West Virginia Stream & Wetland Valuation Metric 2.0

Buffalo Mountain Surface Mine WVDEP Permit No. S-5018-07 Hardee, Lee, and Tug River Districts Mingo County, West Virginia





CONSOL of Kentucky Inc.

1000 CONSOL Energy Drive Canonsburg, Pennsylvania 15317

Revised
Addendum to
Compensatory Mitigation
& Stream Restoration
Plan
March, 2013

Prepared by:

Baker

Michael Baker Jr., Inc.

COMPENSATORY MITIGATION & STREAM RESTORATION PLAN FOR THE BUFFALO MOUNTAIN SURFACE MINE,

WVDEP PERMIT NO. S-5018-07

REVISED ADDENDUM: WEST VIRGINIA STREAM AND WETLAND VALUATION METRIC 2.0

PREPARED FOR:



PREPARED BY:



MARCH 2013

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 SUMMARY OF PROPOSED MITIGATION	2
3.0 METHODOLOGY	2
3.1 SAMPLING LOCATIONS	
3.2 STREAM & WETLAND VALUATION METRIC (SWVM)	
3.3 BENTHIC MACROINVERTEBRATE & WATER QUALITY ASSESSMENT	
3.4 HABITAT ASSESSMENT AND STREAM CHANNEL CONDITION	5
4.0 RESULTS	6
4.1 BRIEF PROJECT AREA DESCRIPTION	
4.2 DATA SUMMARY	7
4.2.1 ON-SITE REPRESENTATIVE REACHES	
4.3 SWVM SUMMARY	14
5.0 REFERENCES	16

LIST OF TABLES

TABLE 1	HILSENHOFF BIOTIC INDEX RANGES	<u>5</u>
TABLE 2	WVSCI RANGES	<u>5</u>
TABLE 3	DATA SUMMARY FOR RUTH TRACE BRANCH	
TABLE 4	HGM FCI SUMMARY FOR RUTH TRACE BRANCH	8
TABLE 5	DATA SUMMARY FOR CONLEY BRANCH	8
TABLE 6	HGM FCI SUMMARY FOR CONLEY BRANCH	
TABLE 7	DATA SUMMARY FOR RIGHT FORK OF HELL CREEK	
TABLE 8	HGM FCI SUMMARY FOR RIGHT FORK OF HELL CREEK	10
TABLE 9	DATA SUMMARY FOR LEFT FORK OF HELL CREEK	
TABLE 10	HGM SUMMARY FOR LEFT FORK OF HELL CREEK	11
TABLE 11	DATA SUMMARY FOR PIGEONROOST CREEK	12
TABLE 12	HGM FCI SUMMARY FOR PIGEONROOST CREEK	12
TABLE 13	DATA SUMMARY FOR UNNAMED TRIBUTARY OF PIGEON CREEK	13
TABLE 14	HGM FCI SUMMARY FOR UNNAMED TRIBUTARY OF PIGEON CREEK	13
TABLE 15	DATA SUMMARY FOR UT5 OF MILLER CREEK	
TABLE 16	HGM FCI SUMMARY FOR UT5 OF MILLER CREEK	
TABLE 17	HGM FCI SUMMARY FOR UT OF STONECOAL BRANCH	14
TABLE 19	SWVM SUMMARY	15

LIST OF APPENDICES

Α	PPF	-N	DI	Χ	Α	F)	۲ŀ	11	R	П	ſS	

APPENDIX B FIELD DATA SHEETS

APPENDIX C BENTHIC MACROINVERTEBRATE TABLES

APPENDIX D SWVM SPREADSHEETS

1.0 INTRODUCTION

CONSOL of Kentucky Incorporated (CONSOL) has prepared a Compensatory Mitigation and Stream Restoration Plan ("CMP") to offset unavoidable structural and functional losses of waters of the United States (U.S.) from its proposed Buffalo Mountain Surface Mine (WVDEP Permit No. S-5018-07). The CMP was developed using the most current regulatory guidance and protocols available at the time of its development (2008-2009). In 2010, a new protocol has been implemented by a team of resource agency representatives including the U.S. Army Corps of Engineers (USACE), Huntington District. This new protocol is entitled the West Virginia Stream and Wetland Valuation Metric (SWVM) (WVIRT, 2010) and provides a method to account for losses of waters of the U.S. and to compensate for those losses in the state of West Virginia. This Supplemental Report provides results from the application of the SWVM to the Buffalo Mountain Surface Mine project.

The proposed mine permit area is located near the Town of Delbarton in central Mingo County, WV (Appendix A, Exhibit 1). The Buffalo Mountain Surface Mine proposes to extract bituminous coal reserves via a combined method of mining, including area, mountaintop, steep slope, contour, and limited auger/highwall mining, within its proposed 2,308-acre permit area. The proposed impact and mitigation stream reaches are located within the Miller Creek, Pigeon Creek, and Buffalo Creek watersheds in the Tug Fork River watershed (Hydrologic Unit Code 05070201) of the Big Sandy River basin, at approximately 34°44′07″ latitude and 82°13′28″ longitude.

According to the 2008 "Final Rule" for implementing the Clean Water Act (USEPA and USACE, 2008), an "appropriate assessment method or other suitable metric must be used to assess and describe the aquatic resource types that will be restored, established, enhanced and/or preserved." In February 2010, USACE issued a Public Notice for the SWVM. The SWVM was developed by West Virginia's Interagency Review Team (WVIRT), consisting of the USACE, Huntington and Pittsburgh Districts, U.S. Environmental Protection Agency (USEPA), U.S. Fish & Wildlife Service (USFWS), U.S. Department of Agriculture's Natural Resource Conservation Service (NRCS), West Virginia Department of Environmental Protection (WVDEP), and the West Virginia Division of Natural Resources (WVDNR). The SWVM is to be used for calculating functional credits and debits in compensatory mitigation plans for losses of aquatic resources (WVIRT, 2010).

In addition to the SWVM, on July 30, 2010, the USACE's Engineer Research and Development Center (ERDC) published the Operational Draft of the Regional Guidebook for the Functional Assessment of High Gradient Ephemeral and Intermittent Streams in Western West Virginia and Eastern Kentucky (ERDC/EL TR-10-11, U.S. Army Engineer Research and Development Center, Vicksburg, MS). The guide book outlines the Hydrogeomorphic (HGM) Approach. The HGM approach is a collection of concepts and methods for developing functional indices and using them to assess the capacity of a wetland to perform functions relative to similar wetlands in a region. This approach has been incorporated into the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, which is now utilized in this state and the surrounding region for wetland identification and delineation. While the HGM Approach was initially developed for the assessment of wetlands, the method can be applied to any ecosystem (ERDC/EL TR-10-11). Thus, the HGM approach has been adopted to assess the functions of high-gradient ephemeral and intermittent headwater streams of the Appalachian Mountain Region of eastern Kentucky and western West Virginia, including the Central Allegheny Plateau,

which includes the project area. On February 1st, 2011 the USACE issued Public Notice for the SWVM version 2.0 along with the implementation of the Hydrogeomorphic (HGM) Approach.

The following sections present a summary of the project's CMP (Section 2.0), the SWVM analysis methodology (Section 3.0), and the analysis results (Section 4.0). Section 4.3 provides a summary of debit and credit calculations and whether the CMP provides compensation for the resulting credit deficit.

2.0 SUMMARY OF PROPOSED MITIGATION

Use of the SWVM metric requires input of data describing existing conditions of the impacted streams and both existing and future conditions for the mitigation reaches. Therefore, this section provides a brief summary of the proposed impacts and mitigation.

The proposed Buffalo Mountain Surface Mine's total impact (permanent and temporary) to jurisdictional streams will be 51,866 linear feet (LF), including 41,651 LF of permanent impacts and 10,215 LF of temporary impacts. As detailed in the CMP (Baker, 2010), CONSOL proposes to use a combination of on-and off-site mitigation techniques, including establishment, restoration, enhancement, and preservation, as well as water quality improvements.¹

As noted above, the CMP developed prior to the implementation of the SWVM used several techniques to assess functional loss and mitigation credits. With the exception of the USM protocol, each technique concluded that the proposed CMP would provide sufficient credits to offset aquatic resource losses. Regarding the USM, calculations resulted in a credit deficit of approximately 34 percent. To mitigate for this deficit, an extensive wastewater treatment plan was developed to improve water quality in the same watershed as other mitigation efforts to implement a complete watershed restoration approach. Like the USM, the SWVM analysis indicated a deficit in credits following implementation of the proposed CMP, as detailed in the following sections. The twenty-five percent deficit resulting from the SWVM protocol will also be compensated for by the implementation of the wastewater treatment plan and off-site stream restoration and enhancement included in the proposed CMP. This subject is detailed in Section 4.4.

3.0 METHODOLOGY

3.1 Sampling Locations

Based on the SWVM Instruction Document (WVIRT, 2010) and consultation with USACE Huntington District (personal communication with Michael Hatten, 2010), streams and stream segments were selected and assessed using the USACE's standard Rapanos-method of delineating streams, which involves delineating streams based on Strahler's (1952) stream order classification method.

Between May 19 and 21, 2010, professional stream biologists collected benthic macroinvertebrate and water quality samples on representative stream segments through each of the subwatersheds in the project area, including a minimum of one segment on each stream order and flow regime. Values were then

2

¹ The water quality improvement component of the Mitigation Plan includes the construction of wastewater collection lines and tap-ins for all of the residents of Hell Creek's watershed and a three-mile long force main to the Delbarton, WV wastewater treatment plant. Raw sewage and other household wastes are currently being released into Hell Creek, a perennial stream. As detailed in the Mitigation Plan (Baker, 2010), fecal coliform levels - an indicator of raw sewage - in Hell Creek are above state recommended levels for aquatic life.

assigned to every stream in the analysis, using the results from the representative stream segments. Site locations are shown on Exhibits contained in Appendix A.

Habitat assessments were conducted as part of the Jurisdictional Determination (Baker, 2008) and the CMP process; however, in accordance with new SWVM guidance, additional habitat assessments were conducted in May, 2010. On every stream order and flow regime throughout the project area, habitat assessments were collected either one or two times depending on whether the stream reach was greater than 100 meters in length as prescribed by USEPA (Barbour et al., 1999). If the stream reach was greater than 100 meters, two habitat assessments were collected and averaged to obtain a more representative habitat score.

Assessments of the hydrologic, geomorphic, and biotic functions were also collected at representative areas as part of the CMP process. Portions of that data, including riparian assessments, pebble counts, large woody debris counts, species richness, and land use, were incorporated into the HGM assessment as stream assessment reaches (SARs) according to the USACE HGM approach guidance (USACE, 2010). In July 2011, additional data, such as embeddedness and diameter at breast height (DBH) measurements, were collected to complete the HGM assessment. Previous data were reviewed during this additional work, to confirm the quality and relevance of the representative assessments.

3.2 Stream & Wetland Valuation Metric (SWVM)

The SWVM is a Microsoft Excel file (http://www.lrh.usace.army.mil/permits) that uses project specific data to assess proposed impacts and compare them to proposed mitigation efforts. The data that are entered include: length of proposed impact/mitigation; hydrology, biogeochemical cycling, and habitat index scores from the USACE HGM, habitat scores from, USEPA habitat assessment score; specific conductivity; pH; dissolved oxygen; West Virginia Stream Condition Index (WVSCI) score; temporal loss impacts; length of long-term protection; and, when appropriate, wetland type, wetland impact/mitigation classification, and wetland acreage.

The SWVM uses the stream data to calculate an index score for each impact. This score is then multiplied by the length of proposed impact to determine the total unit score of the losses in the proposed project. The same parameters are measured at proposed mitigation sites to obtain a baseline index score. The proposed functional lifts from the CMP (establishment, restoration, enhancement, and preservation) are then entered into the SWVM. The total of the functional lifts is a score that should be equal to or greater than the total of losses for the project, as to comply with the policy of "no net loss."

For the predictions of future conditions within the mitigation reaches, only four parameters were changed for calculating credits: the USACE's Hydrogeomorphic (HGM) score, the USEPA's Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers (RBP) habitat assessment score, specific conductivity, and WVSCI score. Elements of the habitat assessment score and the HGM score, such as substrate and bank stability, were changed for the future conditions at certain mitigation streams in accordance with the physical improvements proposed as part of the restoration and enhancement activities. Specific conductivity was changed for the future conditions of mitigation streams that will be located below valley fills in accordance with the best available data for similar conditions in the region. CONSOL is currently mining in the Miller Creek watershed, adjacent to the proposed project area, as part of the Peg Fork Surface Mine (WVDEP Permit No. S-5018-06). Monitoring data results from the Peg Fork Surface Mine indicate that specific conductivity below valley fills has increased, as compared to the baseline condition

4

prior to mining. With similar geology and similar mining practices as those proposed for the Buffalo Mountain Surface Mine, the Peg Fork project scenario is the best predictor available for future conditions at the proposed project site in the Miller Creek and Pigeon Creek watersheds. A conservative increase to 500 μ S/cm was applied to all mitigation sites that will be located below valley fills. Similarly, WVSCI scores below valley fills were adjusted to a conservative score of 68. To account for temporal loss and long term protection, CONSOL has also applied the appropriate factors for each mitigation site (see Appendix D).

As stated in the USACE's Instruction Document, the SWVM is to be used along with other qualitative and quantitative methodologies to show functional lift of a project; it is not to be used as the sole tool for calculating credits and debits (WVIRT, 2010). The USACE Engineer Research and Development Center (EDRC) continue to develop a Comprehensive Stream Assessment Methodology, which may supersede the SWVM, and the WVDNR is working on a functional assessment methodology that may supersede the wetland portion of the SWVM. However, at this time, the SWVM is the most recent tool to use in the West Virginia region to assess impact and calculate total debit and credits for a project.

3.3 Benthic Macroinvertebrate & Water Quality Assessment

Stream water quality measurements (i.e., pH, specific conductivity, dissolved oxygen, and temperature) were conducted during the benthic macroinvertebrate sampling. Water quality data were collected using a YSI Model 556 MPS meter, which was calibrated before each sampling day.

Benthic macroinvertebrates were sampled following the USEPA's RBP for benthic macroinvertebrates (Barbour et al., 1999). At each sample location, a representative riffle area was sampled with a rectangular 500µm mesh D-frame net was used to capture organisms kicked up from substrate disturbance. All organisms and leafy debris captured in the nets were transferred to collection bottles and preserved with 70 percent ethanol.

In the laboratory, leafy debris contained in the samples was carefully picked for attached organisms and then all collected organisms were sorted and identified by a certified taxonomist to the genus level. All organisms in the Chironomidae (also known as the non-biting midge) Family were shipped overnight to Ecoanalysts, Inc. for genus identification. Identification followed Merritt and Cummings (1996) for larval insects and Pennak (1989) for crustaceans and annelids. Data analysis included calculation of additional USEPA RBP metrics: total taxa; Ephemeroptera/Plecoptera/Trichoptera (EPT) taxa; percent EPT; percent Chironomidae; percent two dominant taxa; and Hilsenhoff Biotic Index (HBI) (Table 1). The WVSCI values were calculated for each of the listed RBP metrics and averaged for a total WVSCI score (Gerritsen, et al., 2000). WVSCI scores range from 0 to 100 (Table 2).

Table 1 Hilsenhoff Biotic Index Ranges

Hilsenhoff Biotic Index (HBI)									
Family Biotic Index	Water Quality	Degree of Organic Pollution							
0.00 – 3.75	Excellent	Organic pollution unlikely							
3.76 – 4.25	Very Good	Possible slight organic pollution							
4.26 – 5.00	Good	Some organic pollution probable							
5.01 – 5.75	Fair	Fairly substantial pollution likely							
5.76 – 6.50	Fairly Poor	Substantial pollution likely							
6.51 – 7.25	Poor	Very substantial pollution likely							
7.26 – 10.00	Very Poor	Severe organic pollution likely							

Source: Mandaville, 2002

Table 2 WVSCI Ranges

WVSCI Ranking							
Range Rank							
78 to 100	"Very Good"						
68 to 78	"Good"						
61 to 68	"Gray Zone"						
45 to 61	"Fair"						
22 to 45	"Poor"						
0 to 22	"Very Poor"						

Source: Gerritsen et al., 2000; WVDEP, 2010

3.4 Habitat Assessment and Stream Channel Condition

Habitat assessments were conducted in accordance with USEPA's RBP for habitat (Barbour et al., 1999). The stream habitat assessment protocol qualitatively evaluates ten physical stream parameters as they relate to habitat for aquatic organisms. These parameters include: epifaunal substrate, embeddedness, velocity/depth regime, sediment deposition, channel flow status, channel alteration, riffle frequency, bank stability, vegetative protection, and riparian zone quality. The result is a Habitat Assessment Value (HAV) that ranges from 0 to 200; this value is referenced in the SWVM results more generally as the "RBP Score."

In addition to habitat assessments, stream channel condition was assessed qualitatively and quantitatively in order to gain additional baseline information on the subwatersheds in the project area. Qualitative surveys included a general morphology assessment and a visual organic and inorganic substrate assessment. Quantitative assessments included inorganic particle measurements, large woody debris counts, potential bank erosion, riparian species richness, canopy density, and land use. These data were incorporated, where appropriate, in the HGM assessment and score. Additional information, such as

embeddedness, riparian tree diameter, riparian snag density, and soil detritus, were later collected in the same reaches to complete the USACE's HGM approach.

Data were input into a "Field Data Sheet and Calculator," a formatted Microsoft Excel spreadsheet created by the USACE (http://www.lrh.usace.army.mil/permits) under the following categories:

- Channel Canopy Cover
- Channel Substrate Embeddedness
- Channel Substrate Size
- Potential Channel Bank Erosion
- Large Woody Debris
- Riparian/Buffer Zone Tree Diameter
- Riparian/Buffer Zone Snag Density
- Riparian/Buffer Zone Sapling/Shrub Density
- Riparian/Buffer Zone Species Richness
- Riparian/Buffer Zone Soil Detritus
- Riparian/Buffer Zone Herbaceous Cover
- Watershed Land-use

The categorized measurements calculate the Functional Capacity Indices (FCI) for Hydrology, Biogeochemical Cycling, and Habitat.

Hydrology is the capacity to dissipate energy and convey water, calculated from the roughness characteristic of the channel as described by embeddedness, substrate size, bank erosion, large woody debris, and land use. Biogeochemical cycling is the capacity for biotic and abiotic processes to cycle organic materials calculated by contribution of organic debris through large woody debris, riparian vegetation density, soil detritus, and land use, along with a minor consideration for hydrologic flow determined from embeddedness. Habitat is the capacity to provide life requisites for the wildlife community calculated from available canopy, substrate, large woody debris, riparian tree size, riparian species richness, and soil detritus, along with the limiting factor of embeddedness.

Each FCI is a value from 0.0 to 1.0, where an index of 1.0 indicates that the ecosystem is functioning at the highest sustainable capacity. The three values are collectively known as the "HGM Score" (Appendix B)

4.0 RESULTS

4.1 Brief Project Area Description

The proposed project area, including highlights of the proposed impact reaches, is shown in Appendix A, Exhibit 2. Proposed impacts and mitigation are located within the following subwatersheds of the Pigeon Creek watershed: Ruth Trace Branch (RTB), Right Fork of Conley Branch (RFCB), Left Fork of Conley Branch (LFCB), Right Fork of Hell Creek (RFHC), Left Fork of Hell Creek (LFHC), Hell Creek (HC), Pigeonroost Creek (PC), Unnamed Tributary of Pigeon Creek (UTPC), and an Unnamed Tributary of Stonecoal Branch (UTSB). Additional proposed impacts and mitigation are located within the Miller Creek watershed, specifically within the Unnamed Tributary 4 (UT4MC) and Unnamed Tributary 5 (UT5MC) subwatersheds. As detailed in Section 3.1, HAV scores were assessed for every impact and mitigation stream, while water quality and benthic macroinvertebrate data were collected at representative reaches throughout these subwatersheds (Appendix A, Exhibits 3 through 6). Similarly, habitat, geomorphology,

and hydrology measurements were collected at stream assessment reaches (SARs) in the intermittent and ephemeral stream portions as part of the HGM approach (Exhibits 4 through 6).

Average slopes in the proposed project area are steep and considered high gradient, ranging from 4 to 35 percent. The area is isolated and undeveloped, most likely because of existing topographic features. Past land uses of the proposed project area include timbering, gas exploration, underground and surface mining, and wildlife habitat. The forestland of the proposed project area is predominantly oak-hickory forest of mixed age, early successional, with occasional large-diameter trees. Bank vegetation was very disturbed in many of the reaches from channel bank erosion and incision.

Average stream widths ranged from 1.6 to 8.5 feet in the first order streams, from 2.8 to 14.1 feet in the second order streams, from 4.6 to 7.4 feet in the third order streams, and from 12.8 to 19.4 feet in the single fourth order stream evaluated.

4.2 Data Summary

The following sections summarize the benthic macroinvertebrate, water quality, and hydrogeomorphic data collected for the SWVM analysis. Individual field data summary sheets, including water quality data and HGM field data and calculation sheets are presented in Appendix B, and benthic macroinvertebrate individual count data are presented in Appendix C. Below, Section 4.2.1 presents results from representative stream reaches within the surface mining project area ("on-site"). On-site data were input into the SWVM for all of the proposed impact and on-site restoration mitigation streams. The SWVM results are summarized in Section 4.3.

4.2.1 On-Site Representative Reaches

Ruth Trace Branch

A total of five (5) representative benthic macroinvertebrate and water quality samples were collected in proposed impact reaches of the Ruth Trace Branch subwatershed (Appendix A, Exhibit 3). Samples included one (1) on a first order intermittent stream, one (1) on a second order intermittent stream, one (1) on a third order intermittent stream, and two (2) on a third order perennial stream. The data are summarized in Table 3.

Table & Bata Gammary for Hatti Hade Branen												
Stream ID	Order	Flow Regime	WVSCI	Taxa (# of families)	EPT Taxa (# of families)	% EPT	Specific Conductivity (uS/cm)	рН				
UT1 UT17 RTB	1st	Intermittent	78.48	13	7	63	30	7.87				
RTB	2nd	Intermittent	69.8	8	5	67	34	8.36				
RTB	3rd	Intermittent	92.23	19	13	66	29	8.41				
RTB Temporary	3rd	Perennial	77.13	14	8	61	37	8.27				
RTB Permanent	3rd	Perennial	74.31	9	7	85	36	8.29				
	3rd	Perennial	74.31	9	7	85	36	8.29				

Table 3 Data Summary for Ruth Trace Branch

Notes: UT = Unnamed Tributary, RTB = Ruth Trace Branch. "Permanent" and "Temporary" refer to the location along the stream segment; the permanent site is located where a permanent stream impact is proposed, and the temporary site is located where a temporary impact is proposed (where proposed mitigation includes stream restoration).

Regarding water quality (Appendix B), baseline levels of specific conductivity were low, with values between 29 and 37 μ S/cm. Levels of pH were within the normal range (pH of 6.0 to 9.0; Stumm and Morgan, 1996), but slightly alkaline, with levels above 8.00 at four (4) out of the six (6) sampling sites.

Dissolved oxygen levels were optimal and greater than 10.0 mg/L at each of the sampling sites (5 mg/L is the water quality standard for aquatic life in WV [47CSR2]).

Benthic macroinvertebrates (Appendix C) in this subwatershed had WVSCI scores between "good" (69.8) and "very good" (92.23). The total number of individuals ranged from 15 to 72, with third order perennial streams having the most. Of the taxa (families) present throughout the subwatershed, EPT taxa in the samples numbered from 5 to 13, while the total taxa in the subwatershed numbered from 8 to 19. The EPT taxa were moderately intolerant to organic pollution, with the lowest tolerance value being 0 out of 10. Moderately intolerant EPT taxa represented between 61 and 85 percent of the population samples. The HBI scores ranged from 3.1 to 3.9, indicating water quality ranged from "excellent" to "very good," with the presence of organic pollution being "unlikely" to "slight."

Three (3) stream assessment reaches (SARs) were surveyed within the subwatershed. SARs were collected in first order ephemeral and first and second order intermittent stream segments representing the available conditions. Stream reaches were similar in condition (Table 4), though the ephemeral reach, RTB U2 demonstrated poorer habitat. Biogeochemical cycling and hydrology remained similar among all samples regardless of flow regime or stream order (Table 4). Full HGM field data forms are available in Appendix B.

rable i fremi of cammary for Rath frace Branch											
SAR	Order	Flow Regime	Hydrology	Biogeochemical Cycling	Habitat						
RTB 1	2 nd	Intermittent	0.63	0.81	0.83						
RTB U2	1 st	Ephemeral	0.68	0.84	0.74						
RTB U3	1st	Intermittent	0.69	0.82	0.86						

Table 4 HGM FCI Summary for Ruth Trace Branch

Conley Branch

A total of five (5) representative benthic macroinvertebrate and water quality samples were collected in proposed impact reaches of the Conley Branch subwatershed (Appendix A, Exhibit 4). Samples included collecting two (2) on first order intermittent streams, one (1) on a first order perennial stream, one (1) on a second order intermittent stream, and one (1) on a second order perennial stream. The data are summarized in Table 5.

EPT Taxa Taxa **Specific** Stream ID Order Flow Regime **WVSCI** (# of (# of % EPT Conductivity рН families) families) (uS/cm) **LFCB** 1st Intermittent 69.24 6 4 64 40 6.58 UT2 RFCB 78.91 11 91 8.23 1st Intermittent 8 40 UT3 RFCB Perennial 10 1st 64.52 4 45 41 7.13 UT1 RFCB 2nd Intermittent 64.44 4 3 80 39 8.65 **UT1 RFCB** Perennial 72.08 11 56 39 2nd 8.73

Table 5 Data Summary for Conley Branch

Notes: UT = Unnamed Tributary, LFCB = Left Fork of Conley Branch, RFCB = Right Fork of Conley Branch.

Regarding water quality (Appendix B), baseline levels of specific conductivity were low, with values between 39 and 41 μ S/cm. Levels of pH were within the normal range (pH of 6.0 to 9.0; Stumm and Morgan, 1996), but slightly alkaline, with levels above 8.00 at three (3) out of the five (5) sampling sites.

Dissolved oxygen levels were optimal and greater than 10.0 mg/L at each of the sampling sites (5 mg/L is the water quality standard for aquatic life in WV [47CSR2]).

Benthic macroinvertebrates (Appendix C) in this subwatershed had WVSCI scores between the "gray zone" (64.44) and "very good" (78.91). The total number of individuals ranged from 5 to 46, with first order intermittent streams having the highest number of individuals. Of the taxa present throughout the subwatershed, EPT taxa in the samples numbered from 3 to 8, while the total taxa in the subwatershed numbered from 4 to 11. The EPT taxa were moderately intolerant to organic pollution, with the lowest tolerance value being 0 out of 10. These EPT taxa represented between 45 and 91 percent of the population samples. The HBI scores ranged from 2.0 to 3.8, indicating water quality ranged from "excellent" to "very good," with the presence of organic pollution being "unlikely" to "slight."

Six (6) stream assessment reaches (SARs) were surveyed within the subwatershed. SARs were collected in first order ephemeral and first and second order intermittent stream segments representing the available conditions. Most stream reaches were similar in condition (Table 6), though the ephemeral reach, RFCB U4 demonstrated poorer hydrology. The first order stream portions demonstrated better biogeochemical cycling than second order streams, but habitat remained similar across stream order and flow regime. Full HGM field data forms are available in Appendix B.

SAR	Order	Flow Regime	Hydrology	Biogeochemical Cycling	Habitat
RFCB 1	2nd	Intermittent	0.75	0.78	0.89
RFCB U2	2nd	Intermittent	0.75	0.78	0.88
RFCB U3	1st	Intermittent	0.75	0.81	0.82
RFCB U4	1st	Ephemeral	0.61	0.84	0.83
LFCB 1	1st	Intermittent	0.75	0.84	0.89
LFCB 2	1st	Intermittent	0.75	0.86	0.86

Table 6 HGM FCI Summary for Conley Branch

Hell Creek

Right Fork of Hell Creek

A total of four representative benthic macroinvertebrate and water quality samples were collected in proposed impact reaches of the Right Fork of Hell Creek subwatershed (Appendix A, Exhibit 5). Samples included collecting two (2) on first order intermittent streams, one (1) on a second order intermittent stream, and one (1) on a second order perennial stream. The data are summarized in Table 7.

Table 7 Data Summary for Right Fork of Hell Creek

Stream ID	Order	Flow Regime	WVSCI	Taxa (# of families)	EPT Taxa (# of families)	% EPT	Specific Conductivity (uS/cm)	рН
UT7 RFHC	1st	Intermittent	68.77	7	4	63	41	7.58
UT3 UT4 RFHC	1st	Intermittent	66.64	10	4	55	44	6.77
UT4 RFHC	2nd	Intermittent	69.59	9	6	57	44	6.86
RFHC	2nd	Perennial	85.62	16	10	67	121	7.55

Notes: UT = Unnamed Tributary, RFHC = Right Fork of Hell Creek.

Regarding water quality (Appendix B), baseline levels of specific conductivity were low, with values between 41 and 121 μ S/cm. Levels of pH were within the normal range (pH of 6.0 to 9.0; Stumm and Morgan, 1996) and remained around the neutral level of 7.00 (+/-). Dissolved oxygen levels ranged from 9.52 to 10.25 mg/L (5 mg/L is the water quality standard for aquatic life in WV [47CSR2]).

Benthic macroinvertebrates (Appendix C) in this subwatershed had WVSCI scores between the "gray zone" (66.64) and "very good" (85.62). The total number of individuals ranged from 8 to 93, with second order perennial streams having the most. Of the taxa present throughout the subwatershed, EPT taxa in the samples ranged from 4 to 10, while the total taxa in the subwatershed ranged from 9 to 16. The EPT taxa were moderately intolerant to organic pollution, with the lowest tolerance value being 0 out of 10. These EPT taxa represented between 55 and 67 percent of the population samples. The HBI scores ranged from 3.1 to 3.6, indicating water quality was "excellent," with the presence of organic pollution being "unlikely."

Six (6) stream assessment reaches (SARs) were surveyed within the subwatershed. SARs were collected in first order ephemeral and first and second order intermittent stream segments representing the available conditions (Table 8). The ephemeral reach RFHC U4 demonstrated poorer habitat than other assessments. All of the ephemeral reaches demonstrated poorer biogeochemical cycling than the intermittent reaches. Hydrology remained similar across stream order and flow regime. Full HGM field data forms are available in Appendix B.

Biogeochemical Hydrology SAR Order Flow Regime Habitat Cycling RFHC 1 0.75 2nd Intermittent 0.97 0.92 RFHC 2 0.75 0.88 0.92 1st **Ephemeral** RFHC U3 1st Intermittent 0.75 0.97 0.89 RFHC U4 **Ephemeral** 0.75 0.88 0.72 1st RFHC U5 0.75 0.97 2nd Intermittent 0.95 RFHC U6 1st Intermittent 0.74 1.00 0.81

Table 8 HGM FCI Summary for Right Fork of Hell Creek

Left Fork of Hell Creek

A total of five (5) representative benthic macroinvertebrate and water quality samples were collected in proposed impact reaches of the Left Fork of Hell Creek subwatershed (Appendix A, Exhibit 6). Samples included collecting one (1) on a first order intermittent stream, one (1) on a first order perennial stream, one (1) on a second order intermittent stream, one (1) on a second order perennial stream, and one (1) on a third order perennial stream. The data are summarized in Table 9.

ruble 7 but but but but of their break												
Stream ID	Order	Flow Regime	WVSCI	Taxa (# of families)	EPT Taxa (# of families)	% EPT	Specific Conductivity (uS/cm)	рН				
UT11 LFHC	1st	Intermittent	64.53	11	7	42	55	8.64				
UT11 LFHC	1st	Perennial	66.73	11	5	53	46	10.07				
UT10 LFHC	2nd	Intermittent	33.69	3	0	0	42	7.99				
LFHC Permanent	2nd	Perennial	70.73	9	6	58	19	9.12				
LFHC Temporary	3rd	Perennial	53.63	7	1	18	43	10.15				

Table 9 Data Summary for Left Fork of Hell Creek

Notes: UT = Unnamed Tributary, LFHC = Left Fork of Hell Creek. "Permanent" and "Temporary" refer to the location along the stream segment; the permanent site is located where a permanent stream impact is proposed, and the temporary site is located where a temporary impact is proposed (where proposed mitigation includes stream restoration).

Regarding water quality (Appendix B), baseline levels of specific conductivity were low, with values between 19 and 55 μ S/cm. Levels of pH varied, with two (2) streams within the normal range (pH of 6.0 to 9.0; Stumm and Morgan, 1996). Three (3) streams had alkaline pH levels of over 9.00. Dissolved oxygen levels were optimal and greater than 10.0 mg/L at each of the sampling sites (5 mg/L is the water quality standard for aquatic life in WV [47CSR2]).

Benthic macroinvertebrates (Appendix C) in this subwatershed had WVSCI scores between "poor" (33.69) and "good" (70.73). The total number of individuals ranged from 11 to 55, with first order intermittent streams having the most. Of the taxa present throughout the subwatershed, EPT taxa in the samples ranged from 0 to 7, while the total taxa in the subwatershed ranged from 3 to 11. The EPT taxa were moderately intolerant to organic pollution, with the lowest tolerance value being 1 out of 10. These EPT taxa represented between 0 and 58 percent of the population samples. The HBI scores ranged from 2.9 to 4.5, indicating water quality ranged from "excellent" to "good," with the presence of organic pollution being "unlikely" to "probable."

Five (5) stream assessment reaches (SARs) were surveyed within the subwatershed. SARs were collected in first and second order intermittent stream segments representing the available conditions. Most stream reaches were similar in condition (Table 10), though LFHC U3, a first order stream segment, demonstrated poorer hydrology and habitat. Full HGM field data forms are available in Appendix B.

the state of the s											
SAR	Order	Flow Regime	Hydrology	Biogeochemical Cycling	Habitat						
LFHC 1	2nd	Intermittent	0.75	0.97	0.96						
LFHC U2	2nd	Intermittent	0.71	0.95	0.95						
LFHC U3	1st	Intermittent	0.63	0.93	0.87						
LFHC U4	2nd	Intermittent	0.75	0.97	0.94						
LFHC U5	1st	Intermittent	0.75	0.97	0.96						

Table 10 HGM Summary for Left Fork of Hell Creek

Pigeonroost Creek

A total of two (2) representative benthic macroinvertebrate and water quality samples were collected in proposed impact reaches of the Pigeonroost Creek subwatershed (Appendix A, Exhibit 5). Samples

included a second order intermittent stream and a second order perennial stream. The data are summarized in Table 11.

Table 11 Data Summary for Pigeonroost Creek

Stream ID	Order	Flow Regime	WVSCI	Taxa (# of families)	EPT Taxa (# of families)	% EPT	Specific Conductivity (uS/cm)	рН
PRC	2nd	Intermittent	75.82	13	10	51	39	8.81
PRC	2nd	Perennial	78.58	15	10	49	38	6.53

Note: PRC = Pigeonroost Creek.

Regarding water quality (Appendix B), baseline levels of specific conductivity were low, with values between 38 and 39 μ S/cm. Levels of pH were within the normal range (pH of 6.0 to 9.0; Stumm and Morgan, 1996), and dissolved oxygen levels were optimal and greater than 10.0 mg/L at each of the sampling sites (5 mg/L is the water quality standard for aquatic life in WV [47CSR2]).

Benthic macroinvertebrates (Appendix C) in this subwatershed had WVSCI scores between "good" (75.82) and "very good" (78.58). The total number of individuals ranged from 43 to 49, with second order intermittent streams having the most. Of the taxa present throughout the subwatershed, EPT taxa in the samples comprised 10 of the families, while the total taxa in the subwatershed ranged from 13 to 15. The EPT taxa were moderately intolerant to organic pollution, with the lowest tolerance value being 0 out of 10. These EPT taxa represented between 49 and 51 percent of the population samples. The HBI scores ranged from 3.8 to 4.1, indicating "very good" water with a possibility of "slight" organic pollution.

Three (3) stream assessment reaches (SARs) were surveyed within the subwatershed. SARs were collected in first order ephemeral and first and second order intermittent stream segments representing the available conditions (Table 12). The first order reaches, PRC U2 and PRC U3 demonstrated poorer habitat than second order assessments. The first order stream portions demonstrated better biogeochemical cycling than second order streams, but habitat remained similar across stream order and flow regime. Full HGM field data forms are available in Appendix B.

Table 12 HGM FCI Summary for Pigeonroost Creek

SAR	Order	Flow Regime	Hydrology	Biogeochemical Cycling	Habitat
PRC 1	2nd	Intermittent	0.75	0.99	0.96
PRC U2	1st	Ephemeral	0.75	0.88	0.86
PRC U3	1st	Intermittent	0.72	0.96	0.77

Unnamed Tributary of Pigeon Creek

A total of two (2) representative benthic macroinvertebrate and water quality samples were collected in proposed impact reaches of the UTPC subwatershed (Appendix A, Exhibit 4). Samples included collecting two (2) first order intermittent streams. The data are summarized in Table 13.

Table 13 Data Summary for Unnamed Tributary of Pigeon Creek

Stream ID	Order	Flow Regime	WVSCI	Taxa (# of families)	EPT Taxa (# of families)	% EPT	Specific Conductivity (uS/cm)	рН
UTPC Permanent	1st	Intermittent	79.67	12	8	71	45	6.59
UTPC Temporary	1st	Intermittent	82.72	21	11	47	44	6.66

Note: UTPC = Unnamed Tributary of Pigeon Creek. "Permanent" and "Temporary" refer to the location along the stream segment; the permanent site is located where a permanent stream impact is proposed, and the temporary site is located where a temporary impact is proposed (where proposed mitigation includes stream restoration).

Regarding water quality (Appendix B), baseline levels of specific conductivity were low, with values of 44 and 45 μ S/cm. Levels of pH were within the normal range (pH of 6.0 to 9.0; Stumm and Morgan, 1996). Dissolved oxygen levels were optimal and greater than 10.0 mg/L at both of the sampling sites (5 mg/L is the water quality standard for aquatic life in WV [47CSR2]).

Benthic macroinvertebrates (Appendix C) in this subwatershed had WVSCI scores of 79.67 and 82.72, indicating "very good" water quality. The total number of individuals ranged from 58 to 121. EPT taxa in the UTPC subwatershed ranged from 8 to 11, while the total taxa ranged from 12 to 21. The EPT taxa were moderately intolerant to organic pollution, with the lowest tolerance value being 0 out of 10. These EPT taxa represented between 47 and 71 percent of the population samples. The HBI score was 3.1 for both samples, indicating "excellent" water quality with "no" organic pollution.

Three (3) stream assessment reaches (SARs) were surveyed within the subwatershed. SARs were collected in first order ephemeral and first order intermittent stream segments representing the available conditions (Table 14). The ephemeral reach, UTPC 3, demonstrated poorer habitat and biogeochemical cycling. UTPC1, the lowest sample along the stream, demonstrated better hydrology than the other segments. Full HGM field data forms are available in Appendix B.

Table 14 HGM FCI Summary for Unnamed Tributary of Pigeon Creek

SAR	Order	Flow Regime	Hydrology	Biogeochemical Cycling	Habitat
UTPC 1	1st	Intermittent	0.72	0.98	0.96
UTPC 2	1st	Intermittent	0.67	0.97	0.90
UTPC 3	1st	Ephemeral	0.67	0.86	0.88

Unnamed Tributaries of Miller Creek

A total of two (2) representative benthic macroinvertebrate and water quality samples were collected in proposed impact reaches of the Miller Creek subwatershed (Appendix A, Exhibit 4). Samples included collecting a first order intermittent stream and a first order perennial stream. The data are summarized in Table 15.

Table 15 Data Summary	for UT5 of Miller Creek
-----------------------	-------------------------

Stream ID	Order	Flow Regime	WVSCI	Taxa (# of families)	EPT Taxa (# of families)	% EPT	Specific Conductivity (uS/cm)	рН
UT5 MC	1st	Intermittent	24.5	2	0	0	31	6.89
UT5 MC	1st	Perennial	45.46	2	1	50	34	6.29

Note: UT5MC = Unnamed Tributary 5 Miller Creek.

Regarding water quality (Appendix B), baseline levels of specific conductivity were low, with values of 31 and 34 μ S/cm. Levels of pH were within the normal range (pH of 6.0 to 9.0; Stumm and Morgan, 1996), and dissolved oxygen levels were optimal and greater than 10.0 mg/L at both of the sampling sites (5 mg/L is the water quality standard for aquatic life in WV [47CSR2]).

Benthic macroinvertebrates (Appendix C) from both sites had WVSCI scores of 24.5 and 45.46, indicating "poor" water quality. The total number of individuals ranged from 2 to 5. Of the taxa present throughout the subwatershed, there was only one (1) EPT taxon found, and only two (2) taxa were represented in both of the samples. The EPT taxon was intolerant to organic pollution, with the tolerance value being 1 out of 10. The HBI scores ranged from 2 to 7.2, indicating that water quality varied from "excellent" to "poor," with the presence of organic pollution being "unlikely" to "very substantial."

One (1) stream assessment reach (SAR) was surveyed within the subwatershed. The SAR was collected in first order intermittent stream segment representing the available conditions (Table 16). Full HGM field data forms are available in Appendix B.

Table 16 HGM FCI Summary for UT5 of Miller Creek

SAR	Order	Flow Regime	Hydrology	Biogeochemical Cycling	Habitat
MC U1	1st	Intermittent	0.75	0.97	0.87

Unnamed Tributary of Stonecoal Branch

One (1) stream assessment reach (SAR) was surveyed within the subwatershed. The SAR was collected in first order intermittent stream segment representing the available conditions (Table 16). Full HGM field data forms are available in Appendix B.

Table 17HGM FCI Summary for UT of Stonecoal Branch

SAR	Order	Flow Regime	Hydrology	Biogeochemical Cycling	Habitat
UTSB1	1st	Intermittent	0.66	0.94	0.86

4.3 SWVM Summary

As described above, data from representative sites were used to calculate an SWVM unit for each of the individual impact streams and mitigation streams. Also factored into the SWVM calculations are predictions for on- and off-site establishment reaches. Because the on- and off-site establishment streams are first order streams and are expected to have intermittent flow upon Phase II bond release, baseline conditions for these mitigation streams were derived from the average of all the first order intermittent streams collected throughout the project area.

Total SWVM debits and credits were determined for each subwatershed in the project area. Appendix D presents summary tables for each of the subwatersheds where impacts and on-site restoration mitigation is proposed, as well as for the proposed establishment reaches. Appendix D also presents the SWVM spreadsheets for each stream. Off-site preservation credit was determined as 10 percent of total preservation length (Table 18).

Overall, there were a total of 70,668 SWVM debits throughout the project area and a total of 52,929 SWVM credits, resulting in a total deficit of 17,759 SWVM units (Table 18). The deficit represents approximately twenty-five percent of the total debits throughout the project area.

Table 18 SWVM Summary

SWVM Summary	Debit	Credit
Ruth Trace Branch	11,714	1,007
Conley Branch	10,595	1,906
Right Fork of Hell Creek	17,895	2,258
Left Fork of Hell Creek	16,473	1,761
Pigeonroost Creek	7,788	1,181
Unnamed Tributary of Pigeon Creek	2,875	685
Unnamed Tributary of Stonecoal Branch	126	0
Unnamed Tributary 4 of Miller Creek	170	0
Unnamed Tributary 5 of Miller Creek	3,032	425
On- & Off-Site Establishment Mitigation	0	43,178
Off-Site Preservation*	0	528
TOTAL	70,668	52,929
Deficit	- 17,759	(25.1%)

^{*} A total of 5,281 linear feet are proposed to be preserved. Mitigation credit was determined from 10% of the total preservation length.

The CMP concludes that structural and functional losses of waters of the U.S. will be offset by the proposed mitigation detailed in that plan (Baker 2010). The SWVM findings support this conclusion.

As summarized in Section 2.0 of this report, the CMP includes a water quality improvement component within one of the subwatersheds of the project area. This component was developed in order to compensate for any debits associated with any of the mitigation techniques to quantify functional losses and gains, along with providing a full watershed restoration scale approach. The SWVM analysis revealed an approximately twenty-five percent credit deficit without consideration of the proposed water quality improvements, off-site stream restoration, and enhancement activities; therefore, using the findings of the SWVM and the same basis for conclusion as in the CMP, CONSOL will offset the structural and functional losses of waters of the U.S. with the successful implementation of all planned mitigation activities including water quality improvement (i.e., wastewater treatment).

5.0 REFERENCES

- Barbour, M. T., J. Gerritsen, B. D. Snyder, and J. B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates, and Fish, Second Edition. EPA 841-B-99-002. U. S. Environmental Protection Agency, Office of Water, Washington, D. C.
- Gerritson, J., J. Burton, and M.T. Barbour. 2000. A Stream Condition Index for West Virginia Wadeable Streams. Tetra Tech, Inc. Owing Mills, MD.
- Mandaville, S.M. 2002. Benthic Macroinvertebrates in Freshwaters Taxa Tolerance Values, Metrics, and Protocols. Soil &Water Conservation Society of Metro Halifax. Available on the internet: http://chebucto.ca/Science/SWCS/SWCS.html.
- Merritt, R. W. and K. W. Cummins, eds. 1996. An Introduction to the Aquatic Insects of North America, Third Edition. Kendall/Hunt Publishing Company, Dubuque, Iowa.
- Michael Baker Jr., Inc. (Baker). 2010. Compensatory Mitigation and Stream Restoration Plan for the Buffalo Mountain Surface Mine, WVDEP Permit No. S-5018-07. Submitted to CONSOL of Kentucky Inc. July, 2010.
- Michael Baker Jr., Inc. (Baker). 2008. Preliminary Jurisdictional Determination for the Buffalo Mountain Surface Mine. Submitted to CONSOL of Kentucky Inc. on March 3, 2008, and approved by USACE on September 18, 2008.
- Pennak, R. W. 1989. Freshwater Invertebrates of the United States: Protozoa to Mollusca, Third Edition. John Wiley and Sons, Inc., New York, New York.
- Strahler, A.N. 1952. Hypsometric (area-altitude) analysis of erosional topography. Geological Society of American Bulletin, 63, 1117-1142.
- Stumm, W. and J.J.Morgan. 1996. Chemical Equilibria and Rates in Natural Waters. In *Aquatic Chemistry*, 3rd ed. John Wiley & Sons, Inc.: New York, 1022p.
- U.S. Army Corps of Engineers (USACE). 2010. "Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky." Environmental Laboratory, Wetlands Regulatory Assistance Program.
- U.S. Environmental Protection Agency (USEPA) and U.S. Army Corps of Engineers (USACE). 2008. "Compensatory Mitigation for Losses of Aquatic Resources." Published in the Code of Federal Regulations for USEPA and USACE: 33 CFR 332.1 through 332.8 and 40 CFR 230.91 through 230.98. Final Rule, published April 10, 2008; effective June 9, 2008.
- West Virginia Department of Environmental Protection (WVDEP). 2010. "Biological and Fish Information: West Virginia Stream Condition Index." Policy reported on WVDEP website, accessed July 19, 2010: http://www.dep.wv.gov/WWE/watershed/bio_fish/Pages/Bio_Fish.aspx.
- West Virginia's Interagency Review Team (WVIRT). 2010. The West Virginia Stream and Wetland Valuation Metric: Instruction Manual. WV SWVM Version 1.1, March 2010.

APPENDIX A EXHIBITS

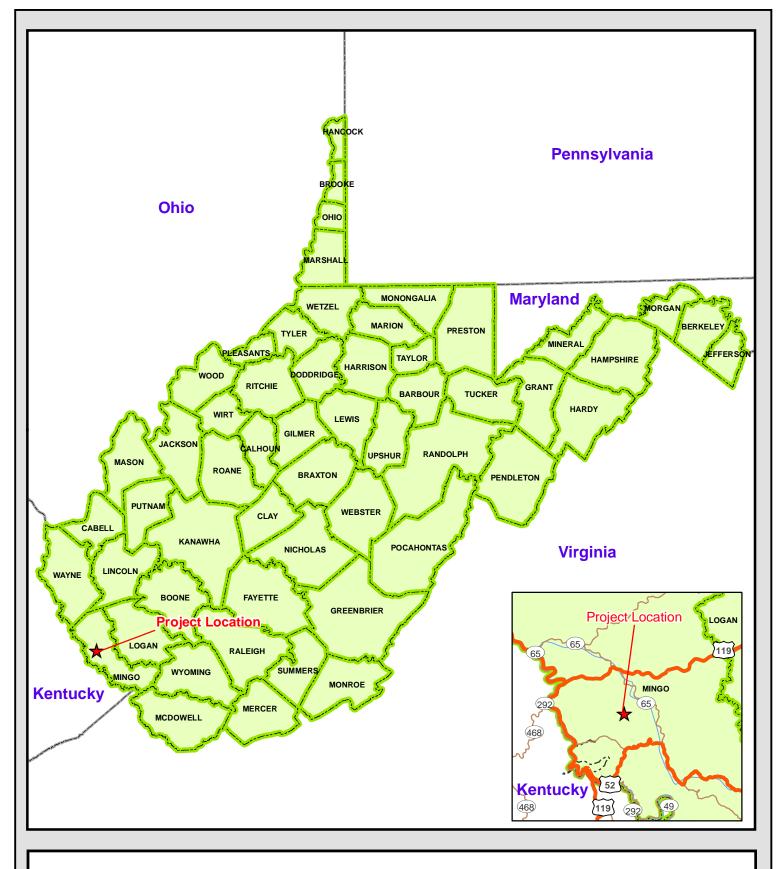
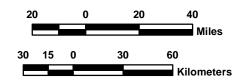
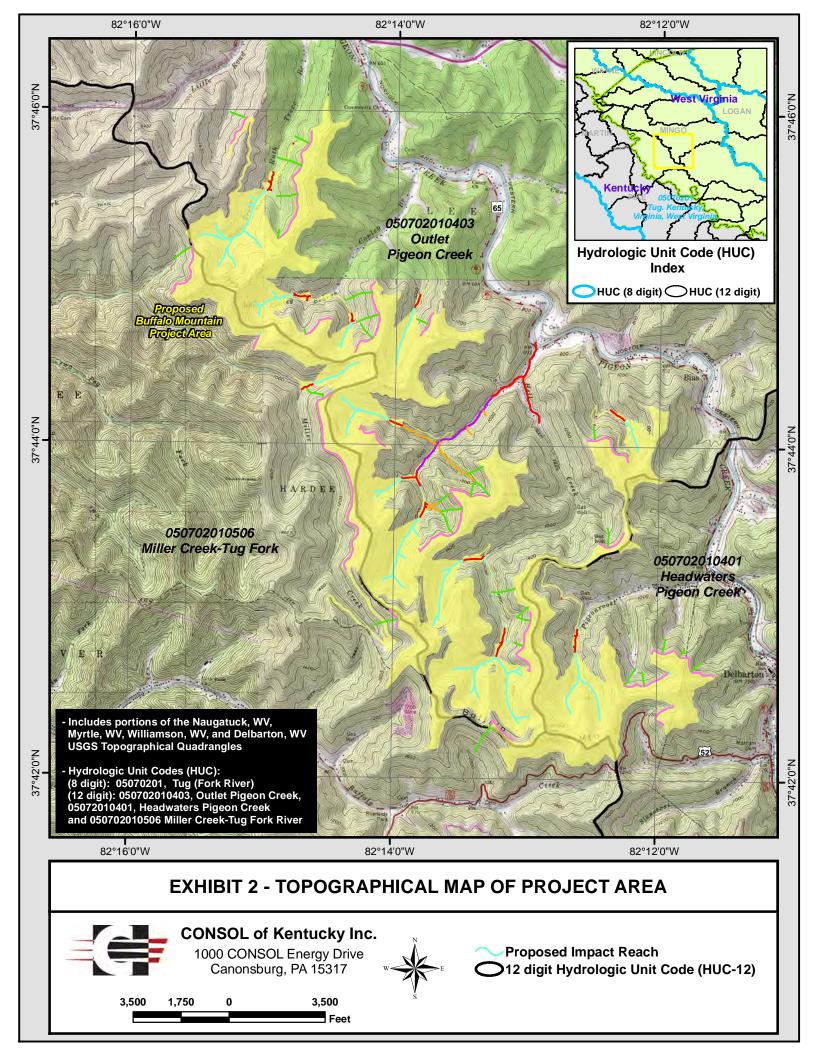


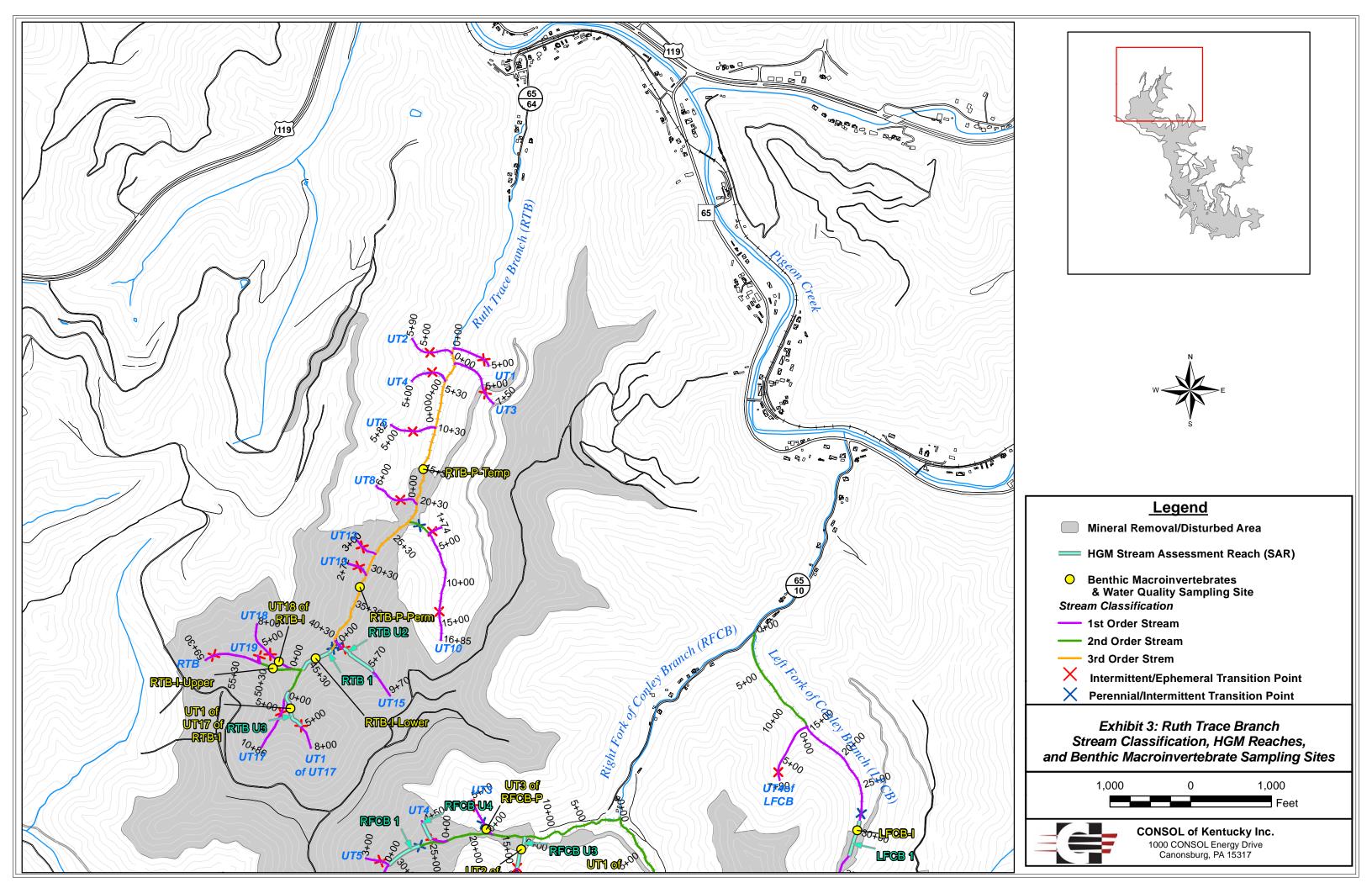
EXHIBIT 1 - PROJECT LOCATION MAP

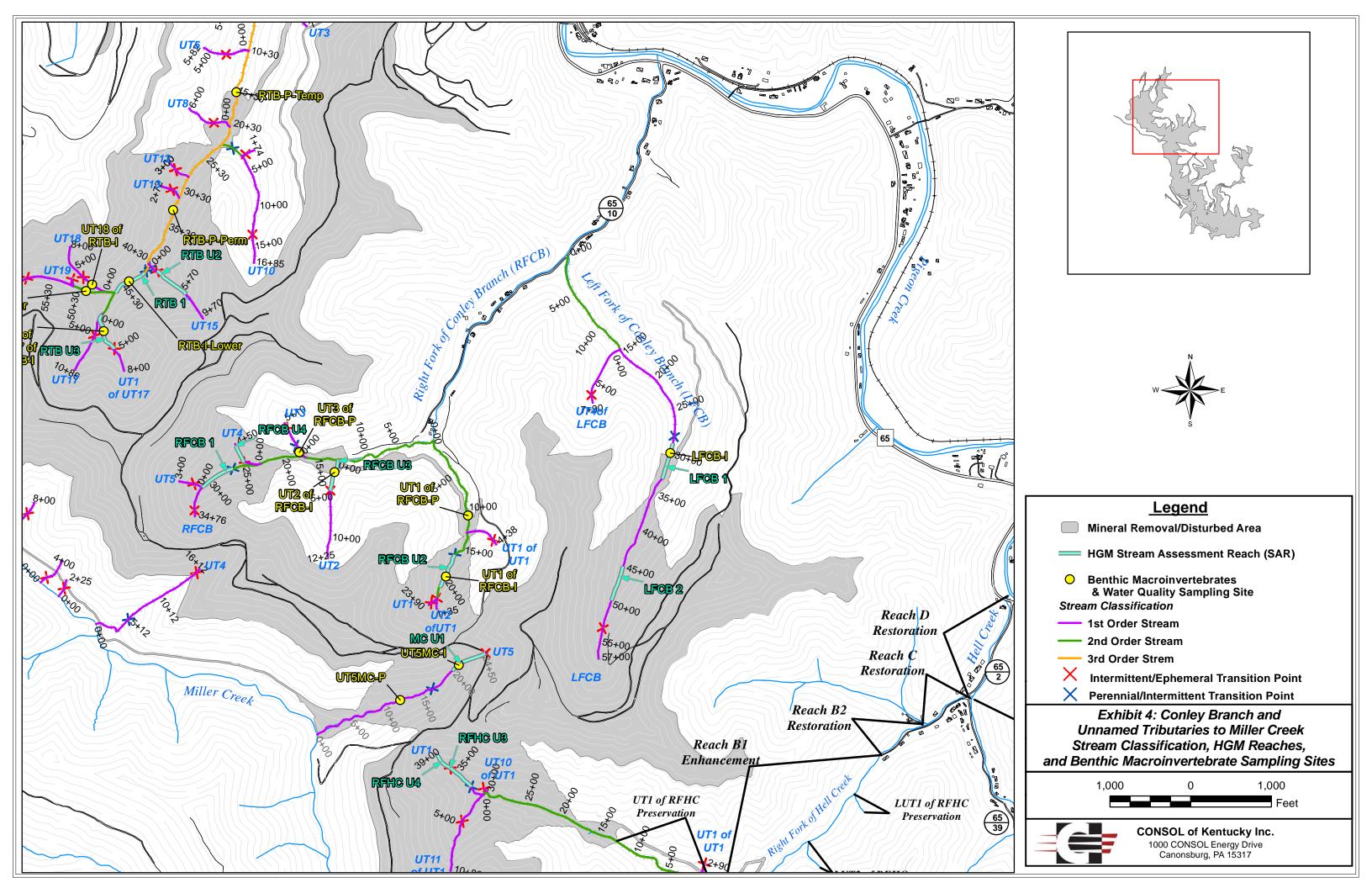


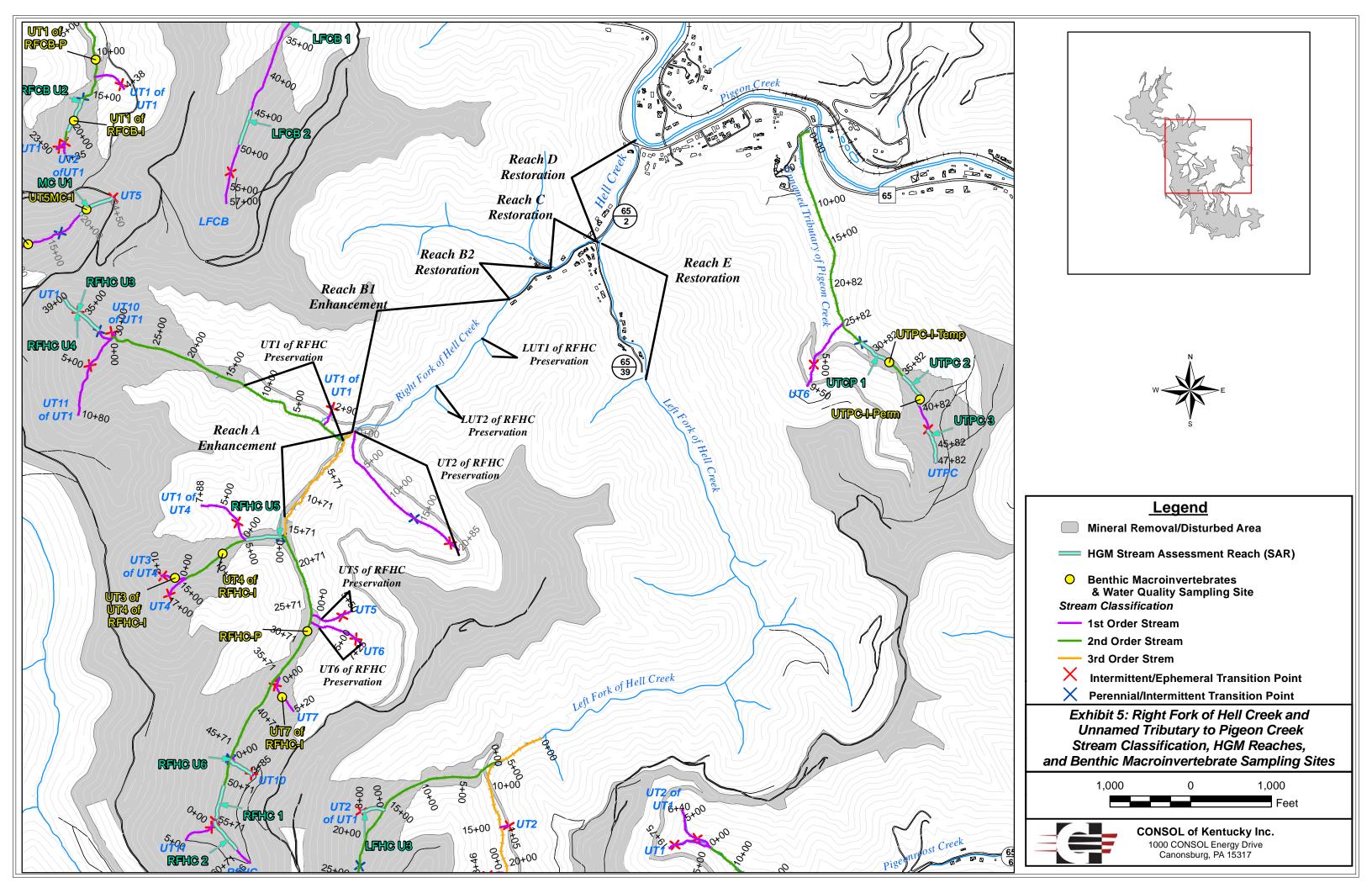


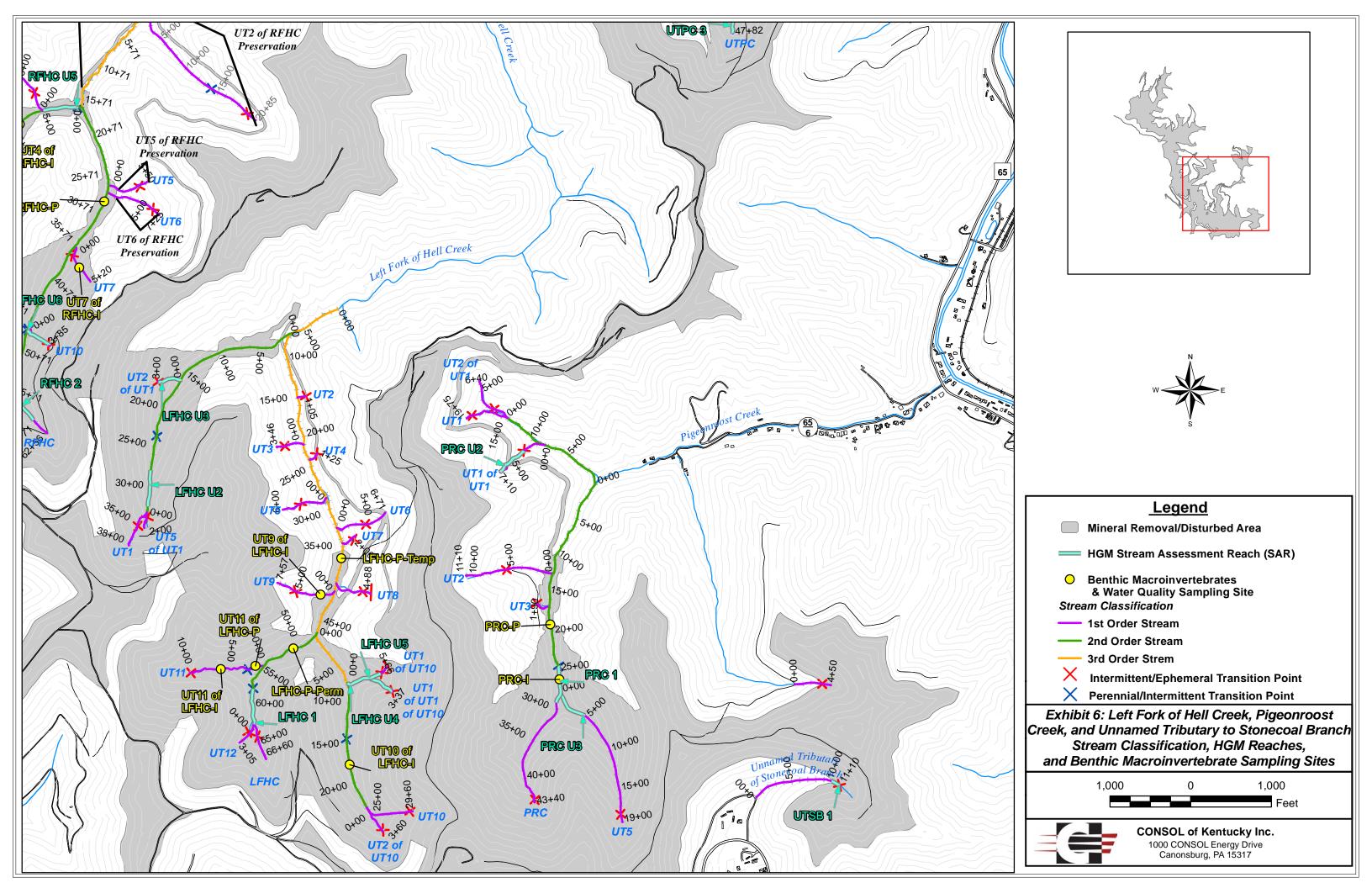












APPENDIX B FIELD DATA SHEETS



FIELD DATA SUMMARY SHEET (FRONT)

DATE: 5/20/10	STREAM NAME: Ruth Trace Branch			Branch				
SITE ID: RTB-P-1	Гетр	RIVER BASIN: Tug Fork				STREAM ORDER: 3		
LOCATION:	<u>.</u>		STREAM CL	ASS:		STORET #	ł:	
LATITUDE: 37° 45	5' 34.27" N	LONGIT	JDE: 82° 1	4' 57.78" W	ELEVATI	ON:		
INVESTIGATORS:	RE, WC							
FORM COMPLETED BY:	WC							
REASON FOR SURVEY:	Baselin	e survey for SW\	′M		,		,	
AGENCY/COMPANY:	CONSC	DL						
WEATHER CONDITIONS/NOTES	Channel V	Vidths: 6.2, 5.8						
CONDITIONS/NOTES	Slope: 5% Weather: 7	70°, Sunny						
SAMPLING	Cinale I leb	itat riffla aamala						
METHODOLOGY	Single Habitat, riffle sample							
SITE PHOTO/	Photo from B	uffalo Mountain Surfa	ace Mine Prelimin	ary Jurisdiction	nal Determination Rep	oort (Baker 2008)		
SKETCH MAP								
							计学 公准制	
					one of the same			
			1					
		1.4	· 64		The state of the s	Al Section	1	
					1		200	
		全下有效		200				
	-							
	(1)			7772	-			
		3-36		A CONTRACTOR				

		5,1						
			NAME OF			(6)		
	4.15	1 1 N		CAN C		Court A	Principle of the second	
STREAM	Flow Regi	*		-	ichem Tyme			
CHARACTERIZATION	□ Perenni	me" ial ☐ Intermitte USGS 7.5' topog			Fishery Type ☐ Coldwater 🏻	Warmwater		
			rapriic quaura	-	Orainage Area			
	Stream Or ☐ Glacial		Spring-fed		•			
		icial montane 🛛	Mixture of original Other	gins				
WATERSHED	 					NDC D-" "		
FEATURES	Predomina	ant Surrounding ☐ Con	Landuse nmercial	_	_ocal Watershed X No evidence		on otential sources	
	☐ Field/Pa	asture 🔲 Indu	ıstrial		Obvious source			
	☐ Agricult ☐ Resider		er	—— ₁	_ocal Watershed	Erosion		
						Moderate	☐ Heavy	

FIELD DATA SUMMARY SHEET (BACK)

DATE:

Sand

Gravel

Cobble

Boulder

Bedrock

0.062-2 mm

2-64 mm

64-256 mm

256-2048 mm

>2048 mm

DATE : 5-2	0-10	SITE ID:	RTB-P-Temp	STREAM NA	STREAM NAME:			
RIPARIAN VEGETATION		Dominant Vegetation Type						
		Dominant Species						
		Canopy Co ☐ Open	ver □ Partly Open □ ⊠	Partly Shaded	☐ Shaded			
AQUATIC VEGETATION		Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free ☐ Floating Algae ☐ Attached Algae						
		Dominant Species						
		Portion of the Reach with Aquatic Vegetation0%						
WATER QUALIT	Υ	Temperatu	re <u>14.83</u> C		Water Odors			
		Specific Co	onductance 37	µS/cm	Normal/None □ Sewage □ Petroleum □ Chemical □ Fishy □ Other			
		Dissolved (Oxygen <u>10.73</u>	mg/L				
		pH <u>8.27</u>			Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other			
		Instrument	UsedYSI 556 MF	<u>'S_</u>	Turbidity			
						rbid		
CHANNEL		Reach Length~400ft			Proportion of Reach Represented by Stream			
FEATURES		Channel W	idthsft		Morphology Types Riffle 20 % Run 60	% Pool_ <u>20</u> _%		
		Water Widt	h ft		Channelized Yes	₫No		
		Right Bank Water Dept	Depthft h_ft		Dam Present □Yes ⊠No			
		Left Bank D Water Dept	Depthft hft		Large Woody Debris □Yes □No Undercut Banks □Yes □No			
		-	Depth (thalweg)	ft				
		Water Dept	h (thalweg)f	t				
	Surface Velocity (thalweg)ft/sec							
		Discharge_	cfs					
SEDIMENT/ SUBSTRATE		Odors Normal/N Chemica Other		☐ Petroleun	Deposits □ Sludge □ Sawdust □ Paper fiber □ Sand □ Relict shells □ Other			
		Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Prof			Undersides of stones black in color? ☐ Yes ☑ No			
					•			
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)				ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	l Diam		% Composition in Sampling Reach		Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.0	62 mm		Detritus	sticks, wood, coarse plan	t		
Sand	0.06	2-2 mm			materials (CPOM)			

black, very fine organic (FPOM)

grey, shell fragments

Muck-Mud

Marl

FIELD DATA SUMMARY SHEET (FRONT)

DATE: 5/20/10	STRE	STREAM NAME: Ruth Trace Branch						
SITE ID: RTB-P-F	Perm RIVER	RIVER BASIN: Tug Fork				STREAM ORDER: 3		
LOCATION:	· ·		STRE	AM CLASS:			STORET #:	
LATITUDE: 37° 45	5' 36.86"N	LONGITU	JDE:	82° 14' 57.	58"W	ELEVAT	ION:	
INVESTIGATORS:	RE, WC					1		
FORM COMPLETED BY:	WC							
REASON FOR SURVEY:	Baseline surv	ey for SWV	/M					
AGENCY/COMPANY:	CONSOL							
WEATHER CONDITIONS/NOTES	Channel Widths Slope: 5% Weather: 75°, St							
SAMPLING METHODOLOGY	Single Habitat, ril	fle sample						
SITE PHOTO/ SKETCH MAP	Photo from Buffalo N	Jountain Surfa	ace Mine	e Preliminary Ju	risdictiona	I Determination Re	eport (Baker 2008)	
STREAM CHARACTERIZATION	Flow Regime* ⊠ Perennial *based on USGS Stream Origin ☐ Glacial	5 7.5' topog	graphic Spring	g-fed		shery Type Coldwater ⊠ ainage Area_	Warmwater	
	☐ Non-glacial m☐ Swamp and b		Mixtur Other ₋					
WATERSHED FEATURES	Predominant Su ☐ Forest ☐ Field/Pasture ☐ Agricultural ☐ Residential	rrounding Con Indu	nmercia ustrial	al	Lo	No evidence Obvious source ocal Watershee	ces ,	

FIELD DATA SUMMARY SHEET (BACK) 5-20-10 SITE ID: RTB-P-Perm STREAM NAME:

DATE : 5-2	0-10 SITE ID: RTB-P-Perm	STREAM NAME:						
RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Gra	asses						
		Dominant Species						
	Canopy Cover ☐ Open ☐ Partly Open ☐	Partly Shaded ☐ Shaded						
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Roote ☐ Floating Algae ☐ Attached	ed submergent						
	Portion of the Reach with Aquat	tic Vegetation0%						
WATER QUALIT	Y Temperature 15.07 C Specific Conductance 36	Water Odors ☑ Normal/None ☐ Sewage µS/cm ☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other						
	Dissolved Oxygen _10.70							
	Instrument Used <u>YSI 556 MPS</u>							
CHANNEL FEATURES	Reach Length~400ft	Proportion of Reach Represented by Stream Morphology Types						
LATORES	Channel Widthsft	Riffle <u>25</u> % Run <u>60</u> % Pool <u>15</u> %						
	Water Widthft	Channelized □Yes ⊠No						
	Right Bank Depthft Water Depth_ft	Dam Present ☐Yes ☐No						
	Left Bank Depthft Water Depthft	Large Woody Debris ⊠Yes □No Undercut Banks ⊠Yes □No						
	Max Bank Depth (thalweg)ft Water Depth (thalweg)ft	ft						
	Surface Velocity (thalweg) Discharge cfs	ft/sec						
SEDIMENT/								
SUBSTRATE	Odors ☑ Normal/None ☐ Sewage ☐ Chemical ☐ Anaerobic ☐ Other	□ Petroleum □ Sawdust □ Paper fiber □ Sand □ Relict shells □ Other						
	Oils ☑ Absent ☐ Slight ☐ Mode	Undersides of stones black in color? ☐ Yes ☑ No						
T								
INORGA	ANIC SUBSTRATE COMPONENTS (should add up to 100%)	ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)						
Substrate	% Composition in	Substrate % Composition in						

INORG	ANIC SUBSTRATE CO (should add up to 10		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	% Composition in Sampling Area			
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant			
Sand	0.062-2 mm			materials (CPOM)			
Gravel	2-64 mm		Muck-Mud	black, very fine organic			
Cobble	64-256 mm			(FPOM)			
Boulder	256-2048 mm		Marl	grey, shell fragments			
Bedrock	>2048 mm		1				

DATE: 5/20/10	SIRE	.AW NAME	: Kuth	i irace Bran	icn				
SITE ID: RTB-I-LC	ower RIVE	R BASIN:	Tug	g Fork				STREAM ORDE	ER : 3
LOCATION:			STRE	AM CLASS:	:			STORET #:	
LATITUDE: 37° 45	5' 14.51" N	LONGITU	JDE:	82° 15′ 13.0	.03" W		ELEVATION	ON:	
INVESTIGATORS:	RE, WC	.I							
FORM COMPLETED BY:	RE								
REASON FOR SURVEY:	Baseline surv	ey for SWV	M						
AGENCY/COMPANY:	CONSOL								
WEATHER	IIChannal Widths	62 74							
CONDITIONS/NOTES	Channel Widths Slope: 9%								
	Weather: 65°, Su	unny							
SAMPLING METHODOLOGY	Single Habitat, rit	ffle sample							
SITE PHOTO/	Photo from Buffalo M	Mountain Surf:	aca Mine	Droliminary III	riediction	nal Deterr	mination Ren	nort (Rakar 2008)	
SKETCH MAP	Prioto from Danaio i	//Uuritairi Jurid	ICE WING	Preminiary 5th	Houldion	lai Detern	Illination rep	JUIT (DONG)	
	4-2	16							
				No.	-		-		
					No.			# J	
							7		
		NO.	1	7 94					
			3		100	型为			
	4	1		-0	and the second	The state of the s			
				4	3	-			
	A I W					100			为量。
			Contract of the second				A Second	12 M	
			1	NOT CO	No.		1		
			9	100	1	TO NO.			
		NAME OF THE PERSON OF THE PERS			A. A. P.				
						1000	1		
		都 1			143	** ***	1	1	
	charle -	Short to	-			350		大丁	
			WE					为	100
			N. W.		2		4		
	A THE					TA		100	
STREAM	Time Denimo*	3.00	100	The same of the sa	and the second		T	A.C. E.	
CHARACTERIZATION	Flow Regime* ☐ Perennial	Intermitte	nt [] Tidal		Fishery □ Coldv		Warmwater	
	*based on USGS	3 7.5' topog	raphic	quadrangles	S				
	Stream Origin				D)rainag	e Area		
	☐ Glacial ☐ Non-glacial m		Spring						
	Swamp and b	og 🗌	Other_		-				
WATERSHED	Predominant Su	urrounding	Landı	use	L	Local W	/atershed	NPS Pollution	
FEATURES		☐ Com	nmercia			⊠ No e\	vidence	☐ Some poter	ntial sources
	☐ Field/Pasture ☐ Agricultural				_ _		ous source	 S	
	Residential	_	_				/atershed	Erosion erate	,

FIELD DATA SUMMARY SHEET (BACK) DATE: 5-20-10 SITE ID: RTB-I-Lower STREAM NAME:

RIPARIAN VEGETATION	Dominant Vegetation Type ☐ Trees ☐ Shrubs ☐ Grass	ses 🗌 He	erbaceous						
	Dominant Species								
	Canopy Cover								
	☐ Open ☐ Partly Open ☐ Pa	artly Shaded	☐ Shaded						
AQUATIC VEGETATION	Dominant Vegetation Type Rooted emergent Rooted floating Free floating Free floating Floating Algae Attached Algae Rooted floating Rooted								
	Dominant Species								
	Portion of the Reach with Aquatic Vegetation0%								
WATER QUALITY	Temperature 14.40 C		Water Odors						
	Specific Conductance 29	μS/cm	⊠ Normal/None						
	Dissolved Oxygen _10.44m	ng/L							
	pH <u>8.41</u>		Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other						
	Instrument Used <u>YSI 556 MPS</u>								
			Turbidity ☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other						
CHANNEL	Reach Lengthft		Proportion of Reach Represented by Stream Morphology Types						
FEATURES	Channel Widths ft		Riffle 45 % Run 15 % Pool 40 %						
	Charmer Widthsit		Channelized □Yes ⊠No						
	Water Widthft		Channelized ∐Yes ⊠No						
	Right Bank Depthft Water Depth_ft		Dam Present ☐Yes ☑No						
	Left Bank Depthft		Large Woody Debris ⊠Yes □No						
	Water Depthft		Undercut Banks ⊠Yes ⊟No						
	Max Bank Depth (thalweg)		Undercut Banks						
	Water Depth (thalweg)ft	_11							
	Surface Velocity (thalweg)	ft/sec							
	Dischargecfs								
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ □ Chemical □ Anaerobic □ Other	☐ Petroleum	Deposits ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other						
			Undersides of stones black in color?						
	Oils ☑ Absent ☐ Slight ☐ Modera	te 🗌 Prof	☐ Yes ☒ No use						
	SSTRATE COMPONENTS add up to 100%)		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)						

INORG	ANIC SUBSTRATE Co		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)					
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area			
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant				
Sand	0.062-2 mm			materials (CPOM)				
Gravel	2-64 mm		Muck-Mud	black, very fine organic				
Cobble	64-256 mm			(FPOM)				
Boulder	256-2048 mm		Marl	grey, shell fragments				
Bedrock	>2048 mm		1					

DATE: 5/20/10		STREAM NAME	: Rutl			
SITE ID: RTB-I-U	pper	RIVER BASIN:	Tu	g Fork		STREAM ORDER: 2
LOCATION:	<u>L</u>		STRE	EAM CLASS:	l	STORET #:
LATITUDE: 37° 45	5' 16.74"	LONGIT	UDE:	82 15' 11.9""	ELEVATI	ON:
INVESTIGATORS:	RE					
FORM COMPLETED BY:	WC					
REASON FOR SURVEY:	Baselin	ne survey for SW\	VΜ			
AGENCY/COMPANY:	CONSC	OL				
luc a Tues	lo	4" Id. 0.5 = 0				
WEATHER CONDITIONS/NOTES	Slope: 9%	<u>Widths:</u> 6.5, 7.0				
	Weather:	65°, Sunny				
SAMPLING METHODOLOGY	Single Hab	oitat, riffle sample)			
SITE PHOTO/						
SKETCH MAP	- To					
		《大學》是			1000	90
		53		4		
				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		
	4.			2.44		
					Contract of the second	
	-					
						入外
				AKTE		
			74	100		
		1				Y
		Comme				
	1					
			4			
STREAM	Flow Regi	ime*			Fishery Type	
CHARACTERIZATION	☐ Perenn	ial 🛛 Intermitte	ent [Tidal	☐ Coldwater ☑	Warmwater
		USGS 7.5' topog	grapnic	quadrangles	Drainage Area	
	Stream Or Glacial		Sprin	g-fed		
	☐ Non-gla	acial montane 🛚 🗵	Mixtu Other	re of origins		
WATERSHED		ant Surrounding			Local Watershed	NPS Pollution
FEATURES		☐ Cor	mmerci		No evidence Obvious source	☐ Some potential sources
	☐ Agricult	tural 🔲 Oth	er			
	Reside	nual			Local Watershed ☐ None ☐ Mode	

FIELD DATA SUMMARY SHEET (BACK)

Silt/Clay

Sand

Gravel

Cobble

Boulder

Bedrock

<0.062 mm

0.062-2 mm

2-64 mm

64-256 mm

256-2048 mm

>2048 mm

DATE : 5-20	D-10	SITE ID:	RTB-I-Upper	STREAM NA	ME:					
RIPARIAN VEGETATION		Dominant \ ☑ Trees	/egetation Type ⊠ Shrubs ☐ G	rasses 🔲 H	erbace	eous				
		Dominant S	Species							
		Canopy Co ☐ Open	ver ☐ Partly Open] Partly Shaded		Shaded				
AQUATIC VEGETATION		☐ Rooted e	/egetation Type emergent ☐ Roo Algae ☐ Attache	ted submergent ed Algae	: [☐ Rooted floating ☐	Free floating			
		Dominant Species								
		Portion of the Reach with Aquatic Vegetation0%								
WATER QUALIT	Y	Temperatu	r e 14.88C			r Odors				
	Specific Conductance 34 µS/cm				Pe	ormal/None				
		Dissolved (Oxygen <u>10.95</u>	mg/L		r Surface Oils				
		рН <u>8.36</u>				ick Sheen Glob one Other	s			
	Instrument Used <u>YSI 556 MPS</u>					Turbidity				
					□ Clear □ Slightly turbid □ Turbid □ Opaque □ Stained □ Other					
CHANNEL FEATURES						ortion of Reach Repres hology Types	ented by Stream			
FEATURES		Channel W	idthsft		Riffle 60 % Run 20 % Pool 20 %					
		Water Widt	h ft		Chan	nelized □Yes ⊠	No			
		Right Bank Water Dept	Depthft		Dam Present □Yes ⊠No Large Woody Debris ⊠Yes □No					
		Water Dept	Depth ft h ft		Undercut Banks ⊠Yes □No					
		Max Bank I	Depth (thalweg)	ft	0					
		Water Dept	h (thalweg)f	ft						
		Surface Ve	locity (thalweg)	ft/sec						
		Discharge_	cfs							
SEDIMENT/ SUBSTRATE		Odors Normal/N Chemica Other		☐ Petroleun	ո [[Deposits ☐ Sludge ☐ Sawdust ☐ Sand ☐ Relict she	Paper fiber			
	Oils Absent Slight Moderate Profuse						lack in color?			
		<u></u>	5							
INORGA		STRATE CO	OMPONENTS 10%)		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)					
Substrate Type	Dia	meter	% Composition ir Sampling Reach			Characteristic	% Composition in Sampling Area			

Detritus

Muck-Mud

Marl

sticks, wood, coarse plant

materials (CPOM)

black, very fine organic

(FPOM)

grey, shell fragments

DATE: 5/20/10		STREAM NAME	: UT1 U	T17 Ruth	Trace	Branch			
SITE ID: UT1 U	T17 RTB I	RIVER BASIN:	Tug	Fork				STREAM ORDE	ER: 1
LOCATION:			STRE	AM CLASS	3 :		u.	STORET #:	
LATITUDE: 37°	45' 7.67"N	LONGIT	UDE:	82° 15' 17	.04"W		ELEVAT	ION:	
INVESTIGATORS:	RE, WC	L							
FORM COMPLETED BY	r: WC								
REASON FOR SURVEY	: Baseli	ine survey for SW\	/M						
AGENCY/COMPANY:	CONS	SOL							
WEATHER	Channel	Widths: 3.7, 4.9							
CONDITIONS/NOTES	Slope: 15	5%							
	Weather:	65°, Sunny							
SAMPLING	Single Ha	abitat, riffle sample							
METHODOLOGY									
SITE PHOTO/	Dhoto from	Buffalo Mountain Surf	aco Mino	Droliminan, li	uriedictio	anal Datar	mination Do	uport (Pakor 2000)	
SKETCH MAP	FIIOLO IIOIII	Bullalo Mountain Sun	ace wille	Freiminary 30	urisuicilo	mai Detei	mination Re	port (baker 2006)	
				- 1					
			98		100	Z			
							Fine		
				Carlos Page					
					1				$i_{i,j}$, $i_{i,j}$
							W.		
		30 Y 30							
			A STATE	900	of a second		Y _{rio}		
	4				.	3			
				* Section		-37	L		
				20					
		Caratia,			VSite	المد إعلى		A	
	100	7.3				*	177	1 1 1 1	
				Vin Land	400		-44		
							No. 11	and the second	A STATE
									NEW YEAR
				100 W				Ward	
	1		100	- WIN	11			The state of the s	N. W.
STREAM	Flow Reg	aime*				Fishery	Type		
CHARACTERIZATION	□ Peren	nial 🛛 Intermitte		Tidal .				Warmwater	
	*based o	n USGS 7.5' topog	graphic	quadrangles		D!			
	Stream C					Drainag	ge Area		
	☐ Glacia	ıl $oxtimes$ lacial montane $oxtimes$	Spring Mixture	ted of origins					
	Swam		Other_						
WATERSHED	Predomi	nant Surrounding	J Landu	se		Local V	Vatershed	NPS Pollution	
FEATURES		t 🔲 Cor	nmercia			☑ No e	vidence	☐ Some poter	ntial sources
	☐ Field/F		ustrial er			☐ Opvi	ous sourc	ees	
	Reside							l Erosion	
	ll .					□ None	⇒ Minoa	lerate 🔲 Heavy	

FIELD DATA SUMMARY SHEET (BACK)

DATE:	5-20-10	SITE ID:	UT1 UT17 RTB I	STRE	AM NAME:
RIPARIAN VEGETATI			/egetation Type ☑ Shrubs □	Grasses	☐ Herbaceous

RIPARIAN VEGETATION	Dominant Vegetation Type ☐ Trees ☐ Shrubs ☐ Gras	sses 🗌 He	erbac	eous				
	Dominant Species							
	Canopy Cover ☐ Open ☐ Partly Open ☐ Partly Shaded ☐ Shaded							
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted ☐ Floating Algae ☐ Attached	submergent Algae	. [☐ Rooted floating ☐ Free floating				
	Dominant Species							
	Portion of the Reach with Aquatic Vegetation0%							
WATER QUALITY	Temperature 13.87 C			r Odors				
	Specific Conductance 30	_µS/cm		ormal/None				
	Dissolved Oxygen _10.77r	mg/L		, _				
	pH <u>7.87</u>			er Surface Oils ick				
	Instrument UsedYSI 556 MPS							
			Turbidity ⊠ Clear □ Slightly turbid □ Turbid □ Opaque □ Stained □ Other					
CHANNEL	Reach Lengthft			ortion of Reach Represented by Stream Phology Types				
FEATURES	Channel Widthsft		Riffle 55 % Run 10 % Pool 35 % Channelized □Yes ☑No Dam Present □Yes ☑No Large Woody Debris ☑Yes □No					
	Water Widthft							
	Right Bank Depthft Water Depth_ft							
	Left Bank Depthft							
	Water Depthft		Undercut Banks ⊠Yes □No					
	Max Bank Depth (thalweg)ft	_ft						
	Surface Velocity (thalweg)	ft/sec						
	Dischargecfs							
SEDIMENT/ SUBSTRATE	Odors Normal/None Sewage Petroleur Chemical Anaerobic Other			Deposits ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other				
	Undersides of stones black in color? Oils ☐ Absent ☐ Slight ☐ Moderate ☐ Profuse							
	STRATE COMPONENTS add up to 100%)		ORG	ANIC SUBSTRATE COMPONENTS (may not add up to 100%)				

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant			
Sand	0.062-2 mm			materials (CPOM)			
Gravel	2-64 mm		Muck-Mud	black, very fine organic			
Cobble	64-256 mm			(FPOM)			
Boulder	256-2048 mm		Marl	grey, shell fragments			
Bedrock	>2048 mm						

DATE: 5/20/10 STREAM NAME: UT18 Ruth Trace					uth Trace B	ranch		
SITE ID: UT18 R	ТВІ	RIVER BASIN: Tug Fork						STREAM ORDER: 1
LOCATION:	STREAM CLASS: STORET #:				STORET #:			
LATITUDE: 37° 45	5' 14.26"N	LONG	GITUDE:	82	2° 15' 18.60"	'W	ELEVATION	ON:
INVESTIGATORS:	RE, WC	<u>'</u>						
FORM COMPLETED BY:	WC							
REASON FOR SURVEY:	Baselin	ne survey for S	SWVM					
AGENCY/COMPANY:	CONS	OL						
WEATHER CONDITIONS/NOTES	Slope: 10°	<u>Vidths:</u> 4.0, 4 % 65°, Sunny	4.8					
SAMPLING METHODOLOGY	Single Hat COLLECT	oitat, riffle sam ION	nple – NC	OT EN	IOUGH FLO	W FOR B	ENTHIC MA	CROINVERTEBRATE
SITE PHOTO/ SKETCH MAP								
STREAM CHARACTERIZATION	*based on Stream Or Glacial Non-gla	ial 🔲 Intern USGS 7.5' to rigin acial montane	opograph ⊠ Spri ⊠ Mixt	ng-fe	adrangles d		y Type dwater ⊠ \	Warmwater
WATERSHED FEATURES	Predomin Forest Field/Pi Agricult Reside	ant Surround asture	Other	duse cial I		⊠ No e □ Obv	evidence rious source Natershed	

FIELD DATA SUMMARY SHEET (BACK) DATE: 5-20-10 SITE ID: UT18 RTB STREAM NAME:

RIPARIAN VEGETATION		/egetation Type ⊠ Shrubs ☐ Gras	sses 🗌 He	erbaceous		
	Dominant S	Species				
	Canopy Co	ver				
40114710		Partly Open P	artly Shaded	Shaded		
AQUATIC VEGETATION	☐ Rooted €	/egetation Type emergent ☐ Rooted Algae ☐ Attached	l submergent Algae	☐ Rooted floating	☐ Free floating	
	Dominant S	Species			-	
	Portion of t	he Reach with Aquati	c Vegetation	0%		
WATER QUALIT	Y Temperatu	re <u>14.49</u> C	,	Water Odors		
	Specific Co	onductance 34	_μS/cm	Petroleum C	sewage Chemical Other	
	Dissolved (Oxygen _10.46	_mg/L Gther			
	рН <u>7.92</u>			Water Surface Oils ☐ Slick ☐ Sheen ☐ ☑ None ☐ Other		
	Instrument	UsedYSI 556 MPS_				
				Turbidity ⊠ Clear □ Slightl □ Opaque □ Staine	y turbid ☐ Turbid d ☐ Other	
CHANNEL	Reach Lend	gthft		Proportion of Reach Re	presented by Stream	
FEATURES	Channel W	-		Morphology Types Riffle <u>40</u> % Run <u>20</u>	% Pool_ <u>40</u> %	
	Water Widt	h ft		Channelized □Yes	⊠No	
	Right Bank Water Dept	Depthft h_ft		Dam Present ☐Yes	⊠No	
	l off Pank I	Depthft	ļ	Large Woody Debris	⊠Yes □No	
	Water Dept			Undercut Banks ⊠Yes □No		
	May Rank I	Depth (thalweg)		ondereut banks	.55 <u> </u>	
	Water Dept	h (thalweg)ft	_''			
	Surface Ve	locity (thalweg)	ft/sec			
	Discharge_	cfs				
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/t □ Chemica □ Other		☐ Petroleum		dust Paper fiber	
	Oils Absent	☐ Slight ☐ Modera	ate 🗌 Profu	Undersides of stor ☐ Yes ☒ No	es black in color?	
	<u> </u>					
INORGA	ANIC SUBSTRATE CO			ORGANIC SUBSTRATE (may not add up		
Substrate	Diameter	% Composition in	Substrate	Characteristic	% Composition in	

INORG	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant			
Sand	0.062-2 mm			materials (CPOM)			
Gravel	2-64 mm		Muck-Mud	black, very fine organic			
Cobble	64-256 mm			(FPOM)			
Boulder	256-2048 mm		Marl	grey, shell fragments			
Bedrock	>2048 mm						

DATE: 5/19/10	STRE	AM NAME:	Left	Fork Conl	ey Bran	nch			
SITE ID: LFCB-I	RIVER	R BASIN:	Tug	Fork				STREAM ORDER: 1	
LOCATION:	,		STRE	AM CLAS	S:		•	STORET #:	
LATITUDE: 37° 44	1' 51.74" N	LONGITU	JDE:	82° 13' 5	0.14" W	1	ELEVATI	ON:	
INVESTIGATORS:	RE, WC					,			
FORM COMPLETED BY:	WC								
REASON FOR SURVEY:	Baseline surv	ey for SWV	′M						
AGENCY/COMPANY:	CONSOL								
WEATHER CONDITIONS/NOTES	Channel Widths Slope: 18% Weather: 60°, C								
SAMPLING METHODOLOGY	Single Habitat, rif	fle sample							
SITE PHOTO/ SKETCH MAP	Photo from Buffalo M	ountain Surfa	ce Mine	Preliminary	Jurisdictio	onal Deterr	nination Rep	oort (Baker 2008)	10年1日 日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日本の日
STREAM CHARACTERIZATION	Flow Regime* ☐ Perennial *based on USGS Stream Origin	7.5' topog	raphic		es		water 🖂	Warmwater	
WATERCHER	☐ Glacial ☐ Non-glacial m ☐ Swamp and b	ontane 🛚	Spring Mixtur Other_	e of origins	S —				
WATERSHED FEATURES	Predominant Su ⊠ Forest □ Field/Pasture □ Agricultural □ Residential	rrounding Com Indu Othe	nmercia Istrial	al		No ev ☐ Obvio	vidence ous source atershed	es '	

FIELD DATA SUMMARY SHEET (BACK) : LFCB-I STREAM NAME:

DATE : 5-19-10	SITE ID: LFCB-I	STREAM NAM	E:			
RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ G	rasses	baceous			
	Dominant Species					
	Canopy Cover ☐ Open ☐ Partly Open ☐	l Partly Shaded	□ Shaded			
AQUATIC	Dominant Vegetation Type	T artiy Chaaca	Gridadea			
VEGETATION	☐ Rooted emergent ☐ Root ☐ Floating Algae ☐ Attache	ted submergent ed Algae	☐ Rooted floating ☐ Free floating			
	Dominant Species					
	Portion of the Reach with Aqu	atic Vegetation _	0%			
WATER QUALITY	Temperature 13.53 C		Vater Odors			
	Specific Conductance 40	µS/cm [Normal/None □ Sewage □ Petroleum □ Chemical □ Fishy □ Other			
	Dissolved Oxygen _10.26	mg/L				
	pH <u>6.58</u>		Vater Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other			
	Instrument Used <u>YSI 556 MF</u>	PS				
			Turbidity ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other			
CHANNEL	Reach Lengthft	P	Proportion of Reach Represented by Stream			
FEATURES	Channel Widthsft	R	Morphology Types Riffle25_% Run60% Pool_ <u>15_</u> %			
	Water Widthft	C	Channelized □Yes ⊠No			
	Right Bank Depthft Water Depth_ft		Oam Present □Yes ⊠No			
	Left Bank Depthft	L	.arge Woody Debris ⊠Yes □No			
	Water Depthft	L	Indercut Banks ⊠Yes □No			
	Max Bank Depth (thalweg)f Water Depth (thalweg)f	ft it				
	Surface Velocity (thalweg)	ft/sec				
	Dischargecfs					
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None ☐ Sewage ☐ Chemical ☐ Anaerobic ☐ Other	☐ Petroleum	Deposits ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other			
	Oils ☑ Absent ☐ Slight ☐ Mod	erate 🗌 Profu	Undersides of stones black in color? ☐ Yes ☑ No se			
	SSTRATE COMPONENTS add up to 100%)	C	ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Onder the te	0/ Commonition in	Cubatnata	0/ Commonition in			

INORG	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant			
Sand	0.062-2 mm			materials (CPOM)			
Gravel	2-64 mm		Muck-Mud	black, very fine organic			
Cobble	64-256 mm			(FPOM)			
Boulder	256-2048 mm		Marl	grey, shell fragments			
Bedrock	>2048 mm		1				

DATE: 5/19/10 STREAM NAME: UT1 Right Fork Conley Branch							
SITE ID: UT1 RF0	UT1 RFCB-P RIVER BASIN: Tug Fork STREAM ORDER				STREAM ORDER: 2		
LOCATION:	•		STREAM CLASS: STORET #:			STORET #:	
LATITUDE: 37° 44	4' 45.62" N LONGITUDE: 82° 14' 20.12" W ELEVATION:						DN:
INVESTIGATORS:	RE, WC	1					
FORM COMPLETED BY:	WC						
REASON FOR SURVEY:	Baseline su	rvey for SW	VМ				
AGENCY/COMPANY:	CONSOL						
WEATHER CONDITIONS/NOTES	Channel Widt Slope: 10% Weather: 60°,						
SAMPLING METHODOLOGY	Single Habitat	riffle sample	;				
SITE PHOTO/ SKETCH MAP							
STREAM CHARACTERIZATION	Flow Regime ³ Perennial *based on US Stream Origin Glacial Non-glacial	Intermitte GS 7.5' topog montane	graphic Spring Mixtu	g-fed re of origins		dwater 🛚 V	Varmwater
WATERSHED FEATURES	☐ Swamp and Predominant ☐ Forest ☐ Field/Pastu ☐ Agricultural ☐ Residential	Surrounding Cor re Ind	mmerci ustrial	use	⊠ No e □ Obv	evidence rious sources Natershed E	

FIELD DATA SUMMARY SHEET (BACK) UT1 RFCB-P STREAM NAME:

DATE:

Sand

Gravel

Cobble **Boulder**

Bedrock

0.062-2 mm

2-64 mm 64-256 mm

256-2048 mm

>2048 mm

5-19-10

SITE ID:

RIPARIAN VEGETATION		☑ TreesDominant SCanopy Co☑ Open	☐ Partly Open ☐ F	<u></u>	erbaceous	
AQUATIC VEGETATION		Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae Dominant Species				
WATER QUALIT	Υ	Temperature Specific Co Dissolved (re13.27C onductance39 Oxygen _10.78	_μS/cm mg/L	Water Odors Normal/None Sewag Petroleum Chemi Fishy Other Water Surface Oils Slick Sheen Glob None Other Turbidity	cal Second Seco
CHANNEL FEATURES		Channel Wi Water Widt Right Bank Water Dept Left Bank I Water Dept Max Bank I Water Dept	hft Depthft h_ft Depthft hft Depth (thalweg)ft h (thalweg)ft	_ft		Pool <u>20</u> % No
				ells		
INORGA		STRATE CC	OMPONENTS 00%)		ORGANIC SUBSTRATE COI (may not add up to 10	
Substrate Type	Diar	meter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Silt/Clay	<0.06	62 mm		Detritus	sticks, wood, coarse plant	5
Cond	0.000	2			materials (CPOM)	

black, very fine organic (FPOM)

grey, shell fragments

Muck-Mud

Marl

DATE: 5/19/10	SI	TREAM NAME	: UT1	Right Fork Conle	ey Branc	:h	
SITE ID: UT1 RF0	D: UT1 RFCB-I RIVER BASIN: Tug Fork STREAM OF				TREAM ORDER: 2		
LOCATION:	<u>'</u>		STREAM CLASS: STORET #:				STORET #:
LATITUDE: 37° 44	l' 38.61" N	LONGIT	JDE:	82° 14' 23.96" V	V	ELEVATIO	N:
INVESTIGATORS:	RE, WC	· ·					
FORM COMPLETED BY:	WC						
REASON FOR SURVEY:	Baseline	survey for SW\	/M				
AGENCY/COMPANY:	CONSOL						
							_
WEATHER CONDITIONS/NOTES	Channel Wid Slope: 12% Weather: 62°	<u>dths:</u> 5.4, 6.1 °, Cloudy					
SAMPLING METHODOLOGY	Single Habita	at, riffle sample					
SITE PHOTO/ SKETCH MAP							
STREAM CHARACTERIZATION	*based on US Stream Origi Glacial		ıraphic Sprinç Mixtur	g-fed		lwater 🛛 W	/armwater
WATERSHED FEATURES		t Surrounding Conture Indu	Landi nmercia ustrial	use	⊠ No e □ Obvi	evidence lous sources Vatershed E	

FIELD DATA SUMMARY SHEET (BACK) DATE: 5-19-10 SITE ID: UT1 RFCB-I STREAM NAME:

RIPARIAN VEGETATION	Dominant Vegetation Type ☐ Trees	Herbaceous
	Dominant Species Maple	
	Canopy Cover ☐ Open ☐ Partly Open ☐ Partly Shaded	d ☐ Shaded
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted submergen ☐ Floating Algae ☐ Attached Algae	t ☐ Rooted floating ☐ Free floating
	Dominant Species	
	Portion of the Reach with Aquatic Vegetatio	n0%
WATER QUALITY	Temperature 12.96 C	Water Odors
	Specific Conductance 39 µS/cm	Normal/None
	Dissolved Oxygen <u>11.02</u> mg/L	
	pH <u>8.65</u>	Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
	Instrument UsedYSI 556 MPS	None ☐ Other
		Turbidity ☑ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other
CHANNEL	Reach Lengthft	Proportion of Reach Represented by Stream
FEATURES		Morphology Types Riffle 65 % Run 10 % Pool 25 %
	Channel Widthsft	
	Water Widthft	Channelized ☐Yes ☐No
	Right Bank Depthft Water Depth_ft	Dam Present ☐Yes ⊠No
		Large Woody Debris ⊠Yes □No
	Left Bank Depthft Water Depthft	Undercut Banks ⊠Yes □No
	Max Bank Depth (thalweg)ft Water Depth (thalweg)ft	Ondered Banks 2103 Line
	Surface Velocity (thalweg)ft/sec	
	Discharge cfs	
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ Petroleur □ Chemical □ Anaerobic □ Other	Deposits □ Sludge □ Sawdust □ Paper fiber □ Sand □ Relict shells □ Other
	Oils ☑ Absent ☐ Slight ☐ Moderate ☐ Pro	Undersides of stones black in color? ☐ Yes ☒ No
INIODO ANIO CHI	DOTE ATE COMPONENTS	ODG ANIC SUBSTDATE COMPONENTS

INORG	ANIC SUBSTRATE Co		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant	5	
Sand	0.062-2 mm]	materials (CPOM)		
Gravel	2-64 mm		Muck-Mud	black, very fine organic		
Cobble	64-256 mm			(FPOM)		
Boulder	256-2048 mm		Marl	grey, shell fragments		
Bedrock	>2048 mm		1			

DATE: 5/19/10 STREAM NAME: UT2 Right Fork Conley Branch						
SITE ID: UT2 RF0	CB-I	RIVER BASIN: Tug Fork			STREAM	ORDER: 1
LOCATION:	<u>'</u>		STREAM CLASS:		STORE	ET #:
LATITUDE:		LONGIT	UDE:	E	LEVATION:	
INVESTIGATORS:	RE, WC	'		"		
FORM COMPLETED BY:	WC					
REASON FOR SURVEY:	Baselii	ne survey for SW\	/M			
AGENCY/COMPANY:	CONS	OL				
WEATHER	lo	W. Id 0.4.00				
WEATHER CONDITIONS/NOTES	Slope: 12	<u>Widths:</u> 3.1, 3.8 % 55°, Cloudy				
SAMPLING METHODOLOGY	Single Ha	bitat, riffle sample				
SITE PHOTO/ SKETCH MAP	Photo from	Buffalo Mountain Surf	ace Mine Preliminary Jurisd	dictional Determin	nation Report (Baker 20	008)
STREAM CHARACTERIZATION	*based or Stream 0 Glacial Non-gl	nial ⊠ Intermitten OUSGS 7.5' topog rigin	ent	Fishery Ty Coldwa Drainage	ter 🛛 Warmwate	er
WATERSHED FEATURES		aant Surrounding Cor Casture Indu	Landuse mmercial	☑ No evid☐ ObviousLocal Wat		potential sources

FIELD DATA SUMMARY SHEET (BACK) DATE: 5-19-10 SITE ID: UT2 RFCB-I STREAM NAME:

				··· ·	
RIPARIAN VEGETATION		/egetation Type ☑ Shrubs ☐ Gra	asses 🗌 He	erbaceous	
	Dominant S	Species			
	Canopy Co				
		Partly Open	Partly Shaded	I ☐ Shaded	
AQUATIC VEGETATION	☐ Rooted e	/egetation Type emergent ☐ Roote Algae ☐ Attached	ed submergent d Algae	Rooted floating	☐ Free floating
	Dominant S	Species			-
	Portion of t	he Reach with Aqua	tic Vegetation	n0%	
WATER QUALIT		re12.98C	J	Water Odors	
		onductance 40	μS/cm	Petroleum C	Sewage Chemical Other
	Dissolved (Oxygen <u>10.8</u>	mg/L	штізпу ш C	/tilei
	pH <u>8.23</u>			Water Surface Oils ☐ Slick ☐ Sheen ☐ ☐ None ☐ Other	
	Instrument	UsedYSI 556 MPS	3	Minorie Digital	
				Turbidity ⊠ Clear □ Slightl	v tombial Tombial
				☐ Opaque ☐ Staine	y turbid
CHANNEL	Reach Lene	gth ft		Proportion of Reach Re	presented by Stream
FEATURES				Morphology Types Riffle20_% Run70	% Pool 10 %
	Channel W	idthsft		Killie <u>20</u> _/6 Kull <u>70</u>	/6 F00I_ <u>IU</u> /6
	Water Widt	h ft		Channelized Yes	⊠No
	Right Bank Water Dept	Depthft		Dam Present ☐Yes	⊠No
				Large Woody Debris	⊠Yes □No
	Left Bank D Water Dept	Depthft hft		Underest Benke MV	
	.			Undercut Banks ⊠Y	es
	Water Dept	Depth (thalweg) h (thalweg)ft	π		
	Surface Ve	locity (thalweg)	ft/sec		
	Discharge_	cfs			
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/N ☐ Chemica		☐ Petroleum		rdust Paper fiber
	☐ Other				and blook in anlar?
	Oils			Undersides of stor ☐ Yes ☐ No	IES DIACK III COIOF?
		☐ Slight ☐ Mode	rate	ruse	
nien :	NIO 0110070 177 0	MADONENES		ODGANIG CURSTS : T	COMPONENTS
INORGA	NIC SUBSTRATE CC (should add up to 10			ORGANIC SUBSTRATE (may not add up	
Substrate	Diameter	% Composition in	Substrate	Characteristic	% Composition in

INORG	ANIC SUBSTRATE C (should add up to 1		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant		
Sand	0.062-2 mm]	materials (CPOM)		
Gravel	2-64 mm		Muck-Mud	black, very fine organic		
Cobble	64-256 mm]	(FPOM)		
Boulder	256-2048 mm		Marl	grey, shell fragments		
Bedrock	>2048 mm					

DATE: 5/19/10	STRI	STREAM NAME: UT3 Right Fork Conley Branch							
SITE ID: UT3 RF0	CB-P RIVE	R BASIN:	Tu	g Fork		;	STREAM ORDER: 1		
LOCATION:	•		STRE	EAM CLASS	S:	•	STORET #:		
LATITUDE : 37° 44′ 53.57″ N LONGITUDE : 82° 14′ 46.						ELEVATIO	DN:		
INVESTIGATORS:	RE, WC								
FORM COMPLETED BY:	WC								
REASON FOR SURVEY:	Baseline sur	vey for SW\	VM						
AGENCY/COMPANY:	CONSOL								
MEATHER	Chammal Wintsh	- 20 22							
WEATHER CONDITIONS/NOTES	Channel Width Slope: 18% Weather: 55°, (
SAMPLING METHODOLOGY	Single Habitat, r	iffle sample	,						
SITE PHOTO/ SKETCH MAP									
STREAM CHARACTERIZATION	Flow Regime* ⊠ Perennial [*based on USG Stream Origin □ Glacial □ Non-glacial n	S 7.5' topo(∑	graphic ☑ Spring	g-fed	es Di	shery Type] Coldwater ⊠ \ rainage Area	Varmwater		
	Swamp and	bog [_				
WATERSHED FEATURES	Predominant S ☐ Forest ☐ Field/Pasture ☐ Agricultural ☐ Residential	Cor	mmerci ustrial		_	ocal Watershed I No evidence Obvious sources Ocal Watershed I None ⊠ Mode	Some potential sources S Erosion		

FIELD DATA SUMMARY SHEET (BACK) DATE: 5-19-10 SITE ID: UT3 RFCB-P STREAM NAME:

RIPARIAN VEGETATION		/egetation Type ☑ Shrubs ☐ Gras	sses 🗌 He	erbad	ceous			
	Dominant S	Species						
	Canopy Co				_			
AQUATIC		Partly Open P	artly Shaded	\geq	Shaded			
VEGETATION	☐ Rooted €	/egetation Type emergent ☐ Rooted Algae ☐ Attached	l submergent Algae		☐ Rooted floating ☐	Free floating		
	Dominant S	Dominant Species						
	Portion of t	the Reach with Aquati	c Vegetation		_0%			
WATER QUALIT	Y Temperatu	re13.81C		Wat	er Odors			
	Specific Co	onductance 41	_µS/cm	\Box F	Normal/None	0		
	Dissolved (Oxygen _10.58		ш.	isity Outco.			
	pH <u>7.13</u>			er Surface Oils Slick ☐ Sheen ☐ Glol None ☐ Other				
	Instrument	Used <u>YSI 556 MPS</u>						
				\boxtimes (bidity Clear ☐ Slightly turl Opaque ☐ Stained	oid ☐ Turbid ☐ Other		
CHANNEL	Reach Len	gthft			portion of Reach Repres	sented by Stream		
FEATURES	Channel W	_			phology Types e <u>10</u> % Run <u>75</u> %	% Pool <u>5</u> %		
	Water Widt	h ft		Cha	nnelized 🗌 Yes 🗵]No		
	Right Bank Water Dept	Depthft		Dan	n Present □Yes ⊠	No		
				Larç	ge Woody Debris 🛮 🖂 Y	es No		
	Water Dept	Depth ft :hft		Undercut Banks ⊠Yes □No				
	Max Bank I	Depth (thalweg)	ft		_	_		
	Water Dept	h (thalweg)ft						
	Surface Ve	locity (thalweg)	ft/sec					
	Discharge_	cfs						
SEDIMENT/ SUBSTRATE	Odors Normal/I	None ☐ Sewage	☐ Petroleum	l	Deposits ☐ Sludge ☐ Sawdust ☐ Sand ☐ Relict she			
	☐ Other_	Al Anaerobic			☐ Sand ☐ Kelict She	ells		
	Oils ⊠ Absent	Undersides of stones black in color?						
	-	_				_		
INORGA	NIC SUBSTRATE CO			ORG	GANIC SUBSTRATE CO (may not add up to 1	-		
Substrate	Diameter	% Composition in	Substrate		Characteristic	% Composition in		

INORG	ANIC SUBSTRATE Co		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant			
Sand	0.062-2 mm			materials (CPOM)			
Gravel	2-64 mm		Muck-Mud	black, very fine organic			
Cobble	64-256 mm			(FPOM)			
Boulder	256-2048 mm		Marl	grey, shell fragments			
Bedrock	>2048 mm		1				

DATE: 5/20/10	STR	STREAM NAME: Right Fork Hell Creek							
SITE ID: RFHC-P	RIVI	ER BASIN:	Tu	g Fork		S	STREAM ORDER: 2		
LOCATION:	•		STRE	EAM CLASS:			STORET #:		
LATITUDE: 37° 43	3' 36.54" N	LONGIT	UDE:	82° 13' 46.55" V	٧	ELEVATIO	N:		
INVESTIGATORS:	CS, AC								
FORM COMPLETED BY:	AC								
REASON FOR SURVEY:	Baseline su	vey for SW	VM						
AGENCY/COMPANY:	CONSOL								
MEATHER	[OL] W. 141	- 50							
WEATHER CONDITIONS/NOTES	Channel Width Slope: 5% Weather: 75°,								
SAMPLING METHODOLOGY	Single Habitat,	riffle sample	;						
SITE PHOTO/ SKETCH MAP									
STREAM CHARACTERIZATION	Flow Regime* Perennial *based on USC Stream Origin Glacial Non-glacial	SS 7.5' topog	graphic ☑ Spring ☑ Mixtu	g-fed ire of origins		r Type water ⊠ W ge Area	/armwater		
WATERSHED FEATURES	□ Swamp and Predominant \$ □ Forest □ Field/Pastur □ Agricultural □ Residential	Surrounding Cor	Other g Land mmerci ustrial ner	l use ial	⊠ No e ☐ Obvio	vidence ous sources Vatershed E			

FIELD DATA SUMMARY SHEET (BACK) RFHC-P STREAM NAME:

	· · · · · · · · · · · · · · · · · · ·	,	
DATE : 5-20-10	SITE ID: RFHC-P	STREAM NAME:	
RIPARIAN VEGETATION	Dominant Vegetation Type ☐ Trees ☐ Shrubs ☐ Gr. Dominant Species ☐ Beech, Ch	asses	
	Canopy Cover ☐ Open ☐ Partly Open ☐		
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Roote ☐ Floating Algae ☐ Attache		
	Dominant Species Portion of the Reach with Aqua	tic Vegetation 0 %	
WATER QUALITY	Temperature 13.72 C	Water Odors	
	Specific Conductance 121		
	Dissolved Oxygen _9.95	mg/L	
	рН <u>7.55</u>	Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other	
	Instrument Used <u>YSI 556 MP</u>	S Turbidity	
		☐ Clear ☐ Slightly turbid ☐ Turbid☐ Opaque ☐ Stained ☐ Other	
CHANNEL FEATURES	Reach Lengthft	Proportion of Reach Represented by Stream Morphology Types)
	Channel Widths _18.6 ft	Riffle <u>80</u> % Run % Pool <u>20</u> %	
	Water Width 5.2 ft	Channelized □Yes ⊠No	
	Right Bank Depth 2.1 ft	Dam Present ☐Yes ☒No	
	Water Depth_0.1_ft	Large Woody Debris ⊠Yes □No	
	Left Bank Depth_2.6ft Water Depth_0.2_ft	Undercut Banks ☐Yes ⊠No	
	Max Bank Depth (thalweg) <u>3.1</u> Water Depth (thalweg) <u>2.5</u> ft		
	Surface Velocity (thalweg)	ft/sec	
	Dischargecfs		
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ Chemical □ Anaerobic □ Other	□ Petroleum Deposits □ Sludge □ Sawdust □ Paper fibred □ Sand □ Relict shells □ Other	er
	Oils ☑ Absent ☐ Slight ☐ Mode	Undersides of stones black in color? ☐ Yes ☑ No	

INORGA	ANIC SUBSTRATE CO		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	Diameter	eter % Composition in Sampling Reach		Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant	15		
Sand	0.062-2 mm	20		materials (CPOM)			
Gravel	2-64 mm	10	Muck-Mud	black, very fine organic			
Cobble	64-256 mm	5		(FPOM)			
Boulder	256-2048 mm	5	Marl	grey, shell fragments			
Bedrock	>2048 mm	60					

DATE: 5/20/10	STRE	STREAM NAME: UT4 Right Fork Hell Creek							
SITE ID: UT4 RF	HC RIVER	R BASIN:	Tuç		STREAM ORDER: 3				
LOCATION:	,		STRE	AM CLASS:		<u>'</u>	STORET #:		
LATITUDE: 37° 43	3' 48.32"N	LONGIT	UDE:	82° 13' 56.85"W	1	ELEVATIO	DN:		
INVESTIGATORS:	CF, AC								
FORM COMPLETED BY:	AC								
REASON FOR SURVEY:	Baseline surv	ey for SW\	/M						
AGENCY/COMPANY:	CONSOL								
WEATHER CONDITIONS/NOTES	Channel Widths: 5.2 Slope: 5% Weather: 70°, Sunny								
SAMPLING METHODOLOGY	Single Habitat, rit	ffle sample							
SITE PHOTO/									
SKETCH MAP									
STREAM CHARACTERIZATION	Flow Regime* Perennial *based on USGS Stream Origin Glacial Non-glacial m	3 7.5' topog ⊠ ontane ⊠	graphic] Sprino] Mixtur	g-fed re of origins		r Type water ⊠ ۷ ge Area	Varmwater		
WATERSHED	☐ Swamp and b		Other				UDO D. II. di		
FEATURES	Predominant Su ☐ Forest ☐ Field/Pasture ☐ Agricultural ☐ Residential	☐ Cor ☐ Indi	nmerci	al	⊠ No e □ Obvi	vidence ous sources Vatershed I			

FIELD DATA SUMMARY SHEET (BACK) 5-20-10 SITE ID: UT4 RFHC STREAM NAME:

DATE : 5-20-10	SITE ID: UT4 RFHC	STREAM NAME:	
RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Gra	asses	
	Dominant SpeciesBeech, Nett	tle, C. Fern, Basswood	
	Canopy Cover ☐ Open ☐ Partly Open	Partly Shaded	
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted ☐ Floating Algae ☐ Attached	ed submergent	
	Dominant Species		
	Portion of the Reach with Aqua	tic Vegetation0%	
WATER QUALITY	Temperature 13.22 C	Water Odors	
	Specific Conductance44µS/	│ Normal/None │ Sewage │ Petroleum │ Chemical │ Fishy │ Other	
	Dissolved Oxygen <u>10.07</u>		
	рН <u>6.86</u>	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other	
	Instrument UsedYSI 556 MPS	S Turbidity	
		☐ Clear ☐ Slightly turbid ☐ Turbid☐ Opaque ☐ Stained ☐ Other	
CHANNEL FEATURES	Reach Length 300 ft	Proportion of Reach Represented by Strea Morphology Types Riffle 85 % Run % Pool 15 %	m
	Channel Widths <u>9.1</u> ft		
	Water Width 6.4 ft	Channelized ☐Yes ☒No	
	Right Bank Depth <u>1.1</u> ft Water Depth <u>0.1</u> ft	Dam Present ☐Yes ☐No	
	Left Bank Depth 1.3 ft	Large Woody Debris ⊠Yes □No	
	Water Depth 0.2 ft	Undercut Banks ☐Yes ⊠No	
	Max Bank Depth (thalweg)_ <u>1.8</u> Water Depth (thalweg)_ <u>4.3</u> ft	_ft t	
	Surface Velocity (thalweg)	ft/sec	
	Discharge cfs		
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ Chemical □ Anaerobic □ Other_	□ Petroleum Deposits □ Sludge □ Sawdust □ Paper fi □ Sand □ Relict shells □ Other_	
	Oils ⊠ Absent □ Slight □ Mode	Undersides of stones black in color? ☐ Yes ☑ No	

INORG	ANIC SUBSTRATE Co		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm	5	Detritus	sticks, wood, coarse plant	10		
Sand	0.062-2 mm	10		materials (CPOM)			
Gravel	2-64 mm	40	Muck-Mud	black, very fine organic			
Cobble	64-256 mm	25		(FPOM)			
Boulder	256-2048 mm	10	Marl	grey, shell fragments			
Bedrock	>2048 mm	10	1				

DATE: 5/20/10 STREAM NAME: UT3 UT4 Right Fork Hell Creek								
SITE ID: UT3 UT4	1 RFHC	RIVER BASIN: Tug Fork						STREAM ORDER: 1
LOCATION:				STRE	AM CLASS	i:		STORET #:
LATITUDE: 37° 43	3' 43.97"N		LONGIT	UDE:	82° 14' 6.0)3"W	ELEVA	TION:
INVESTIGATORS:	CF, AC	l.					1	
FORM COMPLETED BY:	CF							
REASON FOR SURVEY:	Baseli	ne surve	y for SW	VM				
AGENCY/COMPANY:	CONS	OL						
WEATHER	Channel	Widths:	5.2					
CONDITIONS/NOTES	Slope: 15 Weather:	%	_					
SAMPLING METHODOLOGY	Single Ha	bitat, riff	le sample	;				
SITE PHOTO/ SKETCH MAP								
OKE TOTT MAI			No.					
			9			NO.	and the second	
	100						ar too	
			New York					
	1					_man_		
			don 1					
	1							
		=						
	- 2			-			The same	\$ · X
					MAL THE MAN		ALL PROPERTY.	
			X		A VEREN	That	The same	THE DE LAW
				ASS.				
	1			No. of Street, or other Persons		The same		
		- A			SCIENT STATE		W. Tarks	The second second
STREAM	Flow Reg	imo*					Fishery Type	
CHARACTERIZATION	☐ Pereni	nial 🛚	Intermitte	ent [☐ Tidal quadrangles		☐ Coldwater	⊠ Warmwater
			7.5 ισροί	grapriic	quadrangles		Drainage Area_	
	Stream C	l	\boxtimes	Spring	g-fed		-	
	☐ Non-gl ☐ Swam	acial mo	ontane ⊠ og □	Mixtur Other	e of origins	_		
WATERSHED FEATURES	Predomir							ed NPS Pollution
	☐ Forest ☐ Commercial ☐ No evidence ☐ Pield/Pasture ☐ Industrial ☐ Obvious source							
	☐ Agricu☐ Reside		☐ Oth	er		-	Local Watershe	ed Erosion
								oderate Heavy

FIELD DATA SUMMARY SHEET (BACK)

DATE:	5-20-10		UT3 UT4 S RFHC	TREAM NAME:
RIPARIAN		Dominant Vege ☐ Trees ☐ S	tation Type Shrubs	ses

RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Grasses ☐ Herbaceous						
	Dominant SpeciesBeech, C. Fern, Nettle, Cucumber Tree						
	Canopy Cover ☐ Open ☐ Partly Open ☐ Partly Shaded	I ☐ Shaded					
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae Dominant Species						
	Portion of the Reach with Aquatic Vegetation	n0%					
WATER QUALITY	Temperature13.48C	Water Odors ☑ Normal/None ☐ Sewage					
	Specific Conductance 44 µS/cm	☐ Petroleum ☐ Chemical ☐ Fishy ☐ Other					
	Dissolved Oxygen <u>9.52</u> mg/L	Mater Overface O'lle					
	рН <u>6.77</u>	Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other					
	Instrument Used <u>YSI 556 MPS</u>	Turbidity					
		☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other					
CHANNEL FEATURES	Reach Length_200_ft	Proportion of Reach Represented by Stream Morphology Types					
	Channel Widths <u>5.4</u> ft	Riffle90_% Run% Pool_10%					
	Water Width 2.0 ft	Channelized □Yes ☑No					
	Right Bank Depth <u>1.0</u> ft Water Depth_0.1 ft	Dam Present ☐Yes ☒No					
	Left Bank Depth1.2_ft	Large Woody Debris ⊠Yes □No					
	Water Depth 0.1 ft	Undercut Banks ☐Yes ⊠No					
	Max Bank Depth (thalweg) <u>3.0</u> ft Water Depth (thalweg) <u>0.2</u> ft						
	Surface Velocity (thalweg)ft/sec						
	Dischargecfs						
SEDIMENT/ SUBSTRATE	Odors ☑ Normal/None ☐ Sewage ☐ Petroleur ☐ Chemical ☐ Anaerobic ☐ Other	Sand Relict shells Other					
	Oils ⊠ Absent □ Slight □ Moderate □ Pro	Undersides of stones black in color? ☐ Yes ☑ No fuse					

INORG	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm	5	Detritus	sticks, wood, coarse plant	10		
Sand	0.062-2 mm	5		materials (CPOM)			
Gravel	2-64 mm	10	Muck-Mud	black, very fine organic			
Cobble	64-256 mm	10		(FPOM)			
Boulder	256-2048 mm	5	Marl	grey, shell fragments			
Bedrock	>2048 mm	65					

DATE: 5/20/10 STREAM NAME: UT7 Right Fork Hell Creek							
SITE ID: UT7 RF	HC RIV	RIVER BASIN: Tug Fork					STREAM ORDER: 1
LOCATION:	•		STRE	AM CLASS:		•	STORET #:
LATITUDE: 37° 43	3' 30.31"N	LONGIT	UDE:	82° 13' 52.21"V	٧	ELEVATIO	DN:
INVESTIGATORS:	CF, AC						
FORM COMPLETED BY:	AC						
REASON FOR SURVEY:	Baseline s	urvey for SW\	/M				
AGENCY/COMPANY:	CONSOL						
WEATHER CONDITIONS/NOTES	Channel Wid Slope: 15% Weather: 78°						
SAMPLING METHODOLOGY	Single Habitat	, riffle sample					
SITE PHOTO/ SKETCH MAP							
STREAM CHARACTERIZATION	Flow Regime Perennial *based on US Stream Origin Glacial Non-glacia	☐ Intermitte GGS 7.5' topog n ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	graphic Spring Mixtu	g-fed re of origins		lwater ⊠ V	Varmwater
WATERSHED FEATURES	☐ Swamp an Predominant ☐ Forest ☐ Field/Pastu ☐ Agricultura ☐ Residentia	Surrounding Cor Indu	nmerci ustrial	use	⊠ No e □ Obvi	evidence ious sources Vatershed I	

FIELD DATA SUMMARY SHEET (BACK) 5-20-10 SITE ID: UT7 RFHC STREAM NAME:

DATE : 5-20-10	SITE ID: UT7 RFHC	STREAM NAME:	
RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Gra Dominant Species_Beech, Tulip	_	
	Canopy Cover	Partly Shaded Shaded	
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Roote ☐ Floating Algae ☐ Attached		
	Dominant Species		
	Portion of the Reach with Aqua	itic Vegetation0%	
WATER QUALITY	Temperature13.18C	Water Odors	
	Specific Conductance 41 µS/	Normal/None	
	Dissolved Oxygen <u>10.25</u>	mg/L Water Surface Oils	
	pH <u>7.58</u>	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☑ None ☐ Other	
	Instrument Used YSI 556 MPS	<u> </u>	
		Turbidity ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other	_
CHANNEL FEATURES	Reach Lengthft	Proportion of Reach Represented by Stream Morphology Types	
	Channel Widths <u>5.2</u> ft	Riffle 90 % Run % Pool 10 %	
	Water Width 1.6 ft	Channelized □Yes ☑No	
	Right Bank Depth0.9_ft Water Depth_0 ft	Dam Present ☐Yes ☑No	
	Left Bank Depth1.1ft	Large Woody Debris ⊠Yes □No	
	Water Depth 0.1 ft	Undercut Banks ☐Yes ☒No	
	Max Bank Depth (thalweg) <u>1.</u> 4 Water Depth (thalweg) <u>0.2</u> fi	4_ft t	
	Surface Velocity (thalweg)	ft/sec	
	Dischargecfs		
SEDIMENT/ SUBSTRATE	Odors ☑ Normal/None ☐ Sewage ☐ Chemical ☐ Anaerobic ☐ Other	□ Petroleum □ Petroleum □ Sawdust □ Paper fiber □ Sand □ Relict shells □ Other □ Details □ Detail	_
	Oils ⊠ Absent □ Slight □ Mode	Undersides of stones black in color? ☐ Yes ☐ No erate ☐ Profuse	

INORGA	ANIC SUBSTRATE Co (should add up to 1		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm	5	Detritus	sticks, wood, coarse plant	5		
Sand	0.062-2 mm	20		materials (CPOM)			
Gravel	2-64 mm	10	Muck-Mud	black, very fine organic			
Cobble	64-256 mm	10		(FPOM)			
Boulder	256-2048 mm	5	Marl	grey, shell fragments			
Bedrock	>2048 mm	45					

DATE: 5/20/10	,	STREAM NAME: Left Fork Hell Creek							
SITE ID: LFHC-P	-Temp F	RIVER BASIN:	Tu	g Fork		STREAM ORDER: 3			
LOCATION:			STRE	EAM CLASS:		STORET #:			
LATITUDE: 37° 42	2' 49.08" N	LONGIT	UDE:	82° 13′ 10.26″ W	/ ELE	VATION:			
INVESTIGATORS:	RE, WC				•				
FORM COMPLETED BY: WC									
REASON FOR SURVEY:	REASON FOR SURVEY: Baseline survey for SWVM								
AGENCY/COMPANY:	CONSO)L							
WEATHER CONDITIONS/NOTES	Slope: 4% Weather: 6								
SAMPLING METHODOLOGY	Single Habi	itat, riffle sample							
SITE PHOTO/ SKETCH MAP									
STREAM CHARACTERIZATION	*based on l Stream Ori Glacial	al	graphic] Spring] Mixtu	g-fed	Fishery Type Coldwater Drainage Are				
WATERSHED FEATURES	l	ant Surrounding Consture Indu	J Land mmerci ustrial	use	☑ No eviden☑ Obvious sLocal Waters				

FIELD DATA SUMMARY SHEET (BACK) LFHC-P-Temp | STREAM NAME:

DATE : 5-2	0-10	SITE ID:	LFHC-P-Temp	STREAM NA	i:				
RIPARIAN VEGETATION		Dominant \ ☑ Trees	/egetation Type ☑ Shrubs ☐ G	rasses	aceous				
		Dominant S	Species						
			Canopy Cover ☐ Open ☐ Partly Open ☐ Partly Shaded ☒ Shaded						
AQUATIC VEGETATION		☐ Rooted e	/egetation Type emergent ☐ Roof Algae ☐ Attache	ted submergent ed Algae	☐ Rooted flo	pating	Free floating		
		Dominant S	Species						
		Portion of t	the Reach with Aqu	atic Vegetation	0%				
WATER QUALIT	Υ	Temperatu	re <u>13.24</u> C		ater Odors				
		Specific Co	onductance 43	µS/cm	Normal/None Petroleum Fishy	☐ Chem			
		Dissolved (Oxygen <u>11.17</u>	mg/L	•				
		pH <u>10.15</u>			ater Surface O Slick	en 🗌 Glob	os 🗌 Flecks		
		Instrument	UsedYSI 556 MF	<u> </u>					
] Slightly turb] Stained	oid		
CHANNEL		Reach Leng	gthft				ented by Stream		
FEATURES		Channel W	idthsft		Morphology Types Riffle 20 % Run 60 % Pool 20 %				
		Water Widt	h ft		nannelized	□Yes ⊠	No		
		Right Bank Water Dept	: Depth ft :h_ft		am Present	□Yes ⊠	No		
		l eft Bank Γ	Depthft		Large Woody Debris ⊠Yes □No				
		Water Dept	hft		Undercut Banks ⊠Yes □No				
		Max Bank I Water Dept	Depth (thalweg) h (thalweg)f	ft t					
		Surface Ve	locity (thalweg)	ft/sec					
		Discharge_	cfs						
SEDIMENT/ SUBSTRATE		Odors Normal/N Chemica		☐ Petroleun	Deposits ☐ Sludge ☐ Sand	☐ Sawdust ☐ Relict she	Paper fiber		
		Oils			☐ Yes 🗵	of stones b	lack in color?		
			∐ Slight ∐ Mod	erate	е				
INORG	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)								
Substrate Type	Dia	ımeter	% Composition in Sampling Reach		Characteristic % Composition in		% Composition in Sampling Area		
Silt/Clay	<0.0)62 mm		Detritus	sticks, wood, c		_		
Cond	0.06	2.2			materials (CPOM)			

black, very fine organic (FPOM)

grey, shell fragments

Muck-Mud

Marl

0.062-2 mm

2-64 mm

64-256 mm

256-2048 mm

>2048 mm

Sand

Gravel

Cobble

Boulder

Bedrock

DATE: 5/20/10	S	TREAM NAME	: Left	Left Fork Hell Creek				
SITE ID: LFHC-P-	-Perm RI	RIVER BASIN: Tug Fork					STREAM ORDER: 3	
LOCATION:	,		STRE	AM CLASS:		•	STORET #:	
LATITUDE: 37° 43	B' 53.05"N	LONGIT	UDE:	82° 13' 10.02"W	'	ELEVATIO	ON:	
INVESTIGATORS:	RE, WC							
FORM COMPLETED BY:	WC							
REASON FOR SURVEY:	Baseline	survey for SW\	/M					
AGENCY/COMPANY:	CONSOL							
MEATHER	I 01 1 140	M- 4000						
WEATHER CONDITIONS/NOTES	Slope: 6% Weather: 65	ths: 4.6, 3.2 °, Sunny						
SAMPLING METHODOLOGY	Single Habita	at, riffle sample						
SITE PHOTO/ SKETCH MAP								
STRFAM								
STREAM CHARACTERIZATION	*based on U Stream Orig Glacial	☐ Intermitte SGS 7.5' topog in	graphic Spring	g-fed		r Type water ⊠ \ ge Area	Narmwater	
WATEROUSE	Swamp a	nd bog	Other					
WATERSHED FEATURES	Predominan ☐ Forest ☐ Field/Past ☐ Agricultura ☐ Residentia	al 🔲 Oth	nmerci ustrial		⊠ No e □ Obvi	vidence ous source Vatershed I		

FIELD DATA SUMMARY SHEET (BACK) LFHC-P-Perm | STREAM NAME:

DATE:

Sand

Gravel

Cobble

Boulder

Bedrock

0.062-2 mm

2-64 mm

64-256 mm

256-2048 mm

>2048 mm

5-20-10

SITE ID:

RIPARIAN VEGETATION		☑ Trees Dominant S Canopy Co				
AQUATIC VEGETATION		Dominant \ ☐ Rooted 6 ☐ Floating Dominant \$	Partly Open P /egetation Type emergent Rooted Algae Attached Species	l submergent Algae	☐ Rooted floating	☐ Free floating
WATER QUALIT	Υ	Temperature Specific Co Dissolved 0 pH 9.12	the Reach with Aquation of the Reach with Aquati	_μS/cm mg/L	Water Odors ☐ Normal/None ☐ Se ☐ Petroleum ☐ Ch ☐ Fishy ☐ Ot Water Surface Oils ☐ Slick ☐ Sheen ☐ 0 ☐ None ☐ Other Turbidity	emical her Globs
CHANNEL FEATURES		Channel W Water Widt Right Bank Water Dept Left Bank I Water Dept Max Bank I Water Dept	hft Depthft h_ft Depthft hft Depth (thalweg)ft h (thalweg)ft	_ft	Proportion of Reach Rep Morphology Types Riffle 45 Run 35 Channelized Yes Dam Present Yes	resented by Stream _% Pool_20% ☑No ☑No ☑Yes □No
SEDIMENT/ SUBSTRATE Odors Normal/None Sewage Petroleum Chemical Anaerobic Other Undersides					Sludge Sawd Sand Relict Undersides of stone Yes No	shells Other
INORGA	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%) ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)					
Substrate Type	Dia	meter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area
Silt/Clay	<0.0	62 mm		Detritus	sticks, wood, coarse pl	ant
Sand	Sand 0.062-2 mm				materials (CPOM)	

black, very fine organic (FPOM)

grey, shell fragments

Muck-Mud

Marl

DATE: 5/20/10	STRE	AM NAME	: UT9 I	Left Fork Hell	Creek		
SITE ID: UT9 LFF	HC-I RIVE	R BASIN:	Tug	Fork			STREAM ORDER: 2
LOCATION:	•		STRE	AM CLASS:		-	STORET #:
LATITUDE: 37° 42	2' 49.03" N	LONGITU	JDE:	82° 13′ 10.59	" W	ELEVATION	ON:
INVESTIGATORS:	RE, WC	•					
FORM COMPLETED BY:	WC						
REASON FOR SURVEY:	Baseline surv	ey for SWV	/M				
AGENCY/COMPANY:	CONSOL						
WEATHER CONDITIONS/NOTES	Channel Widths Slope: 15% Weather: 65°, S No Flow for mac	Sunny	ate sam	ple			
SAMPLING METHODOLOGY	Single Habitat, ri COLLECTION	iffle sample	– NOT	ENOUGH FLO	OW FOR B	ENTHIC MA	ACROINVERTEBRATE
SITE PHOTO/ SKETCH MAP	Photo from Buffalo N	Mountain Surfa	ace Mine	Preliminary Jurisc	dictional Dete	ermination Rep	oort (Baker 2008)
STREAM CHARACTERIZATION	Flow Regime* Perennial *based on USG Stream Origin Glacial	S 7.5' topog	raphic Spring	-fed		y Type dwater ⊠ ge Area	Warmwater
	☐ Non-glacial m ☐ Swamp and b		Other_	or origins			
WATERSHED FEATURES	Predominant Si ☐ Forest ☐ Field/Pasture ☐ Agricultural ☐ Residential	☐ Con	nmercia Istrial		⊠ No e □ Obv	evidence vious source Watershed	

FIELD DATA SUMMARY SHEET (BACK) DATE: 5-20-10 SITE ID: UT9 LFHC-I STREAM NAME:

RIPARIAN VEGETATION		/egetation Type ☑ Shrubs ☐ Gras	sses 🗌 He	erbad	ceous	
	Dominant S	Species				
	Canopy Co			_	_	
AQUATIC		Partly Open P	artly Shaded	\succeq	Shaded	
VEGETATION	☐ Rooted €	/egetation Type emergent ☐ Rooted Algae ☐ Attached	l submergent Algae		☐ Rooted floating ☐	Free floating
	Dominant S	Species				
	Portion of t	the Reach with Aquati	c Vegetation		_0%	
WATER QUALIT	Y Temperatu	re <u>12.66</u> C		Wat	er Odors	
	Specific Co	onductance 38		□F	Normal/None Sewa Petroleum Chem Fishy Other	0
	Dissolved (Oxygen <u>10.87</u>	mg/L	_		
	рН <u>9.37</u>				r er Surface Oils Blick ☐ Sheen ☐ Glol None ☐ Other	
	Instrument	Used <u>YSI 556 MPS</u>		_		
				\boxtimes	bidity Clear ☐ Slightly turl Opaque ☐ Stained	oid ☐ Turbid ☐ Other
CHANNEL	Reach Len	gthft			portion of Reach Repres	sented by Stream
FEATURES	Channel W	_			phology Types e <u>5</u> % Run <u>90</u> %	% Pool <u>5</u> %
	Water Widt	h ft		Cha	nnelized 🗌 Yes 🗵]No
	Right Bank Water Dept	Depthft		Dan	n Present □Yes ⊠]No
				Larç	ge Woody Debris 🛮 🖂 Y	es No
	Left Bank I Water Dept	Depthft :hft		Und	lercut Banks ⊠Yes	□No
	Max Bank I	Depth (thalweg)				
	Water Dept	h (thalweg)ft				
	Surface Ve	locity (thalweg)	ft/sec			
	Discharge_	cfs				
SEDIMENT/	Odors				Deposits	
SUBSTRATE	Normal/I Chemica		☐ Petroleum	1	☐ Sludge ☐ Sawdust ☐ Sand ☐ Relict she	
	☐ Other			_	Undersides of stones b	lack in color?
	Oils ⊠ Absent	☐ Slight ☐ Modera	ate □ Prof	use	☐ Yes No	
	<u> </u>					
INORGA	NIC SUBSTRATE CO			ORG	GANIC SUBSTRATE CO	-
Substrate	Diameter	% Composition in	Substrate		Characteristic	% Composition in

INORG	ANIC SUBSTRATE CO (should add up to 10		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant		
Sand	0.062-2 mm			materials (CPOM)		
Gravel	2-64 mm		Muck-Mud	black, very fine organic		
Cobble	64-256 mm			(FPOM)		
Boulder	256-2048 mm		Marl	grey, shell fragments		
Bedrock	>2048 mm		1			

DATE: 5/20/10	STR	STREAM NAME: UT10 Left Fork Hell Creek						
SITE ID: UT10 LF	HC-I RIVE	RIVER BASIN: Tug Fork STREAM ORDER:		STREAM ORDER: 2				
LOCATION:			STRE	EAM CLASS:			STORET #:	
LATITUDE: 37° 42	2' 29.21"N	LONGIT	UDE:	82° 13' 7.99"W	E	LEVATI	ON:	
INVESTIGATORS:	RE, WC				L.			
FORM COMPLETED BY:	WC							
REASON FOR SURVEY: Baseline survey for SWVM								
AGENCY/COMPANY: CONSOL								
WEATHER CONDITIONS/NOTES	Channel Width Slope: 7% Weather: 65°,							
SAMPLING METHODOLOGY	Single Habitat,	riffle sample	•					
SITE PHOTO/ SKETCH MAP								
STREAM CHARACTERIZATION	Flow Regime* Perennial *based on USG Stream Origin Glacial	SS 7.5' topog	graphic] Sprin	g-fed	Fishery T Coldwa Drainage	ater 🛚	Warmwater	
	☐ Non-glacial I☐ Swamp and	montane ⊠ bog □	Mixtu Other					
WATERSHED FEATURES	Predominant S ⊠ Forest □ Field/Pasture □ Agricultural □ Residential	☐ Coi e ☐ Ind	mmerci ustrial		No evidence of the control of th	dence is source tershed		

FIELD DATA SUMMARY SHEET (BACK) 5-20-10 SITE ID: UT10 LFHC-I STREAM NAME:

DATE : 5-2	0-10 SITE ID :	UT10 LFHC-I	STREAM NAME	<u>:</u>				
	I .							
RIPARIAN VEGETATION		Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Grasses ☐ Herbaceous						
	Dominant S	Dominant Species						
		Canopy Cover ☐ Open ☐ Partly Open ☐ Partly Shaded ☐ Shaded						
AQUATIC VEGETATION	☐ Rooted €	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted submergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae						
	Dominant S	Dominant Species						
		Portion of the Reach with Aquatic Vegetation0%						
WATER QUALIT	Temperatu	re <u>12.55</u> C		Water Odors ☑ Normal/None ☐ Sewage				
	Specific Co	onductance 42	µS/cm	Petroleum	n Chemical			
	Dissolved	Oxygen <u>10.73</u>	_mg/L	•				
	рН <u>7.99</u>			/ater Surface Oils]Slick □ Sheen □ Glot 〗None □ Other	os			
	Instrument	UsedYSI 556 MPS	3	urbidity				
					oid			
CHANNEL FEATURES	Reach Len	gthft		roportion of Reach Repres orphology Types	ented by Stream			
LATORLO	Channel W	idthsft	R	iffle20_% Run60%	S Pool_ <u>20_</u> %			
	Water Widt	hft	С	hannelized □Yes ⊠	No			
	Right Bank Water Dept	x Depth ft th_ft	D	Dam Present ☐Yes ☒No				
Left Bank Depth ft				Large Woody Debris ⊠Yes □No				
	Water Depthft			Undercut Banks ⊠Yes □No				
	Max Bank I Water Dept	Depth (thalweg) th (thalweg)ft	ft					
	Surface Ve	locity (thalweg)	ft/sec					
	Discharge_	cfs						
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/I □ Chemica □ Other		☐ Petroleum	Deposits ☐ Sludge ☐ Sawdust ☐ Sand ☐ Relict she	☐ Paper fiber			
	Undersides of stones black in color? Oils ☐ Absent ☐ Slight ☐ Moderate ☐ Profuse Undersides of stones black in color? ☐ Yes ☐ No				lack in color?			
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)					
Substrate	Diameter	% Composition in	Substrate	Characteristic	% Composition in			

INORG	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant			
Sand	0.062-2 mm]	materials (CPOM)			
Gravel	2-64 mm		Muck-Mud	black, very fine organic			
Cobble	64-256 mm			(FPOM)			
Boulder	256-2048 mm		Marl	grey, shell fragments			
Bedrock	>2048 mm						

DATE: 5/20/10	STF	STREAM NAME: UT11 Left Fork Hell Creek							
SITE ID: UT11 LF	HC-P RIV	RIVER BASIN: Tug Fork					STREAM ORDER: 1		
LOCATION:	,		STRE	AM CLASS			STORET #:		
LATITUDE: 37° 42	2' 40.76"N	LONGIT	UDE:	82° 13' 22.	77"W	ELEVATI	ON:		
INVESTIGATORS:	RE, WC	- 1				•			
FORM COMPLETED BY:	WC								
REASON FOR SURVEY:	Baseline su	rvey for SW	VΜ						
AGENCY/COMPANY:	CONSOL								
WEATHER CONDITIONS/NOTES	Channel Widt Slope: 6% Weather: 65°,								
SAMPLING METHODOLOGY	Single Habitat,	riffle sample	•						
SITE PHOTO/ SKETCH MAP	Photo from Buffalo	o Mountain Surf	face Mine	Preliminary Ju	risdictiona	Determination Rep	oort (Baker 2008)		
STREAM CHARACTERIZATION	Flow Regime* Perennial *based on US Stream Origin Glacial	☐ Intermitte GS 7.5' topo			;	shery Type Coldwater	Warmwater		
		montane 🗵	Mixtur Other	re of origins					
WATERSHED FEATURES	Predominant ☐ Forest ☐ Field/Pastu ☐ Agricultural ☐ Residential	Surrounding Cor re Ind	mmercial		Lo	No evidence Obvious source	☐ Some potential sources		

FIELD DATA SUMMARY SHEET (BACK) : UT11 LFHC-P | STREAM NAME:

DATE: 5-20-10	SITE ID: UT11 LFHC-P	STREAM NAME:				
RIPARIAN VEGETATION	Dominant Vegetation Type ⊠ Trees ⊠ Shrubs □ Gra	sses 🔲 Herba	iceous			
	Dominant Species					
	Canopy Cover ☐ Open ☐ Partly Open	Partly Shaded [☐ Shaded			
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae					
	Dominant Species					
	Portion of the Reach with Aquat	ic Vegetation	0%			
WATER QUALITY	Temperature 14.38 C		ter Odors			
	Specific Conductance 46	μS/cm □	Normal/None			
	Dissolved Oxygen _10.48	_mg/L				
	pH10.07		ter Surface Oils Slick ☐ Sheen ☐ Globs ☐ Flecks None ☐ Other			
	Instrument UsedYSI 556 MPS	<u> </u>				
		\boxtimes	rbidity Clear ☐ Slightly turbid ☐ Turbid Opaque ☐ Stained ☐ Other			
CHANNEL	Reach Lengthft		portion of Reach Represented by Stream rphology Types			
FEATURES	Channel Widthsft	Riff	le 20 % Run 60 % Pool 20 %			
	Water Widthft	Cha	annelized □Yes □No			
	Right Bank Depthft Water Depth_ft	Dar	m Present □Yes ☑No			
	Left Bank Depthft Water Depthft	Lar	Large Woody Debris ⊠Yes □No			
			dercut Banks ⊠Yes □No			
	Max Bank Depth (thalweg)ft	ft				
	Surface Velocity (thalweg)	ft/sec				
	Dischargecfs					
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ Chemical □ Anaerobic □ Other	Petroleum	Deposits ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other			
	Oils ☑ Absent ☐ Slight ☐ Moder	rate	Undersides of stones black in color? ☐ Yes ☐ No			
	BSTRATE COMPONENTS add up to 100%)	OR	GANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate	% Composition in	Substrate	% Composition in			

INORG	ANIC SUBSTRATE Co		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant		
Sand	0.062-2 mm			materials (CPOM)		
Gravel	2-64 mm		Muck-Mud	black, very fine organic		
Cobble	64-256 mm			(FPOM)		
Boulder	256-2048 mm		Marl	grey, shell fragments		
Bedrock	>2048 mm					

DATE: 5/20/10		STREAM NAME	•	1 Left Fork Hell (Creek	_	
SITE ID: UT11 LF	E ID: UT11 LFHC-I RIVER BASIN: Tug Fork					STREAM ORDER: 1	
LOCATION:			STRE	AM CLASS:			STORET #:
LATITUDE: 37° 42	" 40.38"N	LONGIT	UDE:	82° 13' 27.91"V	٧	ELEVAT	ION:
INVESTIGATORS:	RE, WC	l .			I		
FORM COMPLETED BY:	WC						
REASON FOR SURVEY:	Baseline	e survey for SW\	/M				
AGENCY/COMPANY:	CONSC	DL					
WEATHER	Channal M	/idths: 2.5, 2.8					
CONDITIONS/NOTES	Slope: 8%						
SAMPLING METHODOLOGY	Single Hab	itat, riffle sample					
SITE PHOTO/ SKETCH MAP							
STREAM CHARACTERIZATION	Flow Regin Perennia *based on Stream Or	al 🛛 Intermitte USGS 7.5' topog	ent [graphic			Type water ⊠ ge Area	Warmwater
		icial montane 🛚 🖂	Mixtui Other	re of origins			
WATERSHED FEATURES	Predomina ☐ Forest ☐ Field/Pa ☐ Agricultu ☐ Residen	ural 🔲 Oth	nmerci ustrial	al	⊠ No e □ Obvi	vidence ous source	es

FIELD DATA SUMMARY SHEET (BACK) : UT11 LFHC-I | STREAM NAME:

DATE : 5-20-10	SITE ID: UT11 LFHC-I	STREAM NAME:				
RIPARIAN VEGETATION	Dominant Vegetation Type ⊠ Trees ⊠ Shrubs □ Gra	asses 🗌 Herba	aceous			
	Dominant Species					
	Canopy Cover ☐ Open ☐ Partly Open ☐	Partly Shaded	☐ Shaded			
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae					
	Dominant Species					
	Portion of the Reach with Aquat	tic Vegetation	0%			
WATER QUALITY	Temperature 14.40 C		nter Odors Normal/None ☐ Sewage			
	Specific Conductance 55	μS/cm □	Petroleum			
	Dissolved Oxygen _10.67	_mg/L				
	pH <u>8.64</u>		ter Surface Oils Slick ☐ Sheen ☐ Globs ☐ Flecks			
	Instrument UsedYSI 556 MPS	<u>S</u>	None Other			
			rbidity Clear ☐ Slightly turbid ☐ Turbid Opaque ☐ Stained ☐ Other			
CHANNEL	Reach Lengthft		oportion of Reach Represented by Stream orphology Types			
FEATURES	Channel Widthsft	Riff	fle 15 % Run 70 % Pool 10 %			
	Water Widthft	Ch	annelized □Yes ⊠No			
	Right Bank Depthft Water Depth_ft	Da	m Present □Yes ☑No			
	Left Bank Depthft Water Depthft	Laı	Large Woody Debris ⊠Yes □No			
			dercut Banks ⊠Yes □No			
	Max Bank Depth (thalweg) Water Depth (thalweg)ft	ft				
	Surface Velocity (thalweg)	ft/sec				
	Dischargecfs					
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ Chemical □ Anaerobic □ Other	Petroleum	Deposits ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other			
	Oils ☑ Absent ☐ Slight ☐ Mode	rate	Undersides of stones black in color? ☐ Yes ☑ No			
		1				
	BSTRATE COMPONENTS add up to 100%)	OR	GANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate	% Composition in	Substrate	% Composition in			

INORG	ANIC SUBSTRATE Co (should add up to 10		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant		
Sand	0.062-2 mm			materials (CPOM)		
Gravel	2-64 mm		Muck-Mud	black, very fine organic		
Cobble	64-256 mm			(FPOM)		
Boulder	256-2048 mm		Marl	grey, shell fragments		
Bedrock	>2048 mm					

DATE: 5/19/10	ST	STREAM NAME: Unnamed Tributary of Pigeon Creek					
SITE ID: UTPC I_	Temp RI	RIVER BASIN: Tug Fork				,	STREAM ORDER: 2
LOCATION:			STRE	AM CLASS:			STORET #:
LATITUDE: 37° 44	l' 11.45" N	LONGIT	UDE:	82° 12' 19.23" V	V	ELEVATIO	DN:
INVESTIGATORS:	AC, CF	-					
FORM COMPLETED BY:	CF						
REASON FOR SURVEY:	Baseline s	urvey for SW\	/M				
AGENCY/COMPANY:	CONSOL						
WEATHER	lo	W 45.0					
WEATHER CONDITIONS/NOTES	Channel Wid Slope: 20% Weather: 60°						
SAMPLING METHODOLOGY	Single Habita	t, riffle sample					
SITE PHOTO/ SKETCH MAP							
STRFAM							
STREAM CHARACTERIZATION	*based on US Stream Origi Glacial Non-glacia	☐ Intermitte SGS 7.5' topog n ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	graphic Spring Mixtu	g-fed re of origins		r Type water ⊠ ۷ ge Area	Varmwater
WATERSHED	☐ Swamp an		Other				
FEATURES	Predominant ☐ Forest ☐ Field/Past ☐ Agricultura ☐ Residentia	ure Indu	nmerci ustrial		⊠ No e □ Obvi	vidence ous sources Vatershed E	

FIELD DATA SUMMARY SHEET (BACK) 5-19-10 SITE ID: UTPC I_Temp STREAM NAME:

DATE: 5-19-10	SITE ID: UTPC I_Temp	STREAM NAME:						
RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Grasses ☐ Herbaceous							
	Dominant Species Umbrella Mag, C. Fern, Beech, Buckeye							
	Canopy Cover ☐ Open ☑ Partly Open ☐ Partly Shaded ☐ Shaded							
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Rooted floating ☐ Free floating ☐ Floating Algae ☐ Attached Algae Dominant Species							
	Portion of the Reach with Aquat	tic Vegetation0%						
WATER QUALITY	Temperature 12.79 C	Water Odors						
	Specific Conductance 44	☑ Normal/None □ Sewage _µS/cm □ Petroleum □ Chemical □ Fishy □ Other						
	Dissolved Oxygen _10.28 _mg	1/L — , — — — — — — — — — — — — — — — — —						
	pH <u>6.66</u>	Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other						
	Instrument Used <u>YSI 556 MPS</u>	<u> </u>						
		Turbidity ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other						
CHANNEL FEATURES	Reach Length_300ft	Proportion of Reach Represented by Stream Morphology Types						
FEATURES	Channel Widths <u>15.0</u> ft	Riffle 80 % Run % Pool 20 %						
	Water Width <u>8.5</u> ft	Channelized □Yes ⊠No						
	Right Bank Depth_ <u>1.0</u> ft Water Depth <u>0.3</u> ft	Dam Present ☐Yes ☑No						
	Left Bank Depth1.1ft	Large Woody Debris ⊠Yes □No						
	Water Depth 0.2 ft	Undercut Banks ⊠Yes □No						
	Max Bank Depth (thalweg)_ <u>2.0</u> Water Depth (thalweg)_ <u>0.4</u> ft	ft						
	Surface Velocity (thalweg)	ft/sec						
	Dischargecfs							
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ Chemical □ Anaerobic	□ Petroleum Deposits □ Sludge □ Sawdust □ Paper fiber □ Sand □ Relict shells □ Other						
	☐ Other Oils ☑ Absent ☐ Slight ☐ Moder	Undersides of stones black in color? ☐ Yes ☑ No						

INORG	ANIC SUBSTRATE CO		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area	
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant	10	
Sand	0.062-2 mm	5		materials (CPOM)		
Gravel	2-64 mm	25	Muck-Mud	black, very fine organic		
Cobble	64-256 mm	40		(FPOM)		
Boulder	256-2048 mm	10	Marl	grey, shell fragments		
Bedrock	>2048 mm	20				

			(110141)		
DATE: 5/19/10	STR	EAM NAME	E: Unnamed Tributary	of Pigeon	Creek
SITE ID: UTPC I_	Upper RIVE	R BASIN:	Tug Fork		STREAM ORDER: 1
LOCATION:	<u> </u>		STREAM CLASS:		STORET #:
LATITUDE:		LONGIT	UDE:	I	LEVATION:
INVESTIGATORS:	AC, CF	.		'	
FORM COMPLETED BY:	AC				
REASON FOR SURVEY:	Baseline sur	vey for SW	VM		
AGENCY/COMPANY:	CONSOL				
WEATHER CONDITIONS/NOTES	Channel Width Slope: 6% Weather: 60°, 0				
SAMPLING METHODOLOGY	Single Habitat, ı	iffle sample	•		
SITE PHOTO/ SKETCH MAP					
STREAM CHARACTERIZATION	Stream Origin Glacial	S 7.5' topo	tent ☐ Tidal graphic quadrangles ☑ Spring-fed ☑ Mixture of origins		Type ater ⊠ Warmwater Area
WATERCHER	☐ Swamp and	bog [Other		
WATERSHED FEATURES	Predominant S ☐ Forest ☐ Field/Pasture ☐ Agricultural ☐ Residential	Co	g Landuse mmercial lustrial ner	⊠ No ev □ Obvio	tershed NPS Pollution dence

FIELD DATA SUMMARY SHEET (BACK) : UTPC | STREAM NAME:

	\—\-	
DATE : 5-19-10	SITE ID: UTPC I_Upper	STREAM NAME:
RIPARIAN VEGETATION	Dominant Vegetation Type ☐ Trees ☐ Shrubs ☐ Gr Dominant Species Beech, C.	_
	Canopy Cover ☐ Open ☐ Partly Open ☐	_
AQUATIC VEGETATION	Dominant Vegetation Type	
	Dominant Species Portion of the Reach with Aqua	atic Vegetation 0 %
WATER QUALITY	Temperature 12.12 C	Water Odors
	Specific Conductance 45	□ Normal/None □ Sewage □ Petroleum □ Chemical □ Fishy □ Other
	Dissolved Oxygen _10.45	_mg/L Water Surface Oils
	pH <u>6.59</u>	☐ Slick ☐ Sheen ☐ Globs ☐ Flecks ☐ None ☐ Other
	Instrument UsedYSI 556 MP	S Turbidity
		☐ Clear ☐ Slightly turbid ☐ Turbid☐ Opaque ☐ Stained ☐ Other
CHANNEL FEATURES	Reach Length 300 ft	Proportion of Reach Represented by Stream Morphology Types
	Channel Widths _14_ft	Riffle <u>85</u> % Run <u></u> % Pool <u>15</u> %
	Water Width 8_ft	Channelized □Yes ☑No
	Right Bank Depth_1.9_ft	Dam Present ☐Yes ☐No
	Water Depth_0.3 ft	Large Woody Debris ⊠Yes □No
	Left Bank Depth 1.1 ft Water Depth 0.1 ft	Undercut Banks ☐Yes ⊠No
	Max Bank Depth (thalweg)2. Water Depth (thalweg)0.41	 <u></u>
	Surface Velocity (thalweg)	ft/sec
	Dischargecfs	
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None □ Sewage □ Chemical □ Anaerobic □ Other	Deposits ☐ Petroleum ☐ Sludge ☐ Sawdust ☐ Paper fiber ☐ Sand ☐ Relict shells ☐ Other
	Oils ☑ Absent ☐ Slight ☐ Mode	Undersides of stones black in color? ☐ Yes ☒ No erate ☐ Profuse

INORG	INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)			ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)			
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant	18		
Sand	0.062-2 mm	5		materials (CPOM)			
Gravel	2-64 mm	5	Muck-Mud	black, very fine organic			
Cobble	64-256 mm	25		(FPOM)			
Boulder	256-2048 mm	15	Marl	grey, shell fragments			
Bedrock	>2048 mm	50					

DATE: 5/19/10	STR	STREAM NAME: Unnamed Tributary of Pigeon Creek					
SITE ID: UTPC I_	Perm RIVI	ER BASIN:	Tu	g Fork		S	STREAM ORDER: 1
LOCATION:	•		STRE	EAM CLASS:			STORET #:
LATITUDE: 37° 44	l' 12.62"N	LONGIT	UDE:	82° 12' 21.22"	W	ELEVATIO	N:
INVESTIGATORS:	AC, CF						
FORM COMPLETED BY:	AC						
REASON FOR SURVEY:	Baseline su	vey for SW	VM				
AGENCY/COMPANY:	CONSOL						
MEATHER	OL 1 14/2 1/1	- 110					
WEATHER CONDITIONS/NOTES	Channel Width Slope: 6% Weather: 60°, 0						
SAMPLING METHODOLOGY	Single Habitat,	riffle sample	;				
SITE PHOTO/ SKETCH MAP							
STREAM CHARACTERIZATION	Flow Regime* Perennial *based on USG Stream Origin Glacial Non-glacial Swamp and	SS 7.5' topog	graphic ☑ Spring	g-fed re of origins		/ Type dwater ⊠ W ge Area	Varmwater
WATERSHED FEATURES	Predominant S	☐ Cor e ☐ Ind	mmerci ustrial		⊠ No € □ Obv	evidence ious sources Vatershed E	

FIELD DATA SUMMARY SHEET (BACK) 5-19-10 SITE ID: UTPC I_Perm STREAM NAME:

DATE : 5-19-10	SITE ID: UTPC I_Perm	STREAM NAME:
RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Gr Dominant Species Beech, C. I Canopy Cover	rasses
ACHATIC		Partly Shaded
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Roote ☐ Floating Algae ☐ Attache Dominant Species Portion of the Reach with Aqua	ed Algae
WATER QUALITY	Temperature12.12C	Water Odors
	Specific Conductance 45	Fishy Other
	Dissolved Oxygen <u>10.45</u> pH <u>6.59</u>	Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks
	Instrument UsedYSI 556 MP	
		Turbidity ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other
CHANNEL FEATURES	Reach Length 300 ft	Proportion of Reach Represented by Stream Morphology Types
	Channel Widths _14_ft	Riffle <u>85</u> % Run <u></u> % Pool <u>15</u> %
	Water Width 8_ft	Channelized □Yes ⊠No
	Right Bank Depth_1.9_ft Water Depth_0.3 ft	Dam Present ☐Yes ⊠No
	Left Bank Depth1.1_ft	Large Woody Debris ⊠Yes □No
	Water Depth 0.1 ft	Undercut Banks ☐Yes ☑No
	Max Bank Depth (thalweg) <u>2.º</u> Water Depth (thalweg) <u>0.4</u> f	
	Surface Velocity (thalweg)	ft/sec
	Dischargecfs	
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None ☐ Sewage ☐ Chemical ☐ Anaerobic ☐ Other	Deposits □ Petroleum □ Sludge □ Sawdust □ Paper fiber □ Sand □ Relict shells □ Other
	Oils ☑ Absent ☐ Slight ☐ Mode	Undersides of stones black in color? ☐ Yes ☒ No erate ☐ Profuse

INORG	ANIC SUBSTRATE CO (should add up to 10		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant	18		
Sand	0.062-2 mm	5		materials (CPOM)			
Gravel	2-64 mm	5	Muck-Mud	black, very fine organic			
Cobble	64-256 mm	25		(FPOM)			
Boulder	256-2048 mm	15	Marl	grey, shell fragments			
Bedrock	>2048 mm	50					

DATE: 5/19/10 STREAM NAME: Pigeonroost Creek							
SITE ID: PRC-P	RIV	RIVER BASIN: Tug Fork					STREAM ORDER: 2
LOCATION:	STREAM CLASS: STORET #:				STORET #:		
LATITUDE: 37° 42	2' 55.14"N	LONGIT	UDE:	82° 12′ 36.15″W	,	ELEVATIO	N:
INVESTIGATORS:	RE, WC						
FORM COMPLETED BY:	RE, WC						
REASON FOR SURVEY:	Baseline s	urvey for SW\	/M				
AGENCY/COMPANY:	CONSOL						
WEATHER CONDITIONS/NOTES	Channel Widt Slope: 6% Weather: 65°,		.1				
SAMPLING METHODOLOGY	Single Habitat	, riffle sample	,				
SITE PHOTO/ SKETCH MAP							
STREAM CHARACTERIZATION	Flow Regime Perennial *based on US Stream Origin Glacial Non-glacia	☐ Intermitte GS 7.5' topog n I montane ☑	graphic] Spring] Mixtur	g-fed e of origins		water 🛚 V	Varmwater
WATERSHED FEATURES	☐ Swamp and Predominant ☐ Forest ☐ Field/Pastu ☐ Agricultura ☐ Residential	Surrounding Cor Ire Indi	mmercia ustrial	ıse	⊠ No e □ Obvi	vidence ous sources Vatershed I	

FIELD DATA SUMMARY SHEET (BACK) PRC-P STREAM NAME:

DATE : 5-19-10	SITE ID: PRC-P	STREAM NAME:					
RIPARIAN VEGETATION	Dominant Vegetation Type ☑ Trees ☑ Shrubs ☐ Gr	rasses Herbaceous					
	Dominant Species						
	Canopy Cover ☐ Open ☐ Partly Open ☐	Partly Shaded					
AQUATIC VEGETATION	Dominant Vegetation Type ☐ Rooted emergent ☐ Root ☐ Floating Algae ☐ Attache						
	Dominant Species						
	Portion of the Reach with Aquatic Vegetation0%						
WATER QUALITY	Temperature 13.7 C Specific Conductance 38						
	Dissolved Oxygen _10.81	Fishy Other					
	pH <u>6.53</u>	Water Surface Oils ☐ Slick ☐ Sheen ☐ Globs ☐ Flecks					
	Instrument UsedYSI 556 MP	S Other					
		Turbidity ☐ Clear ☐ Slightly turbid ☐ Turbid ☐ Opaque ☐ Stained ☐ Other					
CHANNEL FEATURES	Reach Lengthft	Proportion of Reach Represented by Stream Morphology Types					
	Channel Widthsft	Riffle 45 % Run 35 % Pool 20 %					
	Water Widthft	Channelized ☐Yes ⊠No					
	Right Bank Depthft Water Depth_ft	Dam Present ☐Yes ☒No					
	Left Bank Depthft	Large Woody Debris ⊠Yes □No					
	Water Depthft	Undercut Banks ☐Yes ☒No					
	Max Bank Depth (thalweg) Water Depth (thalweg)f	ft t					
	Surface Velocity (thalweg)	ft/sec					
	Dischargecfs						
SEDIMENT/ SUBSTRATE	Odors ⊠ Normal/None ☐ Sewage ☐ Chemical ☐ Anaerobic ☐ Other	□ Petroleum Deposits □ Sludge □ Sawdust □ Paper fiber □ Sand □ Relict shells □ Other					
	Oils ☑ Absent ☐ Slight ☐ Mode	Undersides of stones black in color? ☐ Yes ☐ No erate ☐ Profuse					
	BSTRATE COMPONENTS add up to 100%)	ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)					

	INORG	ANIC SUBSTRATE Co (should add up to 10		ORGANIC SUBSTRATE COMPONENTS (may not add up to 100%)				
	Substrate Type	Diameter	% Composition in Sampling Reach	Substrate Type	Characteristic	% Composition in Sampling Area		
	Silt/Clay	<0.062 mm		Detritus	sticks, wood, coarse plant			
Γ	Sand	0.062-2 mm]	materials (CPOM)			
Γ	Gravel	2-64 mm		Muck-Mud	black, very fine organic			
ſ	Cobble	64-256 mm			(FPOM)			
	Boulder	256-2048 mm		Marl	grey, shell fragments			
T	Bedrock	>2048 mm		1				

DATE: 5/19/10	STREAM NAME: Pigeonroost Creek						
SITE ID: PRC-I	F	RIVER BASIN:	Tug	g Fork			STREAM ORDER: 2
LOCATION:	-		STRE	AM CLASS:			STORET #:
LATITUDE: 37° 42	2' 37.14"N	LONGIT	UDE:	82° 12' 35.53"W	1	ELEVATION	ON:
INVESTIGATORS:	RE, WC	· ·					
FORM COMPLETED BY:	WC and	RE					
REASON FOR SURVEY:	Baseline	survey for SW\	/M				
AGENCY/COMPANY:	CONSO	L					
WEATHER	low						
WEATHER CONDITIONS/NOTES	Slope: 9% Weather: 65	idths: 5.8, 3.5 5°, Sunny					
SAMPLING METHODOLOGY	Single Habit	tat, riffle sample					
SITE PHOTO/ SKETCH MAP							
STREAM CHARACTERIZATION	Flow Regin Perennia *based on l Stream Orig	l ⊠ Intermitte JSGS 7.5' topog	ent [graphic	☐ Tidal quadrangles	Fishery Coldv	water 🛛 \	Warmwater
	☐ Glacial	ial montane ⊠		g-fed re of origins			
WATERSHED FEATURES	Predomina ⊠ Forest □ Field/Pas □ Agricultu □ Resident	ral 🔲 Oth	nmercia ustrial		No ev Obvio Local W	vidence ous source latershed	

FIELD DATA SUMMARY SHEET (BACK)

DATE:

Sand

Gravel

Cobble

Boulder

Bedrock

0.062-2 mm

2-64 mm

64-256 mm

256-2048 mm

>2048 mm

DATE : 5-1	9-10	SITE ID:	PRC-I	STREAM NA	ΛE:		
RIPARIAN VEGETATION			/egetation Type ⊠ Shrubs ☐ G	rasses	erbaceous		
		Dominant S	Species				
		Canopy Co ☐ Open	ver ☐ Partly Open ☐	Dorthy Shadad	☐ Sha	dod	
AQUATIC			/egetation Type	Failiy Shaueu	□ Sila	aea	
VEGETATION		☐ Rooted except a content of the content of th	emergent Roo	ted submergent ed Algae	□ Ro	poted floating	Free floating
		Dominant S	Species				
		Portion of t	he Reach with Aqu	atic Vegetatior	0	_%	
WATER QUALIT	Υ	Temperatu	re <u>13.68</u> C		Water Od	ors	
		Specific Co	onductance 39	µS/cm	Norma Petrole Fishy In the property of th	eum 🔲 Chem	
		Dissolved (Oxygen <u>13.68</u>	mg/L	_ ,		
		pH <u>8.81</u>			Slick	rface Oils ☐ Sheen ☐ Glot ☐ Other	os
		Instrument	Used <u>YSI 556 MF</u>	PS			
					Turbidity ⊠ Clear □ Opaqu	Slightly turk	oid
CHANNEL		Reach Len	gth ft			n of Reach Repres	ented by Stream
FEATURES		Channel W	_		Morpholo Riffle <u>45</u>	o gy Types 5_% Run <u>35</u> _%	5 Pool_ <u>20_</u> %
		Water Widt	h ft		Channeli	zed □Yes ⊠	No
		Right Bank Water Dept	Depthft		Dam Pres	sent □Yes ⊠	No
					Large Wo	oody Debris 🛛 🖂 Y	es 🔲 No
		Left Bank Dept	Depthft hft		Undercut	Banks Yes	⊠No
		Max Bank I Water Dept	Depth (thalweg) h (thalweg)t	ft ft			
		Surface Ve	locity (thalweg)	ft/sec			
		Discharge_	cfs		-		
SEDIMENT/ SUBSTRATE		Odors Normal/N Chemica		☐ Petroleum	Depo ☐ Si ☐ Si	ludge Sawdust	Paper fiber
		Other				ersides of stones b	lack in color?
		Oils ⊠ Absent	☐ Slight ☐ Mod	erate	use 🗌 Y	es 🛛 No	
		<u> </u>					
INORGA		STRATE CO	OMPONENTS 00%)			SUBSTRATE COI	
Substrate Type	Dia	ımeter	% Composition in Sampling Reach		CI	haracteristic	% Composition in Sampling Area
Silt/Clay	<0.0	62 mm	_	Detritus		vood, coarse plant	_
Sand	0.06	2-2 mm		7	mat	erials (CPOM)	

Muck-Mud

Marl

black, very fine organic

(FPOM)

grey, shell fragments

DATE: 5/19/10 STREAM NAME: Unnamed 5 Tributary of Miller Creek							
SITE ID: UT5MC-	P RIVE	R BASIN:	Tu	g Fork		S	STREAM ORDER: 1
LOCATION:			STRE	EAM CLASS:	STORET #:		
LATITUDE: 37° 44	1' 24.42"	LONGIT	UDE:	82 14' 27.51"		ELEVATIO	N:
INVESTIGATORS:	RE, WC						
FORM COMPLETED BY:	RE						
REASON FOR SURVEY:	Baseline surv	ey for SW	VM				
AGENCY/COMPANY:	CONSOL						
MEATHER	Io I w	- 04 47					
WEATHER CONDITIONS/NOTES	Channel Widths Slope: 12% Weather: 60°, C						
SAMPLING METHODOLOGY	Single Habitat, r	iffle sample	÷				
SITE PHOTO/ SKETCH MAP							
STREAM							
CHARACTERIZATION	Flow Regime* Perennial [*based on USG: Stream Origin Glacial	S 7.5' topo	ent [graphic			dwater 🛛 V	Varmwater
	☐ Non-glacial n ☐ Swamp and b	nontane 🗵	Mixtu	re of origins			
WATERSHED FEATURES	Predominant So ☐ Forest ☐ Field/Pasture ☐ Agricultural ☐ Residential	urrounding	g Land mmerci lustrial	l use ial	⊠ No € □ Obv	evidence vious sources Watershed E	

FIELD DATA SUMMARY SHEET (BACK)

DATE:

Sand

Gravel

Cobble

Boulder

Bedrock

0.062-2 mm

2-64 mm

64-256 mm

256-2048 mm

>2048 mm

DATE : 5-1	9-10	SITE ID:	UT5MC-P	STREAM NA	ME:		
RIPARIAN VEGETATION		Dominant \ ☑ Trees	/egetation Type ⊠ Shrubs ☐ Gr	asses	erbac	ceous	
		Dominant S	Species				
		Canopy Co ☐ Open	ver ☐ Partly Open ☐	Dorthy Shadad	_] Shaded	
AQUATIC			/egetation Type	Failiy Shaueu		Jishaded	
VEGETATION		☐ Rooted e	emergent	ed submergent d Algae		☐ Rooted floating ☐	Free floating
		Dominant S	Species				
		Portion of t	he Reach with Aqua	ntic Vegetation	1	_0%	
WATER QUALIT	Υ	Temperatu	re13.65C		Wate	er Odors	
		Specific Co	onductance 34	µS/cm	□Р	Iormal/None Sewag Petroleum Chemi ishy Other	
		Dissolved (Oxygen <u>10.36</u>	_mg/L		, – -	
		рН <u>6.29</u>			□s	er Surface Oils Slick ☐ Sheen ☐ Glob Jone ☐ Other	s Flecks
		Instrument	Used <u>YSI 556 MP</u>	S			
					\boxtimes C	oidity Clear ☐ Slightly turb Opaque ☐ Stained	oid ☐ Turbid ☐ Other
CHANNEL		Reach Len	gthft			portion of Reach Repres	ented by Stream
FEATURES		Channel W				phology Types e <u>65</u> % Run <u>10</u> %	Pool <u>25</u> %
		Water Widt	h ft		Cha	nnelized □Yes ⊠	No
		Right Bank Water Dept	Depthft		Dam	n Present □Yes ⊠	No
					Larg	ge Woody Debris 🔲 Yo	es 🔲 No
		Left Bank Dept	Depthft hft		Und	ercut Banks	⊠No
		Max Bank I Water Dept	Depth (thalweg) h (thalweg)f	ft t			
		Surface Ve	locity (thalweg)	ft/sec			
		Discharge_	cfs				
SEDIMENT/ SUBSTRATE		Odors Normal/N Chemica		☐ Petroleun	1	Deposits ☐ Sludge ☐ Sawdust ☐ Sand ☐ Relict she	Paper fiber
		Other				Undersides of stones b	lack in color?
		Oils ⊠ Absent	☐ Slight ☐ Mode	erate 🗌 Prof	use	☐ Yes	
INORGA		STRATE CO	OMPONENTS 10%)		ORG	GANIC SUBSTRATE COM (may not add up to 10	
Substrate Type	Dia	ımeter	% Composition in Sampling Reach	Substrate Type		Characteristic	% Composition in Sampling Area
Silt/Clay	<0.0	062 mm		Detritus	stic	cks, wood, coarse plant	
Sand	0.06	2-2 mm		ヿ	1	materials (CPOM)	

Muck-Mud

Marl

black, very fine organic

(FPOM)

grey, shell fragments

DATE: 5/19/10 STREAM NAME: Unnamed Tributary 5 Miller Creek								
SITE ID: UT5MC-	l RIV	/ER BASIN:	Tu	g Fork			STREAM ORDER: 1	
LOCATION:	<u> </u>		STRE	AM CLASS:		STORET #:		
LATITUDE: 37° 44	l' 29.13"N	LONGIT	UDE:	82° 14′ 19.42″\	W	ELEVATION	ON:	
INVESTIGATORS:	RE, WC	•						
FORM COMPLETED BY:	RE							
REASON FOR SURVEY:	Baseline s	urvey for SW	VM					
AGENCY/COMPANY:	CONSOL							
WEATHER CONDITIONS/NOTES	Channel Widt Slope: 20% Weather: 60°,							
SAMPLING METHODOLOGY	Single Habitat	, riffle sample						
SITE PHOTO/ SKETCH MAP								
STREAM CHARACTERIZATION	Flow Regime Perennial *based on US Stream Origin Glacial Non-glacia	⊠ Intermitte GS 7.5' topog n	graphic] Spring	g-fed	Fishery Coldv Drainage	vater 🖂	Warmwater	
WATERSHED FEATURES	Swamp an Predominant Forest Field/Pastu Agricultura Residentia	Surrounding Cor Ure Ind] Other	use al	☑ No ev☐ Obvio	ridence ous source atershed		

FIELD DATA SUMMARY SHEET (BACK)

DATE:

Sand

Gravel

Cobble

Boulder

Bedrock

0.062-2 mm

2-64 mm

64-256 mm

256-2048 mm

>2048 mm

DATE : 5-1	9-10	SITE ID:	UT5MC-I	STREAM NA	ME:			
RIPARIAN VEGETATION		Dominant \ ☑ Trees	/egetation Type ⊠ Shrubs ☐ Gr	asses	erba	ceous		
		Dominant S	Species					
		Canopy Co ☐ Open	ver ☐ Partly Open ☐	Partly Shadad		☐ Shaded		
AQUATIC			/egetation Type	Failiy Shaueu		_ Snaueu		
VEGETATION		☐ Rooted e	emergent	ed submergent d Algae		☐ Rooted floating ☐	Free floating	
		Dominant S	Species					
		Portion of t	he Reach with Aqua	atic Vegetation	١	0%		
WATER QUALIT	Υ	Temperatu	re <u>14.17</u> C		Wat	ter Odors		
		Specific Co	onductance 31	μS/cm	□F	Normal/None Sewaç Petroleum Chemi Fishy Other		
		Dissolved (Oxygen <u>10.2</u>	_mg/L		•		
	pH6.89					ter Surface Oils Slick ☐ Sheen ☐ Glob None ☐ Other	s	
		Instrument	Used <u>YSI 556 MP</u>	S				
					\boxtimes	bidity Clear ☐ Slightly turb Opaque ☐ Stained	oid ☐ Turbid ☐ Other	
CHANNEL		Reach Lene	gthft			portion of Reach Repres	ented by Stream	
FEATURES		Channel W				r phology Types le <u>65</u> % Run <u>10</u> %	Pool_ <u>25</u> %	
		Water Widt	h ft		Cha	annelized 🗌 Yes 🛛	No	
		Right Bank Water Dept	Depthft		Dan	m Present □Yes ⊠	No	
					Lar	ge Woody Debris 🛛 🖂 Y	es 🔲 No	
		Water Dept	Depthft hft		Undercut Banks ☐Yes ⊠No			
		Max Bank I Water Dept	Depth (thalweg) h (thalweg)f	ft t				
		Surface Ve	locity (thalweg)	ft/sec				
		Discharge_	cfs					
SEDIMENT/ SUBSTRATE		Odors Normal/N Chemica		☐ Petroleun	า	Deposits ☐ Sludge ☐ Sawdust ☐ Sand ☐ Relict she	☐ Paper fiber	
		Other				Undersides of stones b	lack in color?	
		Oils ⊠ Absent	☐ Slight ☐ Mode	erate □ Prof	fuse	☐ Yes ☑ No		
		II						
INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)					OR	GANIC SUBSTRATE COM		
Substrate Type	Dia	ımeter	% Composition in Sampling Reach	Substrate Type		Characteristic	% Composition in Sampling Area	
Silt/Clay	<0.0	062 mm		Detritus	sti	cks, wood, coarse plant		
Sand	0.06	2-2 mm		7		materials (CPOM)		

Muck-Mud

Marl

black, very fine organic

(FPOM)

grey, shell fragments



To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** Ruth Trace Branch

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RTB 1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.63
Biogeochemical Cycling	0.81
Habitat	0.83

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	98.80	1.00
V _{EMBED}	Average embeddedness of channel.	2.80	0.75
V _{SUBSTRATE}	Median stream channel substrate particle size.	2.50	1.00
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	4.22	0.53
V _{TDBH}	Average dbh of trees.	7.10	0.69
V _{SNAG}	Number of snags per 100 feet of stream.	0.22	0.43
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	83.13	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northing:	37.7540268	3
Pro		Buffalo Mou	untain				•		•	-82.253628	
	-	Ruth Trace					•	-	npling Date:		
9.0	R Number:			Length (ft):	450	Stream Ty	(DO:				
								mittent Strea			•
	Top Strata:	re	e/Sapling St	rata	(determined	a from perce	ent calculate	a in V _{CCANOF}	>γ)		
		Project Site				~	Before Project	ct			—
		1-4 in strea								I	
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	is at least 2			98.8 %
ı			neasuremer								
	100	100	94	100	100	100	94	100	100	100	
	.,	•		4.1							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	2.8
				• .			y fine sedim composed of				
			bed is comp					iiie seaiiiie	ziilo, uoe a i	alling score	
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
			Rating Des	orintion							
		Rating 5			overed suri	rounded or	buried by fin	e sediment	(or bedrock)	
		4					l, or buried b		·	/	
		3					ed, or buried	•			
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	ıl surface)	
			point below				_			_	
	1	2	1	3	4	3	3	4	4	3	
	2	1	3	3	3	4	4	4	5	4	
	3	3	1	2	1	1	3	3	4	2	
	3	3	2	3	4	2 5	2	3	1 4	2	
3	•	Median stre	eam channe	l substrate p	article size.	Measure a	t no fewer the	nan 30 roug			2.50 in
		· ·		·	•					. .	
	•		cnes to tne r and or finer			point below	/ (bedrock sl	nould be co	unted as 99	ın, aspnait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	0.31	
	0.44	0.44	0.63	0.89	0.89	1.26	1.26	1.26	1.26	1.26	
	1.26	1.77	1.77	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	5.00	5.00	
	5.00	5.00	5.00	5.00	5.00	5.00	7.10	7.10	7.10	10.10	
4	V_{BERO}						tal number o				
	DEIG	side and the	e total perce				nks are eroc				200 %
		may be up	to 200%.								
			Left Bank:	45	O ft	I	Right Bank:	45	O ft	_	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		ter and 36 in buffer and w				4.2
		'				f downed w	oody stems:	1	19		
6	V_{TDBH}			measure onl eter. Enter			ng cover is a	t least 20%)). Trees are	at least 4	7.1
		List the dbh	measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								_
			Left Side					Right Side			
	9.2	5.5	15.8	4.9	8	5.5	5	5.6	8.6	4.1	
	5	8									
7	V_{SNAG}			ast 4" dbh a I the amount			t of stream. Iculated.	Enter numb	er of snags	on each	0.2
			Left Side:				Right Side:		1		
8	V_{SSD}						nes dbh) per				N
				Enter numb Il be calculat		gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used
		p = 100	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	1.56
		•	p 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a	-		Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
		ghaniensis		Quercus al			philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glai			Quercus pi			Coronilla v			Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	ımbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras a	albidum		Lespedeza	cuneata		Verbena bi	
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol	btusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame			-				
		acuminata									
	agriona										
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	83.13 %
		long are inc		Side	it cover or ar	e detinaria;		it Side		1	
		65	75	90	85	90	95	80	85		
	.,								200()		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	paceous vege bh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	o Variablo 1	2 within the	ontire cate	chmont of	the stream.						
12	V _{WLUSE}				e for watersh	od:					
12	V WLUSE	weighted A	werage or iv	Curion Scor	e ioi watersii	ieu.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								▼			
								•			
	-							•			
								•			
								•			
								▼			
								•			
	F	RTB 1					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	99 %	1.00	1							
V _E	MBED	2.8	0.75								
Vs	UBSTRATE	2.50 in	1.00								
V _B	ERO	200 %	0.00								
V _L ,	WD	4.2	0.53								
V _T	DBH	7.1	0.69								
Vs	NAG	0.2	0.43								
Vs		Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	83.1 %	1.00								
	ERB	Not Used	Not Used								
Vw	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT17 of Ruth Trace Branch

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RTB U3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.69
Biogeochemical Cycling	0.82
Habitat	0.86

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	97.00	1.00
V _{EMBED}	Average embeddedness of channel.	2.80	0.75
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.00	1.00
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	6.00	0.75
V _{TDBH}	Average dbh of trees.	7.10	0.69
V _{SNAG}	Number of snags per 100 feet of stream.	0.22	0.43
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	88.13	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.7522539	14
Pro		Buffalo Mou	untain						_	-82.254661	
	=		7 of Ruth T	race Branch	ľ			-	npling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/De: Inter	mittent Strea			
											*
	Top Strata:	rre	e/Sapling St	така	(determine)	a from perce	ent calculate	u III v _{ccanor}	>γ)		
		Project Site				V	Before Proje	ct			▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant	points along	the stream	. Measure	only if tree/s	anopy. Mea apling cove Top Strata c	is at least 2			97.0 %
ı	List the per	cent cover r	neasuremer	nts at each p	oint below:						
	100	100	94	100	94	94	100	94	100	94	
	100	100	100	88							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	2.8
				• .			y fine sedim				
							composed of	line seaime	ents, use a r	ating score	
	of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and										
		Minshall 19									
			Rating Des		avarad aur	rounded or	buried by fin	a aadimaat	(ar badraal	`	
		5 4					buried by fin I, or buried b		·)	
		3					ed, or buried	•			
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	al surface)	
ı	List the rati	ngs at each	point below	:							
	1	2	1	3	4	3	3	4	4	3	
	2	1	3	3	3	4	4	4	5	4	
	3	3	1	2	1	1	3	3	4	2	
	2	3	2	3	4	2	2	1	1	2	
2	3	3	3	4	4	5 Magaura a	4	3	4	1	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}		niy equidista	ant points	3.00 in
	•					point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
Ī			and or finer			4.00	4.00	4 77	4 77	4 77	
	0.08	0.89	0.89	1.26	1.26	1.26	1.26	1.77	1.77	1.77	
	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	2.50	2.50	
	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	3.50	3.50	
	3.50 7.10	5.00	5.00	5.00	5.00	5.00	5.00	5.00	7.10	7.10	
4		7.10	7.10	7.10	10.10	10.10 Enter the to	10.10 tal number o	20.00	1.77	3.50	
⊣ T	V_{BERO}	side and the	e total perce				iks are eroc				200 %
		may be up									
			Left Bank:	45	O ft	I	Right Bank:	45	O ft	_	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in buffer and w				6.0
		F				f downed w	oody stems:	2	27		
6	V_{TDBH}			measure onl eter. Enter			ng cover is a	t least 20%)	. Trees are	at least 4	7.1
		•	•				n) within the	buffer on ea	ach side of		
		the stream				`	,				_
			Left Side					Right Side			
	9.2	5.5	15.8	4.9	8	5.5	5	5.6	8.6	4.1	
	5	8									
7	V _{SNAG}			ast 4" dbh a I the amount			t of stream. Iculated.	Enter numb	er of snags	on each	0.2
			Left Side:				Right Side:		1		
8	V_{SSD}						nes dbh) per				
				Enter numb Il be calculat		gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used
		por roo it o	Left Side:	i bo oaloulai	.00.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	1.56
			p 1 = 1.0	and the subh	Idex Will be	calculated	TOTTI UTCGC G		2 (-1.0)		
7	Acer rubru		 	Magnolia tr	rinetala		Ailanthus a			Lonicera ja	nonica
	Acer sacc			Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus			Oxydendrum			Alliaria peti			Lotus corni	
	Asimina tr			Prunus ser			_			Lythrum sa	
		ghaniensis		Quercus al			Alternanthe philoxeroid			Microstegiun	
							-			•	
	Betula len			Quercus co			Aster tatari			Paulownia	
	Carya alba		H	Quercus in			Cerastium		H	Polygonum o	·
	Carya glai			Quercus pr			Coronilla va			Pueraria m	
	Carya ova			Quercus ru			Elaeagnus u			Rosa multin	
	Carya ova			Quercus ve			Lespedeza			Sorghum h	
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia	acuminata									
			On a -! - '	Ono.:: 4				•	0 : :	0 6	
		7	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. Wo	oody debris	<4" diamete	er and <36"	88.13 %
		long are inc		Side	it cover or tir	e detinaria,		t Side		1	
		75	90	95	90	90	100	85	80		
	.,								000() B	L	
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	paceous vege oh and 36" ta h 200% are a	all. Because	there may l	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	o Variablo 1	2 within the	ontire cate	chmont of	the stream.						
12					e for watersh	od:					
12	V _{WLUSE}	vveignted A	werage or K	Kurion Scor	e ioi watersi	ieu.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
								•			
								•			
								~			
								•			
								•			
	Ī							•			
	R	TB U3					No	otes:	•		
V	ariable	Value	VSI								
V _c	CANOPY	97 %	1.00								
V _E	MBED	2.8	0.75								
Vs	UBSTRATE	3.00 in	1.00								
V_{B}	ERO	200 %	0.00								
V _L	WD	6.0	0.75								
V _T	DBH	7.1	0.69								
Vs	NAG	0.2	0.43								
Vs	SD	Not Used	Not Used								
Vs	RICH	1.56	0.74								
	ETRITUS	88.1 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT17 of Ruth Trace Branch

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RTB U3

Shrub/Herb Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.68
Biogeochemical Cycling	0.50
Habitat	0.57

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	2.80	0.75
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.00	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	4.62	0.58
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	52.31	0.80
V _{SRICH}	Riparian vegetation species richness.	7.69	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	Fradient	Headwat				entucky a alculator		ern wes	t virgini	a
	Team:	AC AG							M Northing:	37.7522539	94
Pro		Buffalo Mou	untain				•		ΓM Easting:		
	-	UT1 of UT1		race Branch	ľ		•	_	npling Date:		
2.4						Stroom Tu	(DO:				
	R Number:			Length (ft):	65	Stream Ty		mittent Strea			•
	Top Strata:	Sh	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANOR}	₉ Y)		
		Project Site				▼	After Project				▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	r is at least 2			Not Used, <20%
Ī	List the percent cover measurements at each point below:										1
	0										
	.,	•									
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	2.8
				• .			y fine sedim		•		
to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score											
	of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and									1	
	Minshall 1983)										
		Rating	Rating Des	cription							
		5					buried by fin		•)	
		4					l, or buried b	-			
		3 2					ed, or buried ed, or buried				
		1					r buried by fi	_		l surface)	1
	List the rati	ngs at each			20.0.00, 00.				(0. 0		1
	1	2	1	3	4	3	3	4	4	3	1
	2	1	3	3	3	4	4	4	5	4	1
	3	3	1	2	1	1	3	3	4	2	1
	2	3	2	3	4	2	2	1	1	2	1
	3	3	3	4	4	5	4	3	4	1	1
3	V _{SUBSTRATE}						t no fewer the		hly equidista	ant points	3.00 in
	Enter partic	cle size in in	chas to tha r	nearest 0.1	inch at each	noint helow	, (hadrock sl	hould be co	untad as 00	in aenhalt	
	•	as 0.0 in, s				point bolow	(bearook si	nodia be co	unica as ss	iii, aspiiait	
	0.08	0.89	0.89	1.26	1.26	1.26	1.26	1.77	1.77	1.77	1
	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	2.50	2.50	1
	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	3.50	3.50	
	3.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	7.10	7.10	1
	7.10	7.10	7.10	7.10	10.10	10.10	10.10	20.00	1.77	3.50	1
4	V_{BERO}	•	e total perce	stream cha			tal number on tal number of				40 %
		a, 20 ap	Left Bank:	13	3 ft	ı	Right Bank:	13	3 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	nannel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea	ch. Enter th		om the entir		er and 36 in ouffer and w				4.6
		'				f downed w	oody stems:	;	3	·	
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		•	•				n) within the	huffer on on	sch side of		
		the stream		ienis oi inui	viduai liees	(at least 4 ii	i) within the	bullet on ea	ich side oi		
			Left Side					Right Side			
7	V_{SNAG}		• •		and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
	.,		Left Side:		0		Right Side:		0		
8	V_{SSD}						nes dbh) per bs on each s				52.3
				I be calcula		go ana oma	DO OIT CACIT	side of the s	troam, and	ine amount	02.0
			Left Side:		17		Right Side:		7		
9	V_{SRICH}						m reach. Ch ve species p				7.00
							rom these d		Strata. Spe	cies	7.69
		Grou	p 1 = 1.0					Group	2 (-1.0)		
4	Acer rubru	ım		Magnolia t	ripetala		Ailanthus a	altissima		Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	atica		Albizia julib	orissin		Lonicera ta	tarica
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	iolata		Lotus corni	culatus
	Asimina tr	iloba		Prunus sei	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	1	Quercus a	lba		philoxeroid			Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	icus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum
	Carya glal	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	ımbellata		Rosa multin	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ol	btusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
		5	Species in	Group 1				0	Species in	Group 2	

		10-11 within							one within	25 feet fron	n each
10	V _{DETRITUS}	Average pe	ercent cover	of leaves, s	sticks, or oth	er organic n	naterial. Wo	ody debris «	<4" diamete	er and <36"	50.00 %
				Side				Side		1	
		50	50	50	50	50	50	50	50		
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	<20%). D	o not	
		include woo	ody stems a	t least 4" db	oh and 36" ta n 200% are a	all. Because	there may b	e several la	yers of grou	und cover	50 %
		each subpl	ot.			<u>'</u>	•			<u> </u>	
		5 0		Side	<i>F</i> 0	FO		Side	FO		
		50	50	50	50	50	50	50	50		
Sample	e Variable 1	2 within the	e entire cate	chment of t	the stream.						
12	V _{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ned:					0.66
	I and Use (Choose From Drop List)								Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and native range (>75% ground cover) Open space (pasture, lawns, parks, etc.), grass cover >75%							1	50	50	
								0.3	45	95	
	Forest and native range (<50% ground cover) 0.5								5	100	
							•				
								•			
	-							•			
	R	TB U3					No	tes:			
Va	ariable	Value	VSI								
V _C	CANOPY	Not Used, <20%	Not Used								
V _{EI}	MBED	2.8	0.75								
Vs	UBSTRATE	3.00 in	1.00								
V _{BI}	ERO	40 %	0.86								
VLV	WD	4.6	0.58								
V _{TI}	ОВН	Not Used	Not Used								
V _{si}	NAG	0.0	0.10								
Vs	SD	52.3	0.80								
V _{SI}	RICH	7.69	1.00								
V _D	ETRITUS	50.0 %	0.61								
V _{HI}	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT17 of Ruth Trace Branch

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RTB U3

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.68
Biogeochemical Cycling	0.69
Habitat	0.63

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	2.80	0.75
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.00	1.00
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	4.62	0.58
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	7.69	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	65.00	0.79
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	Hign-G	Fradient	Headwat				entucky a alculator		ern wes	t virginia	a
	Team:	AC AG							M Northina:	37.7522539)4
Pro		Buffalo Mou	untain				•		ū	-82.254661	
	-	UT1 of UT1		race Branch	ľ		•	_	_	Post-10 Yea	
9.0	R Number:			Length (ft):	65	Stream Ty	(DO:				
								mittent Strea			
	Top Strata:	Tre	e/Sapling St	rata	(determined	from perce	ent calculate	d in V _{CCANOF}	ν)		
		Project Site				▼	After Project				▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	r is at least 2			50.0 %
		cent cover r		•							j
	50	50	50	50	50	50	50	50	50	50	
	\			6.0				1 00			
2	V _{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according									2.8	
to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.											
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
				orintion							
		Rating 5	Rating Des		overed suri	ounded or	buried by fin	e sediment	(or bedrock)	
		4					l, or buried b		•	/	
		3					d, or buried	-			
		2	51 to 75 pe	rcent of surf	ace covered	d, surrounde	ed, or buried	by fine sed	iment		
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	ıl surface)	
	List the rati	ngs at each	point below								1
	1	2	1	3	4	3	3	4	4	3	
	2	1	3	3	3	4	4	4	5	4	
	3	3	1	2	1	1	3	3	4	2	
	2	3	2	3	4	2	2	1	1	2	
	3	3	3	4	4	5	4	3	4	1	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}		nly equidista	ant points	3.00 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):						
	0.08	0.89	0.89	1.26	1.26	1.26	1.26	1.77	1.77	1.77	
	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	2.50	2.50	
	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	3.50	3.50	
	3.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	7.10	7.10	
	7.10	7.10	7.10	7.10	10.10	10.10	10.10	20.00	1.77	3.50	
4	V_{BERO}	•	e total perce				tal number on tal number on tal number of				40 %
			Left Bank:	13	3 ft	I	Right Bank:	13	3 ft		

Sampl	le Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		ter and 36 ind buffer and wi				4.6
		•			Number of	f downed w	oody stems:		3		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)). Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indi	vidual trees	(at least 4 in	n) within the	buffer on ea	ach side of		
		the stream									•
	_	_	Left Side	_	_	_		Right Side		_	
	5	5	5	5	5	5	5	5	5	5	
					1.00" : 11	1001					
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}						nes dbh) per				N
				Enter numt Il be calcula		gs and snru	bs on each s	side of the s	tream, and t	ine amount	Not Used
		p = 1 = 1 = 1 = 1	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	7.69
			ip 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia t	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc			Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	flava			n arboreum		Alliaria peti			Lotus corni	culatus
	Asimina tı	riloba		Prunus sei	rotina		Alternanthe			Lythrum sa	
	Betula alle	ghaniensis		Quercus a	lba		philoxeroid			Microstegiun	
	Betula len	_		Quercus c			Aster tatari	cus		Paulownia	
	Carya alb			Quercus in			Cerastium			Polygonum o	
	Carya gla			Quercus p			Coronilla va			Pueraria m	
	Carya ova	alis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multi	flora
	Carya ova	ata		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame							
		acuminata									
	J										
		5	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				one within	25 feet from	n each
10	V _{DETRITUS}				sticks, or oth			oody debris « subplot.	<4" diamete	er and <36"	65.00 %
		10.19 4.10 1.11		Side		o dominar ia)		t Side		1 '	
		65	65	65	65	65	65	65	65		
11	V_{HERB}	Average pe	ercentage co	over of herba	aceous vege	etation (mea	sure only if	tree cover is	s <20%). D	o not	
								oe several la cent cover c			Not Used
		each subple	ot.						9	1	
			Left	Side			Rign	t Side			
Sample	Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ed:					0.67
								Runoff	% in Catch-	Running	
	Land Use (Choose From Drop List)								Score	ment	Percent (not >100)
	Forest and native range (>75% ground cover) Open space (pasture, lawns, parks, etc.), grass cover >75%								1	50	50
									0.3	45	95
	Forest and native range (50% to 75% ground cover) 0.7 5									5	100
	▼										
	-							•			
								•			
	-							•			
	-										
	R	TB U3					No	tes:			
	ariable	Value	VSI								
	CANOPY	50 %	0.50								
V _{EI}	MBED	2.8	0.75								
V _{st}	JBSTRATE	3.00 in	1.00								
V _{BI}	ERO	40 %	0.86								
VLV	N D	4.6	0.58								
V _{TI}	ОВН	5.0	0.29								
Vsi	NAG	0.0	0.10								
Vss	SD	Not Used	Not Used								
	RICH	7.69	1.00								
	ETRITUS	65.0 %	0.79								
	ERB	Not Used	Not Used								
V		U D/	. 0/1								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT17 of Ruth Trace Branch

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RTB U3

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.74
Biogeochemical Cycling	0.79
Habitat	0.87

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	2.80	0.75
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.00	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V _{LWD}	Number of down woody stems per 100 feet of stream.	6.15	0.77
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	1.54	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	7.69	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	radient	Headwat				entucky a alculator		ern wes	t Virginia	3
	Team:	AC AG							M Northina:	37.7522539)4
Pro		Buffalo Mou	untain						_	-82.254661	
	-	UT1 of UT1		race Branch)		•	-	npling Date:		
2.4						Stroom Tu					_
	R Number:			Length (ft):	65	Stream Ty		mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	₉ Y)		
		Project Site				▼	After Project				▼
Sample		1-4 in strea									
1	V _{CCANOPY}									95.0 %	
ı											
	95	95	95	95	95	95	95	95	95	95	
	. ,	•									
2	V _{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according										2.8
				• .			y fine sedim composed of				
								illie seullik	onio, use a i	alling score	
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating 5			overed sur	rounded or	buried by fin	a sadiment	(or bedrock)	
		4					d, or buried b		•)	
		3					ed, or buried	•			
		2	51 to 75 pe	rcent of surf	face covered	d, surrounde	ed, or buried	by fine sed	iment		
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	al surface)	
	List the rati	ngs at each	point below	:							
	1	2	1	3	4	3	3	4	4	3	
	2	1	3	3	3	4	4	4	5	4	
	3	3	1	2	1	1	3	3	4	2	
	2	3	2	3	4	2	2	1	1	2	
	3	3	3	4	4	5	4	3	4	1	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		hly equidista	ant points	3.00 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	•	as 0.0 in, s					,			, ,	
	0.08	0.89	0.89	1.26	1.26	1.26	1.26	1.77	1.77	1.77	
	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	2.50	2.50	
	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	3.50	3.50	
	3.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	7.10	7.10	
	7.10	7.10	7.10	7.10	10.10	10.10	10.10	20.00	1.77	3.50	
4	V_{BERO}	•	e total perce	stream cha			tal number onks are eroo				40 %
		- '	Left Bank:	13	3 ft	I	Right Bank:	13	3 ft		

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		rom the entir		ter and 36 in buffer and w				6.2
		,				f downed w	oody stems:		4		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)). Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indi	vidual trees	(at least 4 in	n) within the	buffer on ea	ach side of		
		the stream				T					1
	4.0	40	Left Side	1.0	10	40	1.0	Right Side			
	10	10	10	10	10	10	10	10	10	10	
											ł
											l
											1
7 V _{SNAG} Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags of				1							
7	\/	Number of	onogo (et la	oot 4" dbb o	and 26" tall)	nor 100 foo	t of otroom	Enter numb	or of opens	on oooh	
/	V _{SNAG}				t per 100 fee			Enter num	per or snags	on each	1.5
			Left Side:		0		Right Side:		1		-
8	330									Not Used	
				Enter numi Il be calcula		ys and snru	ibs on each s	side of the s	stream, and	ine amount	Not Used
		·	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		i strata. Spe	ecies	7.69
			p 1 = 1.0					Group 2 (-1.0)			
/	Acer rubru			Magnolia t	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	· ⁄atica		Albizia julib	rissin		Lonicera ta	
	Aesculus	_			n arboreum		Alliaria peti			Lotus corni	iculatus
	Asimina tı			Prunus sei						Lythrum sa	
		eghaniensis	7	Quercus a			Alternanthe philoxeroid			Microstegiun	
	Betula len	-		Quercus c			Aster tatari			Paulownia	
	Carya alb			Quercus in			Cerastium			Polygonum (
H	Carya gla		H	Quercus p			Coronilla va		H	Pueraria m	
	Carya gia			Quercus ru			Elaeagnus u			Rosa multin	
	Carya ova			Quercus v			Lespedeza			Sorghum h	
	Cornus flo			Sassafras			Lespedeza			Verbena bi	-
	Fagus gra			Tilia ameri			Ligustrum ok				
		americana		Tsuga can			Ligustrum s				
							Ligustiuiti	511 IGI IGG			
	Liriodendro			Ulmus ame	encana						
	iviagnolia	acuminata									
		5	Species in	Group 1				0	Species in	Group 2	

								rian/buffer a	zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,		er organic ı	material. W	oody debris	<4" diamete	er and <36"	85.00 %
			Left	Side			Righ	nt Side]	
		85	85	85	85	85	85	85	85		
11	V	Avorago no	rcontago co	over of borb	account your	etation (may	acuro only it	f tree cover is	-20%) D	o not	
	V_{HERB}	include woo	ody stems a percentages	it least 4" db	oh and 36" ta	all. Because	there may Enter the pe	be several la ercent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	nt Side			
Compl	e Variable 1	2 within the	ontire est	obmont of	the etreem						
12						od:					
12											0.69
	Land Use (Choose From Drop List) Runoff Score Runoff ment								Running Percent (not >100)		
	Forest and r	native range (>75% ground	•	1	55	55				
	Open space	(pasture, law	ns, parks, etc	c.), grass cov	er >75%			•	0.3	45	100
	-	▼									
	▼										
	_										
	▼										
								~			
	-							•			
	R	TB U3					N	otes:	•		
V	ariable	Value	VSI								
Vc	CANOPY	95 %	1.00								
VE	MBED	2.8	0.75								
Vs	UBSTRATE	3.00 in	1.00								
V _B	BERO	40 %	0.86								
V _L	WD	6.2	0.77								
V _T	DBH	10.0	1.00								
Vs	NAG	1.5	1.00								
Vs	SD	Not Used	Not Used								
Vs	RICH	7.69	1.00								
	ETRITUS	85.0 %	1.00								
	IERB	Not Used	Not Used								
V _v	VLUSE	0.69	0.73								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT15 of Ruth Trace Branch

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: RTB U2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.68
Biogeochemical Cycling	0.84
Habitat	0.74

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	93.64	1.00
V _{EMBED}	Average embeddedness of channel.	2.90	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.44	0.22
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.68	0.71
V _{TDBH}	Average dbh of trees.	7.10	0.69
V _{SNAG}	Number of snags per 100 feet of stream.	0.54	0.91
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.89	0.90
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	89.38	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	iradient	Headwat				entucky a alculato		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7539984	14
Pro		Buffalo Mou	ıntain						_	-82.251816	
	-		th Trace Bra	anch			_	_	pling Date:		
0.4					070	Ot T-	<u> </u>				
SA	R Number:	K1B 02	Reacn	Length (ft):	370	Stream Ty	/pe: Ephe	meral Stream	l		
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	₉ Y)		
Site a	and Timing:	Project Site				•	Before Proje	ct			•
Sample	Variables	1-4 in strea									
	V _{CCANOPY}	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.)								93.6 %	
				•							İ
	88	100	94	88	100	77	100	88	100	88	
	100	88	100	100							
2	V _{EMBED}	Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the									
							y fine sedim			-	
							composed of	i iine seaime	enis, use a i	aling score	
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating 5			overed suri	ounded or	buried by fir	ne sediment	(or bedrock	1	
		4					d, or buried by		•	•)	
		3					ed, or buried	•			
		2	51 to 75 pe	rcent of surf	ace covered	d, surrounde	ed, or buried	by fine sed	iment		
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	al surface)	
	List the rati	ngs at each	point below	:							İ
	1	5	5	3	1	3	3	1	3	5	
	4	2	1	4	1	1	3	4	5	3	
	5	1	1	3	4	5	1	3	4	4	
	3	1	4	3	3	3	5	3	5	1	
	1	4	4	3	1	3	4	1	1	3	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}	•	hly equidista	ant points	0.44 in
						point below	(bedrock s	hould be co	unted as 99	in, asphalt	
1			and or finer								
·	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.22	0.22	0.31	0.31	0.44	0.44	0.44	0.63	0.63	0.63	
	0.63	0.89	0.89	1.26	1.26	1.26	1.26	1.26	1.77	1.77	
	1.77	1.77	1.77	2.50	2.50	3.50	3.50	5.00	5.00	7.10	
4	V_{BERO}	•	e total perce				otal number of tal number of tal number of				200 %
			Left Bank:	37	0 ft		Right Bank:	37	0 ft	ı	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir		ter and 36 in buffer and w				5.7
						f downed w	oody stems:	2	21		
6	V_{TDBH}						ng cover is a	t least 20%)	. Trees are	at least 4	7.1
		List the dbh	measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream	below:								_
	V _{TDBH} Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side								l		
			15.8	4.9	8	5.5	5	5.6	8.6	4.1	
	5	8									
											ł
											1
											1
7	V_{SNAG}							Enter numb	er of snags	on each	0.5
			Left Side:				Right Side:		2		
8	V_{SSD}										N
						gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used
		F					Right Side:				
9	V_{SRICH}										
									strata. Spe	ecies	1.89
		•	p 1 = 1.0								
7	Acer rubru			Magnolia ti	ripetala	Group 2 (-1.0) Ailanthus altissima Lonicera jap					
	Acer sacc	harum		Nyssa sylv	-		Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	iculatus
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
		ghaniensis		Quercus al			philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba	a		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glai	bra		Quercus pr	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	ımbellata		Rosa multin	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus florida Sassafras albidum				albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol	btusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
		acuminata									
	J : u										
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. Wo	oody debris	<4" diamete	er and <36"	89.38 %
		long are inc		Side	it cover or th	e detritaria		t Side		1	
		85	90	85	95	90	100	80	90		
11	V	Average no	roomtogo oo	yor of borb	2000110 110 00	etation (mas	aura anlı if	troe cover is	-200() D	o not	
11	V_{HERB}	include woo	ody stems a	t least 4" dl	paceous vege oh and 36" ta h 200% are a	all. Because	there may l	be several la	ayers of grou	und cover	Not Used
		each subple		0:1			D'al	(O' 1-		1	
			Left	Side			Rign	t Side			
Sample	e Variable 1	2 within the	e entire cate	chment of	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Scor	e for watersh	ned:					1.00
		Land Use (Choose From Drop List) Runoff Score Runoff ment									Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				~	1	100	100
		▼									
	_										
	•	•									
		▼									
								•			
	•							•			
	R	TB U2					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	94 %	1.00	1							
V _E	MBED	2.9	0.78								
Vs	UBSTRATE	0.44 in	0.22								
V_{B}	ERO	200 %	0.00								
V _L	WD	5.7	0.71								
V _T	DBH	7.1	0.69								
	NAG	0.5	0.91								
Vs		Not Used	Not Used								
	RICH	1.89	0.90								
	ETRITUS	89.4 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Left Fork of Conley Branch

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFCB 1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.84
Habitat	0.89

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	97.00	1.00
V _{EMBED}	Average embeddedness of channel.	2.70	0.71
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	8.22	1.00
V_{TDBH}	Average dbh of trees.	12.66	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.22	0.43
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	77.50	0.95
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	Gradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.7481599)1
Pro	oject Name:		untain				i e		Ŭ	-82.232507	
	=		Conley Bra	nch			•	-	npling Date:		
SA	AR Number:	LFCB 1	Reach	Length (ft):	450	Stream Ty	rpe: Interi	mittent Strea	m	-	•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_{9Y})		
Site	and Timing:	Project Site				•	Before Projec	ct			•
Sample	Variables										
1	CCANOPY THE BUT OF THE									97.0 %	
	88	94	100	100	100	94	100	100	94	100	
					100	94	100	100	94	100	
2	along the stream. Select a particle from the bed. Before moving it, determine the percentage of the										2.7
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
		Rating	Rating Des	cription							
		5					buried by fin		•)	
		3					l, or buried b ed, or buried	•			
		2					ed, or buried				
		1					r buried by fi			l surface)	
	List the rati	ngs at each	point below	:							
	1	1	1	1	1	1	1	1	1	2	
	2	2	2	2	2	2	2	3	3	3	
	3	3	3	3	3	3	3	3	3	3	
	3	3	3	3	3	3	3	3	3	3	
	3	4	4	4	4	4	4	4	5	5	
3		along the s	tream; use t	he same po	ints and par	ticles as use	t no fewer the ed in V _{EMBED}				1.77 in
			ches to the r and or finer			point below	(bedrock st	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.44	0.44	0.44	0.44	0.63	0.63	0.63	0.63	0.89	
	0.89	1.26	1.77	1.77	1.77	1.77	1.77	1.77	2.50	2.50	
	3.50	3.50	5.00	7.10	7.10	7.10	7.10	7.10	10.10	10.10	
	10.10	14.30	14.30	20.00	40.00	80.00	99.00	99.00	99.00	99.00	
4 V _{BERO} Total percent of eroded stream channel bank. Enter the total number of feet of eroded bank on each side and the total percentage will be calculated If both banks are eroded, total erosion for the stream 200 %											
		side and the	-	entage will b	e calculated	I If both ban	iks are erod	led, total erd	osion for the	stream	200 %

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to the	e stream ch	annel (25 fe	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir			•	, ·		8.2
		p = 100 100				downed wo	oody stems:	3	37		
6	V_{TDBH}						ng cover is a	t least 20%)	. Trees are	at least 4	12.7
		List the dbh	measurem	ents of indiv	vidual trees	(at least 4 ir	n) within the	buffer on ea	ch side of	ļ	
		the stream	below:			•	,				_
	stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: 37 Number of lowned woody stems: 37 Number of snags (at least 4 in) within the buffer on each side of the stream below: 18 18 18 18 18 19 19 19 19 19										
		Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: Average dbh of trees (measure only if V _{CCANDS} y tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side 13.5 16.8 17.5 16.8 18.5 19.5 10.0 17.5 18.8 19.5 19.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0 17.5 10.0									
	16.8	6.5				10	17.5				
7	V_{SNAG}							Enter numb	er of snags	on each	0.2
			Left Side:		1		Right Side:	(0		
8	V_{SSD}										
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount No.								Not Used		
		por roo it o		i bo dalodia	iou.		Right Side:				
9	V_{SRICH}										
									strata. Spe	ecies	1.56
		•			TIGOX WIII DO		10111 111000 0		2 (-1.0)		
J	Acer rubru			Magnolia ti	ripetala						
				-	-						
	Aesculus	flava					-				
				-			-				
			7							-	
							Aster tatari	cus		•	
	Carya alba	а									
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multin	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	•				albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a	acuminata									
		7	Species in	Group 1				0	Species in	Group 2	

C	o \/o=!=!=!=	40 44!46.1	n at laa-4 ^	aubalete /	40" > 40"	u 4 me 4 \	in the election	ion/bff	one with:	OE 64 f	n aa a b
	e Variables The four sul	bplots shou	ıld be place	ed roughly	equidistant	ly along ea	ch side of t	he stream.		25 feet fror	ıı eacn
10	V _{DETRITUS}						naterial. Wo yer at each s		<4" diamete	er and <36"	77.50 %
			Left	Side			Righ	t Side] '	
		65	90	95	80	50	95	75	70	-	
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	asure only if	tree cover is	s <20%). D	o <i>not</i>	
	TIENS	include woo	ody stems a percentages	t least 4" db	h and 36" ta	all. Because	there may be Enter the per	e several la	yers of gro	und cover	Not Used
		each subplo		Side			Righ	t Side		1	
Sampl	e Variable 1										
12	V _{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ned:					1.00
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and n	ative range (:	>75% ground	d cover)				•	1	100	100
								•			
								•			
								•			
								•			
								•			
								•			
								•			
	LI	FCB 1					No	tes:			
V	ariable	Value	VSI								
V _c	CANOPY	97 %	1.00								
VE	MBED	2.7	0.71								
Vs	UBSTRATE	1.77 in	0.89								
V_{B}	ERO	200 %	0.00								
V _L	WD	8.2	1.00								
V_{T}	DBH	12.7	1.00								
Vs	NAG	0.2	0.43								
Vs	SD	Not Used	Not Used								
v_s	RICH	1.56	0.74								
	ETRITUS	77.5 %	0.95								
	ERB	Not Used	Not Used								
V_{w}	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Left Fork of Conley Branch

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFCB 1

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.65
Biogeochemical Cycling	0.49
Habitat	0.54

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	2.70	0.71
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	4.00	0.50
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	52.00	0.80
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	iradient	Headwat				entucky a alculator		ern Wes	t Virgini	a
	Team:	AC AG							M Northing:	37.7481599	91
Pro		Buffalo Mou	untain				•		ΓM Easting:		
	-		Conley Bra	nch			i	_	npling Date:		
67	R Number:	LFCB 1	-	Length (ft):	450	Stream Ty	(DO:				
					450			mittent Strea			•
	Top Strata:	Shi	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_{>Y})		
Site a	and Timing:	Project Site				▼	After Project				▼
Sample		1-4 in strea									
1		equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	r is at least 2			Not Used, <20%
Ī		cent cover n	neasuremer	its at each p	point below:						1
	0										
	\/	A	- h d - d d			Magazina	-t f	h a a 20 ma		ant mainta	
2	V_{EMBED}	along the st	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	2.7
				• .			y fine sedim		•		
							composed of	iiie seaiiiie	enis, use a i	alling score	
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating 5	Rating Des		overed sur	ounded or	buried by fin	e sediment	(or bedrock)	-
		4					l, or buried b		·)	1
		3					d, or buried	-			1
		2	51 to 75 pe	rcent of sur	face covered	d, surrounde	ed, or buried	by fine sed	iment		
		1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	ıl surface)	
	List the rati	ngs at each	point below	:							
	1	1	1	1	1	1	1	1	1	2	
	2	2	2	2	2	2	2	3	3	3	
	3	3	3	3	3	3	3	3	3	3	
	3	3	3	3	3	3	3	3	3	3	
	3	4	4	4	4	4	4	4	5	5	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}	•	hly equidista	ant points	1.77 in
	Enter partic	le size in ind	ches to the r	nearest 0.1	inch at each	point below	(bedrock sl	hould be co	unted as 99	in, asphalt	
_	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):						_
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.44	0.44	0.44	0.44	0.63	0.63	0.63	0.63	0.89	
	0.89	1.26	1.77	1.77	1.77	1.77	1.77	1.77	2.50	2.50	
	3.50	3.50	5.00	7.10	7.10	7.10	7.10	7.10	10.10	10.10	
	10.10	14.30	14.30	20.00	40.00	80.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number o				40 %
			Left Bank:	90) ft	1	Right Bank:	90) ft		

Sample	e Variables	5-9 within t	the entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea		ne number fi	om the entir		er and 36 in buffer and w				4.0
		'				f downed w	oody stems:	1	8	,	
6	V_{TDBH}						ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		inches (10	cm) in diam	eter. Enter	tree DBHs i	n inches.					Not Osed
				ents of indi	vidual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream				1		Diaht Cida			
			Left Side					Right Side			
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:	(0	'	
8	V_{SSD}						nes dbh) per				
			r is <20%). of stream wil			gs and shru	bs on each s	side of the s	tream, and t	the amount	52.0
		por 100 it c	Left Side:		17		Right Side:	1	17		
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	1.11
			ip 1 = 1.0	ind the Subi	ildex will be	Calculateu i	Tom mese u		2 (1 0)		
	Acer rubru		ip i = 1.0	Magnalia t	rinotolo		Ailanthus a	•	2 (-1.0)	I onigoro io	nonioo
7				Magnolia t	-					Lonicera ja	
	Acer sacci			Nyssa sylv			Albizia julib			Lonicera ta	
	Aesculus f			Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus sei	rotina		Alternanthe			Lythrum sa	licaria
	Betula alle	ghaniensis	J	Quercus a	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus c	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	9		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	ora		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multit	flora
	Carya ova	ta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	mericana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendroi	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
	agriolia (.Janmata									
		5	Species in	Group 1				0	Species in	Group 2	

							in the ripar		one within	25 feet from	n each
10	V _{DETRITUS}						naterial. Wo /er at each s		<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side] '	
		50	50	50	50	50	50	50	50		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" db s up through	h and 36" ta	all. Because	sure only if there may be need the percentage of	e several la cent cover o	yers of grou	und cover	50 %
		50		Side	50	50	Right		50		
		50	50	50	50	50	50	50	50		
Sample	e Variable 1	2 within the	e entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ned:					0.66
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	45
	Forest and r	native range (>75% ground	d cover)				_	1	50	95
	Forest and r	native range (<50% ground	d cover)				•	0.5	5	100
								•			
								•			
								•			
	-							•			
	<u> </u>	FCB 1					Not	es:			
V	ariable	Value	VSI								
	CANOPY	Not Used, <20%	Not Used								
VE	MBED	2.7	0.71								
Vs	UBSTRATE	1.77 in	0.89								
V_{B}	ERO	40 %	0.86								
VL	WD	4.0	0.50								
V _{TI}	овн	Not Used	Not Used								
Vs	NAG	0.0	0.10								
Vs	SD	52.0	0.80								
Vs	RICH	1.11	0.53								
V _D	ETRITUS	50.0 %	0.61								
V _H	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Left Fork of Conley Branch

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFCB 1

Tree/Sapling Strata

Functional Results Summary: En

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.69
Biogeochemical Cycling	0.67
Habitat	0.61

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	2.70	0.71
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.11	0.64
V_{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	65.00	0.79
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG		1 10101 -					M Northing:	37.7481599	1
Pro	oject Name:		untain						Ŭ,	-82.232507	
	-		Conley Bra	nch				-	- 1	Post-10 Yea	
SA	AR Number:	LFCB 1	Reach	Length (ft):	450	Stream Ty	/pe: Interi	mittent Strea	m		•
	Top Strata:	Tree	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	oy)		
Site	and Timing:	Project Site				•	After Project				•
Sample	Variables	1-4 in strea	m channel								
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure of een 0 and 1	only if tree/s	anopy. Meas apling cover Top Strata c	is at least 2			50.0 %
ĺ	•		neasuremer	•		50	50	50	50	5 0	
	50	50	50	50	50	50	50	50	50	50	
2	V _{EMBED}	along the st	tream. Sele	ct a particle	from the be	d. Before m	at no fewer t noving it, det y fine sedim	termine the	percentage	of the	2.7
	to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
		Rating	Rating Des								
		5	_				buried by fin		•)	
		3					l, or buried bed, or buried	•			
							ed, or buried				
		1					r buried by fi			l surface)	
	List the rati	ngs at each	point below	•							
	1	1	1	1	1	1	1	1	1	2	
	2	2	2	2	2	2	2	3	3	3	
	3	3	3	3	3	3	3	3	3	3	
	3	3	3	3	3	3	3	3	3	3	
0	3	4	4	4	4	4	4	4	5	5	
3		along the st	tream; use t	he same po	ints and par	ticles as use	t no fewer the				1.77 in
	•		ches to the r and or finer			point below	/ (bedrock st	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.44	0.44	0.44	0.44	0.63	0.63	0.63	0.63	0.89	
	0.89	1.26	1.77	1.77	1.77	1.77	1.77	1.77	2.50	2.50	
	3.50	3.50	5.00	7.10	7.10	7.10	7.10	7.10	10.10	10.10	
	10.10	14.30	14.30	20.00	40.00	80.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number on tal number of tal number of				40 %
			Left Bank:	90) ft	ı	Right Bank:	90) ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated.									5.1
		'				f downed we	oody stems:	2	23		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream									
		_	Left Side					Right Side			
	5	5	5	5	5	5	5	5	5	5	
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	NI I C	(1)	4 4 11 11 1	1.00" (11)	1001		F			
7	V_{SNAG}				t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}						es dbh) per				NI (III I
				Enter numb		gs and snru	bs on each s	side of the s	tream, and	ine amount	Not Used
		•	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	1.11
		•	ıp 1 = 1.0						2 (-1.0)		
1	Acer rubru			Magnolia tı	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	atica		Albizia julib	orissin		Lonicera ta	tarica
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa	
	Betula alle			Quercus al			philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba	a		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol	otusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame			-				
	Magnolia a			-							
	ag.rona (
		5	Species in	Group 1				0	Species in	Group 2	

		10-11 withi bplots shoບ							one within	25 feet fron	n each
10	V _{DETRITUS}				sticks, or oth			oody debris « subplot.	<4" diamete	er and <36"	65.00 %
				Side		<u> </u>		t Side		1	
		65	65	65	65	65	65	65	65		
11	V_{HERB}	Average pe	ercentage co	over of herba	aceous vege	etation (mea	sure only if	tree cover is	<20%). Do	o <i>not</i>	
	TIENS	include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may l	oe several la cent cover c	yers of grou	und cover	Not Used
		each subpl		s up imougi	1 200% are a	accepted. E	inter the per	cent cover c	n ground ve	egetation at	
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V _{WLUSE}	Weighted A	verage of R	unoff Score	e for watersh	ned:					
											0.67
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	45
	Forest and r	native range (>75% ground	l cover)				•	1	50	95
	Forest and r	native range (50% to 75%	ground cover)			•	0.7	5	100
								•			
								•			
								•			
								•			
								•			
	L	FCB 1					No	tes:			
Va	ariable	Value	VSI								
V _c	CANOPY	50 %	0.50								
VE	MBED	2.7	0.71								
Vs	UBSTRATE	1.77 in	0.89								
V_{B}	ERO	40 %	0.86								
VL	WD	5.1	0.64								
V _{TI}	DВH	5.0	0.29								
	NAG	0.0	0.10								
Vs		Not Used	Not Used								
	RICH	1.11	0.53								
	ETRITUS	65.0 %	0.79								
V _H	ERB	Not Used	Not Used								
V		0.67	0.71								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Left Fork of Conley Branch

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFCB 1

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.84
Habitat	0.85

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.14	0.87
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.56	0.69
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.22	0.43
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.7481599)1
Pro		Buffalo Mou	untain				•		J	-82.232507	
	=		Conley Bra	nch				_	npling Date:		
9.0	R Number:		•	Length (ft):	450	Stream Ty	(DO:				
								mittent Strea			
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	ογ)		
		Project Site				▼	After Project				▼
		1-4 in strea									
1		equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	is at least 2			95.0 %
			neasuremer								
	95	95	95	95	95	95	95	95	95	95	
		•									
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.1
				• .			y fine sedim		•		
			bed is comp				composed of	line seaime	enis, use a i	aling score	
			ness rating f			-	cles (rescale	d from Platt	s, Megahan	, and	
		Rating 5	Rating Des		overed cur	rounded or	buried by fin	o codimont	(or bodrock	\	
		4					l, or buried b		·)	
		3					ed, or buried	•			
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by fi	ine sedimer	nt (or artificia	ıl surface)	
	List the rati	ngs at each	point below	:	•						
	1	1	1	1	1	1	1	1	1	2	
	2	3	3	3	3	3	3	3	3	3	
	3	3	3	3	3	3	3	3	3	3	
	3	3	4	4	4	4	4	4	4	4	
0	4	5	5	5	5	5	5	5	5	5	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}	•	nıy equiaista	ant points	1.77 in
	•		ches to the rand or finer			point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.44	0.44	0.44	0.44	0.63	0.63	0.63	0.63	0.89	
	0.89	1.26	1.77	1.77	1.77	1.77	1.77	1.77	2.50	2.50	
	3.50	3.50	5.00	7.10	7.10	7.10	7.10	7.10	10.10	10.10	
	10.10	14.30	14.30	20.00	40.00	80.00	99.00	99.00	99.00	99.00	
4	V _{BERO}						tal number o				
	DENO	•	e total perce				nks are eroc				40 %
		• •	Left Bank:	90) ft	I	Right Bank:	90) ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to the	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}		ch. Enter th	e number fr	om the entir		er and 36 in				5.6
		p = 1 = 1 = 1				downed wo	oody stems:	2	.5		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream									•
		_	Left Side					Right Side			
	10	10	10	10	10	10	10	10	10	10	
	10	10	10	10	10	10	10	10	10	10	
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.2
			Left Side:		1		Right Side:		0		
8	V_{SSD}						nes dbh) per				
		if tree cover per 100 ft o				gs and shrul	bs on each s	side of the s	tream, and t	the amount	Not Used
		per roon o	Left Side:	i be calculat	icu.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	1.11
			p 1 = 1.0	na the subii	idex will be	Calculated I	TOTT THESE O		2 (-1.0)		
7	Acer rubru		<u> </u>	Magnolia tı	rinetala		Ailanthus a	•	2 (-1.0)	Lonicera ja	nonica
	Acer sacc			Nyssa sylv	-		Albizia julib			Lonicera ta	
	Aesculus i			-			-				
				Oxydendrum			Alliaria peti	olata		Lotus corni	
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
	Betula alle	ghaniensis	✓	Quercus al	ba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	Э		Quercus in	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum
	Carya glal	bra		Quercus pr	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo			Sassafras a	albidum		Lespedeza			Verbena br	•
	Fagus gra			Tilia amerio			Ligustrum ok				
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro			Ulmus ame							
				Ullius alle	o i i Cai Ia						
	Magnolia a	acuminata									
		5	Species in	Group 1				0	Species in	Group 2	

Sample	Variables	10-11 within	n at loast 8	subplots (40" × 40" o	r 1m v 1m)	in the rings	ian/huffor z	one within	25 feet fron	n nach	
					equidistant				One within	23 1661 11011	ii eacii	
10	V _{DETRITUS}				sticks, or oth at cover of th				<4" diamete	er and <36"	85.00 %	
			Left	Side			Righ	t Side] '		
		85	85	85	85	85	85	85	85			
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	<20%). D	o not		
	TILKB	include woo	ody stems a	t least 4" db	oh and 36" ta	all. Because	there may l	oe several la	yers of gro	und cover	Not Used	
		vegetation each subple		s up through	n 200% are a	accepted. E	nter the per	cent cover c	of ground ve	egetation at	1101 0000	
				Side			Righ	t Side] '		
Sample		2 within the	e entire cate	chment of t	the stream.							
12	V _{WLUSE}	Weighted A	Average of R	Runoff Score	e for watersh	ned:					0.69	
		Dune# 10/ in Catala										
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent	
											(not >100)	
	Forest and r	native range (>75% ground	d cover)					1	55	55	
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	100	
	_											
		▼										
								•				
	-							•				
								_				
	-							•				
	<u>.</u>	FCB 1					No	tes:				
V:	ariable	Value	VSI									
	CANOPY	95 %	1.00									
	MBED	3.1	0.87									
	UBSTRATE	1.77 in	0.89									
	ERO	40 %	0.86									
V _L		5.6	0.69									
V _{TI}		10.0	1.00									
	NAG	0.2	0.43									
Vss	SD	Not Used	Not Used									
Vsi	RICH	1.11	0.53									
	ETRITUS	85.0 %	1.00									
V _{HI}	ERB	Not Used	Not Used									
V _w	LUSE	0.69	0.73									

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Left Fork of Conley Branch

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFCB 2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.86
Habitat	0.86

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.71	1.00
V _{EMBED}	Average embeddedness of channel.	2.80	0.75
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.08	0.54
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	8.00	1.00
V_{TDBH}	Average dbh of trees.	12.66	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	88.75	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	radient	Headwat				entucky a alculato		ern Wes	t Virgini	a
	Team:	AC AG							M Northina:	37.7439715	53
Pro	oject Name:		untain						_	-82.230430	
	=		Conley Bra	nch			•		npling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/pe: _{Inter}	mittent Strea		<u> </u>	•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	o _Y)		
Site	and Timing:	Project Site				•	Before Proje	ct			•
Sample	• Variables										
20%, enter at least one value between 0 and 19 to trigger Top Strata choice.)										95.7 %	
	List the percent cover measurements at each point below:										•
	88	82	94	94	100	94	100	94	100	100	1
	100	100	94	100							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer in noving it, de by fine sedim	termine the	percentage	of the	2.8
							composed of				
			bed is comp				-		r	Ü	
		Embedded	ness rating f	or gravel, co	obble and bo	oulder partic	cles (rescale	d from Platt	s, Megahan	, and	
		Minshall 19	183)								
		Rating	Rating Des								
		5					buried by fir			2)	
		3					d, or buried bed, or buried	•			
		2					ed, or buried				
		1	•				r buried by f	•		al surface)	
	List the rati	ngs at each	point below	:							•
	3	1	4	4	3	3	4	3	4	3	
	3	3	2	3	1	1	1	3	3	3	
	2	2	3	3	1	3	2	3	5	3	
	5	1	1	3	3	4	2	3	4	3	
_	1	4	4	3	3	4	3	2	2	3	
3	W _{SUBSTRATE} Median stream channel substrate particle size. Measure at no fewer than 30 roughly equidistant points along the stream; use the same points and particles as used in V _{EMBED} .								1.08 in		
			ches to the r and or finer			point below	v (bedrock s	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.16	0.16	0.22	
	0.31	0.31	0.31	0.31	0.31	0.31	0.44	0.44	0.44	0.63	
	0.63	0.63	0.89	0.89	0.89	1.26	1.77	1.77	1.77	1.77	
	1.77	2.50	2.50	2.50	2.50	2.50	2.50	3.50	3.50	3.50	
	5.00	7.10	10.10	14.30	20.00	40.00	80.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				otal number onks are eroo				200 %
			Left Bank:	45	0 ft		Right Bank:	45	0 ft		

Sampl	le Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}		h. Enter th	e number fr	om the entir		er and 36 ind ouffer and wi				8.0
						f downed w	oody stems:	3	36		'
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	least 20%)	. Trees are	at least 4	12.7
		List the dbh		ents of indiv	vidual trees	(at least 4 ir	n) within the l	ouffer on ea	ach side of		
		tilo otrodin	Left Side					Right Side			
	13.5	5.3	6	28.5	11.6	17.5	15.1	9.5	13.8	5.7	
	16.8	6.5				10	17.5				
7	V_{SNAG}	Number of	snags (at le	ast 4" dbh a	and 36" tall)	per 100 fee	t of stream.	Enter numb	er of snags	on each	
	5.15				t per 100 fee				· ·		0.4
			Left Side:		1		Right Side:		1		
8	V_{SSD}						es dbh) per				N
		per 100 ft o	,			gs and snru	bs on each s	ide of the s	tream, and	ine amount	Not Used
		•	Left Side:				Right Side:				•
9	V_{SRICH}						m reach. Ch				
							ve species particles de from these de		strata. Spe	ecies	1.56
		•	p 1 = 1.0								
7	Acer rubru		·	Magnolia ti	ripetala		Ailanthus a		2 (-1.0)	Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	-		Albizia julib	rissin		Lonicera ta	•
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tı	riloba		Prunus ser	otina		Alternanthe	ra		Lythrum sa	licaria
	Betula alle	ghaniensis	J	Quercus a	lba		philoxeroide			Microstegiun	n vimineum
	Betula len	nta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alb	а	H	Quercus in	nbricaria		Cerastium t	ontanum	A	Polygonum (cuspidatum
	Carya gla	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	alis		Quercus ru	ıbra		Elaeagnus ui	mbellata		Rosa multi	flora
	Carya ova	ata		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	asiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob	tusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	inense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
		acuminata									
		7	Species in	Group 1				0	Species in	Group 2	

		10-11 within							one within	25 feet from	n each
10	V _{DETRITUS}					er organic n e detrital lay		oody debris · subplot.	<4" diamete	er and <36"	88.75 %
			Left	Side			Righ	t Side]	
		100	95	95	90	80	75	90	85		
11	V_{HERB}	Average pe	ercentage co	over of herba	aceous vege	etation (mea	sure only if	tree cover is	s <20%). De	o not	
	TIEND	include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may b	oe several la	yers of grou	und cover	Not Used
		each subple		s up tnrougr	1 200% are a	ассертеа. Е	nter the per	cent cover o	or ground ve	egetation at	
			Left	Side			Righ	t Side] '	
Sample	o Variable 1	2 within the	ontiro cate	chmont of t	the stream						
		2 within the				a di					
12	V _{WLUSE}	vveignted A	werage or R	turion Score	e for watersh	iea.					1.00
									Runoff	% in Catch	Running
			Land	Use (Choos	se From Dro	p List)			Score	ment	Percent (not >100)
	Forest and r	native range (:	>75% around	d cover)				▼	1	100	100
				,					·	.00	
								_			
	_										
	-							_			
	_							_			
	-							•			
	L	FCB 2					No	tes:			
V	ariable	Value	VSI								
Vc	CANOPY	96 %	1.00								
V _E	MBED	2.8	0.75								
Vs	UBSTRATE	1.08 in	0.54								
	ERO	200 %	0.00								
V _L		8.0	1.00								
	DBH	12.7	1.00								
	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	88.8 %	1.00								
	ERB	Not Used	Not Used								
V _W	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Right Fork of Conley Branch

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFCB 1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.78
Habitat	0.89

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	92.29	1.00
V _{EMBED}	Average embeddedness of channel.	2.42	0.61
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	8.22	1.00
V _{TDBH}	Average dbh of trees.	10.21	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.89	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	82.50	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	Gradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.7474438	34
Pro		Buffalo Mou	untain				•		•	-82.249752	
	-		of Conley Br	anch			•	_	npling Date:		
SA	R Number:			Length (ft):	450	Stream Ty	/pe: Interi	mittent Strea		<u> </u>	▼
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	₉ Y)		
Site a	and Timing:	Project Site				•	Before Projec	ct			•
Sample	Variables	1-4 in strea	m channel								
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure of een 0 and 1	only if tree/s	anopy. Meas apling cover Top Strata c	is at least 2			92.3 %
	•		neasuremer			00	100	0.4	100	100	
	76 100	88 100	82 100	76 88	100	88	100	94	100	100	
2	V _{EMBED}	Average en	nbeddednes tream. Sele	s of the stre	from the be	d. Before n	at no fewer t noving it, det y fine sedim	termine the	percentage	of the	2.4
		to the follow of 1. If the	ving table. I bed is comp ness rating f	f the bed is osed of bed	an artificial s Irock, use a	surface, or o	omposed of	fine sedime	ents, use a r	ating score	
		Rating	Rating Des								
		5	_				buried by fin		•)	
		3					l, or buried bed, or buried	•			
		2					ed, or buried				
		1					r buried by fi			l surface)	
	List the rati	ngs at each	point below								
	1	1	2	1	1	1	3	2	1	2	
	2	2	4	4	3	3	1	1	2	4	
	2	3	3	5	5	5	1	1	1	4	
	2	2	2	3	3	3	3	4	1	3	
	3	3	2	2	2	4	2	2	3	1	
3		along the s	tream; use t	he same po	ints and par	ticles as use	t no fewer the ed in V _{EMBED}				3.50 in
			ches to the r and or finer			point below	/ (bedrock st	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.22	0.31	
	0.44	0.63	0.89	0.89	0.89	0.89	1.26	1.77	1.77	2.50	
	2.50	2.50	2.50	3.50	3.50	3.50	3.50	3.50	5.00	5.00	
	5.00	5.00	7.10	7.10	7.10	7.10	10.10	10.10	10.10	10.10	
	10.10	10.10	14.30	14.30	20.00	40.00	40.00	80.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number on tal number of tal number of				200 %
			Left Bank:	45	0 ft	I	Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated.									
		Number of downed woody stems: 37									
6	V_{TDBH}	V _{TDBH} Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches.									10.2
		List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of									
		the stream below:									•
	Left Side						Right Side			l	
	13	8	8	9		12	8	9	6	7	
	13.3	5	17.1	14.8	5.4	13.2	5.4	7.7	21.7	13	
	7.5										
											ł
											ł
											1
7	V _{SNAG}		• •		and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.9
			Left Side:		1		Right Side:		3		
8	V_{SSD}						nes dbh) per				
				Enter numb		gs and shru	bs on each s	side of the s	tream, and t	he amount	Not Used
		per 100 it o	Left Side:	i de calcula	ieu.		Right Side:				
9	V_{SRICH}	Riparian ve	getation spe	ecies richne	ss per 100 f	eet of strea	m reach. Ch	neck all spe	cies present	from	
							ve species p		I strata. Spe	ecies	1.56
		•		ind the subir	ndex will be	caiculated f	rom these da		0 (4.0)		
	A		p 1 = 1.0	M			A :1 = (1- · ·	-	2 (-1.0)	1! !	
<u> </u>	Acer rubru			Magnolia ti	-		Ailanthus a			Lonicera ja	
	Acer sacc			Nyssa sylv			Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	iculatus
	Asimina tr	iloba		Prunus ser	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	I	Quercus al	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	Э		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ob				
	Fraxinus a			Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame			J. 2.2. 3				
				Jiiius ailie	лоана						
	Magnolia a	acummala									
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	82.50 %
		long are me		Side	11. 00 001 01 111	o dotinaria,	e detrital layer at each subplot. Right Side			1	
		60	80	90	100	75	75	85	95		
	.,								000() B	L	
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" dl s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					
											1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
								•			
	<u> </u>							•			
								▼			
	•							•			
								▼			
	-							•			
	R	FCB 1					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	92 %	1.00	1							
V _E	MBED	2.4	0.61								
Vs	UBSTRATE	3.50 in	1.00								
V _B	ERO	200 %	0.00								
V _L	WD	8.2	1.00								
V _T	DBH	10.2	1.00								
Vs	NAG	0.9	1.00								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	82.5 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of Right Fork of Conley Branch

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFCB U2

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.78
Habitat	0.88

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	94.00	1.00
V _{EMBED}	Average embeddedness of channel.	2.42	0.61
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.26	0.63
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	10.67	1.00
V _{TDBH}	Average dbh of trees.	10.21	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	80.63	0.98
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	radient	Headwai				entucky a alculatoi		ern wes	t virgini	a
	Team:	AC AG							M Northina:	37.7443070)4
Pro	oject Name:		untain						_	-82.239797	
			nt Fork of Co	onley Branc	 h		_	-	npling Date:		-
0.4				-		Ot	·			<u></u>	
5/	AR Number:	RFCB U2	Reacn	Length (ft):	450	Stream Ty	/pe: Interi	mittent Strea	m		•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	_{PY})		
Site	and Timing:	Project Site				•	Before Projec	ct			•
Sample	Variables	1-4 in strea	m channel								
1		equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Meas apling cover Top Strata c	is at least 2			94.0 %
	List the per	cent cover r	neasuremer	nts at each p	point below:	1					
	94	100	94	100	100	88	88	100	100	100	Ī
	82	88	94	88							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer t noving it, det	termine the	percentage	of the	2.4
							y fine sedim				
			-				composed of	Tine seaime	ents, use a i	rating score	
	of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and										
		Minshall 19	•								
			Rating Des								
		5					buried by fin		·	()	
		<u>4</u> 3					l, or buried bed, or buried	•			
		2					ed, or buried				
		1					r buried by fi			al surface)	
	List the ration	ngs at each	point below		· · · · · · · · · · · · · · · · · · ·	•	•		1	,	
	1	1	2	1	1	1	3	2	1	2	
	2	2	4	4	3	3	1	1	2	4	
	2	3	3	5	5	5	1	1	1	4	
	2	2	2	3	3	3	3	4	1	3	
	3	3	2	2	2	4	2	2	3	1	
3	V _{SUBSTRATE}						t no fewer the	•	hly equidista	ant points	1.26 in
	Enter partic	le size in in	ches to the i	nearest 0.1	inch at each	noint helow	(bedrock sł	nould be co	unted as 99	in asnhalt	
			and or finer			point below	(bedrock si	louid be co	unieu as 33	iri, aspriait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.16	
	0.22	0.22	0.31	0.31	0.44	0.63	0.63	0.63	0.89	0.89	
	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.77	1.77	1.77	
	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50	3.50	
	5.00	5.00	7.10	10.10	14.30	14.30	20.00	20.00	40.00	80.00	
4	V_{BERO}						tal number o				
T	• REKO		e total perce				iks are erod				200 %
		, 20 up	Left Bank:	45	O ft		Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated.									10.7
		Number of downed woody stems: 48									
6	V_{TDBH}	Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches.									10.2
		List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of									
		the stream below:									-
		•	Left Side					Right Side	_	•	
	13	8	8	9		12	8	9	6	7	
	13.3	5	17.1	14.8	5.4	13.2	5.4	7.7	21.7	13	
	7.5										
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.4
			Left Side:		1		Right Side:		1		
8	V_{SSD}						es dbh) per				
				Enter numb I be calculat		gs and shru	bs on each s	side of the s	stream, and t	the amount	Not Used
		per roone e	Left Side:	i de calculat	icu.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p		I strata. Spe	ecies	1.56
			p 1 = 1.0	ind the Subii	idex will be	calculated i	rom these da		2 (1 0)		
	Acer rubru		p 1 = 1.0	Magnalia t	rinatala		Ailanthus a		2 (-1.0)	Lanicara ia	nonico
√				Magnolia ti	-					Lonicera ja	
	Acer sacc			Nyssa sylv			Albizia julib			Lonicera ta	
	Aesculus			Oxydendrun			Alliaria peti	olata		Lotus corni	
	Asimina tr	iloba		Prunus ser	otina		Alternanthe			Lythrum sa	licaria
	Betula alle	ghaniensis	✓	Quercus al	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob				
	Fraxinus a			Tsuga cana	adensis		Ligustrum s				
	Liriodendro			Ulmus ame			•				
	Magnolia a			2							
	wayiioila	uoummata									
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. Wo	oody debris	<4" diamete	er and <36"	80.63 %
		long are me		Side			Right Side			1	
		60	80	95	90	70	75	85	90		
44	\ <u>'</u>	A				4-4:		4	000() D		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	baceous vege bh and 36" ta h 200% are a	all. Because	there may l	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	o Variablo 1	2 within the	ontire cate	chmont of	the stream.						
12					e for watersh	od:					
12	V _{WLUSE}	vveigitieu <i>P</i>	werage or N	Kurion Scor	e ioi watersi	ieu.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								~			
								•			
								•			
								_			
								•			
								~			
	-							•			
	RF	CB U2					No	otes:	•	•	
V	ariable	Value	VSI								
V _c	CANOPY	94 %	1.00								
V _E	MBED	2.4	0.61								
Vs	UBSTRATE	1.26 in	0.63								
V_{B}	ERO	200 %	0.00								
V _L	WD	10.7	1.00								
V _T	DBH	10.2	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	80.6 %	0.98								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT2 of Right Fork of Conley Branch

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFCB U3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.81
Habitat	0.82

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	99.14	1.00
V _{EMBED}	Average embeddedness of channel.	2.56	0.66
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.89	0.45
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	8.33	1.00
V_{TDBH}	Average dbh of trees.	10.21	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	3.89	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	88.75	1.00
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.7475415	53
Pro		Buffalo Mou	untain						_	-82.239099	
	-	UT2 of Righ		onley Branc	h			-	pling Date:		_
9.0	R Number:			Length (ft):	180	Stream Ty	'ne:				
								mittent Strea			•
	Top Strata:	l re	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	γ)		
		Project Site				▼	Before Projec	ct			▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure of the contract of t	only if tree/s	anopy. Measapling cover Top Strata c	is at least 2			99.1 %
		cent cover r				400	400	0.4	400	400	
	100	100	100	100	100	100	100	94	100	100	
	100	100	100	94	om obonno	Magazira	at na fawar t	han 20 rau	ably oquidiot	ant paints	
2	Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according										2.6
				• .			•		•		
	to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.										
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating Rating Description									
		5			overed. surr	ounded, or	buried by fin	e sediment	(or bedrock)	
		4					d, or buried b		•	,	
		3					ed, or buried				
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by fi	ine sedimer	it (or artificia	ıl surface)	
ı		ngs at each	-		_	_			_	_	
	1	1	1	1	1	1	1	1	2	2	
	2	2	4	4	3	3	2	2	2	4	
	3	3	3	2	3	2	2	2	2	4	
	2	2	2	3	3	3	3	4	2	3	
2	3	3	2	3	3	4	2	5	5	5	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}	•	niy equidista	ani points	0.89 in
	•	cle size in inc as 0.0 in, s				point below	/ (bedrock st	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.22	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.63	0.63	0.63	
	0.22	0.22	0.22	0.89	0.89	0.89	1.26	1.26	1.26	1.26	
	1.26	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	5.00	80.00	7.10	10.10	14.30	20.00	40.00	
4	V_{BERO}						tal number o				
r	* REKO	•	e total perce				nks are erod				200 %
		. '	Left Bank:	18	0 ft	I	Right Bank:	18	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir						8.3
		por 100 100	a or otrouri	min bo caree		f downed we	oody stems:	•	15		
6	V_{TDBH}				ly if V _{CCANOP}	_Y tree/saplir		t least 20%)). Trees are	at least 4	10.2
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								•
	stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: Number of downed woody stems: 15 Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: 13 8 8 9 12 8 9 6 7 13.3 5 17.1 14.8 5.4 13.2 5.4 7.7 21.7 13 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5										
	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: 15 Number of stems only if V _{CCANON} , tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side										
		5	17.1	14.8	5.4	13.2	5.4	7.7	21.7	13	
	7.5										
7	V_{SNAG}							Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8											
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount No.								Not Used		
		per roone e		i be calculat	icu.		Right Side:				
9	V_{SRICH}						m reach. Ch				
									I strata. Spe	ecies	3.89
		•		ind the Subii	idex will be	calculated i	TOTTI THESE G		2 (1 0)		
	Acer rubri			Magnolia ti	rinotala						
				-	-						
				-			-				
				-			Alliaria peti	olata			
										-	
	Betula alle	ghaniensis	✓	Quercus al	ba		prilioxerola	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		-				
							_				
				-			J. 2.2. 3				
				Jinus ante	, iouria						
	Magnolia a	acummata									
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic i	material. W	oody debris	<4" diamete	er and <36"	88.75 %
		long are inc		Side	il cover or tri	le detritar la	-	nt Side		1	
Sample V 12 V 12 V Varia	85	80	100	90	75	80	100	100	4		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" dl s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	nt Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream						
	V _{WLUSE}				e for watersh						
	WLUSE	vvolginou /	wordgo or r	turion coor	o for materer						1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
	Ī	▼									
	Ī										
		▼									
		▼									
								•			
								•			
	RF	CB U3					No	otes:	•		
V	ariable	Value	VSI								
V _c	CANOPY	99 %	1.00	1							
V _E	MBED	2.6	0.66								
Vs	UBSTRATE	0.89 in	0.45								
V _B	ERO	200 %	0.00								
V _L	WD	8.3	1.00								
V _T	DBH	10.2	1.00								
Vs	NAG	0.0	0.10								
		Not Used	Not Used								
		3.89	1.00								
	ETRITUS	88.8 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT2 of Right Fork of Conley Branch

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFCB U3

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.58
Biogeochemical Cycling	0.47
Habitat	0.43

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	2.56	0.66
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.89	0.45
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	3.89	0.49
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	52.22	0.80
V _{SRICH}	Riparian vegetation species richness.	2.78	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virgini	a
	Team:	AC AG							M Northing:	37.747541	53
Pro		Buffalo Mou	untain						ΓM Easting:		
	-	UT2 of Righ		onley Branc	 h			_	pling Date:		
21	R Number:			Length (ft):		Stream Ty	(DO:				
					180			mittent Strea			•
	Top Strata:	Sh	rub/Herb Str	ata	(determined	from perce	ent calculate	d in V _{CCANOR}	ογ)		
		Project Site				▼	After Project				▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Meas apling cover Top Strata c	r is at least 2			Not Used, <20%
List the percent cover measurements at each point below:									1		
	0										
	\/	A	- -			M = = =	-1 (ll 00	-l- li -li - (
2	along the stream. Gelect a particle from the bed. Before moving it, determine the percentage of the										2.6
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according										
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.									
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)]
	Rating Description 5 <- specific percent of surface covered, surrounded, or buried by fine sediment (or bedrock)										
		5 4					l, or buried b		•)	-
		3					ed, or buried	-			1
		2					d, or buried				1
		1	>75 percen	t of surface	covered, su	rrounded, o	r buried by fi	ine sedimer	ıt (or artificia	ıl surface)	
	List the rati	ngs at each	point below	:							_
	1	1	1	1	1	1	1	1	2	2	
	2	2	4	4	3	3	2	2	2	4	
	3	3	3	2	3	2	2	2	2	4	
	2	2	2	3	3	3	3	4	2	3	
	3	3	2	3	3	4	2	5	5	5	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED} .	•	hly equidista	ant points	0.89 in
	Enter partic	ele size in inc	ches to the r	nearest 0.1	inch at each	point below	(bedrock sł	hould be co	unted as 99	in, asphalt	
	•	as 0.0 in, s				po 50.0	(500.00.00.			, aopinan	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.22	
	0.22	0.22	0.22	0.31	0.31	0.31	0.44	0.63	0.63	0.63	
	0.63	0.89	0.89	0.89	0.89	0.89	1.26	1.26	1.26	1.26]
	1.26	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50]
	3.50	3.50	3.50	5.00	80.00	7.10	10.10	14.30	20.00	40.00	1
4	V_{BERO}	•	e total perce				tal number o				40 %
		- '	Left Bank:	36	S ft	1	Right Bank:	36	S ft		

Sample	e Variables	5-9 within t	the entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea		ne number fi	om the entir		ter and 36 in buffer and w				3.9
		•				f downed w	oody stems:		7	,	
6	V_{TDBH}						ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		inches (10	cm) in diam	eter. Enter	tree DBHs i	n inches.					Not Osed
				ents of indi	vidual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream						D: 1 / 0: 1			1
			Left Side					Right Side			
7	V_{SNAG}		• ,		and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V _{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only										
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.								52.2		
		per 100 it c	Left Side:		tea. 17		Right Side:	4	7		
9	V_{SRICH}	Riparian ve	egetation sp	ecies richne	ss per 100 f	eet of strea	m reach. Ch	neck all spec	cies present	from	
							ve species p		strata. Spe	ecies	2.78
		-		and the subi	ndex will be	calculated t					
			ıp 1 = 1.0			Group 2 (-1.0)					
✓	Acer rubru			Magnolia t	•		Ailanthus a			Lonicera ja	ponica
	Acer sacci			Nyssa sylv			Albizia julib	rissin		Lonicera ta	tarica
	Aesculus i	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus sei	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	1	Quercus a	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus c	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	3		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	ora		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ol	otusifolium			
	Fraxinus a	mericana		Tsuga can	adensis		Ligustrum	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
	J ====										
		5	Species in	Group 1				0	Species in	Group 2	

									one within	25 feet from	n each
10	V _{DETRITUS}	Average pe	ercent cover	of leaves, s	sticks, or oth	er organic n	naterial. Wo	ody debris «	<4" diamete	er and <36"	50.00 %
		long are inc		-	t cover of th	e detrital lay		-		,	30.00 //
Sample 12 Vai Vai Vai Vai Vai Vai Vai Va		50	Left 50	Side 50	50	50	Right 50	Side 50	50	1	
		30	50	30	50	30	30	50	30	1	
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" db s up through	aceous vege oh and 36" ta n 200% are a	all. Because	there may be inter the per	e several la cent cover c	yers of grou		50 %
				Side				Side			
		50	50	50	50	50	50	50	50		
Comple	Variable 1	2 within the	ontire est	hmont of t	the etreem						
	V _{WLUSE}				e for watersh	ned:					0.66
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (:	>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and r	native range (-	<50% ground	d cover)				•	0.5	5	100
	•							•			
▼											
	-										
								•			
								•			
	RF	CB U3					No	tes:			
Va	ariable	Value	VSI								
Vc	CANOPY	Not Used, <20%	Not Used								
VE	MBED	2.6	0.66								
V _{st}	JBSTRATE	0.89 in	0.45								
V _{BI}	ERO	40 %	0.86								
VLV	WD	3.9	0.49								
V _{TI}	ОВН	Not Used	Not Used								
V_{SNAG} 0.0 0.10											
Vss	SD	52.2	0.80								
Vsi	RICH	2.78	1.00								
	ETRITUS	50.0 %	0.61								
V _{HI}		50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT2 of Right Fork of Conley Branch

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFCB U3

Tree/Sapling Strata

Functional Results Summary: Er

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.62
Biogeochemical Cycling	0.65
Habitat	0.55

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V_{EMBED}	Average embeddedness of channel.	2.56	0.66
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.89	0.45
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.00	0.63
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.78	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	65.00	0.79
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a	
	Team:	AC AG							M Northing:	37.7475415	53	
Pro		Buffalo Mou	untain						ū	-82.239099		
	-	UT2 of Righ		onley Branc	 h			-	_	Post-10 Yea		
9.0	R Number:			Length (ft):	180	Stream Ty	'ne:					
								mittent Strea			•	
	Top Strata:	l re	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	ογ)			
		Project Site				▼	After Project				▼	
		1-4 in strea										
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Meas apling cover Top Strata c	is at least 2			50.0 %	
		cent cover r									j	
	50	50	50	50	50	50	50	50	50	50		
				6.41								
2	along the stream. Delect a particle from the bed. Delote moving it, determine the percentage of the										2.6	
		surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score										
		of 1. If the bed is composed of bedrock, use a rating score of 5.										
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
			Rating Rating Description									
		5			overed, suri	ounded, or	buried by fin	e sediment	(or bedrock)		
		4					d, or buried b		•	/		
		3					ed, or buried	•				
		2					ed, or buried					
		1			covered, su	rrounded, o	r buried by fi	ine sedimer	t (or artificia	ıl surface)		
ı		ngs at each	-			_			_	_		
	1	1	1	1	1	1	1	1	2	2		
	2	2	4	4	3	3	2	2	2	4		
	3	3	3	2	3	2	2	2	2	4		
	2	2	2	3	3	3	3	4	2	3		
3	3	3 Madian atro	2	3	3	4 Magaura a	2 It no fewer th	5	5	5		
3	V _{SUBSTRATE}						ed in V _{EMBED}	•	niy equidista	ani points	0.89 in	
	•					point below	/ (bedrock sł	nould be co	unted as 99	in, asphalt		
		as 0.0 in, s		particles as	0.08 in):							
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.22	i	
	0.22	0.22	0.22	0.31	0.31	0.31	0.44	0.63	0.63	0.63		
	0.63	0.89	0.89	0.89	0.89	0.89	1.26	1.26	1.26	1.26		
	1.26	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50		
	3.50	3.50	3.50	5.00	80.00	7.10	10.10	14.30	20.00	40.00		
4	V_{BERO}	•	e total perce				otal number of tal nks are erod				40 %	
			Left Bank:	36	S ft	I	Right Bank:	36	i ft			

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		ter and 36 ind buffer and wi				5.0
		•			Number of	f downed w	oody stems:		9		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indi	vidual trees	(at least 4 in	n) within the	buffer on ea	ach side of	ļ	
		the stream									•
	_	_	Left Side	_	_	_	_	Right Side	_	_	
	5	5	5	5	5	5	5	5	5	5	
7	\/	Number of	anaga (at la	oot 4" dbb o	and 26" tall)	nor 100 foo	t of stream.	Entor numb	or of anoga	on ooob	
,	$V_{\sf SNAG}$				t per 100 fee			Enter num.	ei oi silags	on each	0.0
			Left Side:		0		Right Side:		0		_
8	330								Nint Linns		
									Not Used		
		•	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	2.78
			ıp 1 = 1.0			Group 2 (-1.0)					
/	Acer rubru			Magnolia t	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	atica		Albizia julib	rissin		Lonicera ta	
	Aesculus	flava			n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tı			Prunus sei	rotina		Alternanthe			Lythrum sa	
		ghaniensis	7	Quercus a			philoxeroid			Microstegiun	
	Betula len	_		Quercus c			Aster tatari	C118		Paulownia	
	Carya alb			Quercus in			Cerastium			Polygonum o	
Ħ	Carya gla		Ħ	Quercus p			Coronilla va		Ħ	Pueraria m	
	Carya ova			Quercus ru			Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova			Quercus v			Lespedeza			Sorghum h	
	Cornus flo			Sassafras			Lespedeza			Verbena br	•
	Fagus gra			Tilia ameri			Ligustrum ok				
		americana		Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame			3404111				
				Jiiilus aille	Jiloalla						
	iviayriolla	acuminata									
		5	Species in	Group 1				0	Species in	Group 2	

		10-11 within							one within	25 feet from	n each
10	V _{DETRITUS}				sticks, or oth			oody debris « subplot.	<4" diamete	er and <36"	65.00 %
				Side				t Side		1 '	
		65	65	65	65	65	65	65	65		
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	s <20%). D	o <i>not</i>	
								oe several la rcent cover c			Not Used
		each subple	ot.		. 20070 0.10		-		n ground ve		
			Left	Side			Righ	t Side			
Sample	Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ied:					0.67
									D "	0/ i= 0 / i	Running
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Percent (not >100)
	Forest and r	native range (:	>75% ground	d cover)				~	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and r	native range (50% to 75%	ground cover	-)			•	0.7	5	100
								•			
	-							•			
								•			
	-							•			
	•							_			
	RF	CB U3					No	ites:			
Va	ariable	Value	VSI								
Vc	CANOPY	50 %	0.50								
V _E	MBED	2.6	0.66								
V _{st}	JBSTRATE	0.89 in	0.45								
V_{BI}	ERO	40 %	0.86								
VLV	WD	5.0	0.63								
V _{TI}	ОВН	5.0	0.29								
Vsi	NAG	0.0	0.10								
Vss	SD	Not Used	Not Used								
Vsi	RICH	2.78	1.00								
	ETRITUS	65.0 %	0.79								
	ERB	Not Used	Not Used								
V		0.67	0.71	Í							

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT2 of Right Fork of Conley Branch

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFCB U3

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.71
Biogeochemical Cycling	0.75
Habitat	0.78

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	2.56	0.66
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.89	0.45
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	26.11	0.92
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.78	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	Fradient	Headwat				entucky a alculatoi		ern Wes	t Virginia	3
	Team:	AC AG							M Northing:	37.7475415	i3
Pro		Buffalo Mou	untain						_	-82.239099	
		UT2 of Righ		onley Branc	h		•	_	npling Date:		
9.0	R Number:			Length (ft):	180	Stream Ty	, no				
								mittent Strea			
	Top Strata:	l re	e/Sapling St	rata	(determined	from perce	ent calculate	d in V _{CCANOR}	ογ)		
		Project Site				▼	After Project				▼
		1-4 in strea									
1	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) List the percent cover measurements at each point below:									95.0 %	
	95	95	95	95	95	95	95	95	95	95	
2	V _{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer t noving it, det y fine sedim	termine the	percentage	of the	2.6
	to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
			Rating Des								
		5					buried by fin		•)	
		3					l, or buried bed, or buried	-			
		2					ed, or buried				
		1					r buried by fi	_		ıl surface)	
_	List the rati	ngs at each	point below	:							
	1	1	1	1	1	1	1	1	2	2	
	2	2	4	4	3	3	2	2	2	4	
	3	3	3	2	3	2	2	2	2	4	
	2	2	2	3	3	3	3	4	2	3	
	3	3	2	3	3	4	2	5	5	5	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}	•	hly equidista	ant points	0.89 in
	•	cle size in in as 0.0 in, s				point below	(bedrock st	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.22	
	0.00	0.00	0.00	0.31	0.31	0.31	0.44	0.63	0.63	0.63	
	0.63	0.89	0.89	0.89	0.89	0.89	1.26	1.26	1.26	1.26	
	1.26	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	5.00	80.00	7.10	10.10	14.30	20.00	40.00	
4	V_{BERO}	Total perce	nt of eroded e total perce	stream cha	nnel bank.	Enter the to	tal number o	of feet of ero	oded bank o	n each	40 %
		•	Left Bank:	36	S ft	İ	Right Bank:	36	S ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).		
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in ouffer and wi				26.1	
		•				f downed w	oody stems:	4	17			
6	V_{TDBH}			measure onl eter. Enter			ng cover is a	t least 20%)	. Trees are	at least 4	10.0	
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of			
		the stream	below:								-	
			Left Side	1	1	Right Side						
	10	10	10	10	10	10	10	10	10	10		
					1.000							
7	V_{SNAG}			ast 4" dbh a I the amount			t of stream. culated.	Enter numb	er of snags	on each	0.0	
			Left Side:		0		Right Side:		0			
8	V_{SSD}						es dbh) per				N	
				Enter numb		gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used	
		,	Left Side:				Right Side:					
9	V_{SRICH}						m reach. Ch					
							ve species p rom these d		strata. Spe	ecies	2.78	
		•	p 1 = 1.0						2 (-1.0)			
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a	•		Lonicera ja	ponica	
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta		
	Aesculus i	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus	
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa		
	Betula alle			Quercus al			philoxeroid			Microstegiun		
	Betula len			Quercus co			Aster tatari	cus		Paulownia		
	Carya alba			Quercus in			Cerastium			Polygonum o		
	Carya glal			Quercus pr			Coronilla va			Pueraria m	·	
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	mbellata		Rosa multi	flora	
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense	
	Cornus flo	rida		Sassafras a	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis	
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol	otusifolium				
	Fraxinus a			Tsuga cana			Ligustrum s					
	Liriodendro			Ulmus ame			•					
	Magnolia a			J20 am								
	wagnona											
		5	Species in	Group 1				0	Species in	Group 2		

-											
	le Variables The four su	bplots shou	ıld be place	ed roughly	equidistan	tly along ea	ach side of	the stream.			n each
10	V _{DETRITUS}				sticks, or oth nt cover of th			oody debris - subplot.	<4" diamete	er and <36"	85.00 %
			Left	Side			Righ	nt Side] '	
		85	85	85	85	85	85	85	85		
11	V_{HERB}	• .	•		•	•	•	tree cover is	,		
								be several la rcent cover of			Not Used
		each subpl		Side		1	Diak	t Cido		1	
			Leit	Side			Rigi	nt Side		1	
Samp	le Variable 1	2 within the	e entire cat	chment of	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Scor	e for watersl	hed:					0.69
			Land	Use (Choo	se From Dro	op List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	55	55
	Open space	(pasture, law	ns, parks, etc	.), grass cov	er >75%			•	0.3	45	100
	_							•			
	-							•			
	-							•			
	-							▼			
	_							•			
								•			
	RF	CB U3					No	otes:			
\	/ariable	Value	VSI								
V	CCANOPY	95 %	1.00								
V	EMBED	2.6	0.66								
V,	SUBSTRATE	0.89 in	0.45								
V	BERO	40 %	0.86								
V	LWD	26.1	0.92								
V.	TDBH	10.0	1.00								
V,	SNAG	0.0	0.10								
V,	SSD	Not Used	Not Used								
V,	SRICH	2.78	1.00								
V	DETRITUS	85.0 %	1.00								
V	HERB	Not Used	Not Used								
V,	WLUSE	0.69	0.73								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT4 of Right Fork of Conley Branch

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: RFCB U4

Tree/Sapling Strata

Functional Results Summary: Enter Results in Sec

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.61
Biogeochemical Cycling	0.84
Habitat	0.83

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	97.86	1.00
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.26	0.63
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	3.60	0.45
V _{TDBH}	Average dbh of trees.	10.57	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.40	0.70
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.80	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	83.75	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northing:	37.7481990	8
Pro		Buffalo Mou	untain						ū	-82.239932	
		UT4 of Righ		onley Branc	h			-	pling Date:		
9.0	R Number:			Length (ft):	250	Stream Ty	(DO:				
								meral Stream			•
	Top Strata:	l re	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	ογ)		
		Project Site				▼	Before Proje	ct			▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	is at least 2			97.9 %
		cent cover r				0.4	400	00	400	400	
	100	100	100	88	100	94	100	88	100	100	
2	100	100	100	100	om obonno	Magaura	at no fewer t	han 20 rau	ably oquidiot	tant nainta	
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	noving it, det	termine the	percentage	of the	2.9
				• .			y fine sedim composed of		•		
						rating score		iiilo oodiiili), 110, 400 a 1	ating occio	
			ness rating f			~	cles (rescale	d from Platt	s, Megahan	, and	
			Rating Des	crintion							
		5			overed, suri	ounded, or	buried by fin	e sediment	(or bedrock)	
		4					d, or buried b		•	,	
		3					ed, or buried				
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimer	it (or artificia	al surface)	
ı		ngs at each			_	_	_	_	_		
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
2	3	3	3	1	2	1 Magazira a	1	3	3	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		niy equidista	ant points	1.26 in
	•	cle size in inc as 0.0 in, s				point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08			0.08	0.08	0.08	0.00	0.00	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.08	0.08	0.63	0.08	1.26	1.26	1.26	1.77	1.77	1.77	
	2.50			2.50							
		2.50	2.50		3.50	3.50	3.50	3.50	3.50	3.50	
4	3.50	5.00	7.10	7.10	10.10	14.30	20.00 otal number o	40.00	80.00	20.00	
7	V_{BERO}	•	e total perce				nks are eroc				200 %
			Left Bank:	25	0 ft	1	Right Bank:	25	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	•	om the entir		er and 36 inc ouffer and wi	•			3.6
						f downed w	oody stems:		9		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	t least 20%)). Trees are	at least 4	10.6
		List the dbh	n measurem	ents of indiv	vidual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								-
			Left Side	_			_	Right Side			
	5	4	15.3	16.5	5.1	11	7	10	18	14	
						13	16	12	7	9	
						9.5	11.5	7.8	9.2		
7	V_{SNAG}		• .		and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	per of snags	on each	0.4
			Left Side:		1		Right Side:				
8	V_{SSD}	Number of			oody stems	up to 4 inch	nes dbh) per	100 feet of	stream (mea	asure only	
						gs and shru	bs on each s	side of the s	stream, and t	he amount	Not Used
		per 100 it d	Left Side:	l be calcula	tea.		Right Side:				
9	V_{SRICH}	Riparian ve		ecies richne	ss per 100 f	eet of strea	m reach. Ch	neck all spe	cies present	from	
							ve species p		l strata. Spe	ecies	2.80
		•		ind the subii	ndex will be	calculated f	rom these da		- (
			ip 1 = 1.0					•	2 (-1.0)		
✓	Acer rubru			Magnolia ti	•		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	atica		Albizia julib	rissin		Lonicera ta	tarica
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus ser	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	/	Quercus ai	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob				
	Fraxinus a			Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame			J. 2.2. 3				
				Jiiius ailit	лиана						
	Magnolia a	acummata									
		7	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				one within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	83.75 %
		10.19 0.10 1.10		Side			-	t Side		1	
		75	100	55	100	100	80	65	95		
44	\ <u>'</u>	A				4-4:			000() D		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	paceous vege oh and 36" ta h 200% are a	all. Because	there may	be several la	yers of grou	und cover	Not Used
			Left	Side			Righ	t Side	ı		
Sample	o Variablo 1	2 within the	ontiro cate	chmont of	the stream.						
12	V _{WLUSE}				e for watersh	ied:					
											1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
								•			
								•			
								_			
	Ī							•			
								_			
	Ī							•			
	RF	CB U4					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	98 %	1.00	1							
V _E	MBED	2.9	0.78								
Vs	UBSTRATE	1.26 in	0.63								
V _B	ERO	200 %	0.00								
V _L	WD	3.6	0.45								
V _T	DBH	10.6	1.00								
Vs	NAG	0.4	0.70								
Vs		Not Used	Not Used								
	RICH	2.80	1.00								
	ETRITUS	83.8 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Right Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFHC 1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.97
Habitat	0.92

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	97.00	1.00
V_{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.52	0.76
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	11.56	1.00
V_{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	90.00	1.00
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northing:	37.7210140	9
Pro	oject Name:		untain						_	-82.233235	
	-		of Hell Cree	k			•	-	npling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/pe: Interi	mittent Strea			_
	Top Strata:	Tre	e/Sapling St	rata	(determine)	d from perce	ent calculate	d in Vassuar	,,,)		
	•		. •	·uu	(40.011111100				7 Y)		
	and Timing:						Before Proje	ct			
	Variables			avar ahann	al by trac an	d conling of	anany Maa	ours at no fe	awar than 1	O roughly	
1	V _{CCANOPY}	20%, enter at least one value between 0 and 19 to trigger Top Strata choice.)								97.0 %	
i	List the per	cent cover r	neasuremer	nts at each p	oint below:						
	94	94	100	100	100	100	100	100	100	94	
	100	88	100	88							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer t noving it, de	termine the	percentage	of the	3.3
							y fine sedim			-	
							composed of	tine seaime	ents, use a r	ating score	
		Embedded	If the bed is composed of bedrock, use a rating score of 5. mbeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and								
		Minshall 19									
			Rating Des						<i>,</i> , , , ,	,	
		5 4					buried by fin I, or buried b		•)	
		3					ed, or buried	•			
		2					ed, or buried				
		1	>75 percen	t of surface	covered, su	rrounded, o	r buried by fi	ine sedimen	ıt (or artificia	al surface)	
i	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
_	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}		nly equidista	ant points	1.52 in
			ches to the rand or finer			point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	_					0.00	0.00	0.00	0.00	0.40	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	
	0.16 1.26	0.22 1.26	0.22 1.26	0.31 1.26	0.44 1.26	0.44 1.77	0.63 1.77	0.63 1.77	0.89 1.77	1.26	
	2.50 3.50	2.50 3.50	2.50 3.50	2.50 5.00	2.50 7.10	2.50 10.10	2.50 14.30	2.50	3.50 99.00	3.50 99.00	
4	V _{BERO}						tal number of				
r	• REKO	•	e total perce				nks are eroc				200 %
		may be up	Left Bank:	45	0 ft	ı	Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).		
5	V_{LWD}	stream read	ch. Enter th	• •	om the entir		er and 36 incouffer and w				11.6	
		Number of downed woody stems: 52										
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	9.3	
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of			
		the stream	below:				,				_	
			Left Side	•	•		•	Right Side				
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2		
											ł	
											1	
											1	
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.4	
			Left Side:		2		Right Side:		0			
8	V_{SSD}						es dbh) per					
				Enter numb		gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used	
		p	Left Side:				Right Side:					
9	V_{SRICH}						m reach. Ch					
							ve species p rom these d		strata. Spe	ecies	1.56	
		•	p 1 = 1.0						2 (-1.0)			
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a	-		Lonicera ja	ponica	
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta		
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	iculatus	
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa		
	Betula alle			Quercus al	'ba		philoxeroid			Microstegiun		
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa	
	Carya alba	3		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum	
	Carya glal	ora		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana	
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multi	flora	
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense	
	Cornus florida Sassafras albidum						Lespedeza	cuneata		Verbena bi	rasiliensis	
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ok	otusifolium				
	Fraxinus a	mericana		Tsuga cana	adensis		Ligustrum s	sinense				
	Liriodendro	n tulipifera		Ulmus ame			-					
	Magnolia a											
	agriona (
		7	Species in	Group 1				0	Species in	Group 2		

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	ercent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	90.00 %
		10.19 0.10 1.10		Side			-	nt Side		1	
		70	90	95	95	90	95	90	95		
44	\ <u>'</u>	A				4-4:			000() D		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" d	baceous vege bh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	o Variable 1	2 within the	ontire est	obmont of	the etreem						
					the stream.	- al.					
12	V _{WLUSE}	vveignted A	verage or F	Runoii Scor	e for watersh	iea:					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
	a .							•			
	-							•			
	•							•			
								▼			
	-							•			
								▼			
	-							•			
	R	FHC 1					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	97 %	1.00	1							
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	1.52 in	0.76								
V _B	ERO	200 %	0.00								
V _L	WD	11.6	1.00								
V _T	DBH	9.3	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	90.0 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: Right Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: RFHC 2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.88
Habitat	0.92

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	98.71	1.00
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.00	1.00
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	13.33	1.00
V _{TDBH}	Average dbh of trees.	10.57	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	91.88	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	Gradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7198827	,
Pro	oject Name:		untain				•		•	-82.232980	
	-		of Hell Cree	k			•	-	pling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/pe: Ephe	meral Stream	-		▼
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	_{9Y})		
Site	and Timing:	Project Site				▼	Before Proje	ct			▼
Sample	Variables										
1		equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	is at least 2			98.7 %
			neasuremer			0.4	100	100	100	100	
	94 100	100	100 100	94 100	100	94	100	100	100	100	
2	V _{EMBED}	Average en along the s	nbeddednes tream. Sele	s of the stre	from the be	d. Before n	at no fewer t noving it, det y fine sedim	termine the	percentage	of the	2.9
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating	Rating Des	cription							
		5					buried by fin		•)	
		4					l, or buried b	•			
		3 2					ed, or buried ed, or buried				
		1					r buried by fi			l surface)	
	List the rati	ngs at each	point below								
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}	•	nly equidista	ant points	3.00 in
			ches to the r and or finer			point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.22	
	0.22	0.31	0.44	0.44	0.44	0.63	0.89	0.89	0.89	0.89	
	1.26	1.77	1.77	1.77	2.50	3.50	3.50	3.50	3.50	3.50	
	3.50	3.50	5.00	5.00	5.00	5.00	7.10	7.10	7.10	10.10	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	80.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number on tal number of tal number of				200 %
			Left Bank:	45	0 ft	1	Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).			
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 ind ouffer and wi				13.3		
		Number of downed woody stems: 60											
6	V_{TDBH}		Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches.										
		List the dbh	n measurem	ents of indiv	vidual trees	(at least 4 ir	n) within the l	buffer on ea	ach side of				
		the stream	below:				•				_		
			Left Side					Right Side			1		
	5	4	15.3	16.5	5.1	11	7	10	18	14			
						13	16	12	7	9	l		
						9.5	11.5	7.8	9.2		ł		
											1		
											1		
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	per of snags	on each	0.4		
			Left Side:		1		Right Side:		1				
8	8 V _{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (mea if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the stream is the stream of the stream is the stream of the stream is the stream of the stream is the stream of the st												
				Enter numb		gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used		
		p	Left Side:				Right Side:						
9	V_{SRICH}						m reach. Ch						
							ve species p rom these da		i strata. Spe	ecies	1.56		
			ıp 1 = 1.0						2 (-1.0)				
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a	•		Lonicera ja	ponica		
	Acer sacc	harum		Nyssa sylv	-		Albizia julib	rissin		Lonicera ta			
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	iculatus		
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa			
	Betula alle			Quercus ai	lba		philoxeroide			Microstegiun			
	Betula len	ta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa		
	Carya alba	а		Quercus in	nbricaria		Cerastium i	fontanum		Polygonum d	cuspidatum		
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana		
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora		
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense		
	Cornus florida Sassafras albidum						Lespedeza	cuneata		Verbena br	rasiliensis		
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium					
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense					
Liriodendron tulipifera Ulmus americana													
	Magnolia a												
	J												
		7	Species in	Group 1				0	Species in	Group 2			

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	91.88 %
		long are inc		Side	il cover or th	e deliliai la		t Side		1	
		90	95	90	95	95	90	95	85		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	baceous vege bh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
										-	
Sample	o Variable 1	2 within the	ontire est	obmont of	the etreem						
					the stream.	a di					
12	V _{WLUSE}	vveignted A	werage or K	Kurion Scor	e for watersh	ieu.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								▼			
								•			
								•			
								▼			
								•			
								•			
	Ī							•			
	R	FHC 2					No	otes:	•	•	
V	ariable	Value	VSI								
V _c	CANOPY	99 %	1.00	1							
V _E	MBED	2.9	0.78								
Vs	UBSTRATE	3.00 in	1.00								
V_{B}	ERO	200 %	0.00								
V _L	WD	13.3	1.00								
V _T	DBH	10.6	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	91.9 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of Right Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFHC U3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.97
Habitat	0.89

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	91.86	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.26	0.63
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	13.78	1.00
V _{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.32	0.58
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.24	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	89.38	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	radient	Headwat				entucky a alculato		ern wes	t virginia	3
	Team:	AC AG							M Northina:	37.7373250	18
Pro		Buffalo Mou	untain						_	-82.239099	
	-		nt Fork of He	ell Creek			•	-	npling Date:		
SA	AR Number:			Length (ft):	312	Stream Ty	/De:				
O,						-		mittent Strea			•
	Top Strata:	re	e/Sapling St	rata	(determined	a from perce	ent calculate	a in v _{ccanor}	γ)		
		nd Timing: Project Site ■ Before Project									▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least 2			91.9 %
			neasuremer			0.0	0.0	0.4	0.0	2.4	
	94	94	94	94	94	88	88	94	88	94	
2	94	94 Average on	82	94	om channo	Mogeuro	at no fewer	than 20 roug	ably oquidiet	ant points	
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	ed. Before n	noving it, de	termine the	percentage	of the	3.3
							y fine sedim composed of				
			bed is comp						,	g	
		Embeddedi Minshall 19		or gravel, co	obble and be	oulder partic	cles (rescale	d from Platt	s, Megahan	, and	
			Rating Des	cription							
		5			overed, suri	rounded, or	buried by fir	ne sediment	(or bedrock)	
		4					d, or buried b		•	,	
		3					ed, or buried				
		2					ed, or buried	_		1 ()	
	List the reti	1	>75 percen point below		coverea, su	rrounded, o	r buried by f	ine seaimer	it (or artificia	ii surface)	
	4	1 4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}		eam channe	-	article size.		it no fewer the	nan 30 roug	hly equidista	ant points	1.26 in
	Enter partic			-	-		/ (bedrock s		00 se hatnu	in asphalt	
			and or finer			i poirit below	(Deditor S	nould be co	unieu as 33	iii, aspiiait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.31	0.31	0.44	
	0.44	0.44	0.44	0.63	0.63	0.63	0.63	0.89	0.89	0.89	
	1.26	1.26	1.26	1.26	1.26	1.77	1.77	1.77	1.77	1.77	
	1.77	2.50	2.50	2.50	2.50	2.50	2.50	3.50	3.50	3.50	
	3.50	3.50	5.00	5.00	5.00	7.10	1.26	14.30	14.30	14.30	
4	V_{BERO}	•	e total perce				tal number onks are eroo				200 %
		- , - P	Left Bank:	31	2 ft	ı	Right Bank:	31	2 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated.									13.8
		Number of downed woody stems: 43									
6	V_{TDBH}	Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches.									9.3
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below:									•
		_	Left Side				T.	Right Side		•	
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2	
							-				
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.3
			Left Side:		1		Right Side:		0		
8	V_{SSD}						es dbh) per				
				Enter numb		gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used
		F	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	2.24
			p 1 = 1.0								
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a		2 (-1.0)	Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib	orissin		Lonicera ta	
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	culatus
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa	
	Betula alle			Quercus al	'ba		philoxeroid			Microstegiun	
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	a		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ot	otusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	89.38 %
	long are include. Enter the percent cover of the detrital layer at each subplot. Left Side Right Side									1	
		95	90	85	85	85	95	90	90		
	.,								200()		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" dl s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	nt Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					4.00
											1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
	-							•			
	•							•			
								▼			
	-							•			
								▼			
	-							•			
	RF	HC U3					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	92 %	1.00	1							
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	1.26 in	0.63								
V _B	ERO	200 %	0.00								
V _L	WD	13.8	1.00								
V _T	DBH	9.3	1.00								
Vs	NAG	0.3	0.58								
Vs	SD	Not Used	Not Used								
	RICH	2.24	1.00								
	ETRITUS	89.4 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of Right Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: RFHC U4

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.88
Habitat	0.72

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	96.57	1.00
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.08	0.04
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	12.40	1.00
V _{TDBH}	Average dbh of trees.	10.57	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.80	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.80	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	90.63	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northina:	-82.239932	2
Pro		Buffalo Mou	untain						ū	37.7378090	
	-	UT1 of Righ		ell Creek			_	_	pling Date:		
C A					250	Ctroom To					
	AR Number:			Length (ft):	250	Stream Ty		meral Stream			•
Top Strata: Tree/Sapling Strata (determined from percent calculated in V _{CCANOPY})											
Site and Timing: Project Site ▼ Before Project ▼											▼
Sample Variables 1-4 in stream channel											
1	V _{CCANOPY}	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) rcent cover measurements at each point below:									96.6 %
						0.1	100	100	100	0.4	
	94	94	100	94	94	94	100	100	100	94	
0	94	100	100	94		N4	-1 1	ll 00	ula la como di alti a d		
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer to	termine the	percentage	of the	2.9
							y fine sedim composed of			-	
			bed is comp					inic scanne	51113, U3C a 1	atting score	
			ness rating f				cles (rescale	d from Platt	s, Megahan	, and	
			Rating Des	crintian							
		Rating 5			overed, suri	rounded, or	buried by fin	e sediment	(or bedrock)	
		4					d, or buried b		•	7	
		3					ed, or buried	-			
		2					ed, or buried	_			
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	al surface)	
i	List the rati	ngs at each									
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
0	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}						it no fewer the d in V _{EMBED}		niy equiaista	ant points	0.08 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):						
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.08	0.08	0.08	0.08	0.08	0.16	0.16	0.22	0.22	0.22	
	0.22	3.50	3.50	5.00	7.10	10.10	14.30	20.00	20.00	40.00	
4	V_{BERO}	•	e total perce				tal number on tal number on tal number of				200 %
			Left Bank:	25	0 ft		Right Bank:	25	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to the	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated.									12.4
		Number of downed woody stems: 31									
6	V_{TDBH}	Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches.									10.6
		List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of									
		the stream below:									_
			Left Side								
	5	4	15.3	16.5	5.1	11	7	10	18	14	
						13	16	12	7	9	
						9.5	11.5	7.8	9.2		
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	per of snags	on each	0.8
			Left Side:		0		Right Side:		2		
8	V_{SSD}						es dbh) per				
			r is <20%). of stream wil			gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used
		p	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these da		i strata. Spe	ecies	2.80
			ıp 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	culatus
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa	
	Betula alle			Quercus ai	lba		philoxeroide			Microstegiun	
	Betula len	ta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium i	fontanum		Polygonum d	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. Wo	oody debris	<4" diamete	er and <36"	90.63 %
	long are include. Enter the percent cover of the detrital layer at each subplot. Left Side Right Side									1	
		90	95	90	90	95	90	85	90		
44	\ <u>'</u>	A				4-4:		4	000() D		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	baceous vege bh and 36" ta h 200% are a	all. Because	there may l	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	o Variable 1	2 within the	ontire est	ohmont of	the etreem						
12					the stream. e for watersh	a di					
12	V _{WLUSE}	vveignted A	werage or K	Runon Scor	e ioi watersi	ieu.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								▼			
								•			
								•			
								~			
								•			
								•			
	-							•			
	RF	HC U4					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	97 %	1.00								
V _E	MBED	2.9	0.78								
Vs	UBSTRATE	0.08 in	0.04								
V_{B}	ERO	200 %	0.00								
V _L	WD	12.4	1.00								
V _T	DBH	10.6	1.00								
Vs	NAG	0.8	1.00								
Vs	SD	Not Used	Not Used								
	RICH	2.80	1.00								
	ETRITUS	90.6 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT4 of Right Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFHC U5

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section A of the Mitigation Sufficiency Calculator

Function

Function

Functional Capacity Index

Hydrology

0.75

Biogeochemical Cycling

0.97

Habitat

0.95

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	88.43	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	13.78	1.00
V_{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	87.50	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG				000000			M Northing:	37.7300482	.9
Pro	oject Name:		untain				•		•	-82.231496	
	-		nt Fork of He	ell Creek			•	-	npling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/pe: Inter	mittent Strea			▼
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	₉ Y)		
Site	and Timing:	Project Site	·			•	Before Proje	ct			•
Sample	Variables	1-4 in strea	m channel								
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	is at least 2			88.4 %
ı			neasuremer			00	400	00	00	00	
	82	88	82	82	94	88	100	88	88	88	
2 V _{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according									3.3		
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating	Rating Des	cription							
		5					buried by fin		•)	
		4					l, or buried b	•			
		3 2					ed, or buried ed, or buried				
		1	•				r buried by fi	•		l surface)	
_	List the ration	ngs at each	point below	:			•			·	
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}			-			t no fewer thed in V _{EMBED}	_	hly equidista	ant points	1.77 in
			ches to the r and or finer			point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.31	0.31	0.44	
	0.44	0.63	0.63	0.63	0.89	0.89	0.89	0.89	0.89	1.26	
	1.26	1.26	1.26	1.77	1.77	1.77	1.77	1.77	1.77	1.77	
	2.50	2.50	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	
	3.50	5.00	5.00	5.00	5.00	7.10	7.10	7.10	14.30	20.00	
4	V_{BERO}	•	e total perce				tal number on tal number of tal number of				200 %
			Left Bank:	45	0 ft	I	Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir						13.8
						f downed w	oody stems:	(62		
6	V_{TDBH}						ng cover is a	t least 20%)). Trees are	at least 4	9.3
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								•
	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50-wide buffer and within the channel, and the amoun per 100 feet of stream will be calculated. Number of downed woody stems: Number of downed woody stems: 62					•					
	stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: Number of downed woody stems: 62										
											l
											ł
											1
											1
											1
7	V_{SNAG}							Enter numb	per of snags	on each	0.4
			Left Side:		1		Right Side:		1		
8											
		if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount								Not Used	
		,					Right Side:				
9	V_{SRICH}										
									i strata. Spe	ecies	1.56
		•							2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala						ponica
	Acer sacc	harum		ū	•						
	Aesculus	flava		-			-			Lotus corni	iculatus
				-			-				
										•	
							Aster tatari	cus		•	
										Polygonum o	
	-									Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	-			Sassafras	albidum		•			Verbena bi	
	Fagus gra	ndifolia		Tilia ameri	cana		-				
				Tsuga cana	adensis		_				
	Magnolia a			J G. G. M.							
	wagnona	aoan iii iala									
		7	Species in	Group 1				0	Species in	Group 2	

-	ample Variables 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each										
									one within	25 feet fror	n each
10	V _{DETRITUS}								<4" diamete	er and <36"	87.50 %
bank. The four subplots should be placed roughly equidistantly along each side of the stream. 10 Vectories Average percent cover of levere, sitcks, or other organic material. Woody debris -4" diameter and <36" long are include. Enter the percent cover of the definal layer at each subplot. Left Side Right Side 80 95 90 95 95 95 90 95 95 95 90 95 95 95 90 95 95 90 95 95 95 90 95 95 95 90 95 95 95 90 95 95 95 90 95 95 95 90 95 95 95 90 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 95 90 95 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 90 95 95 95 95 95 95 90 95 95 95 95 90 95 95 95 95 95 95 95 95 95 95 95 95 95											
		80	95	90	65	95	90	90	95		
11	V	Average pe	rcentage co	ver of herb	aceons veds	station (mea	eure only if	tree cover is	20%) D	o not	
	* HERB	include woo	ody stems a percentages	t least 4" db	h and 36" ta	II. Because	there may b	oe several la	yers of gro	und cover	Not Used
			Left	Side			Righ	t Side		'	
01	. Variable 4	O sociale in the		-1	U						
-											
12	VWLUSE	vveighted A	verage of R	tunoff Score	e for watersn	ea:					1.00
Land Use (Choose From Drop List)									Running Percent (not >100)		
	Forest and n	native range (:	>75% ground	d cover)				•	1	100	100
								•			
								•			
▼											
		▼									
	}							_			
	}							•			
	_										
	RF	HC U5					No	tes:			
V	ariable	Value	VSI								
V _c	CANOPY	88 %	1.00								
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	1.77 in	0.89								
V_{B}	ERO	200 %	0.00								
V_L	WD	13.8	1.00								
V _T	DBH	9.3	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
Vs	RICH	1.56	0.74								
V_{D}	ETRITUS	87.5 %	1.00								
		Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT4 of Right Fork of Hell Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFHC U5

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.69
Biogeochemical Cycling	0.56
Habitat	0.60

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	4.00	0.50
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	52.00	0.80
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	Fragient	Headwat				entucky a alculator		ern Wes	t Virgini	a
	Team:	AC AG							M Northing:	37.7300482	29
Pro	oject Name:		untain						ΓM Easting:		
	-	UT4 of Righ		ell Creek				-	pling Date:		
9.1	AR Number:			Length (ft):	450	Stream Ty	(DO:				
					450			mittent Strea			•
	Top Strata:	Sh	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_P ()		
Site	and Timing:	Project Site				•	After Project				▼
Sample	e Variables										
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Meas apling cover Top Strata c	is at least 2			Not Used, <20%
		cent cover r	neasuremer	its at each p	oint below:						
	0										
	V	A. (2.112.112.112.112.112.112.112.112.112.1	a la a al a al a a	f th tw-		Magazina	at was farriage	h a a 20 may	ula li ca au si ali ad	ant mainta	
2	V _{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the										
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score										
								iiie seaiiiie	erits, use a i	alling score	
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating 5			overed suri	rounded or	buried by fin	e sediment	(or bedrock)	-
		4					d, or buried b		•)	1
		3					ed, or buried	•			1
		2	51 to 75 pe	rcent of surf	ace covered	d, surrounde	ed, or buried	by fine sed	iment		
		1			covered, su	rrounded, o	r buried by fi	ine sedimer	t (or artificia	ıl surface)	
i	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
_	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED} .		hly equidista	ant points	1.77 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sł	nould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):	•	•				
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.31	0.31	0.44	
	0.44	0.63	0.63	0.63	0.89	0.89	0.89	0.89	0.89	1.26	
	1.26	1.26	1.26	1.77	1.77	1.77	1.77	1.77	1.77	1.77	
	2.50	2.50	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	
	3.50	5.00	5.00	5.00	5.00	7.10	7.10	7.10	14.30	20.00	
4	V_{BERO}	•	e total perce				otal number of nks are erod				40 %
			Left Bank:	90) ft	I	Right Bank:	90) ft		

Sample	e Variables	5-9 within t	the entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea		ne number fi	om the entir		ter and 36 in buffer and w				4.0
		'				f downed w	oody stems:	1	8	·	
6	V_{TDBH}						ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		inches (10	cm) in diam	eter. Enter	tree DBHs i	n inches.					Not Osed
				ents of indi	vidual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream						D: 1 / O: 1			1
			Left Side					Right Side			
7	V_{SNAG}		• ,		and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}	Number of			•	up to 4 inch			-	asure only	
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount								52.0		
		per 100 ft of stream will be calculated. Left Side: 117 Right Side: 117									
9	V _{SRICH}	Rinarian ve	Left Side:			eet of strea	Right Side: m reach. Ch			from	
	V SKICH						ve species p				1.11
		richness pe	er 100 feet a	and the subi	ndex will be	calculated f	from these d	ata.			
		Grou	ıp 1 = 1.0								
I	Acer rubru	ım		Magnolia t	ripetala		Ailanthus a	ltissima		Lonicera ja	ponica
	Acer sacci	harum		Nyssa sylv	atica		Albizia julib	orissin		Lonicera ta	tarica
	Aesculus i	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus sei	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	<u> </u>	Quercus a	lba		philoxeroid			Microstegiun	n vimineum
	Betula len			Quercus c			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glal			Quercus p			Coronilla va			Pueraria m	•
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ol	otusifolium			
	Fraxinus a	mericana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame							
	Magnolia a										
	agriolia (.Janmata									
		5	Species in	Group 1				0	Species in	Group 2	

									one within	25 feet from	n each
							ch side of t		All all		
10	V _{DETRITUS}						naterial. Wo /er at each s		<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side]	
Sample Va 12 Vw For Ope For Varial Vcane Vember		50	50	50	50	50	50	50	50		
11	V_{HERB}	Average ne	rcentage co	ver of herb	aceous vegs	atation (mea	sure only if t	ree cover is	<20%) D	o not	
''	V HERB	include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may b	e several la	yers of grou	und cover	50 %
		vegetation each subple		up through	n 200% are a	accepted. E	inter the per	cent cover c	of ground ve	egetation at	30 70
			Left	Side			Right	Side] '	
		50	50	50	50	50	50	50	50		
Sample	Variable 1	2 within the	e entire cato	chment of t	he stream.						
12	V_{WLUSE}	Weighted A	verage of R	unoff Score	for watersh	ied:					0.66
											Running
Land Use (Choose From Drop List) Runoff Score							Runoff Score	% in Catch- ment	Percent		
		,	===:						_	=0	(not >100)
	_	ative range (-					1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and n	ative range (<50% ground	I cover)				•	0.5	5	100
	▼										
	▼										
								•			
								•			
	-							•			
	RF	HC U5					No	es:			
V/a		Value	VSI								
		Not Used,	Not Used								
		<20%									
		3.3	0.94								
V _{Sl}	JBSTRATE	1.77 in	0.89								
V _{BI}	ERO	40 %	0.86								
V_{LV}	WD	4.0	0.50								
V _{TDBH} Not Used Not Used											
Vsi	V _{SNAG} 0.0 0.10										
V _{SSD} 52.0 0.80											
V _{SF}	RICH	1.11	0.53								
		50.0 %	0.61								
		50 %	0.67								
		0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT4 of Right Fork of Hell Creek

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFHC U5

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.73
Biogeochemical Cycling	0.78
Habitat	0.65

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V _{LWD}	Number of down woody stems per 100 feet of stream.	5.11	0.64
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	65.00	0.79
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a	
	Team:	AC AG							M Northing:	37.7300482	29	
Pro		Buffalo Mou	untain						_	-82.231496		
	-	UT4 of Righ		ell Creek			•	-	_	Post-10 Yea		
9.0	AR Number:			Length (ft):	450	Stream Ty	/DO:					
								mittent Strea			•	
	Top Strata:	Tre	e/Sapling St	rata	(determined	a from perce	ent calculate	a in v _{ccanor}	ν)			
		Project Site				~	After Project				▼	
		1-4 in strea										
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Meas apling cover Top Strata c	is at least 2			50.0 %	
ĺ		cent cover r										
	50	50	50	50	50	50	50	50	50	50	j	
2	V _{EMBED}	Average en	nbeddednes	s of the stre	eam channe	l. Measure	at no fewer t	han 30 roug	ghly equidist	ant points	3.3	
		along the stream. Select a particle from the bed. Before moving it, determine the percentage of the										
		surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score										
								illie seullik	onio, use a i	alling score		
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
		Rating 5			overed sur	rounded or	buried by fin	e sediment	(or bedrock)		
		4					d, or buried b		•)		
		3					ed, or buried	•				
		2	51 to 75 pe	rcent of surf	face covered	d, surrounde	ed, or buried	by fine sed	iment			
		1			covered, su	rrounded, o	r buried by fi	ine sedimer	it (or artificia	ıl surface)		
i	List the rati	ngs at each	point below	:							1	
	4	4	2	4	3	4	4	3	3	4		
	4	4	3	2	4	1	2	1	4	3		
	4	4	4	4	3	4	3	4	4	3		
	5	1	4	4	1	4	4	4	4	3		
•	5	4	3	3	5	1	4	3	1	4		
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED} .		nly equidista	ant points	1.77 in	
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sh	nould be co	unted as 99	in, asphalt		
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):							
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.31	0.31	0.44		
	0.44	0.63	0.63	0.63	0.89	0.89	0.89	0.89	0.89	1.26		
	1.26	1.26	1.26	1.77	1.77	1.77	1.77	1.77	1.77	1.77		
	2.50	2.50	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50		
	3.50	5.00	5.00	5.00	5.00	7.10	7.10	7.10	14.30	20.00		
4	V_{BERO}	•	e total perce				otal number of tal number of tal number of				40 %	
			Left Bank:	90) ft		Right Bank:	90) ft			

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		ter and 36 inc buffer and wi				5.1
		•			Number of	f downed w	oody stems:	2	23		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indiv	vidual trees	(at least 4 in	n) within the	buffer on ea	ach side of	· ·	
		the stream									•
	_	_	Left Side	_	_	_	_	Right Side	_	_	
	5	5	5	5	5	5	5	5	5	5	
	\	<u> </u>	() (4 4 11 11 1	1.00" (11)	100 (- ·			
7	$V_{\sf SNAG}$				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	330								N		
								Not Used			
		p = 1 = 1 = 1 = 1	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these da		strata. Spe	ecies	1.11
			ıp 1 = 1.0				alculated from these data. Group 2 (-1.0)				
7	Acer rubru		<u> </u>	Magnolia ti	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib	rissin		Lonicera ta	
	Aesculus	flava			n arboreum		Alliaria peti			Lotus corni	culatus
	Asimina tı	riloba		Prunus sei	rotina		Alternanthe			Lythrum sa	
		ghaniensis	7	Quercus a			philoxeroid			Microstegiun	
	Betula len	_		Quercus co			Aster tatari	CUS		Paulownia	
	Carya alb			Quercus in			Cerastium			Polygonum o	
	Carya gla		Ħ	Quercus p			Coronilla va			Pueraria m	
	Carya ova			Quercus ru			Elaeagnus u	mbellata		Rosa multin	flora
	Carya ova	ata		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame							
		acuminata									
	gu.										
		5	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				one within	25 feet fron	n each
10	V _{DETRITUS}				sticks, or oth			oody debris « subplot.	<4" diamete	er and <36"	65.00 %
		3		Side				t Side		1 '	
		65	65	65	65	65	65	65	65		
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	s <20%). D	o <i>not</i>	
		include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may I	oe several la rcent cover c	yers of gro	und cover	Not Used
		each subple	ot.		120070 010 0	docepted. L	-		n ground ve	getation at	
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	e entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ied:					0.67
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and n	native range (>75% ground	d cover)				▼	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			_	0.3	45	95
	Forest and n	ative range (50% to 75%	ground cover	-)			•	0.7	5	100
	-							•			
								•			
								•			
	-							•			
								•			
	RF	HC U5					No	ites:			
Va	ariable	Value	VSI								
Vc	CANOPY	50 %	0.50								
V _{EI}	MBED	3.3	0.94								
Vs	JBSTRATE	1.77 in	0.89								
V _{BI}	ERO	40 %	0.86								
VL	WD	5.1	0.64								
V _{TI}	ОВН	5.0	0.29								
V _{SI}	NAG	0.0	0.10								
Vs	SD	Not Used	Not Used								
V _{SI}	RICH	1.11	0.53								
V _{DI}	ETRITUS	65.0 %	0.79								
V _{HI}	ERB	Not Used	Not Used								
V		0.67	0.71								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT4 of Right Fork of Hell Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFHC U5

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.77
Biogeochemical Cycling	0.88
Habitat	0.87

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	6.00	0.75
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.7300482	29
Pro		Buffalo Mou	untain						J	-82.231496	
	-	UT4 of Righ		ell Creek			_	-	npling Date:		-
C A					450	Ctroom To					
	AR Number:			Length (ft):		Stream Ty		mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_{>Y})		
Site	and Timing:	Project Site				▼	After Project				▼
Sample		1-4 in strea									
1	CCANOPY										95.0 %
				·							
	95	95	95	95	95	95	95	95	95	95	
_				6.41							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.3
				• .			y fine sedim composed of		•		
			bed is comp					iiile seaiille	erits, use a i	alling Score	
			ness rating f			-	cles (rescale	d from Platt	s, Megahan	, and	
		Rating 5	Rating Des		overed our	rounded or	buried by fin	o oodimoot	(or bodrook	١	
		4					buried by fin I, or buried b		·	.)	
		3					ed, or buried	•			
		2					ed, or buried				
		1	>75 percen	t of surface	covered, su	rrounded, o	r buried by fi	ine sedimer	nt (or artificia	al surface)	
i	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		hly equidista	ant points	1.77 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sł	nould be co	unted as 99	in, asphalt	
	•	as 0.0 in, s					(,	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.31	0.31	0.44	
	0.44	0.63	0.63	0.63	0.89	0.89	0.89	0.89	0.89	1.26	
	1.26	1.26	1.26	1.77	1.77	1.77	1.77	1.77	1.77	1.77	
	2.50	2.50	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	
	3.50	5.00	5.00	5.00	5.00	7.10	7.10	7.10	14.30	20.00	'
4	V_{BERO}	•	e total perce				otal number of tal number of				40 %
			Left Bank:	90) ft	I	Right Bank:	90) ft	ı	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in ouffer and w				6.0
		•				f downed w	oody stems:	2	27	·	
6	V_{TDBH}			measure onleter.			ng cover is a	t least 20%)	. Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								-
			Left Side	1	1		ı	Right Side			
	10	10	10	10	10	10	10	10	10	10	
					1.000						
7	V_{SNAG}			ast 4" dbh a I the amount			t of stream. Iculated.	Enter numb	er of snags	on each	0.4
			Left Side:		1		Right Side:		1		
8	V_{SSD}						es dbh) per				N
				Enter numb		gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used
		p	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	1.11
		•	p 1 = 1.0						2 (-1.0)		
7	Acer rubru		<u>.</u> П	Magnolia ti	ripetala		Ailanthus a	-		Lonicera ja	ponica
	Acer sacci	harum		Nyssa sylv	atica		Albizia julib	orissin		Lonicera ta	itarica
	Aesculus i	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa	licaria
	Betula alle			Quercus al	ba		philoxeroid			Microstegiun	
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	3		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pr	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	mbellata		Rosa multin	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol	otusifolium			
	Fraxinus a	mericana		Tsuga cana	adensis		Ligustrum	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
	J • * *										
		5	Species in	Group 1				0	Species in	Group 2	

Comple	Variables	40 44 within	n at lagat 0	oubplote /	40" v 40" o	" 1 ma v 1 ma\	in the rines	ion/buffor -	one within	25 feet fron	2 222h
					40 x 40 , o equidistant				one within	25 feet from	n eacn
10	V _{DETRITUS}				sticks, or oth				<4" diamete	er and <36"	85.00 %
			Left	Side			Righ	t Side]	
		85	85	85	85	85	85	85	85		
11	V_{HERB}	Average ne	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	<20%) D	o not	
	▼ HERB	include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may l	oe several la	yers of grou	und cover	Not Used
		vegetation each subple		s up through	n 200% are a	accepted. E	nter the per	cent cover c	of ground ve	egetation at	1101 0000
				Side			Righ	t Side] '	
		2 within the								-	
12	V _{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ied:					0.69
									Runoff	% in Catch-	Running
			Land	Use (Choos	se From Dro	p List)			Score	ment	Percent (not >100)
	Forest and r	native range (:	>75% ground	d cover)				_	1	55	55
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			_	0.3	45	100
	•	•	·					•			
	-							•			
								_			
	-							•			
	-							•			
	RE	HC U5					No	tes:			
V:	ariable	Value	VSI								
	CANOPY	95 %	1.00								
	MBED	3.3	0.94								
	JBSTRATE	1.77 in	0.89								
	ERO	40 %	0.86								
V _{L\}		6.0	0.75								
V _{TI}		10.0	1.00								
	NAG	0.4	0.77								
V _{ss}		Not Used	Not Used								
	SICH	1.11	0.53								
	ETRITUS	85.0 %	1.00								
V _{HI}		Not Used	Not Used								
	LUSE	0.69	0.73								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT10 of Right Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: RFHC U6

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.74
Biogeochemical Cycling	1.00
Habitat	0.81

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	93.57	1.00
V _{EMBED}	Average embeddedness of channel.	3.62	1.00
V _{SUBSTRATE}	Median stream channel substrate particle size.	0.89	0.45
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	7.76	0.97
V _{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.09	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	91.88	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fragient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northing:	37.7222198	2
Pro	oject Name:		untain						_	-82.232347	
	-		ght Fork of F	Hell Creek				-	pling Date:		
SA	AR Number:			Length (ft):	335	Stream Ty	/De:			,	
O,						-		mittent Stream			•
	Top Strata:	re	e/Sapling St	rata	(determined	a from perce	ent calculate	a in v _{ccanor}	ν)		
	and Timing:					•	Before Project	ct			V
	• Variables										
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	is at least 2			93.6 %
			neasuremer								
	88	94	88	88	94	88	100	88	100	94	
	100	94	94	100							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.6
							y fine sedim			-	
			bed is comp				composed of e of 5.	iiie seaiiiie	erits, use a i	alling score	
			ness rating f				cles (rescale	d from Platt	s, Megahan	, and	
		Rating 5	Rating Des		overed suri	rounded or	buried by fin	e sediment	(or bedrock)	
		4					l, or buried b		•)	
		3					ed, or buried	•			
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimen	it (or artificia	ıl surface)	
			point below		0	4	4	0	0	4	
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	3	4	3	3	4	3	
	5	4	4	4	4	4	4	4	4	3	
	5	4	3	3	5	4	4	3	4	4	
3	V _{SUBSTRATE}	Median stre	eam channe	l substrate p	article size.	Measure a	t no fewer the	nan 30 roug	-		0.89 in
	Enter perti	· ·		·	•				untad aa 00	in canhalt	
	•		cnes to the r and or finer			point below	/ (bedrock sl	nould be co	unted as 99	in, aspnait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	0.22	
	0.31	0.31	0.31	0.31	0.31	0.31	0.44	0.44	0.44	0.44	
	0.44	0.63	0.63	0.89	0.89	0.89	0.89	1.26	1.26	1.77	
	1.77	1.77	1.77	3.50	3.50	3.50	3.50	3.50	5.00	7.10	
	7.10	7.10	7.10	7.10	10.10	10.10	14.30	20.00	20.00	40.00	
4	V_{BERO}						tal number o				
	-	side and the	-	entage will b	e calculated	I If both bar	nks are eroc	led, total erd	osion for the	stream	200 %
		, эс ар	Left Bank:	33	5 ft		Right Bank:	33	5 ft	L	

Sampl	le Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 incouffer and wi				7.8
		•				f downed w	oody stems:	2	26		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	t least 20%)). Trees are	at least 4	9.3
		List the dbh	n measurem	ents of indi	vidual trees	(at least 4 ir	n) within the	buffer on ea	ach side of	ļ	
		the stream				_					1
	40.0	0.5	Left Side	5.0	4.4	0	4.4	Right Side	T.	44.0	ł
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2	
											1
											1
7	V_{SNAG}	Number of	snags (at le	ast 4" dbh a	and 36" tall)	ner 100 fee	t of stream.	Enter numb	ner of spage	on each	
,	▼ SNAG				t per 100 fee			Linter Hamis	or or snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}						nes dbh) per				Net Head
				Enter numt Il be calcula		gs and snru	bs on each s	side of the s	stream, and	ne amount	Not Used
		•	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				0.00
							ve species p from these da		i strata. Spe	cies	2.09
			p 1 = 1.0						2 (-1.0)		
/	Acer rubru	ım		Magnolia t	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	atica		Albizia julib	rissin		Lonicera ta	ıtarica
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	iculatus
	Asimina tr	iloba		Prunus sei	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis		Quercus a	lba		philoxeroide			Microstegiun	n vimineum
	Betula len	_		Quercus c			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya gla			Quercus p			Coronilla va			Pueraria m	
	Carya ova	nlis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	nta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo			Sassafras	albidum		Lespedeza			Verbena br	-
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob				
	Fraxinus a			Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame							
		acuminata		Jiiius alli	Jiloaria						
	wayiiulia	uoummald									
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant					25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris		er and <36"	91.88 %
		long are inc		r the percer Side	nt cover of th	e detritai la	-	supplot. It Side		1	01.00 /0
		85	95	90	95	90	90	100	90		
- 11	\ <u>'</u>	A. (2.72.72.72.72.72.72.72.72.72.72.72.72.72	una unta una an	an of boul		tation (mag	anna ambu if	tuan annum i	(200() D	a mat	
11	V_{HERB}				paceous vege oh and 36" ta						Not Used
		vegetation each subple		s up throug	h 200% are a	accepted. E	Enter the pe	rcent cover	of ground ve	egetation at	Not Osed
		Сист сигр.		Side			Righ	t Side] '	
										-	
Sampl	o Variable 1	2 within the	ontire est	ohmont of	the etreem						
12					the stream. e for watersh	ed:					
12	V_{WLUSE}	weighted A	werage or N	Curion Scor	e ioi watersi	ieu.					1.00
				(0)		1. 0			Runoff	% in Catch-	Running
			Land	Use (Cnoo	se From Dro	p List)			Score	ment	Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								_			
	•							•			
	-							•			
								~			
								•			
								•			
	•							•			
	RF	HC U6					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	94 %	1.00								
	MBED	3.6	1.00								
	UBSTRATE	0.89 in	0.45								
	ERO	200 %	0.00								
V _L		7.8	0.97								
	DBH	9.3	1.00								
		0.0	0.10								
	NAG										
V _s		Not Used	Not Used								
	RICH ETRITUS	2.09 91.9 %	1.00 1.00								
- VD		01.0 /0	1.00	Ī							
	ERB	Not Used	Not Used								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain
Location: Left Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC 1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.97
Habitat	0.96

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	97.43	1.00
V_{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.00	1.00
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	10.00	1.00
V_{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	81.25	0.99
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northing:	37.7097537	7
Pro	oject Name:		untain						_	-82.222910	
	-		Hell Creek				•	_	npling Date:		
SA	AR Number:	LFHC 1		Length (ft):	450	Stream Ty	/pe: Inter	mittent Strea			V
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in Vocanor	₂ v)		
	·				(_			-17		_
	and Timing:						Before Project	ct			
Sample 1	Variables			over shapp	al by trac an	d copling of	anopy. Mea	ouro et ne f	ower than 1	0 roughly	
'	V _{CCANOPY}	equidistant	points along	the stream	. Measure	only if tree/s	apling cover Top Strata c	r is at least 2			97.4 %
ı	List the per	cent cover r	neasuremer	nts at each p	oint below:						
	100	100	94	100	88	94	100	100	100	88	
	100	100	100	100							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.3
				• .			y fine sedim				
							composed of	line seaime	ents, use a r	ating score	
		Embedded	of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and								
		Minshall 19									
		Rating 5	Rating Des		overed sur	rounded or	buried by fin	a sadiment	(or bedrock	1	
		4					l, or buried b		·)	
		3					ed, or buried	-			
		2					ed, or buried	_			
		1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	al surface)	
ĺ			point below		_		_	_	_		
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	<u>4</u> 1	4	4	3 1	4	3	4	4	3	
	5 5	4	3	3	5	4	4	3	<u>4</u> 1	4	
3	_	Median stre	eam channe	l substrate p	article size.		t no fewer the	nan 30 roug	-	-	3.00 in
		· ·		·	•						
			ches to the r and or finer			point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
						0.00	0.00	0.16	0.16	0.22	
	0.08	0.08	0.08	0.08 0.44	0.08	0.08	0.08	0.16 0.89	0.16 0.89	0.22	
	0.89	1.26	1.77	2.50	2.50	3.50	3.50	3.50	3.50	5.00	
	5.00	5.00	5.00	5.00	5.00	7.10	7.10	7.10	7.10	10.10	
ĺ	10.10	14.30	14.30	14.30	14.30	20.00	40.00	80.00	80.00	80.00	
4	V_{BERO}						tal number o				
7	• REKO	•	e total perce				nks are eroc				200 %
		, 20 up	Left Bank:	45	0 ft		Right Bank:	45	0 ft	I	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).			
5	V_{LWD}	stream read	ch. Enter th	• •	om the entir		er and 36 in				10.0		
		F	Number of downed woody stems: 45 Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4										
6	V_{TDBH}				y if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	9.3		
		List the dbh	n measurem	ents of indiv	vidual trees	(at least 4 ir	n) within the	buffer on ea	ach side of				
		the stream below:											
			Left Side					Right Side			l		
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2			
											ł		
											ł		
											1		
											1		
7	V_{SNAG}				ind 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.4		
			Left Side:		2		Right Side:		0				
8	V_{SSD}						es dbh) per				N		
				Enter numb		gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used		
		,	Left Side:				Right Side:						
9	V_{SRICH}						m reach. Ch						
							ve species p rom these d		strata. Spe	ecies	1.56		
		•	p 1 = 1.0						2 (-1.0)				
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a	-		Lonicera ja	ponica		
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta			
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	iculatus		
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa			
	Betula alle			Quercus al	ba		philoxeroid			Microstegiun			
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa		
	Carya alba	9		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum		
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana		
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	mbellata		Rosa multi	flora		
	Carya ovata Quercus velutina						Lespedeza	bicolor		Sorghum h	alepense		
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis		
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ok	otusifolium					
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense					
	Liriodendro	n tulipifera		Ulmus ame	ericana								
	Magnolia a												
		7	Species in	Group 1				0	Species in	Group 2			

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. Wo	oody debris	<4" diamete	er and <36"	81.25 %
		long are inc		Side	THE COVET OF HI	e detinaria		t Side		1	
		60	75	85	90	90	90	95	65		
	.,								000() B	L	
11	V_{HERB}	include woo	ody stems a percentages	t least 4" d	baceous vege bh and 36" ta h 200% are a	all. Because	there may l	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					4.00
									1	1	1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
	-							•			
	•							•			
								▼			
	-							•			
								▼			
	-							•			
	L	FHC 1					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	97 %	1.00	1							
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	3.00 in	1.00								
V _B	ERO	200 %	0.00								
V _L	WD	10.0	1.00								
V _T	DBH	9.3	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	81.3 %	0.99								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of Left Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.71
Biogeochemical Cycling	0.95
Habitat	0.95

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	100.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	2.14	1.00
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	6.67	0.83
V _{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.67	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	79.38	0.97
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7171356	64
Pro		Buffalo Mo	untain						_	-82.227463	
	=		Fork of Hell	Creek			•	_	npling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/pe: Inter	mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	₉)		
Site a	and Timing:	Project Site				•	Before Proje	ct			•
		1-4 in strea					•				
1	V _{CCANOPY}	Average pe equidistant 20%, enter	ercent cover points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling covel Top Strata c	r is at least 2			100.0 %
ĺ			neasuremer			400	400	100	100	400	
	100	100 100	100 100	100 100	100	100	100	100	100	100	
2	V _{EMBED}	Average en along the s	nbeddednes tream. Sele	s of the stre	from the be	d. Before n	at no fewer to noving it, de by fine sedim	termine the	percentage	of the	3.3
		of 1. If the	bed is comp ness rating f	osed of bed	drock, use a	rating score	composed of e of 5. cles (rescale				
		Rating	Rating Des								
		5					buried by fin		•	()	
		3					d, or buried bed, or buried	-			
		2					ed, or buried				
		1					r buried by f	_		al surface)	
	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
0	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		niy equidista	ant points	2.14 in
	•		ches to the r and or finer			point below	v (bedrock sl	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	0.22	0.22	
	0.22	0.31	0.44	0.63	0.89	1.26	1.26	1.26	1.26	1.26	
	1.26	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00	
	7.10	10.10	10.10	14.30	14.30	14.30	14.30	20.00	40.00	80.00	
4	V_{BERO}	•	e total perce				otal number of tal number of tal number of				200 %
			Left Bank:	45	0 ft		Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).		
5	V_{LWD}	stream read	ch. Enter th	• `	om the entir		er and 36 in ouffer and wi				6.7	
		Number of downed woody stems: 30 Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4										
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	9.3	
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of			
		the stream below:										
		•	Left Side				•	Right Side				
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2		
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.7	
			Left Side:		2		Right Side:		1			
8	V_{SSD}						es dbh) per					
				Enter numb		gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used	
		p	Left Side:				Right Side:					
9	V_{SRICH}						m reach. Ch					
							ve species p rom these d		strata. Spe	ecies	1.56	
		•	p 1 = 1.0						2 (-1.0)			
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a	-		Lonicera ja	ponica	
	Acer sacci	harum		Nyssa sylv	•		Albizia julib			Lonicera ta		
	Aesculus i	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus	
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa	licaria	
	Betula alle	ghaniensis	<u> </u>	Quercus al	'ba		philoxeroid			Microstegiun	n vimineum	
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa	
	Carya alba	9		Quercus in	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum	
	Carya glal	ora		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana	
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multin	flora	
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense	
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis	
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ob	otusifolium				
	Fraxinus a	mericana		Tsuga cana	adensis		Ligustrum s	sinense				
	Liriodendro	n tulipifera		Ulmus ame	ericana							
	Magnolia a											
		7	Species in	Group 1				0	Species in	Group 2		

					40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	79.38 %
		long are inc		Side	11 00 101 01 111	o dotinar ia		nt Side		1	
		50	70	75	90	90	85	90	85		
	.,								200()		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" db	paceous vege oh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	nt Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					4.00
									1	1	1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
	-							•			
	•							•			
								•			
	-							•			
								▼			
	-							•			
	LF	HC U2					No	otes:	l		
V	ariable	Value	VSI								
V _c	CANOPY	100 %	1.00	1							
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	2.14 in	1.00								
V_{B}	ERO	200 %	0.00								
V _L	WD	6.7	0.83								
V _T	DBH	9.3	1.00								
Vs	NAG	0.7	1.00								
Vs	SD	Not Used	Not Used								
Vs	RICH	1.56	0.74								
	ETRITUS	79.4 %	0.97								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT2 of UT1 of Left Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.63
Biogeochemical Cycling	0.93
Habitat	0.87

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	100.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.52	0.76
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	4.22	0.53
V _{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.67	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	86.25	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7208742)
Pro	oject Name:		untain						_	-82.226672	
	-		of Left Fork	of Hell Cre	ek		_	_	npling Date:		-
SA	AR Number:			Length (ft):	450	Stream Ty		mittent Stream			_
	Top Strata:		e/Sapling St			-	ent calculate				•
	•			iaia	(determine)	a nom perce			-γ)		
	and Timing:					▼	Before Proje	ct			▼
	• Variables									0 11	
1	V _{CCANOPY}	equidistant	points along	the stream	. Measure	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least 2			100.0 %
	List the per	cent cover r	measuremer	nts at each p	oint below:						i
	100	100	100	100	100	100	100	100	100	100	
	100	100	100	100							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, de	termine the	percentage	of the	3.3
				• .			y fine sedim				
			ving table. I bed is comp				composed of	line seaime	ents, use a r	ating score	
		Embedded	ness rating f				cles (rescale	d from Platt	s, Megahan	, and	
		Minshall 19									
			Rating Des		avarad aur	rounded or	buried by fin	o oodimont	(or bodrook	Λ.	
		5 4					buried by find, or buried b		·	.)	
		3					ed, or buried	-			
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimen	nt (or artificia	al surface)	
	List the rati	ngs at each	point below	:							1
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	4	4	4	1	4	4	4	4	3	
3	5		3	3 Leubetrate r	5	Measure a	4 It no fewer th	3 20 roug	hly equidiets	4	
3	V _{SUBSTRATE}						ed in V _{EMBED}		rily equidista	ant points	1.52 in
						point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
			and or finer								1
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	
	0.16	0.22	0.31	0.44	0.44	0.44	0.44	0.44	0.63	0.63	
	0.63	0.63	0.89	0.89	1.26	1.77	2.50	2.50	2.50	2.50	
	3.50	3.50	3.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
4	5.00	7.10	7.10	7.10	7.10	7.10	7.10 otal number of	10.10	10.10	14.30	
+	V_{BERO}	•					nks are eroc				200 %
		may be up	-	•							_30 /0
			Left Bank:	45	0 ft		Right Bank:	45	0 ft	•	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	• `	om the entir		er and 36 in ouffer and wi	•			4.2
		,				f downed w	oody stems:	1	19		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	9.3
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								•
		•	Left Side					Right Side		•	
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2	
											l
											ł
											1
											1
											1
]
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.7
			Left Side:		2		Right Side:		1		
8	V_{SSD}						es dbh) per				
				Enter numb		gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used
		p	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	1.56
		•	p 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacci	harum		Nyssa sylv	•		Albizia julib	orissin		Lonicera ta	
	Aesculus i	flava		Oxydendrum			Alliaria peti			Lotus corni	iculatus
	Asimina tr			Prunus ser			-			Lythrum sa	
	Betula alle			Quercus al			Alternanthe philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glal			Quercus pi			Coronilla va			Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ok	otusifolium			
	Fraxinus a			Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame			-				
	Magnolia a										
	g.rona (
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	86.25 %
		long are inc		Side	11. 00 001 01 111	le detinaria	-	it Side		1	
		75	95	90	70	85	95	95	85		
	.,								200()		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" dl s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	a Variable 1	2 within the	e entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh						
12	WLUSE	vvoiginou /	wordgo or r	tarion coor	o for waterer	iou.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								▼			
								•			
	-							•			
								•			
								•			
								~			
								•			
	LF	HC U3					No	otes:	l		
V	ariable	Value	VSI								
V _c	CANOPY	100 %	1.00								
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	1.52 in	0.76								
V _B	ERO	200 %	0.00								
V _L ,	WD	4.2	0.53								
V _T	DBH	9.3	1.00								
Vs	NAG	0.7	1.00								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	86.3 %	1.00								
	ERB	Not Used	Not Used								
Vw	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U4

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.97
Habitat	0.94

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	99.14	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	10.00	1.00
V_{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.22	0.43
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	89.38	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northina:	37.7107736	5
Pro	oject Name:		untain						ū	-82.218207	
	-	UT1 of UT1		rk of Hell Cı	reek		•	_	npling Date:		
SA	AR Number:			Length (ft):		Stream Ty	/pe: Inter	mittent Strea			•
Top Strata: Tree/Sapling Strata (determined from percent calculated in V _{CCANOPY})											
Site and Timing: Project Site ■ Before Project ■ Before Project									•		
							-				
1	V _{CCANOPY}	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) the percent cover measurements at each point below:									
						400	400	0.4	400	0.4	
	100	100 100	100 100	100 100	100	100	100	94	100	94	
2	V _{EMBED}	Average en along the s	nbeddednes tream. Sele	s of the stre	from the be	d. Before n	at no fewer to noving it, de-	termine the	percentage	of the	3.3
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
			Rating Des								
		5					buried by fin		·)	
		3					d, or buried bed, or buried	-			
		2					ed, or buried				
		1					r buried by f	_		al surface)	
	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		niy equidista	ant points	1.77 in
	•	cle size in in as 0.0 in, s				point below	v (bedrock sl	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	0.63	
	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	3.50	5.00	7.10	7.10	10.10	14.30	14.30	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				otal number of nks are eroc				200 %
			Left Bank:	45	0 ft		Right Bank:	45	0 ft	•	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	Number of down woody stems (at least 4 inches in diameter and 36 inches in length) per 100 feet of stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated.									10.0
						f downed w	oody stems:	4	4 5		
6	V_{TDBH}				y if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)). Trees are	at least 4	9.3
		List the dbh	n measurem	ents of indiv	vidual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								•
		_	Left Side	1	1			Right Side		•	
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2	
											l
											ł
											1
											1
											1
]
									_		
7	V_{SNAG}				ind 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.2
			Left Side:		0		Right Side:		1		
8	V_{SSD}						es dbh) per				
			r is <20%). of stream wil			gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used
		po. 100 it o	Left Side:	, po caroura	.04.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		I strata. Spe	ecies	1.56
		•	ip 1 = 1.0		140% 11111 20	carouratou i	10111 111000 0		2 (-1.0)		
J	Acer rubru			Magnolia tı	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc			Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	
	Asimina tr			Prunus ser			-			Lythrum sa	
	Betula alle			Quercus al			Alternanthe philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glal			Quercus pr			Coronilla va			Pueraria m	•
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ot	otusifolium			
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro			Ulmus ame							
	Magnolia a			J20 am							
	wagnona	aoan iii iala									
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant					25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris		er and <36"	89.38 %
		long are me		Side	100001 01 111	o dotinar ia	-	nt Side		1	
		80	85	90	95	100	80	95	90		
	.,								200()		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	baceous vege bh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	nt Side			
Sample	o Variable 1	2 within the	ontire est	obmont of	the etreem						
12					the stream. e for watersh	a di					
12	V _{WLUSE}	vveignted A	werage or K	Kurion Scor	e ioi watersii	ieu.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
								•			
								•			
								▼			
								•			
								•			
								•			
	LF	HC U4					No	otes:	•		
٧	ariable	Value	VSI								
V _c	CANOPY	99 %	1.00								
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	1.77 in	0.89								
V_{B}	ERO	200 %	0.00								
V _L	WD	10.0	1.00								
V _T	DBH	9.3	1.00								
Vs	NAG	0.2	0.43								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	89.4 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U4

Shrub/Herb Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.70
Biogeochemical Cycling	0.56
Habitat	0.62

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V _{LWD}	Number of down woody stems per 100 feet of stream.	4.35	0.54
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	52.17	0.80
V _{SRICH}	Riparian vegetation species richness.	4.35	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	radient	Headwat				entucky a alculato		ern wes	t virgini	a
	Team:	AC AG							M Northing:	37.7107736	65
Pro	oject Name:		untain						ΓM Easting:		
	-		0 of Left Fo	rk of Hell Cı	eek		•	-	npling Date:		
C /	AR Number:					Stroom Tu					_
S.F				Length (ft):	115	Stream Ty		mittent Strea			
	Top Strata:	Sh	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANOF}	₉ Y)		
	and Timing:					▼	After Project				▼
	Variables										
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least 2			Not Used, <20%
		cent cover r	neasuremer	its at each p	oint below:						
	0										
				6.41							
2	V_{EMBED}	along the stream. Select a particle from the bed. Before moving it, determine the percentage of the									3.3
		surface and area surrounding the particle that is covered by fine sediment, and enter the rating according									
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score									
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and									
		Minshall 1983)									
		Rating Description									
		5					buried by fir		•)	
		3					d, or buried bed, or buried	•			
		2					ed, or buried				
		1					r buried by f	_		al surface)	
	List the rati	ngs at each	point below		•	•			,	,	1
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						t no fewer the		hly equidista	ant points	1.77 in
	Enter partic	de size in in	ches to the i	nearest 0.1	inch at each	noint helow	/ (bedrock s	hould be co	unted as 99	in asnhalt	
	•		and or finer			i point below	(bearock 3	nould be co	unicu as ss	iii, aspiiait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	0.63	
	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	3.50	5.00	7.10	7.10	10.10	14.30	14.30	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	99.00	99.00	99.00	
4	V_{BERO}	Total perce	nt of eroded e total perce	stream cha	nnel bank.	Enter the to	tal number onks are eroo	of feet of erd	oded bank o	n each	40 %
		may be up				ı				l	
			Left Bank:	23	3 ft		Right Bank:	23	3 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea	ch. Enter th		om the entir		er and 36 in buffer and w				4.3
						f downed w	oody stems:	;	5		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		`	•				a) within the	huffer on oa	ob side of		
		the stream		ents of man	nuuai iiees	(at least 4 II	n) within the	buller on ea	ich side oi		
			Left Side					Right Side			ĺ
7	V_{SNAG}	Number of	snags (at le	ast 4" dbh a	nd 36" tall)	per 100 fee	t of stream.	Enter numb	er of snags	on each	
		side of the	stream, and	the amoun	t per 100 fee	et will be cal	lculated.				0.0
			Left Side:		0		Right Side:	(Ω		
8	V_{SSD}	Number of			-	up to 4 inch			•	asure only	
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount								52.2		
		per 100 ft c	of stream will Left Side:	l be calculat	tea. 30		Right Side:	.3	30		
9	V_{SRICH}	Riparian ve				eet of strea	m reach. Ch		-	from	
							ve species p		strata. Spe	ecies	4.35
		·		ind the subii	ndex will be	calculated t	rom these d		0 (4 0)		
	A		p 1 = 1.0	Manualia	rin atala		A ilo athus a		2 (-1.0)	l anisana ia	
	Acer rubru			Magnolia ti	-		Ailanthus a			Lonicera ja	
	Acer sacci			Nyssa sylv			Albizia julib			Lonicera ta	
	Aesculus i	flava		Oxydendrun	n arboreum		Alliaria peti	iolata		Lotus corni	culatus
	Asimina tr	iloba		Prunus ser	rotina		Alternanthe			Lythrum sa	licaria
	Betula alle	ghaniensis	J	Quercus ai	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	9		Quercus in	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum
	Carya glal	ora		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	ımbellata		Rosa multi	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ol				
	Fraxinus a			Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame			J				
				Jiiilus aille	, iodila						
	Magnolia a	uvuniinala									
		5	Species in	Group 1				0	Species in	Group 2	

		10-11 within							one within	25 feet from	n each
10	V _{DETRITUS}	Average pe	ercent cover	of leaves, s	sticks, or oth at cover of th	er organic n	naterial. Wo	ody debris «	<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side		1 '	
		50	50	50	50	50	50	50	50		
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	ree cover is	<20%). D	o not	
	TIEND	include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may b	e several la	yers of grou		50 %
		each subple	ot.		120070 010 0	docopica. L	inter the per	ociii covci c	n ground ve	gotation at	
		50		Side	50			Side	50		
		50	50	50	50	50	50	50	50		
Sample	e Variable 1	2 within the	e entire cate	chment of t	the stream.						
12	V _{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ned:					0.66
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and r	native range (<50% ground	d cover)				•	0.5	5	100
▼											
	▼										
								•			
	-							•			
		HC U4	_				No	tes:			
\/-	ariable	Value	VSI				INO				
	CANOPY	Not Used, <20%	Not Used								
V _{EI}	MBED	3.3	0.94								
V _{st}	UBSTRATE	1.77 in	0.89								
V _{BI}	ERO	40 %	0.86								
VL	WD	4.3	0.54								
V _{TDBH} Not Used Not Used											
V_{SNAG} 0.0 0.10											
Vs	SD	52.2	0.80								
	RICH	4.35	1.00								
	ETRITUS	50.0 %	0.61								
V _{HI}		50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U4

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.73
Biogeochemical Cycling	0.78
Habitat	0.67

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.22	0.65
V_{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	4.35	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	65.00	0.79
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	High-G	Fradient	Headwat				entucky a alculato		ern Wes	t Virginia	3
	Team:	AC AG							M Northina:	37.7107736	5
Pro		Buffalo Mou	untain						_	-82.218207	
	-	UT1 of UT1		rk of Hell Ci	reek		_	-	_	Post-10 Yea	
0.4						О: Т			-	1 000 10 100	
SA	AR Number:			Length (ft):		Stream Ty		mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	oy)		
Site	and Timing:	Project Site				•	After Project				•
Sample	e Variables	1-4 in strea	m channel								
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least 2			50.0 %
		cent cover r									
	50	50	50	50	50	50	50	50	50	50	
				6.41							
2	V _{EMBED}	Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the									
		surface and area surrounding the particle that is covered by fine sediment, and enter the rating according									
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.									
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating Rating Description									
		5			overed suri	rounded or	buried by fir	ne sediment	(or bedrock)	
		4					d, or buried b		·	1	
		3					ed, or buried	•			
		2	51 to 75 pe	rcent of surf	face covered	d, surrounde	ed, or buried	by fine sed	ment		
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	al surface)	
	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		hly equidista	ant points	1.77 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock s	hould be co	unted as 99	in, asphalt	
	•	as 0.0 in, s					(, э.эрэ	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	0.63	
	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	3.50	5.00	7.10	7.10	10.10	14.30	14.30	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number onks are eroo				40 %
		a, 20 ap	Left Bank:	23	3 ft		Right Bank:	23	3 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read		e number fr	om the entir		er and 36 in ouffer and wi				5.2
						f downed w	oody stems:		6		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream	below:								•
		_	Left Side	1				Right Side		•	
	5	5	5	5	5	5	5	5	5	5	
											l
											l
											1
											1
											1
]
									_		
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	330										
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.								Not Used		
		,	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	4.35
			ıp 1 = 1.0								
7	Acer rubru			Magnolia ti	ripetala	Group 2 (-1.0) Ailanthus altissima Lonicera jap					ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	iculatus
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
	Betula alle			Quercus al			philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glal			Quercus pi			Coronilla va			Pueraria m	•
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo			Sassafras	albidum		Lespedeza			Verbena br	-
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol				
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro			Ulmus ame			G	-			
	Magnolia a			Jido di ile							
	wayi olia e	aouminala									
		5	Species in	Group 1				0	Species in	Group 2	

		10-11 within							one within	25 feet fron	n each
10	V _{DETRITUS}				sticks, or oth			oody debris « subplot.	<4" diamete	er and <36"	65.00 %
				Side		,		t Side		1 '	
Sample V		65	65	65	65	65	65	65	65		
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	s <20%). D	o <i>not</i>	
		include woody stems at least 4" dbh and 36" tall. Because there may be several layers of ground cover vegetation percentages up through 200% are accepted. Enter the percent cover of ground vegetation at									Not Used
		each subple	ot.		. 20070 0.10				n ground ve		
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ed:					0.67
									Б "	0/ : 0 : :	Running
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Percent (not >100)
	Forest and r	native range (:	>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and r	native range (50% to 75%	ground cover	-)			•	0.7	5	100
	▼										
	=							_			
	-							•			
	LF	HC U4					No	tes:			
Va	ariable	Value	VSI								
V _C	CANOPY	50 %	0.50								
VE	MBED	3.3	0.94								
V _{st}	JBSTRATE	1.77 in	0.89								
V _{BI}	ERO	40 %	0.86								
V_{LV}	WD	5.2	0.65								
V _{TI}	ОВН	5.0	0.29								
Vsi	NAG	0.0	0.10								
Vss	SD	Not Used	Not Used								
Vsi	RICH	4.35	1.00								
	ETRITUS	65.0 %	0.79								
	ERB	Not Used	Not Used								
V		0.67	0.71	ĺ							

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U4

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.77
Biogeochemical Cycling	0.88
Habitat	0.91

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	6.09	0.76
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.87	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	4.35	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	High-G	Fradient	Headwat				entucky a alculato		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7107736	65
Pro		Buffalo Mou	untain						ū	-82.218207	
	-	UT1 of UT1		rk of Hell Cr	eek		•	-	pling Date:		
6/	AR Number:					Stroom Tu					_
SF				Length (ft):	115	Stream Ty		mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_P ()		
		Project Site				▼	After Project				▼
Sample		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least 2			95.0 %
		cent cover r				0.5	0.5	0.5	0.5	0.5	
	95	95	95	95	95	95	95	95	95	95	
2	\/	A	a la a al a al a a	f thtu-		Magazina	ot no force	th a m 20 may	والمارية والمارية	ant mainte	
2	V _{EMBED}	Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the									
		surface and area surrounding the particle that is covered by fine sediment, and enter the rating according									
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.									
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating Rating Description									
		5			overed, suri	rounded, or	buried by fir	ne sediment	(or bedrock)	
		4					d, or buried b		·	,	
		3	26 to 50 pe	rcent of surf	ace covered	d, surrounde	ed, or buried	by fine sed	ment		
		2					ed, or buried	_			
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	ıl surface)	
		ngs at each									
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
_	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		nly equidista	ant points	1.77 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	(bedrock s	hould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):		·			•	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.22	
	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	0.63	
	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	3.50	·
	3.50 3.50 3.50 5.00 7.10 7.10 10.10 14.30 14.30										
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	99.00	99.00	99.00	·
4	V_{BERO}	•	e total perce				otal number of the state of the				40 %
		,	Left Bank:	23	3 ft	ı	Right Bank:	23	3 ft		

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		rom the entir		ter and 36 inc buffer and wi				6.1
		•				f downed w	oody stems:		7		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)). Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indi	vidual trees	(at least 4 in	n) within the	buffer on ea	ach side of		
		the stream				-					1
	4.0	10	Left Side	1.0	10	40	1 40	Right Side		10	
	10	10	10	10	10	10	10	10	10	10	
											ł
											l
											1
]
	\	N	(1)	4 4 11 11 1	1.00" (11)	100 (
7	$V_{\sf SNAG}$				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.9
			Left Side:		0		Right Side:		1		
8	V_{SSD}						nes dbh) per				N
				Enter numb Il be calcula		gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used
			Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		i strata. Spe	ecies	4.35
			p 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia t	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc			Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	_			n arboreum		Alliaria peti			Lotus corni	iculatus
	Asimina tı	riloba		Prunus sei	rotina		Alternanthe			Lythrum sa	
	Betula alle	ghaniensis		Quercus a	lba		philoxeroid			Microstegiun	
	Betula len	_		Quercus c			Aster tatari	cus		Paulownia	
	Carya alb			Quercus in			Cerastium			Polygonum o	
	Carya gla			Quercus p			Coronilla va			Pueraria m	
	Carya ova	alis		Quercus ru	ubra		Elaeagnus u	mbellata		Rosa multi	flora
	Carya ova	ata		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	on tulipifera		Ulmus ame	ericana						
	Magnolia	acuminata									
		5	Species in	Group 1				0	Species in	Group 2	

		40.44 '41.1			4011 4011	. 4 4				0= 6	
					40" x 40", o equidistant				one within	25 feet fron	n eacn
10	$V_{DETRITUS}$				sticks, or oth				<4" diamete	er and <36"	85.00 %
		long are inc		Side	nt cover of th	e deliliai lay		t Side		, l	
		85	85	85	85	85	85	85	85	.	
4.4		^							000() D		
11	V_{HERB}				aceous vege oh and 36" ta						Not Used
		vegetation each subple		s up through	n 200% are a	accepted. E	inter the pe	cent cover c	of ground ve	egetation at	Not Osea
				Side			Righ	t Side] '	
Comple	. Variable 4	2 within the	ontire est	shmant of t	the etreem						
1 2		2 within the			e for watersh	od:					
12	V _{WLUSE}	weighted A	werage or iv	anon Score	e ioi watersi	ieu.					0.69
				(Ob		- 1 i-4)			Runoff	% in Catch-	Running
			Land	Use (Choos	se From Dro	p List)			Score	ment	Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	55	55
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	100
								•			
								•			
								•			
								•			
								•			
	_							•			
	LF	HC U4					No	tes:			
Va	ariable	Value	VSI								
Vc	CANOPY	95 %	1.00								
VE	MBED	3.3	0.94								
V _{sı}	JBSTRATE	1.77 in	0.89								
V_{BI}	ERO	40 %	0.86								
VLV	WD	6.1	0.76								
V _{TI}		10.0	1.00								
	NAG	0.9	1.00								
Vss		Not Used	Not Used								
	RICH	4.35	1.00								
	ETRITUS	85.0 %	1.00								
V _{HI}		Not Used	Not Used								
V _w	LUSE	0.69	0.73								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: 26-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U5

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section A of the Mitigation Sufficiency Calculator

Function

Function

Functional Capacity Index

Hydrology

0.75

Biogeochemical Cycling

0.97

Habitat

0.96

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	100.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	8.01	1.00
V _{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	1.19	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.78	0.85
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	89.38	1.00
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	iradient	Headwat				entucky a alculato		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7208742)
Pro	oject Name:		ıntain						_	-82.217431	
	-		of UT10 of	Left Fork of	Hell Creek		_	_	pling Date:		
C /											
	AR Number:	LFHC U5	Reacn	Length (ft):	337	Stream Ty	/pe: Inter	mittent Strea	m		
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	oy)		
Site	and Timing:	Project Site				▼	Before Proje	ct			•
Sample	Variables										
1	V _{CCANOPY}	equidistant	ercent cover points along at least one	the stream	n. Measure	only if tree/s	sapling cove	r is at least 2			100.0 %
	List the per	cent cover r	neasuremer	nts at each p	point below:						
	100	100	100	100	100	100	100	100	100	100	ļ
	100	100	100	100							
2	V_{EMBED}	along the s	nbeddednes tream. Sele	ct a particle	from the be	d. Before n	noving it, de	termine the	percentage	of the	3.3
			d area surrou	• .			•				
			ving table. I					f fine sedime	ents, use a r	ating score	
			bed is comp					I.C. DI. W			
		Embeddedi Minshall 19	ness rating f 83)	or gravei, co	obble and b	oulder partic	cies (rescale	d from Platt	s, Meganan	, and	
		Rating	Rating Des	cription							
		5			overed, suri	rounded, or	buried by fir	ne sediment	(or bedrock	<u>.)</u>	
		4	5 to 25 perc	ent of surfa	ice covered,	surrounded	d, or buried b	y fine sedin	nent		
		3					ed, or buried				
		2					ed, or buried				
	List the reti	1	>75 percen		coverea, su	rrounaea, o	r buried by f	ine seaimer	it (or artificia	ai surrace)	
	4	ngs at each	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1			4	3	
	4	4			3	4	3	1	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}	·	eam channe			•	-	•	-		
Ü	SUBSTRATE		tream; use t						my oquidiote	ant pointo	1.77 in
	Enter partic	ele size in ind	ches to the r	nearest 0.1	inch at each	point below	v (bedrock s	hould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):						ı
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.22	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	
	0.63	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	,
	3.50	3.50	3.50	3.50	5.00	5.00	7.10	10.10	10.10	14.30	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	80.00	99.00	99.00	
4	V_{BERO}	•	nt of eroded								
			e total perce	entage will b	e calculated	I If both bar	nks are eroo	ded, total er	osion for the	stream	200 %
		may be up					D. 1.5 :		-		
			Left Bank:	33	7 ft		Right Bank:	33	7 ft		

Sampl	le Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 ind buffer and wi				8.0
		,				f downed w	oody stems:	4	27		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	t least 20%)). Trees are	at least 4	9.3
		List the dbh	n measurem	ents of indi	vidual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream									
	40.0	1 0 5	Left Side		1			Right Side	T.	14.0	
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2	
	\	<u> </u>	(1)	4 4 11 11 1	1.00" (11)	100 (-			
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	1.2
			Left Side:		3		Right Side:		1		
8	V_{SSD}						nes dbh) per				N
				Enter numb Il be calcula		gs and shru	bs on each s	side of the s	stream, and	the amount	Not Used
		,	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these da		i strata. Spe	ecies	1.78
			p 1 = 1.0						2 (-1.0)		
	Acer rubru			Magnolia t	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus				n arboreum		Alliaria peti			Lotus corni	culatus
	Asimina tr	riloba		Prunus sei	rotina		Alternanthe			Lythrum sa	
	Betula alle	ghaniensis		Quercus a	lba		philoxeroid			Microstegiun	
	Betula len	_		Quercus c			Aster tatari	CUS		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glai			Quercus p			Coronilla va			Pueraria m	
	Carya ova	nlis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multi	flora
	Carya ova	nta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
		acuminata									
	<u> </u>										
		6	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	89.38 %
				Side			-	nt Side		1	
		90	95	80	100	80	85	90	95		
11	V	Average pe	roontago oo	war of barb	paceous vege	etation (mod	acure only if	troe gover is	-200() D	o not	
	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	bh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Commi	a Variabla 4	O within the	antina aat		the etwoew						
					the stream.	1-					
12	V _{WLUSE}	vveignted A	verage of R	Runon Scor	e for watersh	iea:					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
	a .							•			
	-							•			
								•			
								~			
								•			
								•			
	-							•			
	LF	HC U5					No	otes:	•		
٧	ariable	Value	VSI								
V _c	CANOPY	100 %	1.00								
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	1.77 in	0.89								
V_{B}	ERO	200 %	0.00								
V _L	WD	8.0	1.00								
V _T	DBH	9.3	1.00								
Vs	NAG	1.2	1.00								
Vs	SD	Not Used	Not Used								
	RICH	1.78	0.85								
	ETRITUS	89.4 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U5

Shrub/Herb Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.70
Biogeochemical Cycling	0.56
Habitat	0.62

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	4.44	0.56
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	51.85	0.80
V _{SRICH}	Riparian vegetation species richness.	2.74	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virgini	a
	Team:	AC AG							M Northing:	37.7208742	2
Pro	oject Name:		untain				•		ΓM Easting:		
	-		of UT10 of	Left Fork of	Hell Creek		•	_	npling Date:		
SA	AR Number:	LFHC U5	Reach	Length (ft):	135	Stream Ty	/pe: Inter	mittent Strea	-		_
	Top Strata:	Shi	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANOR}	_{>Y})		
Site	and Timing:	Project Site				•	After Project				•
Sample	Variables	1-4 in strea	m channel								
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	is at least 2			Not Used, <20%
ĺ	•	cent cover n	neasuremer	nts at each p	oint below:						
	0										
2	V _{EMBED}	along the st	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer t noving it, det	termine the	percentage	of the	3.3
		to the follow of 1. If the	ving table. I bed is comp ness rating f	f the bed is oosed of bed	an artificial s Irock, use a	surface, or o	y fine sedim composed of e of 5. cles (rescale	fine sedime	ents, use a r	ating score	
		Rating	Rating Des	cription							
		5					buried by fin		•)	
		3					l, or buried bed, or buried	•			
							ed, or buried				
		1					r buried by fi			ıl surface)	
	List the rati	ngs at each	point below								
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
2	5	4	3	3	5	1	4	3	1	4	
3		along the st	tream; use t	he same po	ints and par	ticles as use	t no fewer thed in V _{EMBED}			•	1.77 in
			ches to the r and or finer			point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.22	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	
	0.63	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	
	3.50	3.50	3.50	3.50	5.00	5.00	7.10	10.10	10.10	14.30	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	80.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number on tal number on tal number of				40 %
			Left Bank:	27	ft	I	Right Bank:	27	7 ft		

Sample	e Variables	5-9 within t	the entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea		ne number fi	om the entir		ter and 36 in buffer and w				4.4
		'				f downed w	oody stems:	(6	,	
6	V_{TDBH}	Average db	oh of trees (measure on	ly if V_{CCANOP}	_Y tree/saplir	ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		inches (10	cm) in diam	eter. Enter	tree DBHs i	n inches.					Not Used
				ents of indi	vidual trees	(at least 4 ir	n) within the	buffer on ea	ch side of	•	
		the stream									Ī
			Left Side					Right Side			
7	V_{SNAG}		• ,		,		t of stream.	Enter numb	er of snags	on each	
		side of the	stream, and	the amoun	t per 100 fee	et will be cal	lculated.				0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}	Number of			oody stems	up to 4 inch	nes dbh) per		_	asure only	
	002	if tree cove	r is <20%).	Enter numb	per of sapling		bs on each s				51.9
		per 100 ft c	of stream will Left Side:				Diaht Cida	•	35		
9	V _{SRICH}	Rinarian ve			35 ss ner 100 f	eet of strea	Right Side: m reach. Ch	_		from	
	V SKICH						ve species p				2.74
		richness pe	er 100 feet a	and the subi	ndex will be	calculated f	from these d	ata.			
		Grou	ıp 1 = 1.0					Group	2 (-1.0)		
I	Acer rubru	ım		Magnolia t	ripetala		Ailanthus a	ltissima		Lonicera ja	ponica
	Acer sacci	harum		Nyssa sylv	atica		Albizia julib	orissin		Lonicera ta	tarica
	Aesculus i	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus sei	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	<u> </u>	Quercus a	lba		philoxeroid			Microstegiun	n vimineum
	Betula len			Quercus c			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glal		H	Quercus p			Coronilla va		Ħ	Pueraria m	,
	Carya ova			Quercus ru			Elaeagnus u			Rosa multil	
	Carya ova			Quercus v			Lespedeza			Sorghum h	
	Cornus flo			Sassafras			Lespedeza			Verbena br	
	Fagus gra			Tilia ameri			Ligustrum ol				
	Fraxinus a			Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame			5				
	Magnolia a			Jiiias airie	Jilouna						
	wayiiula	aouminala									
		5	Species in	Group 1				1	Species in	Group 2	

		10-11 within							one within	25 feet fron	n each
10	V _{DETRITUS}	Average pe	ercent cover	of leaves, s	sticks, or oth	er organic n	naterial. Wo	ody debris «	<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side]	
		50	50	50	50	50	50	50	50		ļ
11	V_{HERB}	include woo	ody stems a percentages	t least 4" db	aceous vege oh and 36" ta n 200% are a	all. Because	there may b	e several la	yers of grou	und cover	50 %
			Left	Side			Right	Side			
		50	50	50	50	50	50	50	50		
Sample	e Variable 1	2 within the	e entire cate	chment of t	the stream.						
12	V _{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ied:					0.66
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (:	>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and r	native range (<50% ground	d cover)				•	0.5	5	100
								•			
	-							•			
	•							•			
	_							▼			
	LF	HC U5					No	tes:			
Va	ariable	Value	VSI								
V _C	CANOPY	Not Used, <20%	Not Used								
V _{EI}	MBED	3.3	0.94								
Vsi	JBSTRATE	1.77 in	0.89								
V_{BI}	ERO	40 %	0.86								
VLV	WD	4.4	0.56								
V _{TI}	овн	Not Used	Not Used								
Vsı	NAG	0.0	0.10								
Vs	SD	51.9	0.80								
V _{sı}	RICH	2.74	1.00								
V _{DI}	ETRITUS	50.0 %	0.61								
V _{HI}	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U5

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.73
Biogeochemical Cycling	0.78
Habitat	0.67

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.19	0.65
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.74	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	65.00	0.79
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7208742	
Pro		Buffalo Mou	untain				•		ū	-82.217431	
	=	UT1 of UT1		Left Fork of	Hell Creek		. –	-	_	Post-10 Yea	
C A						Ctroom Tu	<u> </u>				
	AR Number:			Length (ft):	135	Stream Ty		mittent Stream			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_P ()		
		Project Site				▼	After Project				▼
Sample		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	. Measure of the contract of t	only if tree/s	anopy. Mea apling cover Top Strata c	is at least 2			50.0 %
ĺ		cent cover r									
ļ	50	50	50	50	50	50	50	50	50	50	
2	V _{EMBED}										2.2
	along the stream. Select a particle from the bed. Before moving it, determine the percentage of the										
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according										
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.									
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and									
		Minshall 1983)									
			Rating Des				h		/ a.v. la a alva alv	\	
		5 4					buried by fin I, or buried b		•)	
		3					ed, or buried	•			
		2					d, or buried				
		1	>75 percen	t of surface	covered, su	rrounded, o	r buried by fi	ine sedimer	ıt (or artificia	al surface)	
ı	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}		hly equidista	ant points	1.77 in
	Enter partic	cle size in inc	ches to the i	nearest 0.1	inch at each	point below	/ (bedrock sl	nould be co	unted as 99	in. asphalt	
		as 0.0 in, s				po 50.0	(500.00.10.			,	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.22	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	
	0.63	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	
	3.50	3.50	3.50	3.50	5.00	5.00	7.10	10.10	10.10	14.30	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	80.00	99.00	99.00	
4	V_{BERO}		e total perce				tal number on tal number of				40 %
		, эс ар	Left Bank:	27	7 ft	1	Right Bank:	27	'ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in ouffer and wi				5.2
						f downed w	oody stems:		7		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream	below:								•
		_	Left Side	1				Right Side		•	
	5	5	5	5	5	5	5	5	5	5	
									_		
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	330										
				Enter numb		gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used
		po. 100 it o	Left Side:	. Do caroura	.00.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	2.74
		•	ip 1 = 1.0		140% 11111 20	carouratou i	10111 111000 0		2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala	Group 2 (-1.0) Ailanthus altissima Lonicera jap					
	Acer sacc			Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus			Oxydendrun			Alliaria peti			Lotus corni	
	Asimina tr			Prunus ser			-			Lythrum sa	
	Betula alle			Quercus al			Alternanthe philoxeroid			Microstegiun	
	Betula len									•	
				Quercus in			Aster tatari			Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	·
	Carya glal			Quercus pi			Coronilla va			Pueraria m	
	Carya ova			Quercus ru			Elaeagnus u			Rosa multin	
	Carya ova			Quercus ve			Lespedeza			Sorghum h	•
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a	acuminata									
			On a -i - i	O 1					.	0 6	
		5	Species in	Group 1				1	Species in	Group 2	

		10-11 withi bplots shoບ							one within	25 feet from	n each
10	V_{DETRITUS}				sticks, or oth It cover of th			oody debris <	<4" diamete	er and <36"	65.00 %
		long are me		Side		o domana,		t Side] '	
		65	65	65	65	65	65	65	65		
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	<20%). D	o not	
	TIERD	include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may I	oe several la rcent cover c	yers of gro	und cover	Not Used
		each subpl		s up imougi	1 200% are a	accepted. E	inter the per	cent cover c	n ground ve	egetation at	
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	e entire cate	chment of t	he stream.						
12	V _{WLUSE}				e for watersh	ned:					
	WLUSE		g								0.67
			Land	Usa (Chaor	se From Dro	n Liet)			Runoff	% in Catch-	Running
			Lanu	Ose (Choos	se Fiolii Dio	p List)			Score	ment	Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and r	native range (!	50% to 75%	ground cover	•)			•	0.7	5	100
	▼										
	-							•			
								•			
	-							•			
	LF	HC U5					No	ites:			
Va	ariable	Value	VSI								
V _C	CANOPY	50 %	0.50								
VEI	MBED	3.3	0.94								
	JBSTRATE	1.77 in	0.89								
	ERO	40 %	0.86								
V _{L\}		5.2	0.65								
		5.0	0.03								
SINC											
V _{SSD} Not Used Not Used											
	RICH	2.74	1.00								
V _{DI}	ETRITUS	65.0 % Not Used	0.79 Not Used								
V_{W}	LUSE	0.67	0.71								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of UT10 of Left Fork of Hell Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: LFHC U5

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.76
Biogeochemical Cycling	0.88
Habitat	0.90

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.77	0.89
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.93	0.74
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	2.96	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	2.74	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7208742	
Pro		Buffalo Mou	untain						_	-82.217431	
	-	UT1 of UT1		Left Fork of	Hell Creek		_	_	npling Date:		
C A						Ctroom Tu					
	AR Number:			Length (ft):	135	Stream Ty		mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_{>Y})		
Site	and Timing:	Project Site				V	After Project				▼
Sample		1-4 in strea									
1	V _{CCANOPY}	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.)								95.0 %	
ĺ				·							
	95	95	95	95	95	95	95	95	95	95	
		•									
2	along the stream. Delect a particle from the bed. Delote moving it, determine the percentage of the										3.3
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according										
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.									
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and									
		Minshall 1983)									
			Rating Des				المسالم المسالم		/a b.a.da.d.	Λ.	
		5 4					buried by find, or buried b		·	.)	
		3					ed, or buried	-			
		2					ed, or buried				
		1	>75 percen	t of surface	covered, su	rrounded, o	r buried by fi	ine sedimer	nt (or artificia	al surface)	
ı	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the d in V _{EMBED}		hly equidista	ant points	1.77 in
	Enter partic	ele size in inc	ches to the i	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in asphalt	
		as 0.0 in, s				point bolon	(DOG!OOK O	nouna po co	antou ao oo	iii, aopiiait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.22	0.22	0.22	0.22	0.31	0.31	0.44	0.44	0.63	0.63	
	0.63	0.89	0.89	1.26	1.77	1.77	1.77	2.50	2.50	3.50	
	3.50	3.50	3.50	3.50	5.00	5.00	7.10	10.10	10.10	14.30	
	14.30	14.30	14.30	14.30	20.00	40.00	40.00	80.00	99.00	99.00	
4	V_{BERO}		e total perce				tal number onks are eroc				40 %
		may be up	Left Bank:	27	7 ft		Right Bank:	27	7 ft	ı	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in ouffer and w				5.9
		•				f downed w	oody stems:		8		
6	V_{TDBH}			measure onleter.			ng cover is a	t least 20%)	. Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								-
			Left Side	1	1		ı	Right Side			
	10	10	10	10	10	10	10	10	10	10	
					1.000						
7	V_{SNAG}			ast 4" dbh a I the amount			t of stream. Iculated.	Enter numb	er of snags	on each	3.0
			Left Side:	:	3		Right Side:		1		
8	330								N		
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.								Not Used		
		F	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	2.74
			p 1 = 1.0						2 (-1.0)		
7	Acer rubru		<u> </u>	Magnolia ti	ripetala	Group 2 (-1.0) Ailanthus altissima Lonicera jap					ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib	rissin		Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
	Betula alle			Quercus al			philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glal			Quercus pr			Coronilla va			Pueraria m	·
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol	otusifolium			
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro	n tulipifera		Ulmus ame			-				
	Magnolia a										
	agriona (
		5	Species in	Group 1				1	Species in	Group 2	

					40" x 40", o equidistant				one within	25 feet from	n each
10	V _{DETRITUS}				sticks, or oth nt cover of th				<4" diamete	er and <36"	85.00 %
			Left	Side			Righ	t Side]	
		85	85	85	85	85	85	85	85		
11	V_{HERB}	Average pe	rcentage co	over of herb	aceous vege	etation (mea	asure only if	tree cover is	s <20%). Do	o not	
	HEKB	include woo	ody stems a	t least 4" db	oh and 36" ta	all. Because	there may	be several la	yers of grou	und cover	Not Used
		each subple		s up trirougi	n 200% are a	ассеріей. Б	inter the pe	rcent cover (oi grouna ve	egetation at	
			Left	Side			Righ	t Side			
Sample	o Variablo 1	2 within the	ontiro cate	chmont of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					
	WLUSE	g	go or r			.00.					0.69
			Land	Usa (Chao	se From Dro	n Liet)			Runoff	% in Catch-	Running
			Lanu	USE (CHOO	se Floiii Dio	p List)			Score	ment	Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				_	1	55	55
	Open space	(pasture, law	ns, parks, etc	.), grass cov	er >75%			_	0.3	45	100
	•							•			
▼											
	-							•			
								_			
	-							•			
	<u>L</u>	HC U5					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	95 %	1.00								
	MBED	3.3	0.94								
Vs	UBSTRATE	1.77 in	0.89								
	ERO	40 %	0.86								
V _L		5.9	0.74								
	DBH	10.0	1.00								
	NAG	3.0	1.00								
V _s		Not Used	Not Used								
	RICH	2.74	1.00								
	ETRITUS	85.0 %	1.00								
	ERB	Not Used	Not Used								
	/LUSE	0.69	0.73								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** UT of Pigeon Creek

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 1

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.72
Biogeochemical Cycling	0.98
Habitat	0.96

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	96.57	1.00
V_{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	7.11	0.89
V_{TDBH}	Average dbh of trees.	9.96	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	78.13	0.95
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG							M Northina:	37.7365456	7
Pro		Buffalo Mou	untain						_	-82.205420	
	-	UT of Piged					•	_	npling Date:		
SA	R Number:			Length (ft):	450	Stream Ty	/De: Interi	mittent Strea			
						-					\
	Top Strata:	re	e/Sapling St	rata	(determined	a from perce	ent calculate	a in v _{ccanor}	ν)		
		Project Site				▼	Before Project	ct			▼
Sample		1-4 in strea									
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	r is at least 2			96.6 %
			neasuremer			T					
	100	94	100	100	94	88	100	88	100	94	
	100	94	100	100				-			
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.5
							y fine sedim			-	
to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.											
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and									
		Minshall 1983)									
			Rating Des		avarad aur	rounded or	buried by fin	o andimont	(or bodrook	`	
		5 4					buried by fin I, or buried b		·)	
		3					ed, or buried	-			
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	al surface)	
	List the rati	ngs at each	point below	:							
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
2	4	5	4	2	4	3 Magaura a	4	4	4	4	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}		niy equidista	ant points	3.50 in
	•					point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
			and or finer								
	0.08	0.08	0.08	0.08	0.08	0.31	0.44	0.89	1.26	1.26	
ı	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00	
	5.00	5.00	5.00	5.00	5.00	7.10	7.10	7.10	7.10	7.10	
1	7.10	7.10	7.10	10.10	10.10	10.10	14.30	20.00	99.00	99.00	
4	V_{BERO}	side and the	e total perce				ital number on tal number on tal number of				200 %
		may be up									
			Left Bank:	45	0 ft		Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to the	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in ouffer and wi				7.1
		'				f downed wo	oody stems:	3	32		
6	V_{TDBH}			measure onleter.			ng cover is a	t least 20%)	. Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream	below:								•
		T	Left Side	1	1		•	Right Side			
	8	7	15.5	10	10.5	5.5	7	11.1	15		
									_		
7	V_{SNAG}			ast 4" dbh a the amount			t of stream. culated.	Enter numb	er of snags	on each	0.4
			Left Side:	:	2		Right Side:		0		
8	330 , , , , , , , , , , , , , , , , , ,										
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.								Not Used		
		po. 100 it o	Left Side:	, po caroura	.04.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	1.56
		•	p 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala	Group 2 (-1.0) Ailanthus altissima Lonicera jag					ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib	orissin		Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
		ghaniensis		Quercus al			philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glai			Quercus pi			Coronilla va			Pueraria m	ontana
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	ımbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ok	btusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame			-				
		acuminata									
	agriona (
		7	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	78.13 %
		long are inc		Side	it cover or tir	e detinaria,		it Side		1	Not Used 1.00
		70	50	100	95	95	95	45	75		
	.,								000() B	L	
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	aceous vege oh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Commi	a Variabla 4	O within the	antina aat		the extreme						
					the stream.						
12	V _{WLUSE}	vveignted A	verage of R	tunon Scor	e for watersh	iea:					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Percent
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
	a .							•			
	-							•			
								•			
								▼			
								•			
								•			
								•			
	U	TPC 1					No	otes:	•		
٧	ariable	Value	VSI								
V _c	CANOPY	97 %	1.00								
V _E	MBED	3.5	0.99								
Vs	UBSTRATE	3.50 in	1.00								
V_{B}	ERO	200 %	0.00								
V _L	WD	7.1	0.89								
V _T	DBH	10.0	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
V _s	RICH	1.56	0.74								
	ETRITUS	78.1 %	0.95								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain Location: UT of Pigeon Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 1

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.69
Biogeochemical Cycling	0.57
Habitat	0.63

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	4.00	0.50
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	52.00	0.80
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V_{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	radient	Headwat				entucky a alculator		ern wes	t virgini	a
	Team:	AC AG							M Northing:	37.7365456	67
Pro		Buffalo Mou	untain						ΓM Easting:		
	-	UT of Pigeo					•	-	npling Date:		
91	R Number:			Length (ft):	450	Stream Ty	(DO:				
								mittent Strea			•
	Top Strata:	Shi	rub/Herb Str	ata	(determined	from perce	ent calculate	d in V _{CCANOR}	γ)		
		Project Site				V	After Project				▼
Sample		1-4 in strea									
1		equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than								Not Used, <20%	
		cent cover n	neasuremer	its at each p	oint below:						1
	0										
	V	A	- -			M = = =		h 00	-l- li -li - (
2 V _{EMBED} Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according							3.5				
				• .			•		•		
			bed is comp				composed of	line seaime	enis, use a i	aling score	
		Embeddedi	ness rating f			<u> </u>	cles (rescale	d from Platt	s, Megahan	, and]
		Minshall 19									
			Rating Des				h		/ a.v. la a alva alv	\	
		5 4					buried by fin I, or buried b		•)	-
		3					ed, or buried	•			1
		2					d, or buried				1
		1	>75 percen	t of surface	covered, su	rrounded, o	r buried by fi	ine sedimer	ıt (or artificia	ıl surface)	
	List the ration	ngs at each	point below	:							_
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	4	4	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}		hly equidista	ant points	3.50 in
	Enter partic	le size in ind	ches to the r	nearest 0.1 i	inch at each	point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	Enter particle size in inches to the nearest 0.1 inch at each point below (bedrock should be counted as 99 in, asphalt or concrete as 0.0 in, sand or finer particles as 0.08 in):										
	0.08	0.08	0.08	0.08	0.08	0.31	0.44	0.89	1.26	1.26	1
1	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00]
	5.00	5.00	5.00	5.00	5.00	7.10	7.10	7.10	7.10	7.10	
	7.10	7.10	7.10	10.10	10.10	10.10	14.30	20.00	99.00	99.00	1
4	V_{BERO}	•	e total perce	stream cha			tal number o				40 %
			Left Bank:	90) ft	1	Right Bank:	90) ft		

Sample	Sample Variables 5-9 within the entire riparian/buffer zone adjacent to the stream channel (25 feet from each bank).										
5	V_{LWD}	stream rea		e number fr	om the entir		er and 36 in buffer and w				4.0
						f downed w	oody stems:	1	8	,	
6	V_{TDBH}						ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		inches (10	cm) in diam	eter. Enter	tree DBHs i	n inches.					Not Osed
				ents of indiv	vidual trees	(at least 4 ir	n) within the	buffer on ea	ch side of	•	
		the stream						D: 1 / O: 1		-	Ī
			Left Side					Right Side			
7	V_{SNAG}		• •		and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}						nes dbh) per				
						gs and shru	bs on each s	side of the s	tream, and t	the amount	52.0
		per 100 it c	of stream wil Left Side:		17		Right Side:	1	17		
9	V_{SRICH}	Riparian ve	egetation sp	ecies richne	ss per 100 f	eet of strea	m reach. Ch	neck all spec	cies present	from	
							ve species p		strata. Spe	ecies	1.11
				ind the subi	ndex will be	calculated t	rom these d		0 (1 0)		
			ıp 1 = 1.0				A.11 .11	•	2 (-1.0)		
✓	Acer rubru			Magnolia ti	•		Ailanthus a			Lonicera ja	ponica
	Acer sacci			Nyssa sylv			Albizia julib	orissin		Lonicera ta	tarica
	Aesculus f	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tri	iloba		Prunus sei	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	I	Quercus a	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	3		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multit	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	mericana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
		5	Species in	Group 1				0	Species in	Group 2	

Sample Variables 10-11 within at least 8 subplots (40" x 40", or 1m x 1m) in the riparian/buffer zone within 25 feet from each											
bank. T	he four sul	oplots shou	ıld be place	d roughly	equidistant	ly along ea	ch side of t	ne stream.			
10	V _{DETRITUS}						naterial. Wo ver at each s		<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side]	
		50	50	50	50	50	50	50	50		
11	V_{HERB}	Average pe	ercentage co	ver of herb	aceous vege	etation (mea	sure only if t	ree cover is	<20%). D	o <i>not</i>	
		include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may b	e several la	yers of grou	und cover	50 %
		each subple		s up trirougi	1 200% are a	accepted. E	inter the per	cent cover c	n ground ve	egetation at	
				Side			Right		-	·	
		50	50	50	50	50	50	50	50		
0		0 1411 41									
		2 within the								•	
12 V _{WLUSE} Weighted Average of Runoff Score for watershed:										0.66	
									Runoff	% in Catch	Running
			Land	Use (Choos	se From Dro	p List)			Score	ment	Percent (not >100)
	Forest and n	ative range (:	>75% ground	l cover)				_	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and n	ative range (<50% ground	l cover)				•	0.5	5	100
	-	_	_					•			
								•			
	-							_			
	-							Ž			
								V			
		TPC 1					Not	es:			
Va	ariable	Value	VSI								
V _C	CANOPY	Not Used, <20%	Not Used								
VE	MBED	3.5	0.99								
V _{st}	JBSTRATE	3.50 in	1.00								
V _{BI}	ERO	40 %	0.86								
VLV	WD	4.0	0.50								
V _{TI}	овн	Not Used	Not Used								
Vsi	NAG	0.0	0.10								
Vss	SD	52.0	0.80								
V _{SI}	RICH	1.11	0.53								
V _{DI}	ETRITUS	50.0 %	0.61								
V _{HI}	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain
Location: UT of Pigeon Creek
Sampling Date: Post-10 Year

Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 1

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.73
Biogeochemical Cycling	0.80
Habitat	0.68

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.11	0.64
V_{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	70.00	0.85
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	Hign-G	Fradient	Headwat				entucky a Falculator		ern Wes	t Virginia	a	
	Team:	AC AG							M Northina:	37.7365456	67	
Pro		Buffalo Mou	ıntain						_	-82.205420		
	-	UT of Piged					_	_	_	Post-10 Yea		
0.4				1 (1 (1)	450	О: Т				1 000 10 100		
SA	R Number:	UTPC 1	Reach	Length (ft):	450	Stream Ty	/pe: Inter	mittent Strea	m		•	
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	oy)			
Site a	and Timing:	Project Site				•	After Project				•	
Sample		1-4 in strea										
1		equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea sapling cover Top Strata c	r is at least 2			50.0 %	
		cent cover r		·								
	50	50	50	50	50	50	50	50	50	50		
2	along the stream. Gelect a particle from the bed. Before moving it, determine the percentage of the										3.5	
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according											
	to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.											
		Embeddedi	Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and									
		Minshall 19	Minshall 1983)									
	Rating Description 5 < 5 percent of surface covered, surrounded, or buried by fine sediment (or bedrock)											
		5							•)		
		3					d, or buried bed, or buried	-				
		2					ed, or buried					
		1					r buried by fi	_		al surface)		
	List the ration	ngs at each	point below	:			•					
	2	3	2	3	3	2	2	3	4	5		
	4	3	4	3	4	4	1	4	4	3		
	4	4	3	2	3	2	4	4	5	4		
	5	3	4	4	4	3	4	5	2	3		
	4	5	4	2	4	3	4	4	4	4		
3	V _{SUBSTRATE}						nt no fewer the ed in V _{EMBED}		hly equidista	ant points	3.50 in	
	Enter partic	ele size in in	ches to the i	nearest 0.1	inch at each	point below	v (bedrock sl	hould be co	unted as 99	in, asphalt		
	•	as 0.0 in, s				point bolon	· (Dodiook of	nouna po co	u	iii, aopiiait		
	0.08	0.08	0.08	0.08	0.08	0.31	0.44	0.89	1.26	1.26		
•	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	3.50	3.50		
	3.50	3.50	3.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00		
	5.00	5.00	5.00	5.00	5.00	7.10	7.10	7.10	7.10	7.10		
	7.10	7.10	7.10	10.10	10.10	10.10	14.30	20.00	99.00	99.00		
4	V_{BERO}	Total perce	nt of eroded e total perce	stream cha	nnel bank.	Enter the to	otal number of tal nks are eroc	of feet of ero	oded bank o	n each	40 %	
		- '	Left Bank:	90) ft	I	Right Bank:	90) ft			

Sample	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read		e number fr	om the entir		er and 36 inc buffer and wi				5.1
		•				f downed w	oody stems:	4	23	·	
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	t least 20%)). Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								1
			Left Side	-	-			Right Side			
	5	5	5	5	5	5	5	5	5	5	
	5	5	5	5	5	5	5	5	5	5	
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	per of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}		saplings an				nes dbh) per				
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.									Not Used	
		per 100 it o	Left Side:		nea. O		Right Side:		0		
9	V_{SRICH}	Riparian ve		ecies richne	ss per 100 f	eet of strea	m reach. Ch	neck all spe	cies present	from	
							ve species p		I strata. Spe	ecies	1.11
				ind the subir	ndex will be	calculated 1	from these da		0 (4 0)		
	A (p 1 = 1.0				A.1. (1		2 (-1.0)	,	
V	Acer rubru			Magnolia ti	-		Ailanthus a			Lonicera ja	
	Acer sacc			Nyssa sylv			Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus ser	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	\checkmark	Quercus al	'ba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	a		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glai	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multit	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro			Ulmus ame			J				
				Jinus and	rouriu						
	Magnolia	acummata									
		5	Species in	Group 1				0	Species in	Group 2	

				subplots (40 ed roughly eq					zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves, sticer the percent c	cks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	70.00 %
Sample V 11 V Sample V 12 V Vari				Side				nt Side		1	
		70	70	70	70	70	70	70	70		
11	M	Average pe	roontago og	over of herbac	00110 1/000	etation (mod	auro only it	troe cover is	-200() D	o not	
	V_{HERB}	include woo	ody stems a percentages	it least 4" dbh a s up through 2	and 36" ta	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	nt Side	•		
Commi	- Variabla 4	O within the	ontine set	share and of the	tu						
						- d.					
12	V _{WLUSE}	vveignted A	werage or r	Runoff Score fo	or watersh	iea.					0.67
			Land	Use (Choose	From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	c.), grass cover :	>75%			•	0.3	45	95
	Forest and r	native range (50% to 75%	ground cover)				•	0.7	5	100
	-							•			
								•			
	-	▼									
								•			
								•			
	U	TPC 1					N	otes:			
V	ariable	Value	VSI								
Vc	CANOPY	50 %	0.50								
VE	MBED	3.5	0.99								
Vs	UBSTRATE	3.50 in	1.00								
V _B	BERO	40 %	0.86								
V _L	WD	5.1	0.64								
V _T	DBH	5.0	0.29								
Vs	NAG	0.0	0.10								
Vs	SD	Not Used	Not Used								
Vs	RICH	1.11	0.53								
	ETRITUS	70.0 %	0.85								
		Not Used	Not Used								
V _v	VLUSE	0.67	0.71								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** UT of Pigeon Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 1

Tree/Sapling Strata

Functional Results Summary: Enter Results i

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.78
Biogeochemical Cycling	0.90
Habitat	0.89

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	6.44	0.81
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.22	0.43
V_{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.11	0.53
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG		1 10101 -		000000			M Northina:	37.7365456	57
Pro		Buffalo Mou	untain						ū	-82.205420	
	-	UT of Piged					_	_	pling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/De: Interi	mittent Strea			
											•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	ν)		
		Project Site				▼	After Project				▼
Sample		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least 2			95.0 %
	List the percent cover measurements at each point below:										
	95	95	95	95	95	95	95	95	95	95	
								-			
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.5
surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score											
								line seaime	ents, use a r	ating score	
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and									
		Minshall 1983)									
			Rating Des		avarad aur	rounded or	buried by fin	o andimont	/or bodrook	`	
		5 4					buried by find, or buried b		•)	
		3					ed, or buried	-			
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	al surface)	
ı	List the rati	ngs at each	point below								
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5 4	3	4	4	4	3	4	5 4	2	3	
3	•	5 Median stre	•	2 Leubstrate r	4	3 Measure a	4 It no fewer th		4 bly equidists	4	
3	V _{SUBSTRATE}						ed in V _{EMBED}		riiy equidista	ant points	3.50 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):						
	0.08	0.08	0.08	0.08	0.08	0.31	0.44	0.89	1.26	1.26	
	1.77	1.77	1.77	1.77	2.50	2.50	2.50	2.50	3.50	3.50	
	3.50	3.50	3.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00	
	5.00	5.00	5.00	5.00	5.00	7.10	7.10	7.10	7.10	7.10	
	7.10	7.10	7.10	10.10	10.10	10.10	14.30	20.00	99.00	99.00	
4	V_{BERO}	side and the	e total perce				tal number on hks are eroc				40 %
		may be up									
			Left Bank:	90) ft		Right Bank:	90) ft		

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir						6.4
						f downed w	oody stems:	2	29		'
6	V_{TDBH}						ng cover is at	: least 20%)). Trees are	at least 4	10.0
				ents of indiv	idual trees	(at least 4 ir	n) within the l	buffer on ea	ach side of	l	
		tne stream				I		Diaht Sido			1
	stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: 29 V _{TDBH} Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side 10 10 10 10 10 10 10 10 10 1										
		_									
	10	10	10	10	10	10	10	10	10	10	
7	V_{SNAG}							Enter numb	er of snags	on each	0.2
			Left Side:		1		Right Side:		0		
8											
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount No.								Not Used		
		per 100 it 0					Right Side:		0		
9	V_{SRICH}						m reach. Ch				
									strata. Spe	cies	1.11
				nd the Subii	idex will be	calculated i	Tom these da		2 (1 0)		
	A = = # # # # # #		p 1 = 1.0	Manualia	rin atala						
7				-	-						
				-							
				-			Alliaria peti	olata			
	Asimina ti	riloba		Prunus ser	otina					Lythrum sa	licaria
	Betula alle	ghaniensis	✓	Quercus ai	lba		philoxeroide	es		Microstegiun	n vimineum
	Betula ler	nta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alb	а		Quercus in	nbricaria		Cerastium t	fontanum		Polygonum o	cuspidatum
	Carya gla	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	alis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ata		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob	tusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera									
		acuminata									
	agriona										
		5	Species in	Group 1				0	Species in	Group 2	

_											
					40" x 40", o equidistant				one within	25 feet fron	n each
10	V _{DETRITUS}				sticks, or oth				<4" diamete	er and <36"	85.00 %
		long are inc		Side	it cover or th	e detilital lay		t Side		1 '	
		85	85	85	85	85	85	85	85		
11	V_{HERB}	Average ne	rcentage co	ver of herb	aceous vege	atation (mea	sure only if	tree cover is	: <20%) D	o not	
	▼ HERB	include woo	ody stems a	t least 4" db	oh and 36" ta	all. Because	there may l	oe several la	yers of gro	und cover	Not Used
		vegetation each subple		s up through	n 200% are a	accepted. E	nter the pe	cent cover c	of ground ve	egetation at	
			Left	Side			Righ	t Side		l '	
										1	
Sample	· Variable 1	2 within the	e entire cate	chment of t	the stream.						
12	V _{WLUSE}				e for watersh	ned:					
İ	WEUSE	3									0.69
Lang Use (Choose From Drop List)							% in Catch	Running Percent			
			Laria			p 2.0t/			Score	ment	(not >100)
Forest and native range (>75% ground cover)							1	55	55		
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	100
								•			
	▼										
	_										
								•			
								•			
	U	TPC 1					No	tes:			
Va	ariable	Value	VSI								
Vc	CANOPY	95 %	1.00								
VE	MBED	3.5	0.99								
Vsı	JBSTRATE	3.50 in	1.00								
V_{BI}	ERO	40 %	0.86								
VLV	WD	6.4	0.81								
V _{TI}	овн	10.0	1.00								
	NAG	0.2	0.43								
Vss		Not Used	Not Used								
	RICH	1.11	0.53								
	ETRITUS	85.0 %	1.00								
		Not Used	Not Used								
V _{HERB} Not Used Not Used V _{WLUSE} 0.69 0.73											

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** UT of Pigeon Creek

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.67
Biogeochemical Cycling	0.97
Habitat	0.90

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.71	1.00
V _{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.56	0.69
V _{TDBH}	Average dbh of trees.	9.96	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	80.00	0.98
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	radient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7353602	
Pro		Buffalo Mou	untain				•		ū	-82.203688	
	-	UT of Piged					. –	_	npling Date:		
SA	R Number:			Length (ft):	450	Stream Ty	/De: Interi	mittent Strea			
						-					*
	Top Strata:		e/Sapling St	Idid	(determine)	a nom perce	ent calculate	u III v _{CCANOF}	Ρ Υ <i>)</i>		
		Project Site				V	Before Proje	ct			▼
		1-4 in strea			al h	al continu co	nany Maa		4b 4	O	
1	V _{CCANOPY}	equidistant	points along	the stream	. Measure	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least 2			95.7 %
	List the per	cent cover r	neasuremer	nts at each p	oint below:						
	100	100	88	88	100	88	100	100	88	100	
	100	94	94	100				-			
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.5
surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score											
			bed is comp					iiile sediiile	ziilo, uoe a i	alling score	
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating 5			overed suri	rounded or	buried by fin	e sediment	(or bedrock)	
		4					l, or buried b		·	7	
		3					d, or buried	-			
		2					ed, or buried	_			
		1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	al surface)	
			point below		0	0	0	0	4	-	
	2	3	2	3	3	2	2	3	4	5	
	4	3 4	3	3 2	3	2	1	4	<u>4</u> 5	3	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	4	4	
3		Median stre	eam channe	l substrate p	article size.	Measure a	t no fewer the	nan 30 roug	-	-	3.50 in
	Entor norti	· ·		•	•				untad as CO	in conholt	
			cnes to the r and or finer			point below	/ (bedrock sl	noula be co	unted as 99	in, aspnait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.44	
	0.44	0.44	0.89	0.89	0.89	0.89	0.89	0.89	1.77	1.77	
	2.50	2.50	2.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00	
	5.00	7.10	10.10	10.10	10.10	14.30	20.00	40.00	80.00	80.00	
	80.00	80.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}						tal number o				
	DENO	•	e total perce				nks are eroc				200 %
		,	Left Bank:	45	0 ft	ı	Right Bank:	45	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to the	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read		e number fr	om the entir		er and 36 in ouffer and w	_			5.6
		'				f downed wo	oody stems:	2	25		
6	V_{TDBH}		oh of trees (r cm) in diam				ng cover is a	t least 20%)	. Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream	below:								•
		•	Left Side	1	1		•	Right Side		1	
	8	7	15.5	10	10.5	5.5	7	11.1	15		
									_		
7	V_{SNAG}		snags (at le stream, and				t of stream. culated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V _{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only										
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.								Not Used		
		po. 100 it o	Left Side:	, po caroura	.04.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	1.56
			ıp 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala		ponica				
	Acer sacc	harum		Nyssa sylv	•		Ailanthus a Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
	Betula alle			Quercus al			philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glal			Quercus pr			Coronilla va			Pueraria m	·
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	ımbellata		Rosa multi	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ot	btusifolium			
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro			Ulmus ame			•				
	Magnolia a			J20 am							
	wagnona	aoan iii iala									
		7	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	80.00 %
		long are me		Side	11 00 001 01 111	o dotinaria,		it Side		1	
		80	80	100	65	85	70	85	75		
- 11	.,								000() B	L	
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" dl s up throug	aceous vege oh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					4.00
									_		1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
	•							•			
								•			
								_			
	-							•			
								▼			
	-							•			
	U	TPC 2					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	96 %	1.00								
	MBED	3.5	0.99								
Vs	UBSTRATE	3.50 in	1.00								
	ERO	200 %	0.00								
V _L		5.6	0.69								
V _T	DBH	10.0	1.00								
Vs	NAG	0.0	0.10								
Vs		Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	80.0 %	0.98								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain
Location: UT of Pigeon Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 2

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.68
Biogeochemical Cycling	0.57
Habitat	0.63

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	3.64	0.45
V_{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	47.27	0.73
V _{SRICH}	Riparian vegetation species richness.	9.09	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V_{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	radient	Headwat		ms in ea Data She		_		ern wes	t virgini	a
	Team:	AC AG							M Northing:	37.7353602	2
Pro	ject Name:		untain				<u>'</u>		ΓM Easting:		
	-	UT of Piged						_	npling Date:		
SA	R Number:			Length (ft):	55	Stream Ty	/pe: _{Inter}	mittent Strea			•
	Top Strata:	Sh	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANO}	_{>Y})		
Site a	and Timing:	Project Site				•	After Project				•
	Variables	-					-				
1	V _{CCANOPY}	Average pe equidistant 20%, enter	ercent cover points along at least one	the stream value betw	. Measure of een 0 and 1	only if tree/s	apling cove	r is at least :			Not Used, <20%
Ī	•	cent cover i	neasuremer	its at each p	Joint Delow.						1
	0										
2	V _{EMBED}	along the s	nbeddednes tream. Sele	ct a particle	from the be	d. Before n	noving it, de	termine the	percentage	of the	3.5
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
		Rating	Rating Des	cription							
		5			overed, surr	ounded, or	buried by fir	ne sediment	(or bedrock	.)	
		4	5 to 25 perc					-			
		3			ace covered						
		<u>2</u> 1			ace covered				iment nt (or artificia	al surface)	
	List the ration	-	point below		0010100, 00	rrouridou, o	i banca by i	ino ocannoi	it (or artinoic	ar ourrado)	J
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	4	4	
3	V _{SUBSTRATE}		eam channe tream; use t						hly equidista	ant points	3.50 in
			ches to the r and or finer			point below	/ (bedrock s	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.44	
	0.44	0.44	0.89	0.89	0.89	0.89	0.89	0.89	1.77	1.77	
	2.50	2.50	2.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00	
	5.00	7.10	10.10	10.10	10.10	14.30	20.00	40.00	80.00	80.00	
	80.00	80.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	•	nt of eroded e total perce to 200%.								40 %
			Left Bank	11	ft	1	Right Bank	11	l ft		

Sampl	e Variables	5-9 within t	the entire ri	parian/buf	fer zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea		ne number f	rom the enti		ter and 36 inc buffer and wi				3.6
					Number o	f downed w	oody stems:		2	·	
6	V_{TDBH}				lly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		List the dbl	n measurem	ents of indi	vidual trees	(at least 4 i	n) within the	buffer on ea	ach side of	!	
		the stream									•
			Left Side					Right Side			
7	V_{SNAG}	Number of	snags (at le	ast 4" dbh a	and 36" tall)	per 100 fee	t of stream.	Enter numb	er of snags	on each	
	SIVAG				t per 100 fe						0.0
			Left Side:		0		Right Side:		0	'	
8	V_{SSD}						nes dbh) per				
			er is <20%). of stream wi			gs and shru	bs on each s	side of the s	tream, and t	the amount	47.3
		per roone	Left Side:		13		Right Side:	1	13		
9	V _{SRICH}	Riparian ve	egetation sp	ecies richne	ess per 100 f	eet of strea	m reach. Ch			from	
							ve species p		strata. Spe	ecies	9.09
		•		ind the Subi	ndex will be	calculated	from these d		0 (4 0)		
	<u> </u>		up 1 = 1.0	N.4 11 11			A''. (I		2 (-1.0)	,	
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Acer rubru			Magnolia t	-		Ailanthus a			Lonicera ja	
	Acer sacc	harum		Nyssa sylv	⁄atica		Albizia julib			Lonicera ta	tarica
	Aesculus	flava		Oxydendrur	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	riloba		Prunus se	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	J	Quercus a	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	la		Quercus c	occinea		Aster tatari	cus		Paulownia	lomenlosa
	Carya alba	a		Quercus ir	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum
	Carya glai	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	nlis		Quercus ru	ubra		Elaeagnus u	mbellata		Rosa multit	flora
	Carya ova	nta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus am	ericana						
	Magnolia	acuminata									
		5	Species in	Group 1				0	Species in	Group 2	

Sample	Variables	10-11 withi	n at least 8	subplots (4	40" x 40", o	r 1m x 1m)	in the ripar	an/buffer z	one within	25 feet fron	n each
	he four su	bplots shou	ıld be place	d roughly	equidistant	ly along ea	ch side of t	ne stream.			
10	V _{DETRITUS}				sticks, or oth t cover of th	-		•	<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side] '	
		50	50	50	50	50	50	50	50		
11	V_{HERB}	Average pe	ercentage co	ver of herb	aceous vege	etation (mea	sure only if t	ree cover is	<20%). D	o not	
					oh and 36" ta						50 %
		each subple		s up througr	1 200% are a	ассертеа. Е	nter the per	cent cover c	ir ground ve	egetation at	
			Left	Side			Right	Side] '	
		50	50	50	50	50	50	50	50	-	
			_								
•		2 within the									
12	V _{WLUSE}	Weighted A	verage of R	tunoff Score	e for watersh	ied:					0.66
									Runoff	% in Catch	Running
			Land	Use (Choos	se From Dro	p List)			Score	ment	Percent (not >100)
	Forest and r	native range (>75% ground	l cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%				0.3	45	95
Forest and native range (<50% ground cover) 0.5 5										100	
	→										
	=							•			
	-							_			
	-							_			
	=							. <u> </u>			
	-										
	U	TPC 2					Not	es:			
Va	ariable	Value	VSI								
Vc	CANOPY	Not Used, <20%	Not Used								
VE	MBED	3.5	0.99								
V _{st}	JBSTRATE	3.50 in	1.00								
V _{BI}	ERO	40 %	0.86								
V_{LV}	WD	3.6	0.45								
V _{TE}	овн	Not Used	Not Used								
Vsi	NAG	0.0	0.10								
Vss	SD	47.3	0.73								
V _{SI}	RICH	9.09	1.00								
V _{DI}	ETRITUS	50.0 %	0.61								
V _{HI}	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain
Location: UT of Pigeon Creek
Sampling Pate: Post 10 Year

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.74
Biogeochemical Cycling	0.80
Habitat	0.71

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V_{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.45	0.68
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	9.09	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	70.00	0.85
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	High-G	radient	Headwat				ntucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG					ı	_atitude/UT	M Northing:	37.7353602)
Pro	oject Name:		untain				•		ΓM Easting:		
	-	UT of Piged					. –	•	pling Date:		
SA	AR Number:			Length (ft):	55	Stream Ty	/pe: _{Interi}	mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	oy)		
Site	and Timing:	Project Site				•	After Project				•
Sample	• Variables	1-4 in strea	m channel								
1 V _{CCANOPY} Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) List the percent cover measurements at each point below:											50.0 %
i	List the per	cent cover r	neasuremer	its at each p	oint below:						1
	50	50	50	50	50	50	50	50	50	50	r.
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.5
							y fine sedim composed of				
		of 1. If the	bed is comp	osed of bed	lrock, use a	rating score	of 5.			_	
Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)											
		Rating	Rating Des								
		5					buried by fin)	
		3					l, or buried bed, or buried	•			
		2					ed, or buried				
		1					r buried by fi			l surface)	
	List the ration	ngs at each	point below		,	•	<u> </u>		,	/	
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	4	4	
3	$V_{SUBSTRATE}$						t no fewer the ed in V _{EMBED}		hly equidista	ant points	3.50 in
			ches to the r and or finer			point below	/ (bedrock sł	nould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.44	
	0.08	0.06	0.89	0.89	0.89	0.89	0.89	0.89	1.77	1.77	
ı	2.50	2.50	2.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00	
	5.00	7.10	10.10	10.10	10.10	14.30	20.00	40.00	80.00	80.00	
	80.00	80.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V _{BERO}						tal number o				
7	* BERO	•	e total perce				nks are erod				40 %
			Left Bank:	11	ft	ļ	Right Bank:	11	ft		

Sample	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read		e number fr	om the entir		er and 36 incouffer and wi				5.5
		•				f downed w	oody stems:	:	3		
6	V_{TDBH}		oh of trees (r cm) in diam				ng cover is at	t least 20%)	. Trees are	at least 4	5.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of	ļ	
		the stream	below:				,				-
			Left Side					Right Side			
	5	5	5	5	5	5	5	5	5	5	
	5	5	5	5	5	5	5	5	5	5	
7	V _{SNAG}		snags (at le stream, and				t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}	Number of	saplings and	d shrubs (w	oody stems	up to 4 inch	nes dbh) per	100 feet of	stream (mea	asure only	
						gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used
		per 100 ft c	of stream will Left Side:	be calculat	nea. O		Right Side:		0		
9	V _{SRICH}	Riparian ve		ecies richne	ss per 100 f	eet of strea	m reach. Ch	neck all spe	cies present	from	
							ve species p		strata. Spe	ecies	9.09
		-		na the subir	idex will be	calculated i	rom these da		2 (4 0)		
	A = = = = = = = = = = = = = = = = = = =		p 1 = 1.0	Manalia	rin a ta la		A il a rather rain		2 (-1.0)	l anisava ia	
7	Acer rubru			Magnolia ti	•		Ailanthus a			Lonicera ja	
	Acer sacc			Nyssa sylv			Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus ser	rotina		Alternanthe			Lythrum sa	licaria
	Betula alle	ghaniensis	J	Quercus al	ba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	la		Quercus co	occinea		Aster tatari	cus		Paulownia	lomenlosa
	Carya alba	9		Quercus in	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multin	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ob	otusifolium			
	Fraxinus a			Tsuga cana	adensis		Ligustrum s				
	Liriodendro	n tulipifera		Ulmus ame			-				
	Magnolia a			5ao ame							
	wayiioila	Journinala									
		5	Species in	Group 1				0	Species in	Group 2	

		10-11 within							one within	25 feet fron	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves, s		er organic m	naterial. Wo	ody debris «	<4" diamete	er and <36"	70.00 %
				Side				t Side		1 '	
		70	70	70	70	70	70	70	70		
11	V_{HERB}	Average pe	ercentage co	over of herba	aceous vege	etation (mea	sure only if	tree cover is	s <20%). D	o <i>not</i>	
		include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may I	oe several la rcent cover c	yers of grou	und cover	Not Used
		each subple	ot.		120070 010 0	docepted. L	•		n ground ve	getation at	
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ied:					0.67
									D #	0/ in O-1-1	Running
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Percent (not >100)
	Forest and n	ative range (:	>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			. 🕶 .	0.3	45	95
	Forest and native range (50% to 75% ground cover) 0.7 5									5	100
	F							•			
	-							•			
	-							•			
	=										
				1							
		TPC 2					No	ites:			
Va	ariable	Value	VSI								
Vc	CANOPY	50 %	0.50								
VE	MBED	3.5	0.99								
V _{st}	JBSTRATE	3.50 in	1.00								
V _{BI}	ERO	40 %	0.86								
VLV	WD	5.5	0.68								
V _{TI}	ОВН	5.0	0.29								
Vsi	NAG	0.0	0.10								
Vs	SD	Not Used	Not Used								
V _{SI}	RICH	9.09	1.00								
	ETRITUS	70.0 %	0.85								
V _{HI}		Not Used	Not Used								
V,,,	LUCE	0.67	0.71								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** UT of Pigeon Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTPC 2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.81
Biogeochemical Cycling	0.91
Habitat	0.95

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	3.50	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	7.27	0.91
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	1.82	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	9.09	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	radient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7353602	2
Pro	oject Name:		untain						•	-82.203688	
	-	UT of Piged					. –	_	npling Date:		-
0.4				1 th- /ft) -		Ot	·			······································	
SA	AR Number:	UTPC 2	Reacn	Length (ft):	55	Stream Ty	/pe: Inter	mittent Strea	m		
	Top Strata:	Tre	e/Sapling St	rata	(determine	d from perce	ent calculate	d in V _{CCANOR}	_{>Y})		
Site a	and Timing:	Project Site				•	After Project				•
Sample	Variables										
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea: apling covei Top Strata c	r is at least :			95.0 %
		cent cover r									
	95	95	95	95	95	95	95	95	95	95	
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer t noving it, det	termine the	percentage	of the	3.5
							y fine sedim				
			ving table. I bed is comp				composed of	tine sedime	ents, use a i	ating score	
						-	eles (rescale	d from Platt	s Magaban	and	
		Minshall 19		or graver, co	oddie and di	ouider partic	ies (rescale	u IIOIII Piall	s, weganan	, and	
		Rating	Rating Des								
		5					buried by fin		·)	
		4					l, or buried b	-			
		3 2					ed, or buried ed, or buried				
		1					r buried by fi			al surface)	
	List the ration	ngs at each			20.0.00, 00				(0. 0	• • • • • • • • • • • • • • • • • •	
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	4	4	
3	V _{SUBSTRATE}					Measure a	t no fewer thed in V _{EMBED}	•	hly equidista	ant points	3.50 in
	Enter partic	le size in in	ches to the i	nearest 0.1	inch at each	noint helow	(bedrock sl	hould be co	unted as 99	in asphalt	
		as 0.0 in, s				point bolow	(bodrook or	nodia bo oo	aritoa ao oo	iii, aopiiait	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.44	
	0.44	0.44	0.89	0.89	0.89	0.89	0.89	0.89	1.77	1.77	
	2.50	2.50	2.50	3.50	3.50	3.50	5.00	5.00	5.00	5.00	
	5.00	7.10	10.10	10.10	10.10	14.30	20.00	40.00	80.00	80.00	
	80.00	80.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}						tal number of				
,	- DEKU		e total perce				iks are eroc				40 %
		, up	Left Bank:	11	ft	ı	Right Bank:	11	l ft	l	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).			
5	V_{LWD}	stream read		e number fr	om the entir		er and 36 ind buffer and wi				7.3		
		por 100 100	Number of downed woody stems: 4										
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	least 20%). Trees are	at least 4	10.0		
		List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of											
		the stream below:											
			Left Side					Right Side					
	10	10	10	10	10	10	10	10	10	10			
	10	10	10	10	10	10	10	10	10	10			
					1.000 . 11)								
7	V_{SNAG}		• •		and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	per of snags	on each	1.8		
			Left Side:		0		Right Side:		1				
8	V_{SSD}			nes dbh) per				N					
			r is <20%). If stream wil			gs and shru	bs on each s	side of the s	stream, and t	he amount	Not Used		
		r	Left Side:		0		Right Side:		0				
9	V_{SRICH}						m reach. Ch						
							ve species pair		i strata. Spe	cies	9.09		
			p 1 = 1.0						2 (-1.0)				
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a			Lonicera ja	ponica		
	Acer sacc	harum		Nyssa sylv	-		Albizia julib			Lonicera ta			
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	culatus		
	Asimina tr			Prunus ser			-			Lythrum sa			
		ghaniensis		Quercus al			Alternanthe philoxeroide			Microstegiun			
	Betula len			Quercus co			Aster tatario			Paulownia			
	Carya alba			Quercus in			Cerastium t		H	Polygonum o	•		
	Carya gla			Quercus pi			Coronilla va			Pueraria m			
	Carya ova			Quercus ru Quercus ve			Elaeagnus u			Rosa multin			
	Carya ova					Lespedeza			Sorghum h	-			
	Cornus florida Sassafras albidum						Lespedeza			Verbena br	asiliensis		
	Fagus grandifolia Tilia americana						Ligustrum ob						
	Fraxinus a	americana		Tsuga can			Ligustrum s	sinense					
	Liriodendro	n tulipifera		Ulmus ame	ericana								
	Magnolia	acuminata											
		5	Species in	Group 1				0	Species in	Group 2			

								rian/buffer a	zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,		er organic i	material. W	oody debris	<4" diamete	er and <36"	85.00 %
				Side			-	nt Side		1	
		85	85	85	85	85	85	85	85		
11	1/	Averege pe	roontogo o	over of borb	000011011000	etation (may	nouro only it	troe cover i	-200() D	o not	
11	V_{HERB}	include woo	ody stems a percentages	t least 4" db	oh and 36" ta	all. Because	there may	f tree cover is be several la ercent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	nt Side			
Commi	o Marrialala 4	O within the	ontine set	alamant of	the extreme						
12	e Variable 1				e for watersh	od:					
12	V _{WLUSE}	vveignted A	werage or r	Curion Score	e ioi watersi	ieu.					0.69
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	55	55
	Open space	(pasture, law	ns, parks, etc	c.), grass cov	er >75%			•	0.3	45	100
	-							•			
	•							•			
								▼			
	•							•			
								~			
								•			
	U	TPC 2					N	otes:			
V	ariable	Value	VSI								
Vo	CANOPY	95 %	1.00								
VE	MBED	3.5	0.99								
Vs	UBSTRATE	3.50 in	1.00								
V _B	BERO	40 %	0.86								
V _L	WD	7.3	0.91								
V _T	DBH	10.0	1.00								
Vs	NAG	1.8	1.00								
Vs	SD	Not Used	Not Used								
Vs	RICH	9.09	1.00								
	ETRITUS	85.0 %	1.00								
	IERB	Not Used	Not Used								
V _v	VLUSE	0.69	0.73								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** UT of Pigeon Creek

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: UTPC 3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.67
Biogeochemical Cycling	0.86
Habitat	0.88

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	94.43	1.00
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	5.00	1.00
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	5.33	0.67
V _{TDBH}	Average dbh of trees.	10.57	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	80.63	0.98
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	Fradient	Headwat				entucky a alculato		ern wes	t Virginia	3
	Team:	AC AG							M Northina:	37.7334730)4
Pro		Buffalo Mou	untain						_	-82.202800	
	•	UT of Piged					_	_	npling Date:		
9.0	R Number:			Length (ft):	450	Stream Ty	(DO:				
								meral Stream			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_{>Y})		
Site a	and Timing:	Project Site	!			•	Before Proje	ct			•
Sample	Variables	1-4 in strea									
1	COANOPT								94.4 %		
ı	•		neasuremer								
	100	94	94	100	94	100	88	88	88	88	
	94	94	100	100							
2	V_{EMBED}	along the s	nbeddednes tream. Sele	ct a particle	from the be	d. Before n	noving it, de	termine the	percentage	of the	2.9
			d area surroi				-			-	
			ving table. I bed is comp					i iiile seaiille	eriis, use a i	alling score	
			ness rating f			-		d from Platt	s, Megahan	, and	
				orintion							
		Rating 5	Rating Des		overed suri	rounded or	buried by fir	ne sediment	(or bedrock)	
		4					I, or buried b		·	.,	
		3					d, or buried	•			
		2					ed, or buried				
	1	1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	al surface)	
ĺ			point below		4	4	4	-	4	4	
	1	2	2	3	4	4	1	5	1	1	
	3	3	3	3	3 4	4	3	3	2 4	2	
	5	5	4	4 1	4	2	2	1	4	4	
	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}	Median stre	eam channe tream; use t	•	article size.	Measure a		nan 30 roug		•	5.00 in
	_			-	-						
	•		ches to the i and or finer			point below	/ (bedrock s	hould be co	unted as 99	in, asphalt	
						0.00	0.00	0.00	0.00	1 77	
	0.08 1.77	0.08 1.77	0.44 1.77	0.44 1.77	0.44 2.50	0.89 2.50	0.89	0.89 3.50	0.89	1.77 3.50	
	3.50	3.50	5.00	5.00	5.00	5.00	2.50 5.00	5.00	3.50 5.00	5.00	
	5.00	5.00	7.10	10.10	10.10	10.10	10.10	10.10	10.10	14.30	
	14.30	14.30	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	
4	V _{BERO}		ent of eroded								
•	BEKO	•	e total perce								200 %
		may be up	to 200%.								
			Left Bank:	45	0 ft		Right Bank:	45	0 ft	•	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to the	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 ind ouffer and wi				5.3
		F				downed wo	oody stems:	2	24		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ig cover is at	least 20%)	. Trees are	at least 4	10.6
		List the dbh	n measurem	ents of indiv	idual trees	at least 4 ir	n) within the l	ouffer on ea	ach side of		
		the stream	below:			`					
			Left Side					Right Side			
	5	4	15.3	16.5	5.1	11	7	10	18	14	
						13	16	12	7	9	
						9.5	11.5	7.8	9.2		
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. culated.	Enter numb	er of snags	on each	0.4
			Left Side:				Right Side:		2		
8	V _{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only										
						gs and shrul	bs on each s	ide of the s	tream, and t	he amount	Not Used
		per 100 it d	Left Side:	l be calculat	tea.		Right Side:				
9	V_{SRICH}	Riparian ve		ecies richne	ss per 100 f	eet of strea	m reach. Ch	eck all spe	cies present	from	
							ve species p		strata. Spe	cies	1.56
		•		ind the subir	ndex will be	calculated f	rom these da		- (
			p 1 = 1.0				• • • • • • • • • • • • • • • • • • • •	•	2 (-1.0)		
✓	Acer rubru			Magnolia ti	•		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	atica		Albizia julib	rissin		Lonicera ta	tarica
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus ser	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	I	Quercus al	lba		philoxeroide	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium t	fontanum		Polygonum d	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multit	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ob	tusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
		7	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. Wo	oody debris	<4" diamete	er and <36"	80.63 %
				Side		<u> </u>		t Side		1	
		80	90	75	60	90	100	75	75		
44	\ <u>'</u>	A				1-1:		4	000() D		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	paceous vege oh and 36" ta h 200% are a	all. Because	there may l	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	o Variablo 1	2 within the	ontire cate	chmont of	the stream.						
12					e for watersh	od:					
12	V _{WLUSE}	weighted A	werage or n	Kurion Scor	e ioi watersi	ieu.					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								~			
								•			
								•			
								_			
								•			
								~			
	-							•			
	U	TPC 3					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	94 %	1.00								
V _E	MBED	2.9	0.78								
Vs	UBSTRATE	5.00 in	1.00								
V_{B}	ERO	200 %	0.00								
V _L	WD	5.3	0.67								
V _T	DBH	10.6	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	80.6 %	0.98								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain
Location: UT of Pigeon Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: UTPC 3

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.70
Biogeochemical Cycling	0.52
Habitat	0.59

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	5.00	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.00	0.63
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	55.00	0.85
V _{SRICH}	Riparian vegetation species richness.	12.50	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	radient	neadwat			stern Ke et and C	-		ern wes	t virgini	a
	Team:	AC AG							M Northing:	37.7334730)4
Pro	ject Name:		untain						ΓM Easting:		
	-	UT of Piged							npling Date:		
SA	R Number:			Length (ft):	40	Stream Ty	pe: Ephe	meral Stream			•
	Top Strata:	Shi	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANOF}	₉ Y)		
Site a	and Timing:	Project Site				•	After Project				•
Sample	Variables	1-4 in strea	m channel								
1	V _{CCANOPY} Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) List the percent cover measurements at each point below:								Not Used, <20%		
Ī		cent cover r	neasuremer	its at each p	onit below.						ı
	0										
2	\/	Averege on	nbeddednes	a of the atro	om channal	Magaura	ot no fower t	than 20 rau	ably equidies	ant points	
2	V_{EMBED}	along the st	tream. Sele d area surrou	ct a particle	from the be	d. Before n	noving it, de	termine the	percentage	of the	2.9
			ving table. I								
			bed is comp				•		,	g	
		Embeddedi	ness rating f	or gravel, co	obble and bo	oulder partic	les (rescale	d from Platt	s, Megahan	, and	
		Minshall 19	83)			•	•				
		Rating	Rating Des	cription							
		5				ounded, or			·)	
			5 to 25 perc					-			
		3 2				d, surrounde d, surrounde					
		1	>75 percen							l surface)	
	List the ration	ngs at each	point below:		•	•			,		_
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}		eam channel tream; use tl						hly equidista	ant points	5.00 in
			ches to the r and or finer			point below	(bedrock sl	hould be co	unted as 99	in, asphalt	
1	0.08	0.08	0.44	0.44	0.44	0.89	0.89	0.89	0.89	1.77	
,	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50	3.50	
	3.50	3.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	
	5.00	5.00	7.10	10.10	10.10	10.10	10.10	10.10	10.10	14.30	
	14.30	14.30	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	
4	V_{BERO}	•	nt of eroded e total perce to 200%.								40 %
			Left Bank	Q	ft		Right Bank	Ω	ft		

Sampl	le Variables	5-9 within t	he entire ri	iparian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea	ch. Enter th		om the enti		ter and 36 in buffer and w				5.0
		po. 100 100		55 56.50		f downed w	oody stems:	:	2		
6	V_{TDBH}			measure on eter. Enter			ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
	List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below:										
										ī	
			Left Side								
7	$V_{\sf SNAG}$	Number of	snags (at le	east 4" dbh a	and 36" tall)	ner 100 fee	t of stream.	Enter numb	er of snags	on each	
,	▼ SNAG			the amoun				Litter Hamb	er or snags	on each	0.0
			Left Side:		0		Right Side:		0	,	
8	V_{SSD}						nes dbh) per ibs on each s				55.0
				Il be calcula		gs and sind	ibs on cacins	side of the s	ileam, and	ine amount	33.0
			Left Side:		11		Right Side:		1		
9	V_{SRICH}						m reach. Ch ve species p				10.50
							from these d		Strata. Opt	,0103	12.50
		Grou	ıp 1 = 1.0					Group	2 (-1.0)		
\	Acer rubru	ım		Magnolia t	ripetala		Ailanthus a	ltissima		Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	atica		Albizia julib	rissin		Lonicera ta	tarica
	Aesculus	flava		Oxydendrun	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	riloba		Prunus sei	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	1	Quercus a	lba		philoxeroid			Microstegiun	n vimineum
	Betula len	ıla		Quercus co	occinea		Aster tatari	cus		Paulownia	lomenlosa
	Carya alba	а		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya gla	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	alis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	nta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo			Sassafras	albidum		Lespedeza			Verbena br	-
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ol				
		americana		Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame			-				
		acuminata		- 10.2 0.77							
	Magriona										
		5	Species in	Group 1				0	Species in	Group 2	

Sample	Variables	10-11 withi	n at least 8	subplots (40" x 40" o	r 1m x 1m)	in the rinar	an/huffer z	one within	25 feet fron	n each
							ch side of t		One within	20 1001 1101	ii cucii
10	V _{DETRITUS}						naterial. Wo /er at each s		<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side] '	
		50	50	50	50	50	50	50	50		
44	1/	A		ver of bowle		tation (mag	arra anh if i		200() D		
11	V_{HERB}						sure only if t there may b				50 0/
		-		up through	n 200% are a	accepted. E	nter the per	cent cover o	f ground ve	egetation at	50 %
		each subple		Side			Right	Side]	
		50	50	50	50	50	50	50	50		
Sample	Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	unoff Score	e for watersh	ied:					0.66
	_										0.66
			Land	llse (Choos	se From Dro	n List)			Runoff	% in Catch	Running Percent
			Lana	030 (011000	oc i ioni bio	p List)			Score	ment	(not >100)
	Forest and r	native range (>75% ground	l cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and r	native range (<50% ground	l cover)				•	0.5	5	100
	-	J. (,				_			
	=							Ĺ			
	-							_			
	-							•			
	Ē							. 🔻 .			
								•			
	U	TPC 3					No	es:			
Va	ariable	Value	VSI								
Vcc	CANOPY	Not Used, <20%	Not Used								
VE	MBED	2.9	0.78								
V _{sı}	JBSTRATE	5.00 in	1.00								
V _{BI}	ERO	40 %	0.86								
VLV	WD	5.0	0.63								
V _{TE}	овн	Not Used	Not Used								
Vsi	NAG	0.0	0.10								
Vss	SD	55.0	0.85								
V _{SI}	RICH	12.50	1.00								
V _{DI}	ETRITUS	50.0 %	0.61								
V _{HI}	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain
Location: UT of Pigeon Creek

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: UTPC 3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index		
Hydrology	0.78		
Biogeochemical Cycling	0.74		
Habitat	0.69		

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	5.00	1.00
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V _{LWD}	Number of down woody stems per 100 feet of stream.	7.50	0.94
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	12.50	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	70.00	0.85
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	a	
	Team:	AC AG							M Northina:	37.7334730)4	
Pro		Buffalo Mou	ıntain				1		_	-82.202800		
	-	UT of Piged					, <u>-</u>	=	_	Post-10 Yea		
0.4				1 th- /ft) -	40	Otro To				1 000 10 100	A1	
SA	R Number:	UTPC 3	Reach	Length (ft):	40	Stream Ty		meral Stream				
	Top Strata:	Tree	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	oy)			
Site and Timing: Project Site ▼ After Project ▼											▼	
Sample	Variables	1-4 in strea	m channel									
1	V _{CCANOPY}	equidistant 20%, enter	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.)									
		cent cover n										
	50	50	50	50	50	50	50	50	50	50		
2	V_{EMBED}	along the st	tream. Sele	ct a particle	from the be	d. Before n	at no fewer t noving it, det	termine the	percentage	of the	2.9	
							y fine sedim					
			ving table. I bed is comp				composed of	line seaime	ents, use a r	ating score		
		Embeddedi	ness rating f				cles (rescale	d from Platt	s, Megahan	, and		
		Minshall 19	•									
			Rating Des									
		5					buried by fin		·	.)		
		3					l, or buried bed, or buried					
		2					ed, or buried					
		1					r buried by fi	•		al surface)		
	List the rati	ngs at each	point below	:								
	1	2	2	3	4	4	1	5	1	1		
	3	3	4	3	3	4	1	4	2	2		
	3	3	3	4	4	4	3	3	4	4		
	5	5	4	1	4	2	2	1	4	4		
	3	3	3	1	2	1	1	3	3	4		
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED} .		hly equidista	ant points	5.00 in	
	Enter partic	ele size in in	ches to the r	nearest 0.1 i	inch at each	point below	/ (bedrock sł	nould be co	unted as 99	in, asphalt		
		as 0.0 in, s				point bolon	(Dodiook C	iodia po oo	antou ao oo	iii, dopridit		
I	0.08	0.08	0.44	0.44	0.44	0.89	0.89	0.89	0.89	1.77		
,	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50	3.50		
	3.50	3.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00		
	5.00	5.00	7.10	10.10	10.10	10.10	10.10	10.10	10.10	14.30		
	14.30	14.30	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00		
4	V_{BERO}	Total perce	nt of eroded e total perce	stream cha			tal number o		oded bank o	n each	40 %	
		•	Left Bank:	8	ft	1	Right Bank:	8	ft	ı		

Sampl	e Variables	s 5-9 within t	the entire r	iparian/buf	fer zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea		ne number f	rom the entir		ter and 36 ind buffer and wi				7.5
							oody stems:		3		
6	V_{TDBH}				lly if V _{CCANOP} tree DBHs i		ng cover is at	least 20%). Trees are	at least 4	5.0
	List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of									l	
	the stream below:										
	Left Side Right Side										l
	5	5	5	5	5	5	5	5	5	5	l
	5	5	5	5	5	5	5	5	5	5	
7	V_{SNAG}				and 36" tall) it per 100 fee		t of stream. Iculated.	Enter numb	per of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}	Number of	saplings an	d shrubs (w	oody stems	up to 4 inch	nes dbh) per	100 feet of	stream (mea	asure only	
						gs and shru	bs on each s	ide of the s	stream, and t	the amount	Not Used
		per 100 ft o	of stream wi				Dialet Cide		0		
9	W	Dinarian v	Left Side:		0	oot of etrop	Right Side: m reach. Ch		0	from	
3	V_{SRICH}						ve species pi				12.50
							from these da				
		Grou	ıp 1 = 1.0					Group	2 (-1.0)		
7	Acer rubru	um		Magnolia t	ripetala		Ailanthus ai	ltissima		Lonicera ja	ponica
	Acer sacc	charum		Nyssa sylv	vatica		Albizia julib	rissin		Lonicera ta	tarica
	Aesculus	flava		Oxydendrur	n arboreum		Alliaria petid	olata		Lotus corni	iculatus
	Asimina ti	riloba		Prunus se	rotina		Alternanthe	ra		Lythrum sa	licaria
	Betula alle	eghaniensis	J	Quercus a	lba		philoxeroide			Microstegiun	
	Betula len	nla		Quercus c	occinea		Aster tatario	cus		Paulownia	lomenlosa
	Carya alb	a		Quercus ir	mbricaria		Cerastium f	ontanum		Polygonum d	cuspidatum
	Carya gla	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	alis		Quercus ru	ubra		Elaeagnus ui	mbellata		Rosa multir	flora
	Carya ova	ata		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob	tusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	inense			
	Liriodendro	on tulipifera		Ulmus am	ericana						
	Magnolia	acuminata									
	ga										
		5	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				one within	25 feet fron	n each
10	V _{DETRITUS}	Average percent cover of leaves, sticks, or other organic material. Woody debris <4" diameter and <36" long are include. Enter the percent cover of the detrital layer at each subplot.									
		Left Side Right Side									
		70	70	70	70	70	70	70	70		
11	V_{HERB}	Average pe	ercentage co	over of herba	aceous vege	etation (mea	sure only if	tree cover is	s <20%). D	o not	
		include woo	ody stems a	t least 4" db	h and 36" ta	II. Because	there may l	oe several la cent cover c	yers of gro	und cover	Not Used
		each subple	ot.		1 200 % are 8	accepted. L	•		n ground ve	getation at	
			Left	Side			Righ	t Side		-	
Sample	e Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ed:					0.67
			Land	Use (Choos	se From Dro	p List)			Runoff	% in Catch	Running Percent
									Score	ment	(not >100)
	Forest and n	native range (>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			. •	0.3	45	95
	Forest and n	ative range (50% to 75%	ground cover)			•	0.7	5	100
	=							•			
	-							•			
	-							•			
	=							. •			
	-							•			
		TPC 3	1				No	tes:			
	ariable	Value	VSI								
	CANOPY	50 %	0.50								
VEI	MBED	2.9	0.78								
Vsı	JBSTRATE	5.00 in	1.00								
V _{BI}	ERO	40 %	0.86								
VLV	WD	7.5	0.94								
V _{TI}	ОВН	5.0	0.29								
Vsi	NAG	0.0	0.10								
Vs	SD	Not Used	Not Used								
V _{SI}	RICH	12.50	1.00								
	ETRITUS	70.0 %	0.85								
V _{HI}		Not Used	Not Used								
V.,,	LUCE	0.67	0.71								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** UT of Pigeon Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: UTPC 3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.79
Biogeochemical Cycling	0.81
Habitat	0.90

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V_{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	5.00	1.00
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	7.50	0.94
V_{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	2.50	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	12.50	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	iradient	Headwat				entucky a alculator		ern wes	t Virginia	a	
	Team:	AC AG							M Northina:	37.7334730)4	
Pro		Buffalo Mou	untain				•		•	-82.202800		
	-	UT of Piged					. –	-	npling Date:			
0.4				1 th- (ft) -	40	Ot	·		-	······································		
54	R Number:	UIPC 3	Reacn	Length (ft):	40	Stream Ty	/pe: Ephe	meral Stream	1			
	Top Strata:	Tree	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	_{>Y})			
Site a	and Timing:	Project Site				•	After Project				•	
Sample		1-4 in strea										
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	r is at least :			95.0 %	
		cent cover n										
	95	95	95	95	95	95	95	95	95	95		
2	V_{EMBED}	along the st	tream. Sele	ct a particle	from the be	ed. Before n	at no fewer to noving it, det	termine the	percentage	of the	2.9	
surface and area surrounding the particle that is covered by fine sediment, and enter the rating according to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score												
			-			rating score	•	Tine seaime	ents, use a r	ating score		
		Embeddedi	ness rating f				cles (rescale	d from Platt	s, Megahan	, and		
		Minshall 19	1983)									
			Rating Des									
		5					buried by fin		·)		
		<u>4</u> 3					l, or buried bed, or buried	-				
		2					ed, or buried					
		1					r buried by fi			al surface)		
	List the ration	ngs at each	•		· · · · · · · · · · · · · · · · · · ·	•				/		
	1	2	2	3	4	4	1	5	1	1		
	3	3	4	3	3	4	1	4	2	2		
	3	3	3	4	4	4	3	3	4	4		
	5	5	4	1	4	2	2	1	4	4		
	3	3	3	1	2	1	1	3	3	4		
3	V _{SUBSTRATE}			-			t no fewer the	•	hly equidista	ant points	5.00 in	
	Enter partic	ele cize in in	chas to the i	nearest 0.1 i	inch at each	noint halou	/ (bedrock sl	hould be co	untad as 00	in acphalt		
		as 0.0 in, s				i poirit below	(Dediook Si	iloulu be co	unieu as 99	iii, aspiiait		
	0.08	0.08	0.44	0.44	0.44	0.89	0.89	0.89	0.89	1.77		
	1.77	1.77	1.77	1.77	2.50	2.50	2.50	3.50	3.50	3.50		
	3.50	3.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00		
	5.00	5.00	7.10	10.10	10.10	10.10	10.10	10.10	10.10	14.30		
	14.30	14.30	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00		
4	V _{BERO}						tal number o					
	BLIV		e total perce				nks are eroc				40 %	
		, , ,	Left Bank:	8	ft	ı	Right Bank:	8	ft	l		

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir						7.5
		p				f downed w	oody stems:		3		
6	V_{TDBH}						ng cover is at	t least 20%)). Trees are	at least 4	10.0
		List the dbh	measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
	_	the stream				ı				-	
	stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: 3 V _{TDBH} Average dbh of trees (measure only if V _{CCANOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side Right Side 10 10 10 10 10 10 10 10 10 1										
		_					_				
	10	10	10	10	10	10	10	10	10	10	
					1.0011 . 11)						
7	V_{SNAG}		• •		,			Enter numb	per of snags	on each	2.5
			Left Side:		0		Right Side:		1		
8									N		
									Not Used		
							Right Side:		0		
9	V_{SRICH}										
									i strata. Spe	ecies	12.50
7	Acer rubri			Magnolia ti	ripetala						ponica
	Acer sacc	harum		-	-						
	Aesculus	flava		-			•			Lotus corni	culatus
				-							
										-	
							Aster tatari	cus		•	
	•										·
	Carya ova	alis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ata		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob				
		americana		Tsuga can			Ligustrum s				
	Liriodendro	n tulipifera		Ulmus ame			-				
		acuminata									
	magnona										
		5	Species in	Group 1				0	Species in	Group 2	

		40.44 '41.1			4011 4011	. 4 4				0= 6	
					40" x 40", o equidistant				one within	25 feet fron	n each
10	$V_{DETRITUS}$				sticks, or oth at cover of th			oody debris <	<4" diamete	er and <36"	85.00 %
		long are inc		Side	11 00 001 01 111	e detintal lay		t Side		1 '	
		85	85	85	85	85	85	85	85		
11	V_{HERB}	Average ne	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	<20%) D	o not	
	▲ HEKR	include woo	ody stems a	t least 4" db	oh and 36" ta	all. Because	there may l	oe several la	yers of grou	und cover	Not Used
		each subpl		s up througr	1 200% are a	accepted. E	nter the per	cent cover c	of ground ve	egetation at	
			Left	Side			Righ	t Side		i i	
Sample	e Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V _{WLUSE}				e for watersh	ned:					
											0.69
Lang Use (Choose From Drop List)							% in Catch-	Running Percent			
				(0110		F =			Score	ment	(not >100)
	Forest and r	native range (tive range (>75% ground cover) 1 55							55	
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	100
	-							•			
	▼										
	▼										
	-							•			
	-							•			
								•			
	U	TPC 3					No	tes:			
Va	ariable	Value	VSI								
Vc	CANOPY	95 %	1.00								
VE	MBED	2.9	0.78								
Vsı	UBSTRATE	5.00 in	1.00								
V_{BI}	ERO	40 %	0.86								
VLV	WD	7.5	0.94								
V _{TDBH} 10.0 1.00											
	NAG	2.5	1.00								
Vss		Not Used	Not Used								
V _{SRICH} 12.50 1.00											
	ETRITUS	85.0 %	1.00								
V _{HI}		Not Used	Not Used								
V _w	LUSE	0.69	0.73								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** Pigeonroost Creek

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: PRC 1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.99
Habitat	0.96

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	89.71	1.00
V_{EMBED}	Average embeddedness of channel.	3.46	0.99
V _{SUBSTRATE}	Median stream channel substrate particle size.	7.10	0.93
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	14.89	1.00
V_{TDBH}	Average dbh of trees.	9.96	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	83.75	1.00
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.710635	
Pro	oject Name:		untain				•		•	-82.209784	
	-	Pigeonroos						-	pling Date:		
SA	AR Number:	PRC 1	Reach	Length (ft):	450	Stream Ty	/pe: Inter	mittent Strea	m	-	•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_{9Y})		
Site	and Timing:	Project Site				▼	Before Proje	ct			▼
Sample	• Variables									_	
1		equidistant 20%, enter	points along at least one	the stream value betw	. Measure een 0 and 1	only if tree/s	anopy. Mea apling cove Top Strata c	is at least 2			89.7 %
	88	82	neasuremer 94	94	88	94	88	94	94	88	
	88	82	94	88	00	94	00	94	94	00	
2	V _{EMBED}	Average en	nbeddednes tream. Sele	s of the stre	from the be	d. Before n	at no fewer t noving it, det y fine sedim	termine the	percentage	of the	3.5
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
	Rating Description										
		5					buried by fin		•)	
		3					l, or buried bed, or buried	•			
		2					ed, or buried				
		1					r buried by fi	•		ıl surface)	
•	List the rati	ngs at each	point below	:							
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	4	4	
3	V _{SUBSTRATE}						t no fewer thed in V _{EMBED}		nly equidista	ant points	7.10 in
			ches to the r and or finer			point below	/ (bedrock sl	nould be co	unted as 99	in, asphalt	
	0.50	1.00	1.00	1.00	0.89	1.26	1.26	1.77	1.77	1.77	
	1.77	2.50	2.50	2.50	2.50	3.50	3.50	3.50	3.50	5.00	
ī	5.00	5.00	5.00	7.10	7.10	7.10	7.10	10.10	14.30	20.00	
	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number on tal number of tal number of				200 %
			Left Bank:	45	0 ft	I	Right Bank:	45	0 ft		

Sampl	e Variables	s 5-9 within t	he entire r	iparian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 inc buffer and wi				14.9
							oody stems:		67		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	t least 20%)). Trees are	at least 4	10.0
		List the dbh	n measuren	nents of indi	vidual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream									•
			Left Side	1			1	Right Side	T.		
	8	7	15.5	10	10.5	5.5	7	11.1	15		
											ł
											1
											1
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	per of snags	on each	0.4
			Left Side:		1		Right Side:		1		
8	V_{SSD}						nes dbh) per				
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.								Not Used		
		por 100 it 0	Left Side:		iou.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p from these da		I strata. Spe	ecies	1.56
			p 1 = 1.0	and the Subi	ndex will be	calculated	TOTTI LITESC G		2 (-1 0)		
7	Acer rubru		<u> </u>	Magnolia t	rinetala	Group 2 (-1.0) Ailanthus altissima Lonicera jap					
	Acer sacc			Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	_			n arboreum		Alliaria peti			Lotus corni	
				•							
	Asimina ti			Prunus sei			Alternanthe philoxeroide			Lythrum sa	
		ghaniensis	<u> </u>	Quercus a						Microstegiun	
	Betula len	nta		Quercus c	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alb	а		Quercus in	nbricaria		Cerastium	fontanum		Polygonum (cuspidatum
	Carya gla	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	alis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multi	flora
	Carya ova	ata		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	rasiliensis
	Fagus gra	andifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
		americana		Tsuga can	adensis		Ligustrum s				
	Liriodendro			Ulmus ame			<u> </u>				
		acuminata		Ciao airi							
	wayiioiia	acummata									
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant					25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris		er and <36"	83.75 %
		long are inc		Side	11. 00 001 01 111	o dotinaria,		it Side		1	
		80	95	60	80	95	75	90	95		
			,						200() 5		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" d s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side	_		Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					4.00
									_		1.00
Land Use (Choose From Drop List) Runoff Score								% in Catch- ment	Running Percent (not >100)		
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
	-							•			
	•							•			
								▼			
	-							•			
								▼			
	-							•			
	<u>k</u>	PRC 1					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	90 %	1.00								
	MBED	3.5	0.99								
V _s	UBSTRATE	7.10 in	0.93								
V_{B}	ERO	200 %	0.00								
V _L	WD	14.9	1.00								
V _T	DBH	10.0	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	83.8 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of Pigeonroost Creek

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: PRC U2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.88
Habitat	0.86

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	97.43	1.00
V_{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	14.30	0.47
V_{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	12.00	1.00
V_{TDBH}	Average dbh of trees.	10.57	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	1.00	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	7.00	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northing:	37.7182394	19
Pro		Buffalo Mou	untain						ū	-82.211993	
	-	UT1 of UT1		ost Creek			_	_	pling Date:		
C A					400	Ctroom To					
	R Number:			Length (ft):		Stream Ty		meral Stream			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_P ()		
		Project Site				▼	Before Proje	ct			▼
Sample		1-4 in strea									
1		equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	r is at least 2			97.4 %
ı		cent cover r		·		100	400	100	0.4	400	
	88	100	100	82	100	100	100	100	94	100	
0	100	100	100	100							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to	termine the	percentage	of the	2.9
				• .			y fine sedim		•		
	to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.										
		Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating Description 5 <- spercent of surface covered, surrounded, or buried by fine sediment (or bedrock)									
		4					d, or buried b		•	/	
		3					ed, or buried	-			
		2					ed, or buried	_			
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	ıl surface)	
	List the rati	ngs at each									
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}						it no fewer the d in V _{EMBED}		niy equiaista	ant points	14.30 in
						point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
ı	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):						
	0.08	0.08	0.44	0.89	1.77	3.50	3.50	3.50	5.00	5.00	
	5.00	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	10.10	
	10.10	14.30	14.30	14.30	14.30	14.30	20.00	20.00	20.00	20.00	
	20.00	20.00	20.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	
4	V_{BERO}	•	e total perce				otal number of tal number of tal number of				200 %
			Left Bank:	10	0 ft		Right Bank:	10	0 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read		e number fr	om the entir		er and 36 ind ouffer and wi				12.0
		por 100 100	a or otrouri	min bo caree		f downed we	oody stems:	•	12		
6	V_{TDBH}					_Y tree/saplir	ng cover is at	t least 20%)). Trees are	at least 4	10.6
		,	•				n) within the l	buffer on ea	ach side of		
		the stream	below:				•				_
		side of the stream, and the amount per 100 feet will be calculated. Left Side: 0 Right Side: 1 V _{SSD} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only							l		
	5	4	15.3	16.5	5.1						
										9	
						9.5	11.5	7.8	9.2		ł
											1
											1
7	V_{SNAG}							Enter numb	per of snags	on each	1.0
			Left Side:		0		Right Side:		1		
8											
		if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 ft of stream will be calculated.								Not Used	
		p	Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these da		i strata. Spe	ecies	7.00
			ıp 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala	Group 2 (-1.0) Ailanthus altissima Lonicera jap					ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib	rissin		Lonicera ta	
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	iculatus
	Asimina tr	iloba		Prunus ser			Alternanthe			Lythrum sa	
	Betula alle			Quercus ai	lba		philoxeroide			Microstegiun	
	Betula len	ta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium i	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ob	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	85.00 %
		10.19 0.10 1.10		Side				nt Side		1	
		85	75	80	85	90	95	90	80		
44	\ <u>'</u>	A				4-4:			000() D		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" d s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					4.00
									1	1	1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
	a .							•			
	-							•			
	•							•			
								▼			
	-							•			
								▼			
	-							•			
	P	RC U2					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	97 %	1.00	1							
	MBED	2.9	0.78								
Vs	UBSTRATE	14.30 in	0.47								
	ERO	200 %	0.00								
V _L		12.0	1.00								
V _T	DBH	10.6	1.00								
Vs	NAG	1.0	1.00								
Vs		Not Used	Not Used								
	RICH	7.00	1.00								
	ETRITUS	85.0 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of Pigeonroost Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: PRC U2

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.58
Biogeochemical Cycling	0.51
Habitat	0.44

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	14.30	0.47
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	3.64	0.45
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	50.91	0.78
V _{SRICH}	Riparian vegetation species richness.	9.09	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virgini	a
	Team:	AC AG							M Northing:	37.7182394	19
Pro		Buffalo Mou	untain						ΓM Easting:		
	-	UT1 of UT1		ost Creek			•	-	npling Date:		
SA	R Number:	PRC U2	Reach	Length (ft):	55	Stream Ty	/pe: Ephe	meral Stream	<u> </u>		•
	Top Strata:	Shi	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANO}	₉ Y)		
Site a	and Timing:	Project Site				•	After Project				•
Sample	Variables	1-4 in strea	m channel								
1	V _{CCANOPY} Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) List the percent cover measurements at each point below:									Not Used, <20%	
		cent cover r	neasuremer	ils al each p	Joint below.						
	0										
2	V _{EMBED}						at no fewer to noving it, de				2.9
							y fine sedim				
				• .			composed of		•		
		of 1. If the	bed is comp	osed of bed	drock, use a	rating score	of 5.				
		Embeddedi Minshall 19		or gravel, co	obble and bo	oulder partic	cles (rescale	d from Platt	s, Megahan	, and	
		Rating	Rating Des								
		5	_				buried by fin		•)	
		3					d, or buried bed, or buried	•			
							ed, or buried				
		1					r buried by f			ıl surface)	
	List the rati	ngs at each	point below								
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		nly equidista	ant points	14.30 in
		cle size in inc as 0.0 in, s				point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
_	0.08	0.44	0.44	0.44	0.44	0.89	0.89	0.89	7.10	7.10	
	7.10	10.10	10.10	10.10	14.30	14.30	14.30	20.00	20.00	20.00	
	20.00	20.00	20.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	
4	V_{BERO}	•	e total perce				tal number on tal number on tal number of				40 %
			Left Bank:	11	l ft	I	Right Bank:	11	ft		

Sampl	le Variables	5 5-9 within t	he entire r	iparian/buff	er zone adj	acent to th	e stream ch	annel (25 fe	eet from ea	ch bank).	
5	V_{LWD}	stream rea	ch. Enter th		om the entir		ter and 36 in buffer and w				3.6
		•			Number o	f downed w	oody stems:	2	2		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		List the dbh	n measurem	nents of indi	vidual trees	(at least 4 i	n) within the	buffer on ea	ch side of		
		the stream									Ī
			Left Side					Right Side			
		<u> </u>						_			
7	$V_{\sf SNAG}$		• •		and 36" tall) t per 100 fee	•	t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}						nes dbh) per				50.0
				Enter numt Il be calcula		gs and snru	bs on each s	side of the si	tream, and t	ne amount	50.9
		•	Left Side:	•	14		Right Side:		4		
9	V_{SRICH}						m reach. Ch				
							ve species p from these d		strata. Spe	ecies	9.09
			ıp 1 = 1.0						2 (-1.0)		
/	Acer rubru			Magnolia t	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib	orissin		Lonicera ta	
	Aesculus	flava		-	n arboreum		Alliaria peti			Lotus corni	iculatus
	Asimina tr	riloba		Prunus sei	rotina		Alternanthe			Lythrum sa	licaria
	Betula alle	ghaniensis	[7]	Quercus a	lba		philoxeroid			Microstegiun	
	Betula len	_		Quercus c			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glai			Quercus p			Coronilla va			Pueraria m	
	Carya ova	alis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	nta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo			Sassafras	albidum		Lespedeza			Verbena br	•
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ol				
		americana		Tsuga can	adensis		Ligustrum s				
	Liriodendro			Ulmus ame			-				
		acuminata									
	Magnona										
		5	Species in	Group 1				0	Species in	Group 2	

		10-11 withi bplots shoบ							one within	25 feet from	n each
10	V _{DETRITUS}						naterial. Wo /er at each s		<4" diamete	er and <36"	50.00 %
			Left	Side			Right	Side] '	
		50	50	50	50	50	50	50	50		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" db s up through	h and 36" ta	all. Because	sure only if there may be need the performance of t	e several la cent cover c	yers of grou	und cover	50 %
		50		Side	50	50	Right		F.0		
		50	50	50	50	50	50	50	50	-	
Sample	e Variable 1	2 within the	e entire cate	chment of t	the stream.						
12	V _{WLUSE}	Weighted A	verage of R	tunoff Score	e for watersh	ned:					0.66
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	l cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and native range (<50% ground cover) 0.5 5									5	100
	▼										
								•			
								•			
	-							•			
	P	RC U2					No	es:			
Va	ariable	Value	VSI								
V _C	CANOPY	Not Used, <20%	Not Used								
V _{EI}	MBED	2.9	0.78								
Vsı	UBSTRATE	14.30 in	0.47								
V _{BI}	ERO	40 %	0.86								
VLV	WD	3.6	0.45								
V _{TI}	овн	Not Used	Not Used								
Vsi	NAG	0.0	0.10								
Vs	SD	50.9	0.78								
V _{SI}	RICH	9.09	1.00								
V _{DI}	ETRITUS	50.0 %	0.61								
V _{HI}	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of Pigeonroost Creek

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: PRC U2

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.64
Biogeochemical Cycling	0.71
Habitat	0.57

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V_{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	14.30	0.47
V_{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.45	0.68
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	9.09	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	70.00	0.85
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG					I	Latitude/UT	M Northing:	37.7182394	19
Pro		Buffalo Mou	untain						ū	-82.211993	
	-	UT1 of UT1		oost Creek			•	_	_	Post-10 Yea	
SΔ	R Number:			Length (ft):	55	Stream Ty	/De'				
								meral Stream			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	a from perce	ent calculate	a in V _{CCANOF}	ν)		
		Project Site				V	After Project				▼
		1-4 in strea									
1	V _{CCANOPY}	equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	r is at least 2			50.0 %
ĺ		cent cover r		·							
	50	50	50	50	50	50	50	50	50	50	
2	V _{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, defay on fine sedim	termine the	percentage	of the	2.9
	to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)										
			Rating Des								
		5					buried by fin		•)	
		3					d, or buried bed, or buried	-			
		2					ed, or buried				
		1					r buried by fi	_		ıl surface)	
	List the rati	ngs at each	point below	:							
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}						it no fewer the d in V _{EMBED}		hly equidista	ant points	14.30 in
	•	cle size in inc as 0.0 in, s				point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
İ	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
į	0.08	0.44	0.44	0.44	0.44	0.89	0.89	0.89	7.10	7.10	
	7.10	10.10	10.10	10.10	14.30	14.30	14.30	20.00	20.00	20.00	
	20.00	20.00	20.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	
4	V_{BERO}	Total perce	nt of eroded e total perce	stream cha	nnel bank.	Enter the to	otal number of nks are eroc	of feet of ero	oded bank o	n each	40 %
			Left Bank:	11	l ft	I	Right Bank:	11	ft		

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}		ch. Enter th	e number fr	om the entir		er and 36 ind buffer and wi				5.5
		•				f downed w	oody stems:		3	ļ	
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is at	: least 20%)). Trees are	at least 4	5.0
		List the dbh	measurem	ents of indiv	idual trees	(at least 4 ir	n) within the l	buffer on ea	ach side of	ļ	•
		the stream									1
	_		Left Side	_	_	_	_	Right Side		_	
	5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	
	5	5	5	5	5	5	5	ວ	5	5	
	\	No. 1	(, ,)	4 4 11 11 1	1.00" (11)	100 (<u> </u>			
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}						nes dbh) per				N1 (11 1
		per 100 ft o				gs and snru	bs on each s	side of the s	tream, and t	ne amount	Not Used
		•	Left Side:		0		Right Side:		0	ļ	•
9	V_{SRICH}						m reach. Ch				
							ve species pair		strata. Spe	cies	9.09
			p 1 = 1.0						2 (-1.0)		
7	Acer rubru		·	Magnolia ti	ripetala		Ailanthus a	•		Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrun			Alliaria peti			Lotus corni	culatus
	Asimina ti			Prunus ser			-			Lythrum sa	
		ghaniensis		Quercus al			Alternanthe philoxeroide			Microstegiun	
	Betula len			Quercus co			Aster tatario			Paulownia	
	Carya alb		H	Quercus in			Cerastium I		H	Polygonum o	
	Carya gla			Quercus pi			Coronilla va			Pueraria m	
	Carya ova			Quercus ru			Elaeagnus u			Rosa multin	
	Carya ova			Quercus ve			Lespedeza			Sorghum h	•
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	andifolia		Tilia amerio	cana		Ligustrum ob	tusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	on tulipifera		Ulmus ame	ericana						
	Magnolia	acuminata									
			• • •	<u> </u>							
		5	Species in	Group 1				0	Species in	Group 2	

				subplots (40" x 40'ed roughly equidist				one within	25 feet from	n each
10	V _{DETRITUS}			of leaves, sticks, or the percent cover o				<4" diamete	er and <36"	70.00 %
			Left	Side		Righ	t Side] '	
		70	70	70 70	70	70	70	70	Į	
11	V_{HERB}	Average pe	rcentage co	over of herbaceous v	regetation (me	asure only if	tree cover is	s <20%). De	o not	
	- HEND	include woo	ody stems a percentages	t least 4" dbh and 36 s up through 200% a	6" tall. Because	e there may l	be several la	yers of grou	und cover	Not Used
		each subplo		Side		Riah	t Side		1	
Sampl	e Variable 1	2 within the	entire cate	chment of the strea	am.					
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score for wate	ershed:					0.67
			Land	Use (Choose From	Drop List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)			_	1	50	50
	Open space	(pasture, law	ns, parks, etc	a.), grass cover >75%			~	0.3	45	95
	Forest and native range (50% to 75% ground cover)							0.7	5	100
	-						_			
	-						•			
							▼			
	_						•			
	P	RC U2				No	otes:	•	•	
V	ariable	Value	VSI							
Vc	CANOPY	50 %	0.50							
VE	MBED	2.9	0.78							
Vs	SUBSTRATE	14.30 in	0.47							
V _B	BERO	40 %	0.86							
V _L	wD	5.5	0.68							
V _T	'DBH	5.0	0.29							
	SNAG	0.0	0.10							
Vs	SD	Not Used	Not Used							
	RICH	9.09	1.00							
	ETRITUS	70.0 %	0.85							
	IERB	Not Used	Not Used							
V _v	VLUSE	0.67	0.71							

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT1 of UT1 of Pigeonroost Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Ephemeral Stream

Uppermost stratum present at this SAR: SAR number: PRC U2

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.71
Biogeochemical Cycling	0.81
Habitat	0.82

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	2.88	0.78
V _{SUBSTRATE}	Median stream channel substrate particle size.	14.30	0.47
V _{BERO}	Total percent of eroded stream channel bank.	40.00	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	7.27	0.91
V _{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	1.82	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	9.09	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7182394	19
Pro		Buffalo Mou	untain						_	-82.211993	
	-	UT1 of UT1		oost Creek			_	_	pling Date:		
C 4					55	Ctue e ve Ti					
	R Number:			Length (ft):	55	Stream Ty		meral Stream			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	₉ Y)		
		Project Site				▼	After Project				▼
		1-4 in strea									
1	V _{CCANOPY}										95.0 %
Ī											
	95	95	95	95	95	95	95	95	95	95	
				6.41							
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to	termine the	percentage	of the	2.9
				• .			y fine sedim composed of		•		
								inic scanne	onio, use a i	atting score	
			of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and								
				orintion							
		Rating 5	Rating Des		overed sur	rounded or	buried by fin	e sediment	(or bedrock)	
		4					d, or buried b		•	/	
		3					ed, or buried	-			
		2	51 to 75 pe	rcent of surf	ace covered	d, surrounde	ed, or buried	by fine sed	iment		
		1			covered, su	rrounded, o	r buried by f	ine sedimer	t (or artificia	ıl surface)	
	List the rati	ngs at each	point below								r
	1	2	2	3	4	4	1	5	1	1	
	3	3	4	3	3	4	1	4	2	2	
	3	3	3	4	4	4	3	3	4	4	
	5	5	4	1	4	2	2	1	4	4	
	3	3	3	1	2	1	1	3	3	4	
3	V _{SUBSTRATE}						it no fewer the d in V _{EMBED}		hly equidista	ant points	14.30 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):					•	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	
	0.08	0.44	0.44	0.44	0.44	0.89	0.89	0.89	7.10	7.10	
	7.10	10.10	10.10	10.10	14.30	14.30	14.30	20.00	20.00	20.00	
	20.00	20.00	20.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	80.00	
4	V_{BERO}	•	e total perce				tal number on tal number on tal number of				40 %
			Left Bank:	11	l ft		Right Bank:	11	ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in				7.3
		por 100 100	t or otroam	min bo odioo		f downed we	oody stems:		4		
6	V_{TDBH}			measure onleter	y if V _{CCANOP}	_Y tree/saplir	ng cover is a	t least 20%)	. Trees are	at least 4	10.0
		List the dbh	measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								•
			Left Side	1	1		T.	Right Side		•	
	10	10	10	10	10	10	10	10	10	10	
	10	10	10	10	10	10	10	10	10	10	
7	V_{SNAG}			ast 4" dbh a the amount			t of stream. Iculated.	Enter numb	er of snags	on each	1.8
			Left Side:	(0		Right Side:		1		-
8	V_{SSD}						nes dbh) per				
		if tree cover per 100 ft o		gs and shru	bs on each s	side of the s	tream, and t	the amount	Not Used		
		per roon o	Left Side:	i be calculat	.cu.		Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	9.09
			p 1 = 1.0	ind the Subii	idex will be	calculated i	TOTT THESE O		2 (-1.0)		
7	Acer rubru			Magnolia tr	rinatala		Ailanthus a	•	2 (-1.0)	Lonicera ja	nonica
	Acer sacc			Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus i			-			-				
				Oxydendrum			Alliaria peti	olata		Lotus corni	
	Asimina tr			Prunus ser			Alternanthe			Lythrum sa	
	Betula alle	ghaniensis	✓	Quercus al	ba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pr	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	bra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ıta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	rasiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ok				
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro			Ulmus ame			J # 2 !! \$ # 1 ! !				
				Jiiius aiile	nouna						
	Magnolia a	acummata									
		5	Species in	Group 1				0	Species in	Group 2	

Sampl	e Variables	10-11 withi	n at least 8	subplots (4	40" x 40", o	r 1m x 1m)	in the ripar	ian/buffer z	one within	25 feet fron	n each
	The four su	bplots shou	ıld be place	ed roughly	equidistant	ly along ea	ch side of t	he stream.			
10	V _{DETRITUS}					er organic m e detrital lay		oody debris < subplot.	<4" diamete	er and <36"	85.00 %
				Side		<u> </u>		t Side]	
		85	85	85	85	85	85	85	85		
11	V_{HERB}	Average pe	ercentage co	over of herba	aceous vege	etation (mea	sure only if	tree cover is	<20%). D	o not	
	TIEND	include woo	ody stems a	t least 4" db	h and 36" ta	all. Because	there may b	e several la	yers of grou	und cover	Not Used
		each subple		s up imougn	1 200 % are a	accepted. E	nter the per	cent cover o	n ground ve	egetation at	
			Left	Side			Righ	t Side			
										-	
Sample	e Variable 1	2 within the	e entire cate	chment of t	he stream.						
12	V _{WLUSE}		verage of R			ned:					
. -	WLUSE				To Haterer						0.69
			Lond	Lloo (Choos	se From Dro	n Liot)			Runoff	% in Catch-	Running
			Lanu	Ose (Choos	se Fiolii Dio	p List)			Score	ment	Percent (not >100)
Forest and native range (>75% ground cover)								1	55	55	
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	100
	▼ ▼										
								•			
								•			
								•			
	<u> </u>							•			
	P	RC U2					No	tes:			
V	ariable	Value	VSI								
V _c	CANOPY	95 %	1.00								
	MBED	2.9	0.78								
	UBSTRATE	14.30 in	0.47								
	ERO	40 %	0.86								
			0.91								
	WD	7.3	0.91								
V _T	WD DBH	7.3 10.0	1.00								
V _T	WD DBH NAG	7.3 10.0 1.8	1.00 1.00								
V _T V _S	WD DBH NAG SD	7.3 10.0 1.8 Not Used	1.00 1.00 Not Used								
V _T V _S V _S	WD DBH NAG SD	7.3 10.0 1.8 Not Used 9.09	1.00 1.00 Not Used 1.00								
V _T V _S V _S V _S	WD DBH NAG SD	7.3 10.0 1.8 Not Used	1.00 1.00 Not Used								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT5 of Pigeonroost Creek

Sampling Date: 25-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: PRC U3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.72
Biogeochemical Cycling	0.96
Habitat	0.77

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	90.14	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	17.15	0.28
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	7.11	0.89
V _{TDBH}	Average dbh of trees.	9.96	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.44	0.77
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	82.50	1.00
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7098486	2
Pro	oject Name:		untain						Ü	-82.209420	
	-		eonroost Cre	eek			•	-	npling Date:		
SA	AR Number:			Length (ft):	450	Stream Ty	/pe: Inter	mittent Strea			▼
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	_{>Y})		
Site a	and Timing:	Project Site				•	Before Proje	ct			•
Sample	• Variables	1-4 in strea	m channel								
1											90.1 %
						0.0	0.4	0.4	0.4	0.4	
	94	82	94	88	94	88	94	94	94	94	
2	94 V _{EMBED}						at no fewer t				3.3
							noving it, de by fine sedim				0.0
							composed of			-	
			_				-		,	g	
			of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)								
		Rating	Rating Des	cription							
		5			overed, suri	rounded, or	buried by fin	ne sediment	(or bedrock)	
		4	_				d, or buried b		•	,	
		3					ed, or buried				
		2					ed, or buried	•			
	1 (-4 4)4(1			covered, su	rrounded, o	r buried by f	ine sedimer	it (or artificia	al surface)	
			point below		0	0	0	0	4	-	
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
3	V _{SUBSTRATE}			-			4 It no fewer the ed in V _{EMBED}	_	1 hly equidista	ant points	17.15 in
		_		•	-						
			ches to the r and or finer			point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.44	0.63	0.89	0.89	0.89	1.26	
	1.77	1.77	3.50	5.00	5.00	7.10	7.10	7.10	10.10	10.10	
	14.30	14.30	14.30	14.30	14.30	20.00	20.00	99.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	99.00	99.00	99.00	99.00	
	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				otal number of thicks are eroo				200 %
			Left Bank:	45	0 ft	ı	Right Bank:	45	0 ft	ı	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to the	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea	ch. Enter th		om the entir		er and 36 in ouffer and wi				7.1
		•				f downed wo	oody stems:	3	32		
6	V_{TDBH}			measure onleter.			ng cover is a	t least 20%)	. Trees are	at least 4	10.0
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ch side of		
		the stream									
		_	Left Side					Right Side			
	8	7	15.5	10	10.5	5.5	7	11.1	15		
					1.000	1001					
7	V_{SNAG}			ast 4" dbh a I the amount			t of stream. culated.	Enter numb	er of snags	on each	0.4
			Left Side:		0		Right Side:		2		
8	V_{SSD}						es dbh) per				
	if tree cover is <20%). Enter number of sapli per 100 ft of stream will be calculated.					gs and shru	bs on each s	side of the s	tream, and	the amount	Not Used
			Left Side:				Right Side:				
9	V_{SRICH}						m reach. Ch				
							ve species p rom these d		strata. Spe	ecies	1.56
			p 1 = 1.0						2 (-1.0)		
7	Acer rubru			Magnolia ti	ripetala		Ailanthus a			Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib	orissin		Lonicera ta	
	Aesculus	flava		Oxydendrum			Alliaria peti			Lotus corni	culatus
	Asimina tr			Prunus ser			-			Lythrum sa	
		ghaniensis		Quercus al			Alternanthe philoxeroid			Microstegiun	
	Betula len			Quercus co			Aster tatari	cus		Paulownia	
	Carya alba			Quercus in			Cerastium			Polygonum o	
	Carya glai			Quercus pi			Coronilla va			Pueraria m	ontana
	Carya ova	nlis		Quercus ru	bra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	nta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena bi	
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ok	otusifolium			
	Fraxinus a			Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame			-				
		acuminata									
	ag.rona										
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	82.50 %
		long are inc		Side	11 00 001 01 111	o dotinaria,		it Side		1	
		80	75	85	90	60	95	90	85		
	.,								200()		
11	V_{HERB}	include woo	ody stems a percentages	t least 4" dl	baceous vege bh and 36" ta h 200% are a	all. Because	there may	be several la	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream.						
12	V _{WLUSE}				e for watersh	ned:					4.00
											1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
	a .							•			
	-							•			
	•							•			
								•			
	-							•			
								▼			
	-							•			
	<u>.</u> Pi	RC U3					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	90 %	1.00	1							
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	17.15 in	0.28								
V _B	ERO	200 %	0.00								
V _L	WD	7.1	0.89								
V _T	DBH	10.0	1.00								
Vs	NAG	0.4	0.77								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	82.5 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT5 of Pigeonroost Creek

Sampling Date: Post-5 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: PRC U3

Shrub/Herb Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.54
Biogeochemical Cycling	0.56
Habitat	0.34

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	Not Used, <20%	Not Used
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	17.15	0.28
V _{BERO}	Total percent of eroded stream channel bank.	40.25	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	3.77	0.47
V _{TDBH}	Average dbh of trees.	Not Used	Not Used
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	51.57	0.79
V _{SRICH}	Riparian vegetation species richness.	3.14	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	50.00	0.61
V _{HERB}	Average percent cover of herbaceous vegetation.	50.00	0.67
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.66	0.69

	Hign-G	iradient l	Headwat				entucky a alculator		ern Wes	t Virgini	a
	Team:	AC AG							M Northing:	37.7098486	62
Pro		Buffalo Mou	untain						ΓM Easting:		
	-		eonroost Cre	eek			_	_	npling Date:		
C 1					450	Ctroom Tu					
	R Number:			Length (ft):	159	Stream Ty		mittent Strea			•
	Top Strata:	Shi	rub/Herb Str	ata	(determined	d from perce	ent calculate	d in V _{CCANO}	_{>Y})		
Site a	and Timing:	Project Site				•	After Project				▼
Sample		1-4 in strea									
1		equidistant 20%, enter	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly quidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 0%, enter at least one value between 0 and 19 to trigger Top Strata choice.) ent cover measurements at each point below:								Not Used, <20%
ĺ		cent cover i	neasuremer	its at each p	Doint below.						
	0										
	V	Average on	ab addada a	o of the otro	om obonno	Magaura	ot no fourer	han 20 rau	ably oguidio	tant nainta	
2	V_{EMBED}	along the st	tream. Sele	ct a particle	from the be	d. Before n	at no fewer to noving it, det	termine the	percentage	of the	3.3
				• .			y fine sedim composed of			•	
								iiile seuiili	enis, use a i	alling score	
			of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and								
				orintion							
		Rating 5	Rating Des		overed suri	rounded or	buried by fin	e sediment	(or bedrock)	
		4					d, or buried b		·)	
		3					ed, or buried	-			
		2	51 to 75 pe	rcent of surf	face covered	d, surrounde	ed, or buried	by fine sed	iment		
		1			covered, su	rrounded, o	r buried by fi	ine sedimer	nt (or artificia	al surface)	
	List the rati	ngs at each	point below	:							-
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	1	1	
3	V _{SUBSTRATE}						it no fewer thed in V _{EMBED}		hly equidista	ant points	17.15 in
	Enter partic	le size in ind	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in. asphalt	
	•		and or finer				(100011011011011011			,	
	0.08	0.08	0.08	0.08	0.44	0.63	0.89	0.89	0.89	1.26	
•	1.77	1.77	3.50	5.00	5.00	7.10	7.10	7.10	10.10	10.10	
	14.30	14.30	14.30	14.30	14.30	20.00	20.00	99.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	99.00	99.00	99.00	99.00	
	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number on tal number of				40 %
			Left Bank:	32	2 ft		Right Bank:	32	2 ft		

Sampl	e Variables	5-9 within t	the entire r	iparian/buf	fer zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream rea		ne number f	rom the enti		ter and 36 in buffer and wi				3.8
					Number o	f downed w	oody stems:		6	٠	
6	V_{TDBH}				lly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)	. Trees are	at least 4	Not Used
		List the dbl	n measurem	nents of indi	vidual trees	(at least 4 i	n) within the	buffer on ea	ch side of		
		the stream below:									
		1	Left Side					Right Side	1		
7	V_{SNAG}				and 36" tall) It per 100 fe		t of stream. Iculated.	Enter numb	er of snags	on each	0.0
			Left Side:		0		Right Side:	(0		
8	V_{SSD}						nes dbh) per				
			r is <20%). of stream wi			gs and shru	ibs on each s	side of the s	tream, and t	the amount	51.6
		por roone c	Left Side:		41		Right Side:	4	! 1		
9	V_{SRICH}						m reach. Ch				
							ve species p		strata. Spe	ecies	3.14
				and the Subi	ndex will be	calculated	from these d		2 (1 0)		
	Acer rubru		ıp 1 = 1.0	Magnolia t	rinotolo		Ailanthus a		2 (-1.0)	l anicara ia	nonico
				ū	•					Lonicera ja	
	Acer sacc			Nyssa sylv			Albizia julib			Lonicera ta	
	Aesculus	flava		Oxydendrur	n arboreum		Alliaria peti	olata		Lotus corni	
	Asimina tr	riloba		Prunus se	rotina		Alternanthe			Lythrum sa	licaria
	Betula alle	ghaniensis	1	Quercus a	lba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus c	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	а		Quercus ir	nbricaria		Cerastium	fontanum		Polygonum d	cuspidatum
	Carya glai	bra		Quercus p	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	nlis		Quercus ru	ubra		Elaeagnus u	mbellata		Rosa multit	flora
	Carya ova	nta		Quercus v	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia ameri	cana		Ligustrum ok	otusifolium			
	Fraxinus a	americana		Tsuga can	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus am							
		acuminata									
						ļ					
		5	Species in	Group 1				0	Species in	Group 2	

									one within	25 feet from	n each
10	V _{DETRITUS}	bplots shou Average pe			equidistant sticks, or oth				<4" diamete	er and <36"	
		ong are include. Enter the percent cover of the definal layer at each subplot.									50.00 %
		50	Left 50	Side 50	50	50	Right 50	Side 50	50		
		50	50	30	30	30	30	30	30	•	
11	V_{HERB}				aceous vege oh and 36" ta						
		vegetation	percentages		n 200% are a						50 %
		each subple		Side			Pight	Side		, !	
		50	50	50	50	50	50	50	50		
Sample	e Variable 1	2 within the	entire cate	chment of t	the stream.						
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ied:					0.66
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	50	50
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			•	0.3	45	95
	Forest and native range (<50% ground cover)								5	100	
	▼										
	▼										
	_							•			
								•			
	_							•			
	Р	RC U3					No	tes:			
Va	ariable	Value	VSI								
Vc	CANOPY	Not Used, <20%	Not Used								
V _E	MBED	3.3	0.94								
V _{st}	JBSTRATE	17.15 in	0.28								
V _{BI}	ERO	40 %	0.86								
VLV	WD	3.8	0.47								
V _{TI}	овн	Not Used	Not Used								
Vsi	NAG	0.0	0.10								
Vss	SD	51.6	0.79								
Vsi	RICH	3.14	1.00								
	ETRITUS	50.0 %	0.61								
V _{HI}	ERB	50 %	0.67								
V _w	LUSE	0.66	0.69								

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT5 of Pigeonroost Creek

Sampling Date: Post-10 Year Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: PRC U3

Tree/Sapling Strata

Functional Results Summary: Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index		
Hydrology	0.58		
Biogeochemical Cycling	0.78		
Habitat	0.51		

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	50.00	0.50
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	17.15	0.28
V _{BERO}	Total percent of eroded stream channel bank.	40.25	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	5.03	0.63
V _{TDBH}	Average dbh of trees.	5.00	0.29
V _{SNAG}	Number of snags per 100 feet of stream.	0.00	0.10
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	3.14	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	70.00	0.85
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.67	0.71

	Hign-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG							M Northina:	37.7098486	62
Pro		Buffalo Mou	ıntain						ū	-82.209420	
	-	UT5 of Pige		eek			_	_	_	Post-10 Yea	
0.4					450	О: Т		- Cui	ipinig Dato.	1 000 10 100	A1
SA	R Number:	PRC U3	Reach	Length (ft):	159	Stream Ty	/pe: Inter	mittent Strea	m		
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	₉ Y)		
Site and Timing: Project Site ✓ After Project ✓											•
Sample Variables 1-4 in stream channel											
1	V _{CCANOPY}	equidistant 20%, enter	Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) ent cover measurements at each point below:								
ı				-							
	50	50	50	50	50	50	50	50	50	50	
2	V_{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer t noving it, de	termine the	percentage	of the	3.3
							y fine sedim				
			ving table. I bed is comp				composed of	tine sedime	ents, use a r	ating score	
							cles (rescale	d from Platt	s Megahan	and	
		Minshall 19	_	or graver, or	obble and bi	ouider partic	des (rescale	u iioiii i iatt	s, Meganan	, and	
			Rating Des								
		5					buried by fin		·)	
		3					d, or buried bed, or buried	-			
		2					ed, or buried	_			
		1					r buried by fi			l surface)	
	List the rati	ngs at each	point below	:			-				
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	1	1	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		hly equidista	ant points	17.15 in
	Enter partic	ola siza in in	chas to tha i	nearest () 1	inch at each	noint halow	/ (bedrock sl	hould be co	untad as 00	in aenhalt	
	•	as 0.0 in, s				point below	(bedrock si	ilouid be co	united as 33	iii, aspiiait	
	0.08	0.08	0.08	0.08	0.44	0.63	0.89	0.89	0.89	1.26	
	1.77	1.77	3.50	5.00	5.00	7.10	7.10	7.10	10.10	10.10	
	14.30	14.30	14.30	14.30	14.30	20.00	20.00	99.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	99.00	99.00	99.00	99.00	
	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	Total perce	nt of eroded	stream cha	nnel bank.	Enter the to	otal number on	of feet of ero	oded bank o	n each	40 %
		may be up	-	J = ~				,			10 /0
			Left Bank:	32	2 ft		Right Bank:	32	2 ft		

Sampl	e Variables	s 5-9 within t	he entire ri	parian/buff	fer zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		rom the entir		ter and 36 ind buffer and wi				5.0
		•			Number o	f downed w	oody stems:		8		
6	V_{TDBH}				lly if V _{CCANOP} tree DBHs i		ng cover is at	least 20%). Trees are	at least 4	5.0
	List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of										
	the stream below:									1	
		<i>-</i>	Left Side	_			Г	Right Side		Г	
	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	5 5	
	3	3	3	3	3	3	3	3	3	3	
7	\/	Number of	enage (at le	act 4" dbb a	and 36" tall)	por 100 foo	et of stream.	Entor numb	oor of chage	on oach	
,	V_{SNAG}		• .		it per 100 fee	•		Enter num	Der or snags	on each	0.0
			Left Side:		0		Right Side:		0		
8	V_{SSD}						nes dbh) per				Nine I Innai
				Enter numi Il be calcula		gs and snru	ıbs on each s	ide of the s	stream, and t	ne amount	Not Used
		•	Left Side:		0		Right Side:		0		
9	V _{SRICH}						m reach. Ch				
							ve species pi from these da		i strata. Spe	ecies	3.14
			p 1 = 1.0								
7	Acer rubri		<u>.</u>	Magnolia t	ripetala		Ailanthus ai		2 (-1.0)	Lonicera ja	ponica
	Acer sacc	harum		Nyssa sylv	•		Albizia julib			Lonicera ta	
	Aesculus	flava		-	n arboreum		Alliaria petid	olata		Lotus corni	culatus
	Asimina tı			Prunus sei	rotina		Alternanthe			Lythrum sa	
		ghaniensis		Quercus a			philoxeroide			Microstegiun	
	Betula len	_		Quercus o			Aster tatario	CUS		Paulownia	
	Carya alb			Quercus in			Cerastium f			Polygonum o	
	Carya alb			Quercus p			Coronilla va		H	Pueraria m	•
	Carya ova			Quercus ru			Elaeagnus ui			Rosa multin	
	Carya ova			Quercus v			Lespedeza			Sorghum h	
	Cornus flo			Sassafras			Lespedeza			Verbena br	•
	Fagus gra			Tilia ameri			Ligustrum ob				
		americana		Tsuga can			Ligustrum s				
	Liriodendro			Ulmus am			J				
		acuminata		Jiiius aili	o, iouria						
	ıvıayı1011a	avuriiridld									
		5	Species in	Group 1				0	Species in	Group 2	

					40" x 40", o equidistant				one within	25 feet fron	n each		
10	V _{DETRITUS}	Average percent cover of leaves, sticks, or other organic material. Woody debris <4" diameter and <36" long are include. Enter the percent cover of the detrital layer at each subplot.											
		Left Side Right Side											
		70	70	70	70	70	70	70	70				
11	V_{HERB}	Average pe	ercentage co	over of herb	aceous vege	etation (mea	sure only if	tree cover is	s <20%). D	o <i>not</i>			
		include woody stems at least 4" dbh and 36" tall. Because there may be several layers of ground cover vegetation percentages up through 200% are accepted. Enter the percent cover of ground vegetation at											
	each subplot.									getation at			
			Left	Side			Righ	t Side					
Sample	Variable 1	2 within the	entire cate	chment of t	the stream.								
12	V_{WLUSE}	Weighted A	verage of R	Runoff Score	e for watersh	ied:					0.67		
									Б. ;;	0/ 1 0 1 1	Running		
			Land	Use (Choos	se From Dro	p List)			Runoff Score	% in Catch- ment	Percent (not >100)		
	Forest and n	ative range (>75% ground	d cover)				•	1	50	50		
	Open space	(pasture, law	ns, parks, etc	.), grass cove	er >75%			. •	0.3	45	95		
	Forest and n	ative range (50% to 75%	ground cover	-)			•	0.7	5	100		
	=							•					
	-							•					
	-							•					
	=							. •					
	-							_					
		RC U3					No	ites:					
	ariable	Value	VSI										
Vc	CANOPY	50 %	0.50										
V _{EI}	MBED	3.3	0.94										
Vsu	JBSTRATE	17.15 in	0.28										
V _{BI}	ERO	40 %	0.86										
VLV	WD	5.0	0.63										
V _{TI}	ОВН	5.0	0.29										
Vsi	NAG	0.0	0.10										
Vs	SD	Not Used	Not Used										
	RICH	3.14	1.00										
	ETRITUS	70.0 %	0.85										
V _{HI}		Not Used	Not Used										
V	LUCE	0.67	0.71										

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT5 of Pigeonroost Creek

Sampling Date: Maturity Project Site After Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: PRC U3

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section B of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index		
Hydrology	0.65		
Biogeochemical Cycling	0.89		
Habitat	0.76		

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.00	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	17.15	0.28
V_{BERO}	Total percent of eroded stream channel bank.	40.25	0.86
V_{LWD}	Number of down woody stems per 100 feet of stream.	6.92	0.86
V_{TDBH}	Average dbh of trees.	10.00	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.63	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	3.14	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	85.00	1.00
V_{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	0.69	0.73

	Hign-G	Fradient	Headwat				entucky a alculator		ern Wes	t Virginia	a
	Team:	AC AG					ı	Latitude/UT	M Northina:	37.7098486	62
Pro		Buffalo Mou	untain						_	-82.209420	
	-	UT5 of Pige		eek			_	_	pling Date:		
C 4					450	Ctue e ve Ti					
	R Number:			Length (ft):	159	Stream Ty		mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	_P ()		
		Project Site				V	After Project				▼
Sample		1-4 in strea									
1		equidistant 20%, enter	points along at least one	the stream value betw	n. Measure een 0 and 1	only if tree/s	anopy. Mea apling cover Top Strata c	r is at least 2			95.0 %
		cent cover r									
	95	95	95	95	95	95	95	95	95	95	r
2	along the stream. Select a particle from the bed. Before moving it, determine the percentage of the										3.3
	surface and area surrounding the particle that is covered by fine sediment, and enter the rating according										
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5.									
		Embeddedi	Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and								
		Minshall 1983)									
		Rating Pating Description 5 <- spercent of surface covered, surrounded, or buried by fine sediment (or bedrock)									
		5 4					d, or buried b		•)	
		3					ed, or buried	-			
		2					ed, or buried				
		1	>75 percen	t of surface	covered, su	rrounded, o	r buried by fi	ine sedimer	ıt (or artificia	ıl surface)	
	List the rati	ngs at each	point below	:							1
	2	3	2	3	3	2	2	3	4	5	
	4	3	4	3	4	4	1	4	4	3	
	4	4	3	2	3	2	4	4	5	4	
	5	3	4	4	4	3	4	5	2	3	
	4	5	4	2	4	3	4	4	1	1	
3	V _{SUBSTRATE}						it no fewer the d in V _{EMBED}		hly equidista	ant points	17.15 in
	Enter partic	cle size in inc	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in. asphalt	
	•	as 0.0 in, s					(100011011011011			,	
	0.08	0.08	0.08	0.08	0.44	0.63	0.89	0.89	0.89	1.26	
	1.77	1.77	3.50	5.00	5.00	7.10	7.10	7.10	10.10	10.10	
	14.30	14.30	14.30	14.30	14.30	20.00	20.00	99.00	40.00	40.00	
	40.00	40.00	80.00	80.00	80.00	80.00	99.00	99.00	99.00	99.00	'
	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	99.00	
4	V_{BERO}	•	e total perce				tal number o				40 %
			Left Bank:	32	2 ft	ļ	Right Bank:	32	2 ft		

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir						6.9
						f downed w	oody stems:	1	11		'
6	V_{TDBH}						ng cover is at	t least 20%)). Trees are	at least 4	10.0
		List the dbh	measurem	ents of indiv	idual trees	(at least 4 ir	n) within the l	buffer on ea	ach side of		
	_	the stream	below:								•
	stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: 11 Average dbh of trees (measure only if V _{CCANDOP} , tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side 10 10 10 10 10 10 10 10 10 1										
		_									
	10	10	10	10	10	10	10	10	10	10	
7	V_{SNAG}							Enter numb	er of snags	on each	0.6
			Left Side:		1		Right Side:		0		
8											
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount No.								Not Used		
		per roon o					Right Side:		0		
9	V_{SRICH}						m reach. Ch				
									strata. Spe	cies	3.14
				ind the Subii	idex will be	calculateu i	TOTT THESE G		2 (1 0)		
	Acor rubri		ρ I = 1.0	Magnalia ti	rinotala		nonica				
				-	-						
				-			-				
				-			Alliaria peti	olata			
	Asimina tr	iloba		Prunus ser	otina		Alternanthe			Lythrum sa	licaria
	Betula alle	ghaniensis	✓	Quercus al	lba		philoxeroide	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatario	cus		Paulownia	tomentosa
	Carya alba	а		Quercus in	nbricaria		Cerastium t	fontanum		Polygonum d	cuspidatum
	Carya gla	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	nlis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multin	flora
	Carya ova	nta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	orida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ob				
		americana		Tsuga can			Ligustrum s				
	Liriodendro			Ulmus ame			J. 2.2. 3 0				
				Jinus and	, iouria						
	iviayiiUiia	acuminata									
		5	Species in	Group 1				0	Species in	Group 2	

_											
	le Variables The four su	bplots shou	ıld be place	ed roughly	equidistan	tly along ea	ach side of	the stream.			n each
10	V _{DETRITUS}				sticks, or oth nt cover of th			oody debris subplot.	<4" diamete	er and <36"	85.00 %
			Left	Side			Righ	nt Side]	
Sample 12 Va V _{CO} V _{EN} V _{SN} V _{SS} V _{SR} V _{DE}		85	85	85	85	85	85	85	85		
11	V_{HERB}							tree cover is			
								be several la rcent cover o			Not Used
		each subple	ot.		11 200 70 a10	accopted.			or ground ve	-	
			Left	Side	1		Righ	nt Side			
Samp	le Variable 1	2 within the	e entire cat	chment of	the stream.						
	V _{WLUSE}				e for watersl						0.69
											Running
Land Use (Choose From Drop List)									Runoff Score	% in Catch- ment	Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	55	55
	Open space	(pasture, law	ns, parks, etc), grass cov	er >75%			•	0.3	45	100
								•			
	-	▼									
	•		▼								
	-							•			
								~			
	-							•			
	Р	RC U3					N	otes:		•	
\	/ariable	Value	VSI								
V	CCANOPY	95 %	1.00								
V	EMBED	3.3	0.94								
V,	SUBSTRATE	17.15 in	0.28								
V	BERO	40 %	0.86								
V	LWD	6.9	0.86								
V.	TDBH	10.0	1.00								
V,	SNAG	0.6	1.00								
V,	SSD	Not Used	Not Used								
V	SRICH	3.14	1.00								
V	DETRITUS	85.0 %	1.00								
V	HERB	Not Used	Not Used								
V,	WLUSE	0.69	0.73								

FCI Calculator for the High-Gradient Headwater Streams in eastern Kentucky and western West Virginia HGM Guidebook

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain

Location: UT of Stonecoal Branch

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: UTSB 1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.66
Biogeochemical Cycling	0.94
Habitat	0.86

Variable Measure and Subindex Summary:

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.71	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.26	0.63
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V _{LWD}	Number of down woody stems per 100 feet of stream.	5.00	0.63
V _{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	1.00	1.00
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	7.00	1.00
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	91.88	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	Fradient	Headwat				entucky a alculator		ern wes	t Virginia	a
	Team:	AC AG						- Latitude/UTI	M Northina:	37.707416	
Pro		Buffalo Mou	untain						•	-82.197925	
	•	UT of Stone		า			_	_	npling Date:		
C/	AR Number:				400	Ctroom Tu					
				Length (ft):	100	Stream Ty		mittent Strea			
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOR}	₉ Y)		
Site	and Timing:	Project Site				•	Before Proje	ct			•
Sample	e Variables	1-4 in strea	m channel								
1	V _{CCANOPY}	equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.)								95.7 %	
	List the percent cover measurements at each point below:										
	94	88	100	88	94	94	100	100	100	94	Í
_	100	94	100	94				11 00			
2	V_{EMBED}	Average embeddedness of the stream channel. Measure at no fewer than 30 roughly equidistant points along the stream. Select a particle from the bed. Before moving it, determine the percentage of the surface and area surrounding the particle that is covered by fine sediment, and enter the rating according									
							y fine sedim composed of			-	
								i iiile sediiile	erits, use a i	alling Score	
		of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
		Rating Rating Description									
		5			overed, suri	ounded, or	buried by fin	ne sediment	(or bedrock)	
		4					d, or buried b		·	,	
		3					ed, or buried				
		2					ed, or buried				
		1			covered, su	rrounded, o	r buried by f	ine sedimer	nt (or artificia	al surface)	
		ngs at each			_	_	_	_	_	_	İ
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1 -	4	4	4	4	3	
2	5	4	3	3	5	1 Magazira a	4	3	1 bly oguidist	4	
3	V _{SUBSTRATE}						it no fewer the d in V _{EMBED}	•	rily equidista	ani poinis	1.26 in
	Enter partic	cle size in in	ches to the r	nearest 0.1	inch at each	point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	or concrete	as 0.0 in, s	and or finer	particles as	0.08 in):						ı
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	
	0.16	0.16	0.16	0.16	0.22	0.22	0.22	0.22	0.22	0.22	
	0.31	0.44	0.44	0.89	1.26	1.26	1.26	1.26	1.26	1.26	
	1.26 1.77 1.77 2.50 2.50 3.50 3.50 5.00 5.00										
	7.10	7.10	10.10	10.10	10.10	10.10	14.30	14.30	20.00	80.00	
4	V_{BERO}	•	e total perce				tal number on tal number on tal number of				200 %
			Left Bank:	10	0 ft		Right Bank:	10	0 ft		

Sample	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th		om the entir		er and 36 in ouffer and wi				5.0
		•					oody stems:		5		
6	V_{TDBH}				ly if V _{CCANOP} tree DBHs i		ng cover is a	t least 20%)). Trees are	at least 4	9.3
		•	•				n) within the	buffer on ea	ach side of		
		the stream				`	,				_
			Left Side					Right Side			
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2	
7	V_{SNAG}				and 36" tall) t per 100 fee		t of stream. Iculated.	Enter numb	er of snags	on each	1.0
			Left Side:		1		Right Side:		0		
8	V_{SSD}	Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only									
	if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount Not									Not Used	
		per 100 ft of stream will be calculated. Left Side: Right Side:									
9	V _{SRICH}	Riparian ve		ecies richne	ss per 100 f	eet of strea	Right Side: m reach. Ch	eck all spe	cies present	from	
	SKICH	Group 1 in	the tallest s	tratum. Che	eck all exotic	and invasi	ve species p	resent in all			7.00
				nd the subir	ndex will be	calculated f					
			p 1 = 1.0								
4	Acer rubru	ım		Magnolia tı	ripetala		Ailanthus a	ltissima		Lonicera ja	ponica
	Acer sacci	harum		Nyssa sylv	atica		Albizia julib	rissin		Lonicera ta	tarica
	Aesculus i	flava		Oxydendrum	n arboreum		Alliaria peti	olata		Lotus corni	culatus
	Asimina tr	iloba		Prunus ser	rotina		Alternanthe	era		Lythrum sa	licaria
	Betula alle	ghaniensis	√	Quercus al	ba		philoxeroid	es		Microstegiun	n vimineum
	Betula len	ta		Quercus co	occinea		Aster tatari	cus		Paulownia	tomentosa
	Carya alba	a		Quercus in	nbricaria		Cerastium	fontanum		Polygonum o	cuspidatum
	Carya glal	bra		Quercus pi	rinus		Coronilla va	aria		Pueraria m	ontana
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	Cornus flo	rida		Sassafras	albidum		Lespedeza	cuneata		Verbena br	asiliensis
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ot	otusifolium			
	Fraxinus a	americana		Tsuga cana	adensis		Ligustrum s	sinense			
	Liriodendro	n tulipifera		Ulmus ame	ericana						
	Magnolia a										
	griona (
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant					25 feet from	n each
10	V _{DETRITUS}	Average pe	ercent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris		er and <36"	91.88 %
Sample V 12 V Varia		long are inc		Side	11 00 001 01 111	e detinaria,		it Side		1	
		80	100	95	90	95	85	100	90		
	.,								200()		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" d s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	e Variable 1	2 within the	entire cate	chment of	the stream						
	V _{WLUSE}				e for watersh	ned:					
											1.00
			Land Use (Choose From Drop List)							Running Percent (not >100)	
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
	•	▼									
	▼										
								_			
	-							•			
								▼			
	-							•			
	U	TSB 1					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	96 %	1.00								
		3.3	0.94								
Vs	UBSTRATE	1.26 in	0.63								
V_{B}	ERO	200 %	0.00								
V _L	WD	5.0	0.63								
V _T	DBH	9.3	1.00								
Vs	NAG	1.0	1.00								
Vs	SD	Not Used	Not Used								
		7.00	1.00								
	ETRITUS	91.9 %	1.00								
		Not Used	Not Used								
V _w	/LUSE	1	1.00								

FCI Calculator for the High-Gradient Headwater Streams in eastern Kentucky and western West Virginia HGM Guidebook

To ensure accurate calculations, the <u>UPPERMOST STRATUM</u> of the plant community is determined based on the calculated value for V_{CCANOPY} (≥20% cover is required for tree/sapling strata). Go to the SAR Data Entry tab and enter site characteristics and data in the yellow cells. For information on determining how to split a project into SARs, see Chapter 5 of the Operational Draft Regional Guidebook for the Functional Assessment of High-gradient Ephemeral and Intermittent Headwater Streams in Western West Virginia and Eastern Kentucky (Environmental Laboratory U.S. Army Corps of Engineers 2010).

Project Name: Buffalo Mountain **Location:** UT5 of Miller Creek

Sampling Date: 27-July-11 Project Site Before Project

Subclass for this SAR:

Intermittent Stream

Uppermost stratum present at this SAR: SAR number: MC U1

Tree/Sapling Strata

Functional Results Summary:

Enter Results in Section A of the Mitigation Sufficiency Calculator

Function	Functional Capacity Index
Hydrology	0.75
Biogeochemical Cycling	0.97
Habitat	0.87

Variable Measure and Subindex Summary:

Variable	Name	Average Measure	Subindex
V _{CCANOPY}	Percent canpoy over channel.	95.71	1.00
V _{EMBED}	Average embeddedness of channel.	3.34	0.94
V _{SUBSTRATE}	Median stream channel substrate particle size.	1.26	0.63
V _{BERO}	Total percent of eroded stream channel bank.	200.00	0.00
V_{LWD}	Number of down woody stems per 100 feet of stream.	12.67	1.00
V _{TDBH}	Average dbh of trees.	9.30	1.00
V _{SNAG}	Number of snags per 100 feet of stream.	0.22	0.43
V _{SSD}	Number of saplings and shrubs per 100 feet of stream.	Not Used	Not Used
V _{SRICH}	Riparian vegetation species richness.	1.56	0.74
V _{DETRITUS}	Average percent cover of leaves, sticks, etc.	86.88	1.00
V _{HERB}	Average percent cover of herbaceous vegetation.	Not Used	Not Used
V _{WLUSE}	Weighted Average of Runoff Score for Catchment.	1.00	1.00

	High-G	iradient	Headwat				entucky a alculator		ern Wes	t Virginia	3
	Team:	AC AG		1 10101 -		000000			M Northina:	37.7412984	-6
Pro	oject Name:		untain						ū	-82.238893	
	-	UT5 of Mille					•	_	npling Date:		
SA	AR Number:	MC U1		Length (ft):	450	Stream Ty	/pe: _{Interi}	mittent Strea			•
	Top Strata:	Tre	e/Sapling St	rata	(determined	d from perce	ent calculate	d in V _{CCANOF}	₉ Y)		
Site	and Timing:	Project Site				•	Before Proje	ct			•
Sample	Variables	1_4 in stroa	m channel								
1 V _{CCANOPY} Average percent cover over channel by tree and sapling canopy. Measure at no fewer than 10 roughly equidistant points along the stream. Measure only if tree/sapling cover is at least 20%. (If less than 20%, enter at least one value between 0 and 19 to trigger Top Strata choice.) List the percent cover measurements at each point below:								95.7 %			
						0.4	400	400	400	0.4	
ļ	94	88	100	88	94	94	100	100	100	94	
2	V _{EMBED}	along the s	tream. Sele	ct a particle	from the be	d. Before n	at no fewer t noving it, det y fine sedim	termine the	percentage	of the	3.3
		to the following table. If the bed is an artificial surface, or composed of fine sediments, use a rating score of 1. If the bed is composed of bedrock, use a rating score of 5. Embeddedness rating for gravel, cobble and boulder particles (rescaled from Platts, Megahan, and Minshall 1983)									
	Rating Rating Description										
		5					buried by fin		•)	
		3					d, or buried bed, or buried	-			
		2					ed, or buried				
		1					r buried by fi	_		al surface)	
,	List the rati	ngs at each	point below	:							
	4	4	2	4	3	4	4	3	3	4	
	4	4	3	2	4	1	2	1	4	3	
	4	4	4	4	3	4	3	4	4	3	
	5	1	4	4	1	4	4	4	4	3	
	5	4	3	3	5	1	4	3	1	4	
3	V _{SUBSTRATE}						it no fewer the ed in V _{EMBED}		hly equidista	ant points	1.26 in
			ches to the r and or finer			point below	/ (bedrock sl	hould be co	unted as 99	in, asphalt	
	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.16	
	0.16	0.16	0.16	0.16	0.22	0.22	0.22	0.22	0.22	0.22	
	0.31	0.44	0.44	0.89	1.26	1.26	1.26	1.26	1.26	1.26	
	1.26	1.77	1.77	2.50	2.50	3.50	3.50	3.50	5.00	5.00	
	7.10	7.10	10.10	10.10	10.10	10.10	14.30	14.30	20.00	80.00	
4	V_{BERO}	•	e total perce				otal number of nks are eroc				200 %
			Left Bank:	45	0 ft		Right Bank:	45	0 ft	•	

Sampl	e Variables	5-9 within t	he entire ri	parian/buff	er zone adj	acent to th	e stream ch	annel (25 f	eet from ea	ch bank).	
5	V_{LWD}	stream read	ch. Enter th	e number fr	om the entir						12.7
		,				f downed w	oody stems:	5	57		'
6	V_{TDBH}						ng cover is a	t least 20%)	. Trees are	at least 4	9.3
		List the dbh	n measurem	ents of indiv	idual trees	(at least 4 ir	n) within the	buffer on ea	ach side of		
		the stream	below:								•
	Stream reach. Enter the number from the entire 50'-wide buffer and within the channel, and the amount per 100 feet of stream will be calculated. Number of downed woody stems: 57 V _{TDBH} Average dbh of trees (measure only if V _{CORNOPY} tree/sapling cover is at least 20%). Trees are at least 4 inches (10 cm) in diameter. Enter tree DBHs in inches. List the dbh measurements of individual trees (at least 4 in) within the buffer on each side of the stream below: Left Side Right Side 10.6 9.5 14 5.2 4.4 6 4.1 15.5 12.5 11.2 V _{SNAG} Number of snags (at least 4" dbh and 36" tall) per 100 feet of stream. Enter number of snags on each side of the stream, and the amount per 100 feet will be calculated. Left Side: 1 Right Side: 0 V _{SND} Number of saplings and shrubs (woody stems up to 4 inches dbh) per 100 feet of stream (measure only if tree cover is <20%). Enter number of saplings and shrubs on each side of the stream, and the amount per 100 feet of stream will be calculated. Left Side: Right Side: V _{SRICH} Riparian vegetation species richness per 100 feet of stream reach. Check all species present from										
	10.6	9.5	14	5.2	4.4	6	4.1	15.5	12.5	11.2	
7	V_{SNAG}							Enter numb	er of snags	on each	0.2
			Left Side:		1		Right Side:		0		
8											
									Not Used		
		,					Right Side:				
9	V_{SRICH}										
									strata. Spe	ecies	1.56
		•							2 (-1.0)		
7	Acer rubru			Magnolia tr	ripetala						
	Acer sacc	harum		· ·	•					· .	
	Aesculus	flava		-			-			Lotus corni	culatus
				-			-				
										•	
							Aster tatari	cus		•	
	-										
	Carya ova	lis		Quercus ru	ıbra		Elaeagnus u	mbellata		Rosa multii	flora
	Carya ova	ta		Quercus ve	elutina		Lespedeza	bicolor		Sorghum h	alepense
	-			Sassafras a	albidum		•				
	Fagus gra	ndifolia		Tilia amerio	cana		Ligustrum ol	otusifolium			
	Fraxinus a			Tsuga cana			Ligustrum s				
	Liriodendro			Ulmus ame			<u> </u>				
	Magnolia a			J20 a.m.							
	wagnona										
		7	Species in	Group 1				0	Species in	Group 2	

					(40" x 40", o equidistant				zone within	25 feet from	n each
10	V _{DETRITUS}	Average pe	rcent cover	of leaves,	sticks, or oth	er organic r	material. W	oody debris	<4" diamete	er and <36"	86.88 %
		long are me		Side				nt Side		1	
		80	85	75	85	95	90	90	95		
44	\ <u>'</u>	A				4-4:			000() D		
11	V_{HERB}	include woo	ody stems a percentages ot.	t least 4" dl s up throug	baceous vege bh and 36" ta h 200% are a	all. Because	there may Enter the pe	be several la rcent cover o	ayers of grou	und cover	Not Used
			Left	Side			Righ	t Side			
Sample	o Variable 1	2 within the	ontire est	ohmont of	the etreem						
					the stream.	- al.					
12	V _{WLUSE}	vveignted A	verage or F	Runoii Scor	e for watersh	iea:					1.00
			Land	Use (Choo	se From Dro	p List)			Runoff Score	% in Catch- ment	Running Percent (not >100)
	Forest and r	native range (>75% ground	d cover)				•	1	100	100
								•			
								•			
	•							•			
								•	-		
	-							•			
								_	-		
	<u> </u>							•			
	<u>. </u>	IC U1					No	otes:			
V	ariable	Value	VSI								
V _c	CANOPY	96 %	1.00	1							
V _E	MBED	3.3	0.94								
Vs	UBSTRATE	1.26 in	0.63								
V _B	ERO	200 %	0.00								
V _L	WD	12.7	1.00								
V _T	DBH	9.3	1.00								
Vs	NAG	0.2	0.43								
Vs	SD	Not Used	Not Used								
	RICH	1.56	0.74								
	ETRITUS	86.9 %	1.00								
	ERB	Not Used	Not Used								
V _w	/LUSE	1	1.00								

APPENDIX C BENTHIC MACROINVERTEBRATE TABLES

Table 1: Impact Benthic Macroinvertebrate Individual Count Data –Ruth Trace Branch Watershed, May 2010

ORDER	FAMILY	GENUS	FUNCTIONAL FEEDING GROUP	TV	RTB Temporary	RTB Permanent	RTB Intermittent 3 rd Order	RTB Intermittent 2 nd Order	UT1 UT17 RTB
	Ameletidae	Ameletus	Scraper	0		1			
	Baetidae	Barbaetis	Collector-Gatherer	4	45		3		1
	Ephemerellidae	Drunella	Scraper	3	15	3	4		4
	•	Ephemerella	Collector-Gatherer	3	1	2	1		1
Ephemeroptera	Ephemeridae	<i>Ephemera</i>	Collector-Gatherer	4	1		1		
	Heptageniidae	Stenacron	Collector-Gatherer	4			1		
	p.tagoaa	Stenonema	Scraper	4	6			_	1
	Leptophlebiidae	Habrophlebiodes	Scraper	2				2	5
		Leptophlebia	Collector-Gatherer	2			3		
	Siphlonuridae	Siphlonurus	Collector-Gatherer	7			1		
	Chloroperlidae	Utaperla	Predator	1	1		10		
	Nemouridae	<i>Amphinemura</i>	Shredder	2				1	1
Plecoptera	Peltoperlidae	Viehoperla	Shredder	2			1	1	
riccopicia	Perlidae	Acroneuria	Predator	1			2		
		Eccoptura	Predator	1	1	2			
	Pteronarcyidae	Pteronarcys	Shredder	0		1			
	Apataniidae	<i>Apatania</i>	Scraper	4	2		3		
	Brachycentridae	Micrasema	Piercer-Herbivore	1		2			
	Hydropsychidae	Ceratopsyche	Collector-Filterer	5	13	10	3	4	
Trichoptera	3 . 3	Cheumatopsyche	Collector-Filterer	5	3	1			
	Lepidostomatidae	Lepidostoma	Shredder	1				2	4
	Polycentropodidae	Neureclipsis	Collector-Filterer	6	1		1		2
	Rhyacophilidae	Rhyacophila	Predator	3		1	1		
	Ceratopogonidae	Bezzia	Predator	6				1	1
		Nilotanypus	Predator	6					1
	Chironomidae	Thienemannimyia	Predator	6	2		1	1	
		<i>Tvetenia</i>	Collector-Gatherer	6	1				
Diptera	Dixidae	Dixa	Collector-Gatherer	1	1				
Dipiera	Empididae	Chelifera	Predator	6	1				
		Dicranota	Predator	3	1			3	
	Tipulidae	Hexatoma	Predator	3	4				
	Tipulidae	Pedicia	Predator	3	4	1			3
		Tipula	Shredder	3	1		7		
Colocators	Elmidae	Optioservus	Scraper	4			1		1
Coleoptera	Psephenidae	Ectopria	Scraper	4			1		
Odonata	·	Lanthus	Predator	3		3	1		
Odonata	Gomphidae	Stylogomphus	Predator	3	7		2		
Megaloptera	Corydalidae	Nigronia	Predator	5					1
Decapoda	Cambaridae	Orconectes	Shredder; Collector-Gatherer	5	6		3		2

Table 2: Impact Benthic Macroinvertebrate Individual Count Data – Conley Branch Watershed, May 2010

ORDER	FAMILY	GENUS	FUNCTIONAL FEEDING GROUP	TV	UT1 RFCB Perennial	UT1 RFCB Intermittent	UT2 RFCB	UT3 RFCB	LFCB
	Ameletidae	Ameletus	Scraper	0	1		1		
	Baetidae	Barbaetis	Collector-Gatherer	4					2
	Ephemerellidae	Drunella	Scraper	3					1
Ephemeroptera	Ерпетнегениае	Ephemerella	Collector-Gatherer	3	1	1			1
	Ephemeridae	<i>Ephemera</i>	Collector-Gatherer	4	1				
	Heptageniidae	Stenonema	Scraper	4			1		2
	Leptophlebiidae	Leptophlebia	Collector-Gatherer	2			1		
	Chloroperlidae	Utaperla	Predator	1			22	2	
	Nemouridae	Amphinemura	Shredder	2	4		4	3	1
Plecoptera	Peltoperlidae	Peltoperla	Shredder	2			1		
	Pelloperilaae	Tallaperla	Shredder	2			2		
	Perlodidae	Isoperla	Predator	2	2				
	Hydropsychidae	Ceratopsyche	Collector-Filterer	5	6	2	5		
	пушорѕуспиае	Cheumatopsyche	Collector-Filterer	5			1		
Trichoptera	Lepidostomatidae	Lepidostoma	Shredder	1			4	5	
	Odontoceridae	Psilotreta	Scraper	0		1			
	Rhyacophilidae	Rhyacophila	Predator	3				3	
	Ceratopogonidae	Bezzia	Predator	6	1			1	
	Chironomidae	Nilotanypus	Predator	6				1	
Diptera	Chilonomidae	Thienemannimyia	Predator	6	3		1	6	
Diplera		Dicranota	Predator	3		1			1
	Tipulidae	Hexatoma	Predator	3	3			3	1
		Pedicia	Predator	3	1			2	
Coleoptera	Elmidae	Macronychus	Collector-Gatherer	4				1	
	Cordulegastridae	Cordulegaster	Predator	3			2		
Odonata		Hagenius	Predator	3	1				
	Gomphidae	Stylogomphus	Predator	3				1	
Decapoda	Cambaridae	Orconectes	Shredder; Collector-Gatherer	5	3		1	1	2

Table 3: Impact Benthic Macroinvertebrate Individual Count Data – Right Fork of Hell Creek, May 2010

ORDER	FAMILY	GENUS	FUNCTIONAL FEEDING GROUP	TV	RFHC	UT4 RFHC	UT3 UT4 RFHC	UT7 RFHC
	Ameletidae	Ameletus	Scraper	0	1			
Enhamarantara	Enhamorallidaa	Drunella	Scraper	3	8	1		
Ephemeroptera	Ephemerellidae	Ephemerella	Collector-Gatherer	3	10	1		
	Leptophlebiidae	Leptophlebia	Collector-Gatherer	2	3			2
	Chloroperlidae	Utaperla	Predator	1	6	3	9	1
	Nemouridae	<i>Amphinemura</i>	Shredder	2	5	4		
	ivemoundae	Paranemoura	Shredder	2	2	3		
Discontors	Peltoperlidae	Peltoperla	Shredder	2			2	
Plecoptera		Tallaperla	Shredder	2		1	2	
		Viehoperla	Shredder	2			1	
	Perlidae	Acroneuria	Predator	1	3			
	Periluae	Beloneuria	Predator	1	1			
	Apataniidae	Apatania	Scraper	4				1
	Llydroneychidae	Ceratopsyche	Collector-Filterer	5	13	2		
	Hydropsychidae	Parapsyche	Predator	5	1			
Triphontoro	Lepidostomatidae	Lepidostoma	Shredder	1	4	2		1
Trichoptera	Limpophilidae	Limnephilus	Shredder	4			3	
	Limnephilidae	Pycnopsyche	Shredder	4			1	
	Odontoceridae	Psilotreta	Scraper	0	3			
	Psychomyiidae	Psychomyia	Collector-Gatherer	2	2		3	

Table 3: Impact Benthic Macroinvertebrate Individual Count Data – Right Fork of Hell Creek, May 2010

ORDER	FAMILY	GENUS	FUNCTIONAL FEEDING GROUP	TV	RFHC	UT4 RFHC	UT3 UT4 RFHC	UT7 RFHC
		Larsia	Predator	6			1	
		Natarsia	Predator	6		1		
		Parachaetocladius	Collector-Gatherer	6			1	
		Parametriocnemus	Collector-Gatherer	6			1	
		Paraphaenocladius	Collector-Gatherer	6			1	
	Chironomidae	Psilometriocnemus	Collector-Gatherer	6		1	1	1
		Rheotanytarsus	Collector-Filterer	6		1		
		Stempellina	Collector-Gatherer	6	1			
		Tanytarsus	Collector-Filterer	6	1		2	
Diptera		Thienemannimyia	Predator	6		1	1	
·		Tvetenia	Collector-Gatherer	6	1			
	District	Dixa	Collector-Gatherer	1			1	1
	Dixidae	Dixella	Collector-Gatherer	1			1	
	Empididae	Chelifera	Predator	6	8			
	·	Dicranota	Predator	3	3	2		
		Hexatoma	Predator	3	1		1	
	Tipulidae	Molophilus	Shredder	3		1		
	·	Pedicia	Predator	3		1	2	
		Tipula	Shredder	3		3	1	
	Dytiscidae	Rhantus	Predator	5			1	
0.1	Elmidae	Optioservus	Scraper	4	11			
Coleoptera	Psephenidae	Ectopria	Scraper	4	4			
	Ptilodactylidae	Anchytarsus	Shredder	5	1			
Collembola	Isotomidae	Isotoma	Collector-Gatherer	9				1
Lepidoptera	Pyralidae	Pyralidae	Shredder	5			1	
Decapoda	Cambaridae	Orconectes	Shredder; Collector-Gatherer	5		2	1	

Table 4: Impact Benthic Macroinvertebrate Individual Count Data – Left Fork of Hell Creek, May 2010

ORDER	FAMILY	GENUS	FUNCTIONAL FEEDING GROUP	TV	LFHC Temporary	LFHC Permanent	UT10 LFHC	UT11 LFHC Perennial	UT11 LFHC Intermittent
	Baetidae	Barbaetis	Collector-Gatherer	4					1
	Enhomorollidae	Drunella	Scraper	3		1			1
Enhamarantara	Ephemerellidae	Ephemerella	Collector-Gatherer	3					3
Ephemeroptera	Heptageniidae	Stenonema	Scraper	4		1			1
	Leptophlebiidae	Leptophlebia	Collector-Gatherer	2	2	2		13	4
	Siphlonuridae	Siphlonurus	Collector-Gatherer	7		1			
	Chlavaradidaa	Alloperla	Predator	1		1			
Plecoptera	Chloroperlidae	Utaperla	Predator	1					6
	Nemouridae	Amphinemura	Shredder	2				2	
	Hydropsychidae	Ceratopsyche	Collector-Filterer	5		1		1	5
Tuishantana	Lepidostomatidae	Lepidostoma	Shredder	1				1	
Trichoptera	Limnephilidae	Hydatophylax	Shredder	4				1	
	Polycentropodidae	Neureclipsis	Collector-Filterer	6					2
		Bezzia	Predator	6			2		
	Ceratopogonidae	Stilobezzia	Predator	6			2		
		Brillia	Shredder	6	1				1
		Corynoneura	Collector-Gatherer	6		1			
	Chironomidae	Heleniella	Collector-Gatherer	6					1
	Chilonomidae	Tanytarsus	Collector-Filterer	6			2		3
		Thienemannimyia	Predator	6			1	2	6
Diptera		Tvetenia –	Collector-Gatherer	6					2
	Empididae	Chelifera	Predator	6	1				
	Tabanidae	Tabanus	Predator	6					1
		Hexatoma	Predator	3	3	3	4	8	7
		Limnophila	Predator	3					5
	Tipulidae	Molophilus	Shredder	3			1		
		Pedicia	Predator	3			2		
		Tipula	Shredder	3					4
	Dytiscidae	Agabetes	Predator	5				1	
Coleoptera	Elmidae	Optioservus	Scraper	4				1	2
	Psephenidae	Ectopria	Scraper	4				2	
Odonata	Cordulegastridae	Cordulegaster	Predator	3	1				
Ouonata	Gomphidae	Gomphidae	Predator	3				2	
Megaloptera	Corydalidae	Chauliodes	Predator	5	1				
Decapoda	Cambaridae	Orconectes	Shredder; Collector-Gatherer	5	2	1			

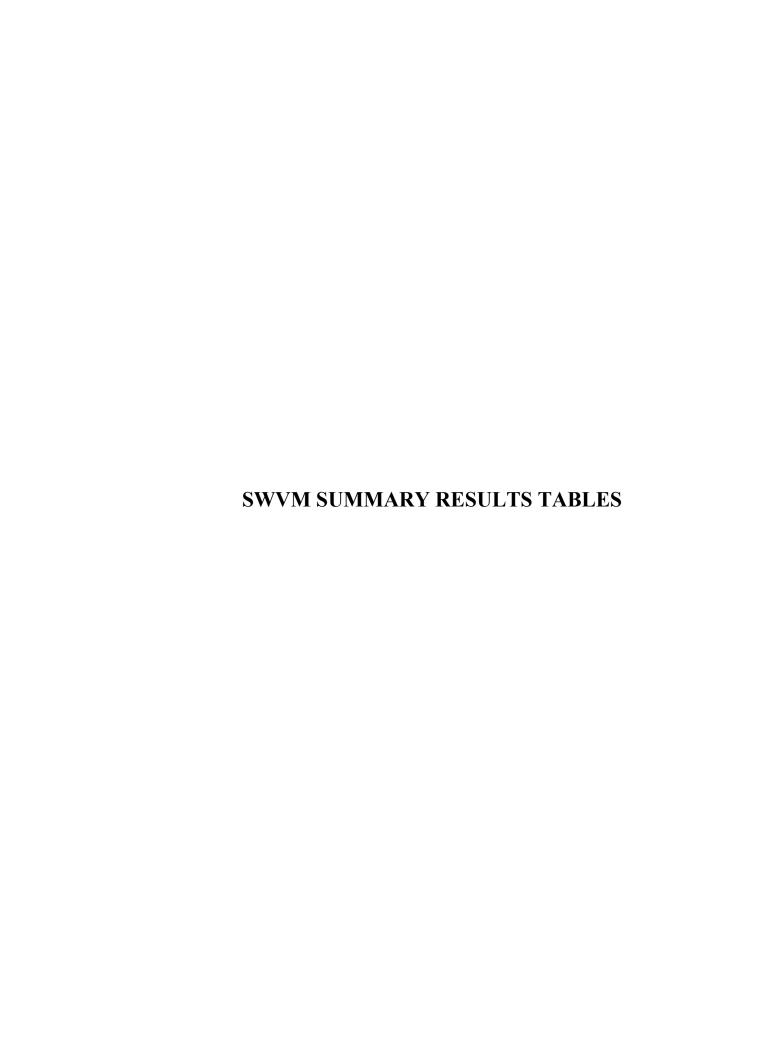
Table 5: Impact Benthic Macroinvertebrate Individual Count Data – Unnamed Tributary of Pigeon Creek, Pigeonroost Creek, and Unnamed Tributary 5 of Miller Creek, May 2010

ORDER	FAMILY	GENUS	FUNCTIONAL FEEDING GROUP	TV	PRC Perennial	PRC Intermittent	UTPC Temporary	UTPC Permanent	UT5 MC Perennial	UT5 MC Intermittent
	Ameletidae	Ameletus	Scraper	0		1				
	Baetidae	Barbaetis	Collector-Gatherer	4	3	1		2		
		Attenella	Collector-Gatherer	3			2			
	Ephemerellidae	Drunella	Scraper	3	2	1				
Enhamarantara		Ephemerella	Collector-Gatherer	3		1				
Ephemeroptera	Ephemeridae	Ephemera	Collector-Gatherer	4		6	1			
	Llanta ganiida a	Stenacron	Collector-Gatherer	4	2		1			
	Heptageniidae	Stenonema	Scraper	4	1	1	1			
	Leptophlebiidae	Leptophlebia	Collector-Gatherer	2	3		12	12		
	Siphlonuridae	Siphlonurus	Collector-Gatherer	7	1	5				
	Chloroperlidae	Utaperla	Predator	1	3		25	6		
	Nemouridae	Amphinemura	Shredder	2		1		2		
Discontoro	Doltoporlidae	Tallaperla	Shredder	2				11		
Plecoptera	Peltoperlidae	Viehoperla	Shredder	2			4			
	Perlidae	Eccoptura	Predator	1					1	1
	Perlodidae	Isoperla	Predator	2			1	1		
	Lludronovahidaa	Ceratopsyche	Collector-Filterer	5	2	2		1		
	Hydropsychidae	Parapsyche	Predator	5			1	3		
	Leptoceridae	Oecetis	Predator	4	1					
	Limnephilidae	Hydatophylax	Shredder	4		5				
Trichoptera	Molannidae	Molanna	Scraper	6	1					
·	Odontoceridae	Psilotreta	Scraper	0			4			
	Dolycontropodidos	Neureclipsis	Collector-Filterer	6	2		1	3		
	Polycentropodidae	Polycentropus	Predator	6			3			
	Rhyacophilidae	Rhyacophila	Predator	3		1	1			

Table 5: Impact Benthic Macroinvertebrate Individual Count Data – Unnamed Tributary of Pigeon Creek, Pigeonroost Creek, and Unnamed Tributary 5 of Miller Creek, May 2010

ORDER	FAMILY	GENUS	FUNCTIONAL FEEDING GROUP	TV	PRC Perennial	PRC Intermittent	UTPC Temporary	UTPC Permanent	UT5 MC Perennial	UT5 MC Intermittent
	Ceratopogonidae	Bezzia	Predator	6			1			
		Demicryptochironomus	Collector-Gatherer	6			1			
		Microtendipes	Collector-Filterer	6			1	1		
		Paraboreochlus	Collector-Gatherer	6			3			
		Parachaetocladius	Collector-Gatherer	6			2			
		Pentaneura	Predator	6	1					
	Chironomidae	Polypedilum	Shredder	6	1					
		Stempellina	Collector-Gatherer	6			1			
		Tanytarsus	Collector-Filterer	6			4			
		Thienemannimyia	Predator	6	1	5	6	1		
		Zavrelia	Collector-Gatherer	6				3		
Dintoro		Zavrelimyia	Predator	6			1			
Diptera	Dixidae	Dixa	Collector-Gatherer	1			2			
	Dixidae	Dixella	Collector-Gatherer	1			1			
	Empididae	Chelifera	Predator	6	1		1			
	Tabanidae	Tabanus	Predator	6			1			
		Antocha	Collector-Gatherer	3					1	1
		Dicranota	Predator	3						2
		Hexatoma	Predator	3	2	13	10	4		
	Tipulidae	Molophilus	Shredder	3			1			
	Принаве	Pedicia	Predator	3	11		12			
		Pilaria	Predator	3		2		1		
		Prionocera	Shredder	3			7			
		Tipula	Shredder	3	2		2	1		
	Elmidae	Optioservus	Scraper	4				3		
Coleoptera	Hydrophilidae	Hydrophilus	Predator	5			1			
	Ptilodactylidae	Anchytarsus	Shredder	5			1			
Megaloptera	Corydalidae	Chauliodes	Predator	5	1		1	3		
Odonata	Gomphidae	Stylogomphus	Predator	3		2				
Decapoda	Cambaridae	Orconectes	Shredder; Collector-Gatherer	5	2	4	4			
Annelida	Tubificidae	Tubificidae	Collector-Gatherer	10						3

APPENDIX D SWVM SPREADSHEETS



Ruth Trace Branch Summary

Multiple S	Stream Site	Unit Compa	arison	
Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)	Sub-Totals	Running Balance (Debit or Credit)
RTB, Temporary Perennial	987.01644	688.014	-299.00244	-299.00244
RTB, Permanent Perennial	2459.81982	0	-2459.819817	-2758.822257
RTB, Intermittent (3rd Order)	718.773458	0	-718.7734583	-3477.595715
RTB, Intermittent (1st and 2nd Order)	1449.15525	0	-1449.15525	-4926.750965
RTB, Ephemeral	152.536042	0	-152.5360417	-5079.287007
UT3 RTB, Temporary Intermittent	94.505125	67.71375	-26.791375	-5106.078382
UT8 RTB, Temporary Intermittent	187.304	135.57375	-51.73025	-5157.808632
UT10 of RTB, Temporary Perennial	173.283333	115.59375	-57.68958333	-5215.498215
UT12 of RTB, Intermittent	262.70825	0	-262.70825	-5478.206465
UT12 of RTB, Ephemeral	129.687708	0	-129.6877083	-5607.894173
UT13 of RTB, Intermittent	207.96375	0	-207.96375	-5815.857923
UT13 of RTB, Ephemeral	141.776708	0	-141.7767083	-5957.634632
UT15 of RTB, Perennial	65.9771667	0	-65.97716667	-6023.611798
UT15 of RTB, Intermittent	148.3925	0	-148.3925	-6172.004298
UT15 of RTB, Ephemeral	922.944167	0	-922.9441667	-7094.948465
UT17 of RTB, Intermittent	819.2	0	-819.2	-7914.148465
UT17 of RTB, Ephemeral	551.113875	0	-551.113875	-8465.26234
UT1 of UT17 of RTB, Intermittent	733.525	0	-733.525	-9198.78734
UT1 of UT17 of RTB, Ephemeral	329.225	0	-329.225	-9528.01234
UT18 of RTB, Intermittent	510.8425	0	-510.8425	-10038.85484
UT18 of RTB, Ephemeral	536.86875	0	-536.86875	-10575.72359
UT19 of RTB, Intermittent	114.021125	0	-114.021125	-10689.74472
UT19 of RTB, Ephemeral	17.3471875	0	-17.3471875	-10707.0919
orro or Krz, zpromera	17.547 1075		0	-10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919 -10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919 -10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919 -10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919
			0	-10707.0919 -10707.0919
Sub-Totals	11713.98715	1006.89525		-10707.0919
тот	AL NET			

West Virginia Stream and Wetland Valuation Metric Conley Branch

Conley Branch								
•		Unit Compa						
Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)	Sub-Totals	Running Balance (Debit or Credit)				
LFCB Temporary Intermittent	858.606938	614.68875	-243.9181875	-243.9181875				
LFCB Permanent Intermittent	2559.66474	0	-2559.664742	-2803.582929				
LFCB Ephemeral	458.39625	0	-458.39625	-3261.979179				
RFCB Temporary Perennial	931.255467	549.9783333	-381.2771334	-3643.256313				
RFCB Permanent Perrenial	1033.18307	0	-1033.183067	-4676.439379				
RFCB Intermittent	1024.27733	0	-1024.277333	-5700.716713				
RFCB Ephemeral	74.79075	0	-74.79075	-5775.507463				
UT1 RFCB, Temporary Perennial	491.1935	326.8125	-164.381	-5939.888463				
UT1 RFCB, Permanent Perennial	444.157867	0	-444.1578667	-6384.046329				
UT1 of RFCB, Intermittent	944.346667	0	-944.3466667	-7328.392996				
UT1 of RFCB, Ephemeral	48.0275	0	-48.0275	-7376.420496				
T1 of UT1 of RFCB, Temporary Intermitte		101.1375	-49.22916667	-7425.649663				
UT2 of UT1 of RFCB, Intermittent	3.00733333	0	-3.007333333	-7428.656996				
UT2 of UT1 of RFCB, Ephemeral	158.943313	0	-158.9433125	-7587.600308				
UT2 of RFCB, Temporary Intermittent	252.30675	174,3525	-77.95425	-7665.554558				
UT3 of RFCB, Temporary Perennial	201.173933	139.2426						
UT4 of RFCB, Intermittent	316.781667	0	-61.93133333	-7727.485892				
UT4 of RFCB, Ephemeral	259.98625	0	-316.7816667	-8044.267558				
UT5 of RFCB, Intermittent	167.84	0	-259.98625	-8304.253808				
•			-167.84	-8472.093808				
UT5 of RFCB, Ephemeral	217.13625	0	-217.13625 0	-8689.230058 -8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058 -8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058 -8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058 -8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058				
			0	-8689.230058 -8689.230058				
0.1.7.01	10595.44224	1906.212183	0	-0003.230030				
Sub-Totals				-8689.230058				
TO								

West Virginia Stream and Wetland Valuation Metric Right Fork of Hell Creek

Multiple Stream Site Unit Comparison									
Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)	Sub-Totals	Running Balance (Debit or Credit)					
RFHC, Temporary Perennial	1473.61935	923.375	-550.24435	-550.24435					
RFHC, Permanent Perennial	4018.01747	0	-4018.017467	-4568.261817					
RFHC, Intermittent	1242.67	0	-1242.67	-5810.931817					
RFHC, Ephemeral	861.772813	0	-861.7728125	-6672.704629					
UT1 RFHC, Temporary Perennial	828.486733	536.8725	-291.6142333	-6964.318863					
UT1 of RFHC, Permanent Perennial	2018.93645	0	-2018.93645	-8983.255313					
UT1 of RFHC, Intermittent	497.141458	0	-497.1414583	-9480.396771					
UT1 of RFHC, Ephemeral	288.229167	0	-288.2291667	-9768.625938					
UT10 of UT1 of RFHC, Intermittent	102.939	0	-102.939	-9871.564938					
UT11 of UT1 of RFHC, Intermittent	583.383938	0	-583.3839375	-10454.94888					
UT11 of UT1 of RFHC, Ephemeral	767.214063	0	-767.2140625	-11222.16294					
UT4 of RFHC, Temporary Perennial	78.1995	37.75	-40.4495	-11262.61244					
UT4 RFHC, Temporary Intermittent	689.592313	450.45	-239.1423125	-11501.75475					
UT4 of RFHC, Permanent Intermittent	1773.75244	0	-1773.752438	-13275.50719					
UT4 of RFHC, Ephemeral	11.7822917	0	-11.78229167	-13287.28948					
UT1 UT4 RFHC, Temporary Intermittent	125.683875	95.985	-29.698875	-13316.98835					
UT3 of UT4 of RFHC, Intermittent	415.93975	0	-415.93975	-13732.9281					
UT3 of UT4 of RFHC, Ephemeral	23.5645833	0	-23.56458333	-13756.49269					
UT5 RFHC, Temporary Intermittent	146.77375	106.875	-39.89875						
UT6 RFHC, Temporary Intermittent	145.46125	106.875		-13796.39144					
UT7 RFHC, Intermittent		_	-38.58625	-13834.97769					
UT7 of RFHC, Ephemeral	193.439813	0	-193.4398125	-14028.4175					
UT10 of RFHC, Perennial	448.204167	0	-448.2041667	-14476.62167					
	65.5855833	0	-65.58558333	-14542.20725					
UT10 of RFHC, Intermittent	460.886563	0	-460.8865625	-15003.09381					
UT10 of RFHC, Ephemeral	11.0791667	0	-11.07916667	-15014.17298					
UT11 of RFHC, Intermittent	177.0285	0	-177.0285	-15191.20148					
UT11 of RFHC, Ephemeral	445.589583	0	-445.5895833	-15636.79106					
			0	-15636.79106 -15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106 -15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106 -15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106					
			0	-15636.79106 -15636.79106					
0.1 7.4.1.	17894.97356	2258.1825	0	- 13030.7 8 100					
Sub-Totals				-15636.79106					
TOT									

Left Fork of Hell Creek Summary

Multiple S	tream Site	Unit Compa	arison	
Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)	Sub-Totals	Running Balance (Debit or Credit)
LFHC, Temporary Perennial	1255.7689	809.74485	-446.02405	-446.02405
LFHC, Permanent Perennial	1397.95435	0	-1397.95435	-1843.9784
LFHC, Intermittent	839.246938	0	-839.2469375	-2683.225338
LFHC, Ephemeral	309.1875	0	-309.1875	-2992.412838
UT1 of LFHC, Temporary Perennial	923.292142	664.11	-259.1821417	-3251.594979
UT1 of LFHC, Permanent Perennial	1675.96773	0	-1675.967725	-4927.562704
UT1 of LFHC, Intermittent	1565.96325	0	-1565.96325	-6493.525954
UT1 of LFHC, Ephemeral	320.703125	0	-320.703125	-6814.229079
UT2 of UT1 of LFHC, Intermittent	387.70875	0	-387.70875	-7201.937829
UT5 of UT1 of LFHC, Intermittent	110.439	0	-110.439	-7312.376829
UT5 of UT1 of LFHC, Ephemeral	140.49	0	-140.49	-7452.866829
UT8 of LFHC, Temporary Intermittent	159.110646	118.51526	-40.59538333	-7493.462213
UT9 of LFHC, Temporary Intermittent	186.675188	138.51911	-48.156075	-7541.618288
UT10 of LFHC, Temporary Perennial	44.1875583	29.925	-14.26255833	-7555.880846
UT10 of LFHC, Permanent Perennial	1786.43986	0	-1786.439858	-9342.320704
UT10 of LFHC, Intermittent	1958.5395	0	-1958.5395	-11300.8602
UT10 of LFHC, Ephemeral	36.388125	0	-36.388125	-11337.24833
UT1 of UT10 of LFHC, Intermittent	619.041771	0	-619.0417708	-11956.2901
UT1 of UT10 of LFHC, Ephemeral	113.448563	0	-113.4485625	-12069.73866
UT1 of UT1 of UT10 of LFHC, Intermittent		0	-422.4983042	-12492.23697
UT2 of UT10 of LFHC, Intermittent	503.660208	0	-503.6602083	-12995.89718
UT2 of UT10 of LFHC, Ephemeral	12.691875	0		
UT11 of LFHC, Perennial	284.02125	0	-12.691875	-13008.58905
UT11 of LFHC, Intermittent	1039.14152	0	-284.02125	-13292.6103
UT11 of LFHC, Ephemeral			-1039.141521	-14331.75182
UT12 of LFHC, Intermittent	5.9359375	0	-5.9359375	-14337.68776
•	220.096954	0	-220.0969542	-14557.78471
UT12 of LFHC, Ephemeral	154.57725	0	-154.57725 0	-14712.36196 -14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196 -14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196 -14712.36196
			0	-14712.36196 -14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196
			0	-14712.36196 -14712.36196
Cub Totalo	16473.17619	1760.814225	J	17/12.00190
Sub-Totals =				-14712.36196
ТОТ				

UT to Pigeon Creek Summary

Multiple Stream Site Unit Comparison								
Site	Impact Unit Yield (Debit)	Init Yield Unit Yield (Debit) (Credit)		Running Balance (Debit or Credit)				
UTPC, Temporary Intermittent	841.7494	596.16	-245.5894	-245.5894				
UTPC, Permanent Intermittent	1343.01725	0	-1343.017246	-1588.606646				
UTPC, Ephemeral	562.903375	0	-562.903375	-2151.510021				
UT6 UTPC, Temporary Intermittent	79.7896458	59.585625	-20.20402083	-2171.714042				
UT6 UTPC, Temporary Ephemeral								
016 01FC, Temporary Ephlemeral	47.2591667	28.845	-18.41416667	-2190.128208				
			0	-2190.128208 -2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
				-2190.128208 2100.128208				
			0	-2190.128208 -2190.128208				
			0	-2190.128208 -2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
			0	-2190.128208				
Sub-Totals	2874.718833	684.590625		-2190.128208				
ТОТ								

Multiple Stream Site Unit Comparison								
Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)	Sub-Totals	Running Balance (Debit or Credit)				
PRC, Temporary Perennial	1299.36378	870.6555	-428.70828	-428.70828				
PRC, Permanent Perennial	362.74356	0	-362.74356	-791.45184				
PRC, Intermittent	2715.1635	0	-2715.1635	-3506.61534				
PRC, Ephemeral	43.9971875	0	-43.9971875	-3550.612528				
LFPRC, Intermittent	44.9235	0	-44.9235	-3595.536028				
LFPRC, Ephemeral	139.205	0	-139.205	-3734.741028				
JT1 of UT1 of PRC, Temporary Ephemera		37.9603125	-27.465625	-3762.206653				
UT2 of PRC, Temporary Intermittent	229.6808	157.231125	-72.449675	-3834.656328				
UT3 of PRC, Temporary Intermittent	162.024525	114.908625						
UT5 of PRC, Intermittent			-47.1159	-3881.772228				
· · · · · · · · · · · · · · · · · · ·	2600.16	0	-2600.16	-6481.932228				
UT5 of PRC, Ephemeral	125.425	0	-125.425	-6607.357228				
			0	-6607.357228 -6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228 -6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228 -6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228 -6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228 -6607.357228				
			0	-6607.357228				
			0	-6607.357228				
			0	-6607.357228				
Sub-Totals	7788.11279	1180.755563		-6607.357228				
TO								

UT to Stonecoal Branch Summary

Multiple	Stream Site	Unit Comp	arison	
Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)	Sub-Totals	Running Balance (Debit or Credit)
UTSB, Intermittent	125.6375	0	-125.6375	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
		<u> </u>	0	-125.6375
		<u> </u>	0	-125.6375
		ļ	0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
		1	0	-125.6375
		1	0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
			0	-125.6375
	405.0075		0	-125.6375
Sub-Totals	125.6375	0		-125.6375
Т	OTAL NET			120.0010

Miller Creek Summary

Multiple Stream Site Unit Comparison									
Site	Unit Yield Unit Yield (Debit) (Credit)		Sub-Totals	Running Balance (Debit or Credit)					
UT4 of MC, Intermittent	93.666	0	-93.666	-93.666					
UT4 of MC, Ephemeral	76.53625	0	-76.53625	-170.20225					
UT5 of MC, Temporary Perennial	602.74665	425.3634	-177.38325	-347.5855					
UT5 of MC, Permanent Perennial	1282.80431	0	-1282.804307	-1630.389807					
UT5 of MC, Intermittent	1146.889	0							
013 of Mo, intermittent	1140.009	U	-1146.889 0	-2777.278807 -2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807 -2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
			0	-2777.278807					
Sub-Totals	3202.642207	425.3634		-2777.278807					
TOT	AL NET			-ZIII.ZIOOUI					

Establishment Summary

Multiple Stream Site Unit Comparison								
Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)	Sub-Totals	Running Balance (Debit or Credit)				
Off-site Establishment Intermittent	0	12885.30833	12885.30833	12885.30833				
On-Site Establishment Intermittent	0	30293.04825	30293.04825	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658 43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658 43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
			0	43178.35658				
	0	43178.35658	0	43178.35658				
Sub-Totals		43176.33636		43178.35658				
то								

PROPOSED IMP	ORKSHEETS - SITE RESTORA	TION CHANNELS

RTB, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	(in Decimal Degrees)		37° 45' 34.27" N	Lon.	82° 14' 57.78" W	WEATHER:	75 Sunny	DATE:	May 20, 2010	
STREAM CLASSIFICATION:		Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			RTB - Ruth Trace Branch of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac		Same (Mitigation is restoration of temporary impacts)		
STREAM IMPACT LENGTH:	744	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES: (in Decimal Degrees)		37° 45' 34.27" N	Lon.	82° 14' 57.78" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	744	
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Proje	cted At Maturity (Credit)	
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average	
Hydrology			Hydrology			Hydrology			Hydrology		Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0	
Habitat			Habitat			Habitat			Habitat		Habitat		
PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicators		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical ar	d Biological Indicators	
	Points Range Scale	Site Score		Points Range Site Score			Points Rang Scale	e Site Score		Points Range Site Score		Points Range Site Score	
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	7	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15	
2. Embeddedness	0-20	6	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20	2. Embeddedness	₀₋₂₀ 15	
3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	6	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20 13	Sediment Deposition	0-20 15	
5. Channel Flow Status	0-20	12	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20	12	5. Channel Flow Status	0-20 0-1	Channel Flow Status	0-20 0-1 10	
6. Channel Alteration	0-20	12	Channel Alteration	0-20		6. Channel Alteration	0-20	12	6. Channel Alteration	0-20 15	6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	10	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15	Frequency of Riffles (or bends)	0-20 15	
8. Bank Stability (LB & RB)	0-20	13	Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18	
Vegetative Protection (LB & RB)	0-20	14	Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	6	Vegetative Protection (LB & RB)	0-20	Vegetative Protection (LB & RB)	0-20 16	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)		6	10. Riparian Vegetative Zone Width (LB & RB)	0-20 11	10. Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score Sub-Total	Marginal	0.555	Total RBP Score Sub-Total	Poor 0		Total RBP Score Sub-Total	Suboptimal	115 0.575	Total RBP Score Sub-Total	Suboptimal 132 0.66	Total RBP Score Sub-Total	Suboptimal 150 0.75	
CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial S		CHEMICAL INDICATOR (Applies to Intermitted		CHEMICAL INDICATOR (Applies to Intermit		
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	·al)		WVDEP Water Quality Indicators (General	n	WVDEP Water Quality Indicators (Gene	/le·	
Specific Conductivity			Specific Conductivity			Specific Conductivity	ai)		Specific Conductivity	.,	Specific Conductivity		
	0-90	37	•	0-90			0-90	500		0-90 500	•	0-90 500	
<=99 - 90 points	0-90	31		0-90		500-599 - 50 points	0-90	300	500-599 - 50 points	0-90	500-599 - 50 points	300	
pH	0.4	43	рН			pH			pH	0.4	рН	- 04	
8.1-9.0 = 45 points	0-80	8.27		5-90		8.1-9.0 = 45 points	5-90	8.27	8.1-9.0 = 45 points	5-90 8.27	8.1-9.0 = 45 points	5-90 8.27	
DO		30	DO			DO			DO		DO		
	10-30	10.73		10-30			10-30	10.73		10-30 10.73		10-30 10.73	
Sub-Total		0.825	Sub-Total	0		>5.0 = 30 points Sub-Total		0.375	>5.0 = 30 points Sub-Total	0.625	>5.0 = 30 points Sub-Total	0.625	
BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Peren		BIOLOGICAL INDICATOR (Applies to Interm		BIOLOGICAL INDICATOR (Applies to Inte		
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
	0-100 0-1	77.13		0-100 0-1			0-100 0-1	68		0-100 0-1 68		0-100 0-1 68	
Very Good Sub-Total		0.7713	Sub-Total	0		Good Sub-Total		0.68	Good Sub-Total	0.68	Good Sub-Total	0.68	
Sub-Total		0.7713	Sub-Total	0	_1	Sub-Total		0.00	Sub-10tal	0.00	Sub-Total	0.00	
PART II - Index and U	nit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score		PART II - Index and U	Init Score	PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	•	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score	
					-								
0.7171	744	533.5224	0	744 0		0.543333333	744	404.24	0.655	744 487.32	0.685	744 509.64	

RTB, Temporary Perennial (2 of 2)

PART III - Impact Factors

	(See instruction
Temporal Loss-Construction	
Note: Reflects duration of aquatic functional loss between the time of an impac	t (debit) and completion of compensatory
mitigation (credit).	
Years	15
Sub-Total	0.322695
Temporal Loss-Maturity	
	he time required for maturity, as it relates
	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and the	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and the tofunction (i.e. maturity of tree stratum to provide organic matter and detritus corridor). **Mature of the stratum to provide organic matter and detritus corridor). **Add. Mitigation**	within riparian stream or wetland buffer Temporal Loss-Maturity (Years)
*Note: Period between completion of compensatory mitigation measures and the tofunction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer

age to insert default values for MITIGATION BANKING and ILF)									
	Long-term Protection								
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)							
	0 + 5/10 Year Monitoring	101							
	Sub-Total	0							

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.326635	744	987.01644	\$789,613.15						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	987.01644	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	404.24	Mitigation Projected at Ten Years Post Completion (Credit)	487.32	Mitigation Projected At Maturity (Credit)	509.64	
FINAL PROJECTED NET BALANCE					404.24		487.32		509.64	

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RTB, Temporary Perennial	987.01644	688.014

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank				
	0-50	Preservation and Re-vegetation			
50	51-150				
Buffer Width		Right Bank			
	0-50	Preservation and Re-vegetation			
50	51-150				
Average Buffer Width/Side	50				

RTB, Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: In the property of	Lat.	37° 45' 36.86"	Lon.	82° 14' 57.58"	WEATHER:	7	75 Sunny	DATE:	May 20,	, 2010
STREAM CLASSIFICATION:	-	Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				RTB - Ruth Trace Bra % Streambed Slope, Acro			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre			Same (Mitigation is restoration	of temporary im	pacts)
STREAM IMPACT LENGTH:	1870	FORM OF MITIGATION:			RDINATES: I al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing C	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (C		ars	Column No. 5- Mitigation Project	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HG	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology			Hydrology			Hyd	rology			Hydrology			Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling		0		geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat			Habitat			Hab	itat			Habitat			Habitat		
PART I - Physical, Chemical and Bi	iological Indica	ators	PART I - Physical, Chemical and E	iological Indica	tors		PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHY	SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				PA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
	0-20	8	Epifaunal Substrate/Available Cover	0-20			pifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
	0-20	7	2. Embeddedness	0-20			mbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
	0-20	10	3. Velocity/ Depth Regime	0-20			elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
·	0-20	7 10	4. Sediment Deposition	0-20			ediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
	0-20 0-1	13	5. Channel Flow Status	0-20 0-1			hannel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
	0-20	11	6. Channel Alteration	0-20			hannel Alteration requency of Riffles (or bends)	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
	0-20	14	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			ank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	
	0-20	15	,	0-20			7	0-20		, ,	0-20		8. Bank Stability (LB & RB)	0-20	
	0-20 0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			egetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
	Suboptimal	113	Total RBP Score	Poor	0		I RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.565	Sub-Total		0	Sub	-Total		0	Sub-Total		0	Sub-Total	•	0
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stre	eams)	CHE	MICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			wv	DEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		0	Spe	cific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	36.5		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nН		
pi1	0-1	0.00	pii	0-1		pii		0-1		pri	0-1		ρπ	0-1	
8.1-9.0 = 45 points	0-80	8.28		5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30	10.72		10-30				10-30			10-30			10-30	
Sub-Total		0.825	Sub-Total	1 1	0	Suh	-Total		0	Sub-Total		0	Sub-Total	1 1	0
BIOLOGICAL INDICATOR (Applies to Intermitter	nt and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)		LOGICAL INDICATOR (Applies to Inter	mittent and Pereni	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)	ı		WV Stream Condition Index (WVSCI)	1		wv	Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)	T		WV Stream Condition Index (WVSCI)	T T	
Good	0-100 0-1	74.31		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Good Sub-Total	1	0.7431	Sub-Total	1 1	0	Sub	·Total		0	Sub-Total	L	0	Sub-Total	1 1	0
Sub-Total	ļ	0.7431	Sub-1 otal		U	Sub	· I Otal		V	Sub-Total		U	Sub-Total		U
PART II - Index and Unit	it Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.741033333	1070	1220 62222	•		0		0	_		0	0	0	0	0	0
0.711033333	1870	1329.63233	0	0	U	L	<u> </u>	0	U	U	U	0	0	U	U

West Virginia Stream and Wetland Valuation Metric RTB, Permanent Perennial (2 of 2)

		PART III - Impact Factors	• · · · · · ·		
	(See instruction	page to insert default values for MITIGATION BANKIN	G and ILF)		
Temporal Loss-Constr	uction			Long-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of	an impact (debit) and completion of compensatory	% Add. N	litigation and Monitoring Period	Lone	g-Term Protection (Years)
mitigation (credit).					
Years	15				
Sub-Total	0.319965				
Temporal Loss-Matu			0 + 5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measu		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and	d detritus within riparian stream or wetland buffer				
corridor).			PART IV - Ir	ndex to Unit Score Co	nversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index (Debit)	Score Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Ur
		1.3154116	67 1870	2459.819817	\$1,967,855.85
30%	25				
Sub-Total	0.284413333				

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	2459.819817	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

THAL TROOLOTED HET DALANGE			0		
	Part VI - Mitigation	on Considerations (Incer	ntives)		
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Lev *Note2: Place an "X" in the appropriate category (only select or			*Note ¹ : Refe	erence Instructional handout for *Note ² : Enter the buffer wi	idth for each
Level I Restoration			D ((W) ()	*Note ³ : S	Select the app
Level II Restoration Level III Restoration			Buffer Width	0-50	
		_		51-150	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RTB, Permanent Perennial	2459.819817	#DIV/0!

Upland Buffer Zone

itions of the Buffer Zone Mitigation Extents and Types (below) ach channel side (Left Bank and Right Bank)

appropriate mitigation type

Buffer Width		Left Bank					
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						

West Virginia Stream and Wetland Valuation Metric RTB, Intermittent 3rd Order

(1 of 2)

USACE FILE NO./Project Name:			Permit No. S-5018-07	(in Decimal Degrees)	Lat.	37° 45' 14.51"	Lon.	82° 15' 13.03"	WEATHER:		75 Sunny	DATE:	May 20), 2010
STREAM CLASSIFICATION:		Intermittent	IMPACT STREAM/SITE ID (% stream slope, watershed size {ac			RTB - Ruth Trace Bra % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {aci					
STREAM IMPACT LENGTH:	493	FORM OF MITIGATION	:	MIT COORDINATES: (in Decimal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:		0	Mitigation Length:		
Column No. 1- Impact Existing	ng Condition (De	ebit)	Column No. 2- Mitigation Existing Co	ndition - Baseline (Credit)		Column No. 3- Mitigation Proj Post Completion (ars	Column No. 4- Mitigation Proje Post Completion (ears	Column No. 5- Mitigation Projecte	ed At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):	-	Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.63	- J	Hydrology			Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.81	0.75666667	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.83		Habitat			Habitat			Habitat			Habitat	1	
PART I - Physical, Chemical an	_		PART I - Physical, Chemical and			PART I - Physical, Chemical and			PART I - Physical, Chemical and			PART I - Physical, Chemical and		
	Points Range Scale	e Site Score		Points Range Site Score Scale			Points Range Scale	Site Score		Points Range Scale	e Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)	, ,		USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	15	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	12 10	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime Sediment Deposition	0-20 0-20	10	Velocity/ Depth Regime Sediment Deposition	0-20 0-20		Velocity/ Depth Regime Sediment Deposition	0-20 0-20		Velocity/ Depth Regime Sediment Deposition	0-20 0-20		Velocity/ Depth Regime Sediment Deposition	0-20 0-20	
Channel Flow Status	0-20	8	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20		Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20 0-1	16	6. Channel Alteration	0-20 0-1		6. Channel Alteration	0-20 0-1		6. Channel Alteration	0-20 0-1		6. Channel Alteration	0-20 0-1	
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	12	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)		18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Suboptimal	120	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	lead and Barrenial O	0.6	Sub-Total	0		Sub-Total		0	Sub-Total	ot and Dansonial O	0	Sub-Total	t and Dannella Or	0
CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial S	streams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial S	streams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	eams)
WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (Genera	1)		WVDEP Water Quality Indicators (General	al)	_	WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General))	
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity	1		Specific Conductivity		
<=99 - 90 points	0-90	29		0-90			0-90			0-90			0-90	
рН		45	рН			pH			рН			рН		
8.1-9.0 = 45 points	0-80	8.41		5-90 0-1			5-90			5-90 0-1			5-90	
8. 1-9.0 = 45 points			DO			DO			DO			DO		
	10-30	10.44		10-30			10-30			10-30			10-30	
	10-30						10-30			10-30			10-30	
Sub-Total BIOLOGICAL INDICATOR (Applies to Intern	sittent and Daransia	0.825	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermi	test and December Streems)		Sub-Total BIOLOGICAL INDICATOR (Applies to Intern	mittant and Davann	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	ittent and Daven	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	ittent and Devenu	0
	ilitterit and Ferenilla	a Streams)		tterit and Perennial Streams)			initient and Fereni	ilai Streams)		intent and Feren	mai Streams)		ittent and Ferenin	iai Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)		
Very Good	0-100 0-1	92.23		0-100 0-1			0-100 0-1	_		0-100 0-1			0-100 0-1	
Sub-Total		1	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and U	Init Score		PART II - Index and U	nit Score		PART II - Index and U	nit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.7825	493	385.7725	0	0 0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric RTB, Intermittent 3rd Order

(2 of 2)

	(See instruction		III - Impact Factors ault values for MITIGATI	ON BANKING and	ILF)		
Temporal Loss-Construction					Lo	ng-term Protection	
Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit).				% Add. Mitigation	n and Monitoring Period		ng-Term Protection (Years)
Years Sub-Total	15 0.352125						
Temporal Loss-Maturity				0 + 5/1	0 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritu corridor).			[Sub-Total	PART IV - Ind	ex to Unit Score C	0 onversion
% Add. Mitigation	Temporal Loss-Maturity (Years)			Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
				1.457958333	493	718.7734583	\$575,018.77
30% Sub-Total	25 0.323333333						
	PART	V- Comparison of	Unit Scores and Project	ed Balance			
			1				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	718.7734583	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

					U
	Part VI - Mitigatio	n Considerations (Incer	itives)		
Extent of Stream Restoration				Extend	ed Upland Buffe
*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro	oject		*Note ¹ : Refe	rence Instructional handout for the	
*Note2: Place an "X" in the appropriate category (only select one).				*Note ² : Enter the buffer width	
Level I Restoration				*Note*: Selec	t the appropriate mit
Level II Restoration			Buffer Width		Left
Level III Restoration				0-50	
		_		51-150	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RTB, Intermittent (3rd Order)	718.7734583	#DIV/0!

Buffer Zone Mitigation Extents and Types (below) side (Left Bank and Right Bank)

mitigation type

Buffer Width		Left Bank					
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						

West Virginia Stream and Wetland Valuation Metric RTB, Intermittent 1st/2nd Order

(1 of 2)

USACE FILE NO./Project Name:			Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 45' 16.74"	Lon.	82° 15' 11.90"	WEATHER:	7:	5 Sunny	DATE:	May 20), 2010
STREAM CLASSIFICATION:	In	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acre			RTB - Ruth Trace B % Streambed Slope, Ad			MITIGATION STREAM CLASS./SITE I (% stream slope, watershed size {acreage					
STREAM IMPACT LENGTH:	1107	FORM OF MITIGATION:		MIT COORDINATES: (in Decimal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existin	ng Condition (Debi	it)	Column No. 2- Mitigation Existing Cond	dition - Baseline (Credit)		Column No. 3- Mitigation Pr Post Completio		'ears	Column No. 4- Mitigation Projecte Post Completion (Cred		rs	Column No. 5- Mitigation Project	cted At Maturity (C	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.63		Hydrology			Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.81	0.75666667	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.83		Habitat			Habitat			Habitat			Habitat		
PART I - Physical, Chemical and	d Biological Indica	ators	PART I - Physical, Chemical and B	iological Indicators		PART I - Physical, Chemical a	nd Biological Ind	licators	PART I - Physical, Chemical and Biol	logical Indica	itors	PART I - Physical, Chemical an	d Biological Indic	ators
	Points Range Scale	Site Score		Points Range Site Score			Points Ran Scale	nge Site Score	Po	oints Range	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stre	ams classifications)		PHYSICAL INDICATOR (Applies to all streams class	ssifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)	1		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Shee	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	6	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20			0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	6	Sediment Deposition	0-20		Sediment Deposition	0-20		4. Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	7	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	.1	5. Channel Flow Status	0-20		Channel Flow Status	0-20	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	12	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	10	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RE	0-20			0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Marginal	101	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.505	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	tent and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)		CHEMICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent and	d Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial Str	eams)
WVDEP Water Quality Indicators (General	ral)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	34		0-90			0-90			0-90			0-90	
<=99 - 90 points		0 4												
pH	- 0.1	45	рН	0.1		рн	0-	4	рн	0.1		рН		
8.1-9.0 = 45 points	0-80	8.36		5-90			5-90		5	5-90			5-90	
0.1-9.0 = 43 points		6.0	DO			DO			DO			DO		
	10-30	10.95		10-30			10-30			0-30			10-30	
	10-30			10-30			10-30			0-30			10-30	
Sub-Total		0.825	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Interm	mittent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Int	ermittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitter	nt and Perennia	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenn	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	69.8		0-100 0-1			0-100 0-	-1	0	-100 0-1			0-100 0-1	
Sub-Total		0.698	Sub-Total	0		Sub-Total	'	0	Sub-Total	•	0	Sub-Total	'	0
PART II - Index and	Unit Score		PART II - Index and Un	t Score		PART II - Index and	d Unit Score		PART II - Index and Unit S	Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score		Index	Linear Fee	et Unit Score	Index	inear Feet	Unit Score	Index	Linear Feet	Unit Score
0.716333333	1107	792.981	0	0 0		0	0	0	0	0	0	0	0	0
515555555	.107	. 02.001		ı Ü					Ű	v		<u> </u>		

West Virginia Stream and Wetland Valuation Metric RTB, Intermittent 1st/2nd Order

(2 of 2)

	(See instruction	PART III - Impact Factors n page to insert default values for MITIGATION BANKING	and II F)		
Temporal Loss-Construction	<u> </u>	page to most actual values for immediate District	<u> </u>	ong-term Protection	
	Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory		igation and Monitoring Period	Long	-Term Protection (Years)
mitigation (credit).		_			
Years	15				
Sub-Total	0.32235	<u>-</u>			
Temporal Loss-Maturity			+ 5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and	the time required for maturity, as it relates	Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detrituction).	s within riparian stream or wetland buffer		PART IV - Index to Unit Score Conversion		
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index So (Debit)	ore Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
		1.30908333	3 1107	1449.15525	\$1,159,324.20
30%	25				
Sub-Total	0.2704				

	PART V- Comparison of Unit Scores and Projected Balance									
[No Net Loss Value] 1449.15525 Condition - Baseline					Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
	FINAL PROJECTED NET BALANCE				0		0		0	

			•		4
	Part VI - Mitigation	n Considerations (Incen	itives)		
Extent of Stream Restoration				Exten	de
*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) f	or your project		*Note ¹ : Refer	rence Instructional handout for th	
*Note2: Place an "X" in the appropriate category (only select one).				*Note ² : Enter the buffer widt *Note ³ : Selo	
Level I Restoration				Note : Sei	Cti
Level II Restoration			Buffer Width		
Level III Restoration				0-50	
		_		51-150	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RTB, Intermittent (1st and 2nd Order)	1449.15525	#DIV/0!

ded Upland Buffer Zone

e definitions of the Buffer Zone Mitigation Extents and Types (below) h for each channel side (Left Bank and Right Bank) ect the appropriate mitigation type

Left Bank **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

RTB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07		DORDINATES: nal Degrees)	Lat.	37° 45' 13.88"	Lon.	82° 15' 29.96"	WEATHER:	75	Sunny	DATE:	May 20), 2010
STREAM CLASSIFICATION:		Ephemeral	IMPACT STREAM/SITE ID (% stream slope, watershed size {a				RTB - Ruth Trace Bra % Streambed Slope, Acre			MITIGATION STREAM CLASS./SITI (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	130	FORM OF MITIGATION:			PRDINATES: nal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existin	ng Condition (Deb	pit)	Column No. 2- Mitigation Existing Co	ondition - Baselin	e (Credit)		Column No. 3- Mitigation Proj Post Completion		ears	Column No. 4- Mitigation Project Post Completion (C		5	Column No. 5- Mitigation Project	ted At Maturity (C	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	Î	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.68		Hydrology			ľ	Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.75333333	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.74		Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and	d Biological Indic	cators	PART I - Physical, Chemical and	Biological Indica	ators		PART I - Physical, Chemical and	Biological Indi	cators	PART I - Physical, Chemical and B	iological Indica	ors	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)			PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			Ī	USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	Sediment Deposition	0-20		l l	4. Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1		ŀ	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		ļ	6. Channel Alteration	0-20		6. Channel Alteration	0-20		Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20		ŀ	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20		ŀ	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20		ļ	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Marginal	18 93	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	ŀ	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0
Sub-Total	Marginal	0.465	Sub-Total	Pool	0	ŀ	Sub-Total	FOOI	0	Sub-Total	POOI	0	Sub-Total	FOOI	0
CHEMICAL INDICATOR (Applies to Intermittee	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)		CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Stre	ams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (Genera	al)		l	WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity				Specific Conductivity	,		Specific Conductivity			Specific Conductivity		
-	0-90			0-90		ſ	-	0-90			0-90			0-90	
100-199 - 85 points						l		0 00			0 00			1 0 00	
рН	0.1		рН	0.1		ŀ	рН	0-1		рН	0.1		рН	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			ŀ	DO			DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Out. Tatal			Out Table				Out Tatal			Out Table			Out Tatal	1 .0 00	
Sub-Total		0:	Sub-Total		0		Sub-Total			Sub-Total		0	Sub-Total		
BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	ŀ	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perer	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennia	l Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			ŀ	WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	1	
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0	Sub-Total	l l	0	İ	Sub-Total	1	0	Sub-Total		0	Sub-Total		0
PART II - Index and l	Unit Score		PART II - Index and U	unit Score			PART II - Index and l	unit Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	ł	Index	Linear Fee	t Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Scor
0.655446667	420	95 2044667		_		ŀ	•	_	0		0			_	
0.655416667	130	85.2041667	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric RTB, Ephemeral (2 of 2)

		PART III - Impact Factors				
	(See instruction	n page to insert default values for MITIGATION BANKING and	d ILF)			
Temporal Loss-Constru	uction		Lo	ong-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit).	*Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory		on and Monitoring Period	Long-Term Protection (Years)		
Years	15					
Sub-Total	0.2949375					
Temporal Loss-Matu	rity	0 + 5/	0 + 5/10 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measur	res and the time required for maturity, as it relates	Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and	detritus within riparian stream or wetland buffer					
corridor).			PART IV - Ind	lex to Unit Score (Conversion	
		Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Uni	
		1.173354167	130	152.5360417	\$122,028.83	
			L			
30%	25					
Sub-Total	0.223					

	PART V- Comparison of Unit Scores and Projected Balance								
Final Unit Score (Debit) [No Net Loss Value]	152.5360417	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

	n Considerations (Incen	itives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ır project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RTB, Ephemeral	152.5360417	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$122,028.83

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer	0						
Width/Side	J						

UT3 of RTB, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	at. 37° 45' 48.01" N	Lon.	82° 14' 47.86" W	WEATHER:	75 Sunny	DATE:	May 20, 2010
STREAM CLASSIFICATION:	EAM CLASSIFICATION: Intermittent IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)		UT3 of RTB - 3rd Unnamed Tributary of RTB of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)		Same (Mitigation is restoration of temporary impacts)			
STREAM IMPACT LENGTH:	65	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES: L. (in Decimal Degrees)	at. 37° 45' 48.01" N	Lon.	82° 14' 47.86" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	65
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)	Column No. 3- Mitigat Post Com	tion Projected at Fi	ve Years	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Proje	ected At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Aver
Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and	0.69 0.82 0.86	0.79	Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and E	0	Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chem	0.68 0.5 0.57	0.583333333	Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and	0.68 0.69 0.63 0.66666667	Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical a	0.74 0.79 0.87
PART I - Fllysical, Chemical and	Points Range Scale	Site Score	FANTI-FIIysical, Chemical and E	Points Range Site Score	FACTT-FITYSICAL, CHEM	Points Ra		FARTT-Filysical, Chemical and	Points Range Site Score Scale	PARTITE ITYSICAL, CHEMICALA	Points Range Site S
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)	PHYSICAL INDICATOR (Applies to all	streams classifications		PHYSICAL INDICATOR (Applies to all stream	s classifications)	PHYSICAL INDICATOR (Applies to all stree	ams classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sh	neet)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet	:)
1. Epifaunal Substrate/Available Cover 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition 5. Channel Flow Status 6. Channel Alteration 7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB) 9. Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score Sub-Total CHEMICAL INDICATOR (Applies to Intermitten WYDEP Water Quality Indicators (General) Specific Conductivity <=99 - 90 points PH 6.0-8.0 = 80 points DO Sub-Total Sub-Total 6.0-8.0 = 80 points		5 11 8 8 11 17 15 9 16 20 113 0.565 eams)	1. Epifaunal Substrate/Available Cover 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition 5. Channel Flow Status 6. Channel Alteration 7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB) 9. Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score Sub-Total CHEMICAL INDICATOR (Applies to Intermittent WVDEP Water Quality Indicators (General) Specific Conductivity DO Sub-Total		1. Epifaunal Substrate/Available Cove 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition 5. Channel Flow Status 6. Channel Alteration 7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB) 9. Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & Total RBP Score Sub-Total CHEMICAL INDICATOR (Applies to Int WVDEP Water Quality Indicators (G Specific Conductivity 500-599 - 50 points PH 6.0-8.0 = 80 points DO >5.0 = 30 points	0-20 0-20 0-20 0-20 0-20 0-20 0-20 0-20	17 15 18 6 6 6 116 0.58 Streams)	Epifaunal Substrate/Available Cover Embeddedness Velocity/ Depth Regime Sediment Deposition Channel Flow Status Channel Alteration Frequency of Riffles (or bends) Bank Stability (LB & RB) Vegetative Protection (LB & RB) Negetative Protection (LB & RB) Neparian Vegetative Zone Width (LB & RB) Total RBP Score Sub-Total CHEMICAL INDICATOR (Applies to Intermitte WVDEP Water Quality Indicators (General Specific Conductivity		1. Epifaunal Substrate/Available Cover 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition 5. Channel Flow Status 6. Channel Alteration 7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB) 9. Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB Total RBP Score Sub-Total CHEMICAL INDICATOR (Applies to Interm WVDEP Water Quality Indicators (Gene Specific Conductivity 500-599 - 50 points PH 6.0-8.0 = 80 points DO >5.0 = 30 points	Suboptimal 15 0.7 ittent and Perennial Streams)
BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to	Intermittent and Per	ennial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Int	ermittent and Perennial Stream
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSC	·		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Very Good	0-100 0-1	78.48		0-100 0-1	Good	0-100		Good	0-100 0-1 68	Good	0-100 0-1 6
Sub-Total		0.7848	Sub-Total	0	Sub-Total		0.68	Sub-Total	0.68	Sub-Total	0.6
PART II - Index and Ui	nit Score		PART II - Index and Un	iit Score	PART II - Ind	ex and Unit Score		PART II - Index and U	Init Score	PART II - Index an	d Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Fe	et Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit S
0.786633333	65	51.1311667	0	65 0	0.593333333			0.691666667	65 44.9583333		

West Virginia Stream and Wetland Valuation Metric UT3 of RTB, Temporary Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors to insert default values for MITIGATION BANKING and	HILF)			
Temporal Loss-Cons	· ·			ong-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit,		% Add. Mitigati	on and Monitoring Period	Lon	ng-Term Protection (Years)	
Years	15					
Sub-Total	0.353985					
Temporal Loss-Ma	turity	0 + 5/	0 + 5/10 Year Monitoring		101	
Note: Period between completion of compensatory mitigation meas		Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter a	nd detritus within riparian stream or wetland buffer					
corridor).			PART IV - Inc	dex to Unit Score Conversion		
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Un	
	to inposts decommend (const)	1.453925	65	94.505125	\$75,604.10	
				1		
30%	25					
Sub-Total	0.313306667					

		PART	V- Comparison of	Unit Scores and Projec	ted Balance				
Final Unit Score (Debit) [No Net Loss Value]	94.505125	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	38.56666667	Mitigation Projected at Ten Years Post Completion (Credit)	44.95833333	Mitigation Projected At Maturity (Credit)	50.15833333
FINAL PROJECTED NET BALANCE	:				38.56666667		44.95833333		50.15833333

	Part VI - Mitigation		
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) *Note2: Place an "X" in the appropriate category (only select one).	for your project		
Level I Restoration			
Level II Restoration		F	Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT3 RTB, Temporary Intermittent	94.505125	67.71375

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

ILF Costs (Offsetting Debit Units) \$75,604.10

Buffer Width	Left Bank					
	0-50	Preservation and Re-vegetation				
50	51-150					
Buffer Width	Right Bank					
	0-50	Preservation and Re-vegetation				
50	51-150					
Average Buffer Width/Side	50					

UT8 of RTB, Temporary Intermittent (1 of 2)

TREAM MAY LENOTIC: 130 FORM OF	DATE: May 20, 2010	Sunny	7:	WEATHER:	82° 14' 58.34" W	Lon.	37° 45' 34.14" N		IMPACT COORDINATES: (in Decimal Degrees)	Mt. Surface Mine nit No. S-5018-07			USACE FILE NO./Project Name:
Column No. Impert Total Contains (Parties) Column No. Impert Total Contains (Parties) Column No. Impert Total Contains (Parties) Column No. Impert Total Column No. Imper Total Column	Same (Mitigation is restoration of temporary impacts)										ermittent	Inte	STREAM CLASSIFICATION:
Control Cont	Mitigation Length: 130		0	PRECIPITATION PAST 48 HRS:	82° 14' 58.34" W	Lon.	37° 45' 34.14" N			Permittee Responsible-Onsite		130	STREAM IMPACT LENGTH:
Part Part	Column No. 5- Mitigation Projected At Maturity (Credit)				ars		Post Completion		lition - Baseline (Credit)	Column No. 2- Mitigation Existing Cond		Condition (Debit)	Column No. 1- Impact Existing
Representation Cycling	Score (attach data forms): Average	Average		HGM Score (attach data forms):	Average		HGM Score (attach data forms):	1	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):
PART Physical, Chemical and Biological Indicators PART Physical, Chemical and Biological Indic	logy 0.74		0.68	Hydrology		0.68	Hydrology	<u> </u>		Hydrology		0.69	Hydrology
## PART I - Physical, Chemical and Biological Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Physical, Chemical Indicators: ## PART I - Ph	ochemical Cycling 0.79 0.8	.66666667	0.69	Biogeochemical Cycling	0.5833333	0.5	Biogeochemical Cycling	<u> </u>	0	Biogeochemical Cycling	0.79	0.82	Biogeochemical Cycling
Section Sect												0.00	Habitat
Secolar Seco	PART I - Physical, Chemical and Biological Indicators	rs	Biological Indica	PART I - Physical, Chemical and Bi	ators	d Biological Indic	PART I - Physical, Chemical and	4	ological Indicators	PART I - Physical, Chemical and Bi	ors	Biological Indicato	PART I - Physical, Chemical and
SEPA BIR (Right Condains Dates)	Points Range Site Si	Site Score			Site Score				Points Range Site Score Scale		Site Score		
Entered Solution Company Compa	ICAL INDICATOR (Applies to all streams classifications)		classifications)	PHYSICAL INDICATOR (Applies to all streams cl		ms classifications)	PHYSICAL INDICATOR (Applies to all stream		classifications)	PHYSICAL INDICATOR (Applies to all streams of		classifications)	PHYSICAL INDICATOR (Applies to all stream
Expectationnes	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet))	USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)
Substitute (Propried Substitute (Propried						0-20	Epifaunal Substrate/Available Cover	4 '		Epifaunal Substrate/Available Cover		0-20	Epifaunal Substrate/Available Cover
A Solitionar Disposation Solition							4 '					2. Embeddedness	
Contract Non-Station								4 '					
Cultured Alexandor Culture				·				4 '		-			
Fingurary of Affice for bands 10 10 10 10 10 10 10 1	0-1		0-1			0-1		A '	0-1			0-1	
Supers Supers Sup								4 '					
A								4 '					
10. Repairs Vegetative Zone Vident (LB ARB) 0.20 1.0			 		18		0: - 0:::: 0 : 0:::: 1 (- 1 : : : -)	4 '					* * * * * * * * * * * * * * * * * * * *
Total RPB Score			0-20		6			4 '					
Sub-Total													
CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEMICAL NDICATOR (Applies to Intermittent and Personnal Streams) CHEM			Suboptimai			Subopumai						Marginal	
Specific Conductivity	ICAL INDICATOR (Applies to Intermittent and Perennial Streams)		nt and Perennial Stre			tent and Perennial St		1				t and Perennial Stream	
Specific Conductivity	P Water Quality Indicators (General)		1	WVDEP Water Quality Indicators (General)		ral)	WVDEP Water Quality Indicators (General	<u> </u>		WVDEP Water Quality Indicators (General)		1	WVDEP Water Quality Indicators (Genera
## ## ## ## ## ## ## ## ## ## ## ## ##			,			iai)		<u> </u>					
## 500-599 - 50 points 5-90 5-90 points 5-90 5-90 points 5-90 5-90 points		500	0.00		500	0.00		_ '	0.90	•	20	0.00	
Solution Solution	500-599 - 50 points	300	0-90	500-599 - 50 points	300	0-90	500-599 - 50 points	4	0-90		30	0-90	<=99 - 90 points
6.0-8.0 = 80 points				pH		0.4	рН	4 '	0.4	рН	0.0	0.4	pH
DO 10-30 1	6.0.9.0 - 90 points 5-90 7.8	7.87	5-90	6 0 8 0 - 80 points	7.87	5-90	6 0 9 0 - 90 points	4 '	5-90		7.87	0-80	6.0.9.0 - 90 points
10-30 10-77 10-30 10	0.0 0.0 – 00 points		<u>-</u>	·			DO	_		DO		<u>-</u>	DO
Sub-Total Sub-To	10-30	10.77	10.20		10.77	10.20		4 '	10.20		10.77	10.20	
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Very Good Very	>5.0 = 30 points		10-30	>5.0 = 30 points		10-30		4 '	10-30			10-30	
WV Stream Condition Index (WVSCI) Very Good 0-100 0-1 78.48 Sub-Total								<u>-</u>	0		-		
Very Good 0-100 0-1 78.48 Sub-Total 0-100 0-1 68 Sub-Total 0-100 0-1	***	Streams)	ittent and Perennia	· · ·	nial Streams)	rmittent and Perenn			nt and Perennial Streams)		eams)	ent and Perennial Str	` ` ` `
Very Good Go	` <i>'</i>			, , ,			WV Stream Condition Index (WVSCI)	<u> </u>		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score Index	Good 0-100 0-1 68	68	0-100 0-1	Good	68	0-100 0-1	Good	A '	0-100 0-1		78.48	0-100 0-1	Very Good
Index Linear Feet Unit Score Index Linear Feet Unit Score Unit Score Index Linear Feet Unit Score Index	otal 0.6	0.68		Sub-Total	0.68	•	Sub-Total	'	0	Sub-Total	0.7848		Sub-Total
Index Linear Feet Unit Score Index Linear Feet Unit Score Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score													
	PART II - Index and Unit Score		nit Score	PART II - Index and Unit		Unit Score	PART II - Index and t		t Score	PART II - Index and Uni		nit Score	PART II - Index and L
	Index Linear Feet Unit S	Unit Score	Linear Feet	Index	Unit Score	Linear Feet	Index	e	Linear Feet Unit Score	Index	Unit Score	Linear Feet	Index
								4 '					
0.7808 130 101.504 0 130 0 0.594166667 130 77.241667 0.6925 130 90.025 0.7725	0.7725 130 100.4	90.025	130	0.6925	77.241667	130	0.594166667		130 0	0	101.504	130	0.7808

UT8 of RTB, Temporary Intermittent (2 of 2)

PART III - Impact Factors

	(See instructio
Temporal Loss-Construction	,
Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	t (debit) and completion of compensator
Years	15
Sub-Total	0.35136
Temporal Loss-Maturity	
Temporal Loss-Maturity *Note: Period between completion of compensatory mitigation measures and the tofunction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	•
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and the tofunction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and the tofunction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	•

page to insert default values for MITIGATI	ON BANKING and ILF)							
	Long-term Protection							
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)						
	0 + 5/10 Year Monitoring	101						
	Sub-Total	0						

	PART IV - Index to Unit Score Conversion										
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)								
1.4408	130	187.304	\$149,843.20								

	PART	ted Balance						
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)	77.24166667	Mitigation Projected at Ten Years Post Completion (Credit)	90.025	Mitigation Projected At Maturity (Credit)	100.425		
FINAL PROJECTED NET BALANCE				77.24166667		90.025		100.425

	Part VI - Mitigation	Considerations (Incen	tives)					
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project							
Level I Restoration								
Level II Restoration			Buffer					
Level III Restoration								

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT8 RTB, Temporary Intermittent	187.304	135.57375

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

*Note³: Select the appropriate mitigation type

 Buffer Width
 Left Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Buffer Width
 Right Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Average Buffer Width/Side
 50

UT10 of RTB, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDIN.		37° 45' 31.29" N	Lon.	82° 14' 58.18" W	WEATHER:	75 Sunny	DATE:	May 20, 2010
STREAM CLASSIFICATION:	M CLASSIFICATION: Perennial IMPACT STREAM/SITE ID AND SITE DESCRIPTION (% stream slope, watershed size {acreage}, unaltered or impairments)									N: Same (Mitigation is restoration of temporary impacts)		
STREAM IMPACT LENGTH:	125	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINAT	_	37° 45' 31.29" N	Lon.	82° 14' 58.18" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	125
Column No. 1- Impact Existing	Condition (Deb	oit)	Column No. 2- Mitigation Existing Con	ndition - Baseline (Credit)	Column No. 3- Mitigation Properties		ars	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Avera	ge	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology			Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling		0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat			Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicators		PART I - Physical, Chemical ar	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical ar	nd Biological Indicators
	Points Range Scale	Site Score		Points Range Site Sc Scale	ore		Points Rang Scale	e Site Score		Points Range Site Score		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)	PHYSICAL INDICATOR (Applies to all stream	nms classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	:)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15
2. Embeddedness	0-20	14	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20 13	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	12	3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	Velocity/ Depth Regime	0-20 13
Sediment Deposition	0-20	14	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20 13	Sediment Deposition	0-20 15
5. Channel Flow Status	0-20 0-1	17	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	8	5. Channel Flow Status	0-20 10	5. Channel Flow Status	0-20 10
6. Channel Alteration	0-20	16	Channel Alteration	0-20		6. Channel Alteration	0-20	17	Channel Alteration	0-20 17	Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15	7. Frequency of Riffles (or bends)	0-20 15
8. Bank Stability (LB & RB)	0-20	11	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18
Vegetative Protection (LB & RB)	0-20	15	Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	6	Vegetative Protection (LB & RB)	0-20	Vegetative Protection (LB & RB)	0-20 16
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)		6	10. Riparian Vegetative Zone Width (LB & RB)	0-20 11	10. Riparian Vegetative Zone Width (LB & RB)	
Total RBP Score Sub-Total	Suboptimal	145 0.725	Total RBP Score Sub-Total	Poor 0		Total RBP Score Sub-Total	Suboptimal	116 0,58	Total RBP Score Sub-Total	Suboptimal 134 0.67	Total RBP Score Sub-Total	Suboptimal 150 0.75
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitten			CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial S		CHEMICAL INDICATOR (Applies to Intermitte		CHEMICAL INDICATOR (Applies to Intermit	
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)	1		WVDEP Water Quality Indicators (Gene	aral)		WVDEP Water Quality Indicators (Genera	al).	WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity			Specific Conductivity			Specific Conductivity	i ai j		Specific Conductivity	,	Specific Conductivity	1
	0-90	34		0-90		•	0-90	500	•	0-90 500	•	0-90 500
<=99 - 90 points	0-90	34		0-90		500-599 - 50 points	0-90	300	500-599 - 50 points	0-90	500-599 - 50 points	300
pH	0.4	45	рН	0.4		pH			рН	0.4	рН	0.4
8.1-9.0 = 45 points	0-80	8.36		5-90		8.1-9.0 = 45 points	5-90	8.36	8.1-9.0 = 45 points	5-90 8.36	8.1-9.0 = 45 points	5-90 8.36
DO		3.0	DO	0		DO	<u> </u>		DO		DO	
	10-30	10.95		10-30			10-30	10.95		10-30 10.95		10-30 10.95
Sub-Total		0.825	Sub-Total	0		>5.0 = 30 points Sub-Total		0.375	>5.0 = 30 points Sub-Total	0.625	>5.0 = 30 points Sub-Total	0.625
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Peren	_	BIOLOGICAL INDICATOR (Applies to Intern		BIOLOGICAL INDICATOR (Applies to Inte	
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
	0-100 0-1	69.8		0-100 0-1			0-100 0-1	68		0-100 0-1 68		0-100 0-1 68
Good			Out Tard			Good		0.00	Good		Good	
Sub-Total		0.698	Sub-Total	0		Sub-Total		0.68	Sub-Total	0.68	Sub-Total	0.68
PART II - Index and Un	nit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score		PART II - Index and U	Jnit Score	PART II - Index and	I Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Unit So	ore	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.749333333	125	93.6666667	0	125 0		0.545	125	68.125	0.658333333	125 82.2916667	0.685	125 85.625

West Virginia Stream and Wetland Valuation Metric UT10 of RTB, Temporary Perennial (2 of 2)

	(See instruction	PART III - Impact Fac page to insert default values for
Temporal Loss-Constructi	on	
Note: Reflects duration of aquatic functional loss between the time of an in mitigation (credit).	npact (debit) and completion of compensatory	
Years	15	
Sub-Total	0.3372	
Temporal Loss-Maturity Note: Period between completion of compensatory mitigation measures a to function (i.e. maturity of tree stratum to provide organic matter and det	and the time required for maturity, as it relates	
corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
% Add. Mitigation	Temporal Loss-Maturity (Years)	
% Add. Mitigation	Temporal Loss-Maturity (Years)	
% Add. Mitigation	Temporal Loss-Maturity (Years)	

values for MITIGATI	ON BANKING and ILF)	
	Lor	ng-term Protection
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)
	0 + 5/10 Year Monitoring	101
	Sub-Total	0

PART IV - Index to Unit Score Conversion										
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)							
1.386266667	125	173.2833333	\$138,626.67							

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	173.2833333	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	68.125	Mitigation Projected at Ten Years Post Completion (Credit)	82.29166667	Mitigation Projected At Maturity (Credit)	85.625		
FINAL PROJECTED NET BALANCE					68.125		82.29166667		85.625		

Par	rt VI - Mitigation	Considerations (Incent	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).	t		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of RTB, Temporary Perennial	173.2833333	115.59375

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank										
	0-50	Preservation and Re-vegetation										
50	51-150											
Buffer Width		Right Bank										
	0-50	Preservation and Re-vegetation										
50	51-150											
Average Buffer Width/Side	50											

UT12 of RTB, Intermittent (1 of 2)

			falo Mt. Surface Mine Permit No. S-5018-07 IMPACT COORDINATES: (in Decimal Degrees)		Lat.	37° 45' 28.79"	Lon.	82° 15' 3.03"	WEATHER:	7	75 Sunny	DATE:	May 20,	May 20, 2010	
STREAM CLASSIFICATION:	EAM CLASSIFICATION: Intermittent IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)			UT12 of RTB - 12th Unnamed To % Streambed Slope, Acr			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr								
STREAM IMPACT LENGTH:	190	FORM OF MITIGATION:		MIT COOR (in Decima	-	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	ted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.69		Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.82	0.79	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indica	ators	PART I - Physical, Chemical and E	Biological Indicat	ors		PART I - Physical, Chemical and	l Biological Indi	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)			PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	3	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	2	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	2	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	2	4. Sediment Deposition	0-20			4. Sediment Deposition	0-20		4. Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	1	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	14	6. Channel Alteration	0-20			6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	2	7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	15	8. Bank Stability (LB & RB)	0-20			8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	75	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	j	0.375	Sub-Total		0		Sub-Total		0	Sub-Total		0	Sub-Total	,	0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	ams)		CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(1)		Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	30		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH				nH			nH			nH		
pi i	0-1	7.07	pii	0-1			p11	0-1		pii	0-1		pii	0-1	
6.0-8.0 = 80 points	0-80	7.87		5-90				5-90			5-90			5-90	
DO			DO				DO			DO			DO		
	10-30	10.77		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total	<u> </u>	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	treams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perer	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	•		WV Stream Condition Index (WVSCI)	T	ı
Van. Cood	0-100 0-1	78.48		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Very Good Sub-Total		0.7848	Sub-Total		0		Sub-Total		0	Sub-Total		0	Sub-Total		0
Sub-Total		0.7646	Sub-1 otal	<u>t</u>	U	I	Sub-Total		U	Sub-Total		U	Sub-10tal		U
PART II - Index and Ur	nit Score		PART II - Index and Ur	it Score			PART II - Index and	Unit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	t Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.75400007	400	442.44267											•		
0.754966667	190	143.443667	0	0	U		0	0	U	0	0	0	0	0	U

West Virginia Stream and Wetland Valuation Metric UT12 of RTB, Intermittent (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGATION BANKING an	d ILF)			
Temporal Loss-Construction			Lo	ng-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an impac	t (debit) and completion of compensatory	% Add. Mitigat	ion and Monitoring Period	Lo	ong-Term Protection (Years)	
mitigation (credit).						
Years	15					
Sub-Total	0.339735					
Temporal Loss-Maturity *Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates			10 Year Monitoring	101		
		Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and detritus	witnin riparian stream or wetiand buπer					
corridor).			PART IV - Inde	ex to Unit Score Conversion		
		Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)	
		1.382675	190	262.70825	\$210,166.60	
30%	25					
Sub-Total	0.287973333					
	PART	V- Comparison of Unit Scores and Projected Balance				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	262.70825	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE		0		0		0					

	Part VI - Mitigation Considerati	ions (Incentives)
Extent of Stream Resto *Note1: Reference the Instructional handout to determine the corre *Note2: Place an "X" in the appropriate cate	ct Restoration Levels (below) for your project	
Level I Restoration		
Level II Restoration		Buffer V
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT12 of RTB, Intermittent	262.70825	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50										
	51-150										
Buffer Width	Right Bank										
	0-50										
	51-150										
Average Buffer Width/Side	0										

UT12 of RTB, Ephemeral (1 of 2)

		Mt. Surface Mine IMPACT COORDINATES: (in Decimal Degrees) Lat.		_at.	37° 45' 30.65"	Lon.	82° 15' 4.59"	WEATHER:	7	75 Sunny	DATE:	May 20,	May 20, 2010		
STREAM CLASSIFICATION:	EAM CLASSIFICATION: Ephemeral IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)		ı	T12 of RTB - 12th Unnamed % Streambed Slope, Ad			MITIGATION STREAM CLASS./SI* (% stream slope, watershed size {ac								
STREAM IMPACT LENGTH:	110	FORM OF MITIGATION:		MIT COORD (in Decimal	_	_at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (0	Credit)		Column No. 3- Mitigation P Post Completio		ears	Column No. 4- Mitigation Proj Post Completion (ars	Column No. 5- Mitigation Project	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.68		Hydrology			Hydro	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.75333333	Biogeochemical Cycling		0	Biogeo	chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.74		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicator	rs		PART I - Physical, Chemical a	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	itors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSI	CAL INDICATOR (Applies to all stre	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	RBP (High Gradient Data Shee	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epifa	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	2. Embeddedness	0-20		2. Emb	eddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	Sediment Deposition	0-20			nent Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	Bank Stability (LB & RB)	0-20			Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20			tative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Marginal	95	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0		rian Vegetative Zone Width (LB & RE BP Score) 0-20 Poor	0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	
Sub-Total	Marginal	0.475	Sub-Total	FOOI	0	Sub-To		Fooi	0	Sub-Total	POOI	0	Sub-Total	Pool	0
CHEMICAL INDICATOR (Applies to Intermitter	ent and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strean	ms)	СНЕМ	CAL INDICATOR (Applies to Intern	ittent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	∍ams)
WVDEP Water Quality Indicators (General	D		WVDEP Water Quality Indicators (General)	1		WVDE	Water Quality Indicators (Gen	eral)		WVDEP Water Quality Indicators (General	1)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity	.,		Specific Conductivity		0		c Conductivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	1
100-199 - 85 points	1 2 2 2														
рН	0-1	433	рн	0-1		рн		0-1		рн	0-1		рн	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO DO		0	DO		(1)	DO				DO	1		DO		
	10-30			10-30				10-30			10-30			10-30	
	10-30			10-30			•	10-00			10-30			10-00	
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermit	ittant and Barannial	Strooms)	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermitt	ant and Barannial Stra	O O	Sub-To	ial GICAL INDICATOR (Applies to Int	ormittant and Barar	U O	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	ittent and Berenn	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Inter	mittant and Barannia	ol Strooms)
WV Stream Condition Index (WVSCI)	itterit and r eremilar	Streams)	WV Stream Condition Index (WVSCI)	ent and refermial offe	sains)		eam Condition Index (WVSCI)	ermittent and refer	illiai Streams)	WV Stream Condition Index (WVSCI)	intterit and referin	nai otreams)	WV Stream Condition Index (WVSCI)	millent and referma	ii Streams)
TT Carcail Condition mack (TT VOCI)	0-100 0-1		TT Cacam Condition mack (TT VOCI)	0-100 0-1		*** 30	Cum Condition mack (17700)	0-100 0-1		TT Caram Condition mack (17750)	0-100 0-1		WV3CI)	0-100 0-1	
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0	Sub-Total		0	Sub-To	tal		0	Sub-Total		0	Sub-Total		0
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and	l Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
										THE MAKE WIND OF	300.0				
Index	Linear Feet	Unit Score	Index	Linear Feet U	Jnit Score		Index	Linear Fee	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.657046667	110	72 2709222		0	0		0	0		0	0		0	0	
0.657916667	110	72.3708333	0	0	<u> </u>	L	U	0	U I	U U	U	0	0	U	

West Virginia Stream and Wetland Valuation Metric UT12 of RTB, Ephemeral (2 of 2)

	(See instruction		II - Impact Factors oult values for MITIGATION	ON BANKING and	ILF)		
Temporal Loss-Construction					Lo	ng-term Protection	
	te: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit).			% Add. Mitigation	n and Monitoring Period		ng-Term Protection (Years)
Years Sub-Total	15 0.2960625						
*Note: Period between completion of compensatory mitigation measures and	the time required for maturity, as it relates			0 + 5/1/ Sub-Total	0 Year Monitoring		101
to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).					ex to Unit Score C		
% Add. Mitigation	Temporal Loss-Maturity (Years)			Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
				1.178979167	110	129.6877083	\$103,750.17
30% Sub-Total	25 0.225						
	PART	V- Comparison of	Unit Scores and Project	ted Balance			

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	129.6877083	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE		0		0		0					

	Part VI - Mitigation	n Considerations (Incen	tives)
Extent of Stream Restoration			
*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pr	niect		
*Note2: Place an "X" in the appropriate category (only select one).	0,000		
Level I Restoration			
			D "
Level II Restoration			Buffer
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT12 of RTB, Ephemeral	129.6877083	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer	0	
Width/Side	J	

UT13 of RTB, Intermittent (1 of 2)

Part Part	USACE FILE NO./Project Name:			lo Mt. Surface Mine ermit No. S-5018-07		DORDINATES: nal Degrees)	Lat.	37° 45' 28.04"	Lon.	82° 15' 4.92"	WEATHER:	75 Sunn	у	DATE:	May 20,	2010
Column No. Section Column No. Section	STREAM CLASSIFICATION:	ı	ntermittent													
Mary Mary	STREAM IMPACT LENGTH:	150					Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Married Marr	Column No. 1- Impact Existin	ng Condition (Del	pit)		ndition - Baselir	ne (Credit)		Post Completion		ears				Column No. 5- Mitigation Projec	ed At Maturity (Cr	edit)
Registrownisted Cycling 1-10 1-	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Avera	age	HGM Score (attach data forms):		Average
	Hydrology	0.69		Hydrology				Hydrology			Hydrology			Hydrology		
PART Physical Chemical and Residence Part Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemical and Residence Part Physical Chemi	Biogeochemical Cycling	0.82	0.79	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling	0		Biogeochemical Cycling		0
Part Part																
Section Sect	PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and	Biological Indic	ators		PART I - Physical, Chemical and	l Biological Ind	licators	PART I - Physical, Chemical and Bi	iological Indicators		PART I - Physical, Chemical and	l Biological Indica	tors
MERPA REP (Fig.) Contains True State 1			Site Score		Points Range Scale	Site Score			Points Ran Scale	ge Site Score			core		Points Range Scale	Site Score
Episteral Secretar Application Secretary Application Secretar	PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)			PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	lassifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)	
Entering Section Secti	USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
	Epifaunal Substrate/Available Cover	0-20	3		0-20			Epifaunal Substrate/Available Cover	0-20			0-20		Epifaunal Substrate/Available Cover	0-20	
Software Disposition Software Disposition			3		0-20							0-20			0-20	
Cleared Place State			•												_	
Common Alexandron											-					
Frequency of Affilias (or funcion)		()-1			0-1				0-	1		0-1			0-1	
Deal of Subdiviry (List A RI)																
10 Popular (, ,								
Table Part																
CHEMICAL NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (Applies to Intermitter and Powerhal Sharehold (Amore) Chemical NDICATOR (0				0						0
WVDEP Water Quality Indicators (General)	Sub-Total		0.385	Sub-Total		0		Sub-Total		0	Sub-Total	0		Sub-Total		0
Specific Conductivity	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	reams)		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stream	ams)
Sub-total Sub-	WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (Genera	I)			WVDEP Water Quality Indicators (Generation	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Genera	il)	
PACT - Index and Unit Score PACT - Index PACT	Specific Conductivity			Specific Conductivity				Specific Conductivity			Specific Conductivity			Specific Conductivity		
PH		0-90	30		0-90				0-90			0-90			0-90	
6.0-8.0 = 80 points	<=99 - 90 points			nH				nH			nH.			nН		
Co Co Co Co Co Co Co Co	pri	0-1	7.07	5 11	0-1			P 11	5.00	1	p	0-1		p.11	0-1	
Sub-Total Sub-To	6.0-8.0 = 80 points	0-00	7.01		3-30				5-90			3-30			3-30	
Sub-Total Sub-To	DO	_		DO				DO			DO			DO		
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) Very Good Dial PART II - Index and Unit Score Index Index Linear Feet Unit Score Index BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) Sub-Total WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) Sub-Total WY Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) Sub-Total WY Stream Condition Index (WVSCI) Sub-Total Sub-Total PART II - Index and Unit Score Index Index Index Index		10-30	10.77		10-30				10-30			10-30			10-30	
Wy Stream Condition Index (WVSCI)	Sub-Total	_ l	1	Sub-Total		0		Sub-Total		0	Sub-Total	0		Sub-Total	1	0
Very Good 0-100 0-1 78.48 Sub-Total 0-100 0-1	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ttent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perennial Stream	ns)	BIOLOGICAL INDICATOR (Applies to Intere	nittent and Perennia	I Streams)
Very Good Sub-Total O	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Sub-Total 0 Sub-To	Versi One d	0-100 0-1	78.48		0-100 0-1				0-100 0-	1		0-100 0-1			0-100 0-1	
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score Index In	<u> </u>		0.7848	Sub-Total		0		Sub-Total		0	Sub-Total	0		Sub-Total	1	0
Index Linear Feet Unit Score Unit																
	PART II - Index and U	Unit Score		PART II - Index and U	Init Score			PART II - Index and I	Jnit Score		PART II - Index and Uni	t Score		PART II - Index and	Jnit Score	
	Index	Linear Foot	Unit Score	Index	Linear Foot	Unit Score		Index	Linear For	t Unit Score	Index	Linear Feet Unit 9	core	Index	Linear Foot	Unit Score
N 0.756633333 150 113.495 0 0 0 0 0 0 0	IIIuex	Linear reet	Ollit Score	IIIdex	Lilleal Peet	Offic Score		IIIUGA	Lilleal Fee	STILL SCOLE	IIIUGX	Linear Feet Offit 3	CO16	IIIuex	Lillear Feet	Jill Score
	0.756633333	150	113.495	0	0	0		0	0	0	0	0 0		0	0	0

West Virginia Stream and Wetland Valuation Metric UT13 of RTB, Intermittent (2 of 2)

	(0.1.1.1)		II - Impact Factors					
	(See instruction	page to insert deta	ault values for MITIGAT	ON BANKING and	•			
Temporal Loss-Construction *Note: Reflects duration of aquatic functional loss between the time of an impact	t (dahit) and completion of companyatory			0/ Add Mitigatio		ng-term Protection		
mitigation (credit).	t (debit) and completion of compensatory			% Add. Willigatio	on and Monitoring Period	Lo	ong-Term Protection (Years)	
Years	15							
Sub-Total	0.340485							
Temporal Loss-Maturity		-		0 + 5/1	0 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measures and the				Sub-Total	o roal monitoring		0	
to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer							
comdor).						ex to Unit Score (
% Add. Mitigation	Temporal Loss-Maturity (Years)			Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units	s)
				1.386425	150	207.96375	\$166,371.00	
	25							
30% Sub-Total	25 0.289306667	-						
out rotal	0.200000	_						
	PART	Г V- Comparison of	Unit Scores and Projec	ted Balance				
			I					

PART V- Comparison of Unit Scores and Projected Balance												
Final Unit Score (Debit) [No Net Loss Value]	207.96375	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)					
FINAL PROJECTED NET BALANCE					0		0		0			

Part VI - Mitig	gation Considerations (Inc	entives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).		*Note ¹ : Ref	rerence Instructional han *Note ² : Enter the
Level I Restoration			
Level II Restoration		Buffer Width	
Level III Restoration			0-50
			51-150

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT13 of RTB, Intermittent	207.96375	#DIV/0!

Extended Upland Buffer Zone

nandout for the definitions of the Buffer Zone Mitigation Extents and Types (below) he buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Left Bank **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

UT13 of RTB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO (in Decimal	RDINATES: L Degrees)	.at.	37° 45' 28.77"	Lon.	82° 15' 5.25"	WEATHER:	7	75 Sunny	DATE:	May 20,	, 2010
STREAM CLASSIFICATION:	E	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			l	T13 of RTB - 13th Unnamed % Streambed Slope, Ad			MITIGATION STREAM CLASS./SI* (% stream slope, watershed size {aci					
STREAM IMPACT LENGTH:	122	FORM OF MITIGATION:		MIT COORE (in Decimal	_	.at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation P Post Completio		ears	Column No. 4- Mitigation Proje Post Completion (ars	Column No. 5- Mitigation Project	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.68		Hydrology			Hydro	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.75333333	Biogeochemical Cycling		0	Biogeo	chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.74		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Siological Indicato	rs		PART I - Physical, Chemical a	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSI	CAL INDICATOR (Applies to all stre	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	RBP (High Gradient Data Shee	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epifa	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	10	2. Embeddedness	0-20		2. Emb	eddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	16	Sediment Deposition	0-20			nent Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20			nel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	15	Channel Alteration	0-20			nel Alteration	0-20		Channel Alteration	0-20		Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20		7. Fred	uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20		8. Ban	Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	16	9. Vegetative Protection (LB & RB)	0-20		9. Veg	tative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	16	Riparian Vegetative Zone Width (LB & RB)	0-20			rian Vegetative Zone Width (LB & RE			Riparian Vegetative Zone Width (LB & RB)	0-20		Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Marginal	89	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.445	Sub-Total		0	Sub-To			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strear	ms)	СНЕМ	CAL INDICATOR (Applies to Interm	ittent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	1)		WVDEP Water Quality Indicators (General)				Water Quality Indicators (Gen	eral)		WVDEP Water Quality Indicators (General	1)		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity			Specif	c Conductivity			Specific Conductivity			Specific Conductivity		
100-199 - 85 points	0-90			0-90				0-90			0-90			0-90	
nH			nH			nН				nH	1		nH		
pii	0-1		p	0-1		P		0-1		p	0-1		<i>3</i> 11	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		0	DO		(1)	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Cub Tatal			Cub Total			0			0	Cub Tatal			Cub Total		_
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermit)	ttent and Perennial S	Streams)	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)	Sub-To	ial GICAL INDICATOR (Applies to Int	ermittent and Peren	unial Streams)	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perenn	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)	tterit and i eremital (otreamsy	WV Stream Condition Index (WVSCI)	chi ana i cremiai on	sums)		eam Condition Index (WVSCI)	crimitent and recon	mar or cams)	WV Stream Condition Index (WVSCI)	nttent unu i erenn	inar Octobrilla,	WV Stream Condition Index (WVSCI)	mittent and i cremina	ar Otreams)
W Orican Condition mack (WCO)	0-100 0-1		TV Carcam Condition mack (VVCCI)	0-100 0-1		*** 0.	cam contained mack (***con)	0-100 0-1		W Oream Condition mack (WCC)	0-100 0-1		VV Greati General index (VVGG)	0-100 0-1	
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0	Sub-Total		0	Sub-To	tal		0	Sub-Total		0	Sub-Total		0
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
	200.0										300.0				
Index	Linear Feet	Unit Score	Index	Linear Feet	Jnit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.650/16667	122	70 3508333	0	0	0		0	0		0	0	0	0	0	0
0.650416667	122	79.3508333	U	0	U		U	U	٠ ا	l v	U	"	U	U	"

West Virginia Stream and Wetland Valuation Metric UT13 of RTB, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATIO	N BANKING and II	LF)		
Temporal Loss-Consti	·				ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit).			% Add. Mitigation	and Monitoring Period		g-Term Protection (Years)
Years	15					
Sub-Total Sub-Total	0.2926875					
Temporal Loss-Mat	ıritv		0 + 5/10 \	Year Monitoring		101
*Note: Period between completion of compensatory mitigation measu	res and the time required for maturity, as it relates	Si	ub-Total	. oar momonig		0
to function (i.e. maturity of tree stratum to provide organic matter an	d detritus within riparian stream or wetland buffer					
corridor).				PART IV - Inc	dex to Unit Score Co	nversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	F	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Unit
, o , lea	Tomporar 2000 maranty (Tours)		1.162104167	122	141.7767083	\$113,421.37
		_				
	95					
30% Sub-Total	25 0.219					
Sub-Total	0.213					
	PART	V- Comparison of Unit Scores and Projecte	ed Balance			

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	141.7767083	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE	:				0		0		0		

	Pa	art VI - Mitigation	Considerations (Incer	ntives)
*Note1: Reference the Instructional hand	ktent of Stream Restoration Sout to determine the correct Restoration Levels (below) for your project "X" in the appropriate category (only select one).	ct		*Note ¹ : Refe
Level I Restoration				
Level II Restoration				Buffer Width
Level III Restoration				

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT13 of RTB, Ephemeral	141.7767083	#DIV/0!

Extended Upland Buffer Zone

eference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50										
	51-150										
Buffer Width		Right Bank									
	0-50										
	51-150										
Average Buffer	0										
Width/Side	0										

UT15 of RTB, Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 45' 17.61"	Lon.	82° 15' 10.04"	WEATHER:	7	75 Sunny	DATE:	May 20	, 2010
STREAM CLASSIFICATION:	-	Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT15 of RTB - 15th Unnamed To % Streambed Slope, Acr			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	50	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing C	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology			Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat			Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and Bi	iological Indica	ators	PART I - Physical, Chemical and E	iological Indicat	ors		PART I - Physical, Chemical and	d Biological Ind	icators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Ran Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)			PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	3	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	2	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
	0-20	1	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
·	0-20	2	Sediment Deposition	0-20			Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
	0-20 0-1	1	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20	1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
	0-20	14	6. Channel Alteration	0-20			6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
	0-20	2	7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
	0-20	13	8. Bank Stability (LB & RB)	0-20			8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
	0-20 0-20	15 18	Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB RB RB RB	0-20 0-20	
Total RBP Score	Marginal	71	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	mar giriai	0.355	Sub-Total	1 001	0		Sub-Total	1 001	0	Sub-Total	1 001	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stre	ams)		CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(0)		Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	30		0-90				0-90			0-90			0-90	
<=99 - 90 points			nU				nU			n Li			nH		
pri	0-1		pri	0-1			pri	0-	1	pri	0-1		рп	0-1	
6.0-8.0 = 80 points	0-80	7.87		5-90				5-90			5-90			5-90	
DO			DO				DO			DO			DO		
	10-30	10.77		10-30				10-30			10-30			10-30	
Sub-Total	1	1	Sub-Total		0		Sub-Total		0	Sub-Total	l l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitter	nt and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perenni	al Streams)
WV Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)	, , ,			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, ,	
Very Good	0-100 0-1	78.48		0-100 0-1				0-100 0-	1		0-100 0-1			0-100 0-1	
Sub-Total	I	0.7848	Sub-Total	L	0		Sub-Total		0	Sub-Total	l l	0	Sub-Total		0
odb Total		0.1040	oub Total			Į.	oub Total		v	oub rotal		v	oub rotal		
PART II - Index and Uni	it Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	t Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.74220007	EC	25 6622222					•			-					_
0.713266667	50	35.6633333	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT15 of RTB, Perennial (2 of 2)

		(Coo in atmustion	PART III - Impact Factors	ION DANKING on	. II E/			
		(See instruction	page to insert default values for MITIGATI	ON BANKING and	<u> </u>			
	ral Loss-Construction					ng-term Protection		
*Note: Reflects duration of aquatic functional loss b		ct (debit) and completion of compensatory		% Add. Mitigation	on and Monitoring Period	L	ong-Term Protection (Years)	
	mitigation (credit).							
Years		15						
Sub-Total		0.32097						
_							404	
Tem	poral Loss-Maturity				0 Year Monitoring		101	
*Note: Period between completion of compensator				Sub-Total			0	
to function (i.e. maturity of tree stratum to provide	organic matter and detritus corridor).	s witnin riparian stream or wetiand buπer						
	cornaor).				PART IV - Inde	ex to Unit Score	Conversion	
				Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation		Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit	Units)
				1.319543333	50	65.97716667	\$52,781.73	
							, ,	
30%		25						
Sub-Total		0.285306667						
oub-1 otal		0.20000001						
		PART	V- Comparison of Unit Scores and Project	ted Balance				
Final Unit Score (Debit) [No Net Loss Value]	65.97716667	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	

FINAL PROJECTED NET BALANCE			0		0		0
	Part VI - Mitigatio	n Considerations (Incer	ntives)				
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) f *Note2: Place an "X" in the appropriate category (only select one).	for your project		*Note ¹ : Refe	rence Instructional handout for the *Note ² : Enter the buffer width		r Zone Mitigation Extents and Types Left Bank and Right Bank)	(below)
Level I Restoration Level II Restoration			Buffer Width	Note : Sele	Left E		
Level III Restoration			Duller Width	0-50	Leit	ZIIN	
		_		51-150			
			Buffer Width		Right	Bank	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT15 of RTB, Perennial	65.97716667	#DIV/0!

0-50 51-150

UT15 of RTB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07		OORDINATES: nal Degrees)	Lat.	37° 45' 16.24"	Lon.	82° 15' 8.63"	WEATHER:	75	Sunny	DATE:	May 20,	, 2010
STREAM CLASSIFICATION:	I	ntermittent	IMPACT STREAM/SITE ID (% stream slope, watershed size (at				UT15 of RTB - 15th Unnamed Ti % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	100	FORM OF MITIGATION:			ORDINATES: mal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existin	ng Condition (Deb	bit)	Column No. 2- Mitigation Existing Co	ndition - Baselin	ne (Credit)		Column No. 3- Mitigation Pro Post Completion		ears ears	Column No. 4- Mitigation Projection (C		s	Column No. 5- Mitigation Projec	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.69		Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.82	0.79	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and	d Biological Indic	cators	PART I - Physical, Chemical and	Biological Indic	ators		PART I - Physical, Chemical and	d Biological Inc	licators	PART I - Physical, Chemical and E	Biological Indicat	tors	PART I - Physical, Chemical and	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	e Site Score			Points Rai Scale	nge Site Score		Points Range Scale	Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)			PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	14	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	11	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	8	3. Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	13	4. Sediment Deposition	0-20			4. Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	12	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20	-1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16 5	6. Channel Alteration	0-20			6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20	16	Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20			Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20		Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20 0-20			9. Vegetative Protection (LB & RB)	0-20 0-20		Bank Stability (LB & RB) Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	20	10. Riparian Vegetative Zone Width (LB & RB)	0-20			10. Riparian Vegetative Zone Width (LB & RB)			Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score	Suboptimal	129	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.645	Sub-Total		0		Sub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	reams)		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Stre	ams)	CHEMICAL INDICATOR (Applies to Intermitte	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (Genera	I)			WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)	ı		WVDEP Water Quality Indicators (Genera	al)	
Specific Conductivity	,		Specific Conductivity				Specific Conductivity	,		Specific Conductivity			Specific Conductivity		
	0-90	30		0-90				0-90			0-90			0-90	1
<=99 - 90 points			nU				nU			nU			nU		
<u></u>	0-1	7.07		0-1			ļ.,	5.60	-1		0-1		у.,	0-1	
6.0-8.0 = 80 points	0-80	7.87		5-90				5-90			5-90			5-90	
DO			DO				DO			DO			DO		
	10-30	10.77		10-30				10-30			10-30			10-30	
Sub-Total	l l	1	Sub-Total	I	0		Sub-Total	L	0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Pere	ennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennia	l Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	78.48		0-100 0-1				0-100 0	-1		0-100 0-1			0-100 0-1	
Very Good		0.7848	Sub Total		0		Sub Total		0	Sub Total		0	Sub Total		0
Sub-Total		0.7848	Sub-Total		0		Sub-Total		U	Sub-Total		U	Sub-Total		
PART II - Index and I	Unit Score		PART II - Index and U	nit Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fe	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.799966667	100	79.9966667	0	0	0		0	0	0	0	0	0	0	0	0
0.133300001	100	. 3.3300001	<u> </u>				<u> </u>	v	Ů	Ů	•	Ü			

West Virginia Stream and Wetland Valuation Metric UT15 of RTB, Intermittent (2 of 2)

		PART III - Impact Factors			
	(See instruction	page to insert default values for MITIGATION BANKING and	ILF)		
Temporal Loss-Cor	nstruction		L	ong-term Protection	
lote: Reflects duration of aquatic functional loss between the tim	e of an impact (debit) and completion of compensatory	% Add. Mitigatio	n and Monitoring Period	Lor	ng-Term Protection
mitigation (cred	dit).				
Years	15				
Sub-Total	0.359985				
Temporal Loss-N	Maturity	0 + 5/10) Year Monitoring		101
Note: Period between completion of compensatory mitigation me		Sub-Total	<u> </u>		0
to function (i.e. maturity of tree stratum to provide organic matter					
corridor).			PART IV - Inc	dex to Unit Score C	onversion
		Final Index Score	Linear Feet	Unit Score	IL
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetti
		1.483925	100	148.3925	\$1
9997	25				
b-Total	0.323973333				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	148.3925	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE					0		0		0		

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	roject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT15 of RTB, Intermittent	148.3925	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

UT15 of RTB, Ephemeral

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07	IMPACT COORD (in Decimal Dec		37° 45' 15.13"	Lon.	82° 15' 6.61"	WEATHER:	75 Sunny	DATE:	May 20, 2010
STREAM CLASSIFICATION:	I	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {act			UT15 of RTB - 15th Unname % Streambed Slope,			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre			
STREAM IMPACT LENGTH:	820	FORM OF MITIGATION:		MIT COORDIN (in Decimal Dec	-		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline (Cre	dit)	Column No. 3- Mitigation Post Comple		ears	Column No. 4- Mitigation Projection (C		Column No. 5- Mitigation Proje	ected At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Ave	erage	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.68		Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0.84	0.75333333	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat	0.74		Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicators		PART I - Physical, Chemica	and Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indicators	PART I - Physical, Chemical ar	nd Biological Indicators
	Points Range Scale	Site Score		Points Range Site	Score		Points Rang Scale	ge Site Score		Points Range Site Score		Points Scale Range Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all s	treams classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)	PHYSICAL INDICATOR (Applies to all stream	ams classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sh	eet)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet	3)
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		 Epifaunal Substrate/Available Cover 			Epifaunal Substrate/Available Cover	0-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	11	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	Embeddedness	0-20
Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	Velocity/ Depth Regime	0-20
4. Sediment Deposition	0-20	12	4. Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	4. Sediment Deposition	0-20
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	5. Channel Flow Status	0-20 0-1
6. Channel Alteration	0-20	16 0	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	9	7. Frequency of Riffles (or bends)	0-20		Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20 0-20	10	8. Bank Stability (LB & RB)	0-20			0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB &	0-20 RB) 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20
Total RBP Score	Marginal	76	Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total		0.38	Sub-Total		0	Sub-Total	•	0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Streams)		CHEMICAL INDICATOR (Applies to Inte	rmittent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennial Streams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Go	eneral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	eral)
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
400 400 05 11	0-90			0-90			0-90			0-90		0-90
100-199 - 85 points			nH			nH			nH		nH	
pi i	0-1		511	0-1		5 11	0-1		pri	5.00 0-1	pri	0-1
5.6-6.0 = 45 points	0-80			5-90			5-90			5-90		5-90
DO		1000000	DO			DO			DO		DO	
	10-30			10-30			10-30			10-30		10-30
Sub-Total	I I		Sub-Total		0	Sub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Stream	s)	BIOLOGICAL INDICATOR (Applies to	Intermittent and Perer	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0	0-100 0-1			0-100 0-1			0-100 0-1			0-100 0-1		0-100 0-1
Sub-Total	<u> </u>	0	Sub-Total		0	Sub-Total		0	Sub-Total	0	Sub-Total	
Sub-Total		· ·	Sub-Total		U	Sub-Total		U	Gub-10tai	U	Sub-10tal	0
PART II - Index and U	Init Score		PART II - Index and Ur	it Score		PART II - Index a	nd Unit Score		PART II - Index and Un	ait Score	PART II - Index and	d Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Unit	Score	Index	Linear Feet	t Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.004400007	000	500.045057		0		•				0		
0.634166667	820	520.016667	0	0	V	0	0	U	0	0 0	0	0 0

West Virginia Stream and Wetland Valuation Metric UT15 of RTB, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING ar	d ILF)		
Temporal Loss-Constru	ction		Lo	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of a mitigation (credit).	n impact (debit) and completion of compensatory	% Add. Mitiga	ion and Monitoring Period	Lo	ng-Term Protection (Years)
Years	15				
Sub-Total	0.285375				
Temporal Loss-Matur	rity	0+5	/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measure to function (i.e. maturity of tree stratum to provide organic matter and		Sub-Total			0
corridor).			PART IV - Inc	lex to Unit Score C	Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Unit
		1.125541667	820	922.9441667	\$738,355.33
30%	25				
Sub-Total	0.206				
	PART	V- Comparison of Unit Scores and Projected Balance			

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	922.9441667	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE		0		0		0					

			0	
	Part VI - Mitigatio	n Considerations (Incer	ntives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Lev *Note2: Place an "X" in the appropriate category (only select		*Note ¹ : Ref	Exter erence Instructional handout for th *Note ² : Enter the buffer wid	
Level I Restoration				*Note ³ : Se
Level II Restoration			Buffer Width	
Level III Restoration				0-50
		_		51-150

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT15 of RTB, Ephemeral	922.9441667	#DIV/0!

ended Upland Buffer Zone

the definitions of the Buffer Zone Mitigation Extents and Types (below) ridth for each channel side (Left Bank and Right Bank)

Select the appropriate mitigation type

Buffer Width		Left Bank										
	0-50											
	51-150											
Buffer Width		Right Bank										
	0-50											
	51-150											
Average Buffer	0											
Width/Side	J											

UT17 of RTB, Intermittent (1 of 2)

USACE FILE NO./Project Name:	LRH /Buffalo Mt. Surface WVDEP Permit No. S-50					Lat.	37° 45' 9.54"	Lon.	82° 15' 17.82"	WEATHER:	6	55 Sunny	y DATE:		, 2010
STREAM CLASSIFICATION:	lı	ntermittent		D AND SITE DESCRIPTION: {acreage}, unaltered or impairments)			UT17 of RTB - 17th Unnamed Tr % Streambed Slope, Acre		•	MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr			:		
STREAM IMPACT LENGTH:	600	FORM OF MITIGATION:		MIT COORI		Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	ndition - Baseline ((Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (C		nrs	Column No. 5- Mitigation Project	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HC	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.63		Hydrology			Hy	Irology			Hydrology			Hydrology		
Biogeochemical Cycling	0.81	0.75666667	Biogeochemical Cycling		0	Bio	geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.83		Habitat			Ha	itat			Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and	Biological Indicato	ors		PART I - Physical, Chemical and	d Biological Ind	icators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Ran Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		РН	/SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	17	Epifaunal Substrate/Available Cover	0-20			pifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	12	2. Embeddedness	0-20			mbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	11	3. Velocity/ Depth Regime	0-20			elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	13 14	4. Sediment Deposition	0-20			sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	16	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20	1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	6	6. Channel Alteration	0-20			requency of Riffles (or bends)	0-20		6. Channel Alteration	0-20		Channel Alteration Frequency of Riffles (or bends)	0-20	
7. Frequency of Riffles (or bends)	0-20	12	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			requency of Riffles (or bends)	0-20		Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20			0-20	
8. Bank Stability (LB & RB)	0-20	12	7	0-20			eank Stability (LB & RB)	0-20		,	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	131	Total RBP Score	Poor	0		al RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.655	Sub-Total		0	Su	-Total	•	0	Sub-Total	•	0	Sub-Total	•	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	СН	EMICAL INDICATOR (Applies to Intermit	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	il)		WVDEP Water Quality Indicators (General)		w	DEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Sp	cific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	34		0-90				0-90			0-90			0-90	
<=99 - 90 points			nU			nH				n Li			n L		
рп	0-1		pri	0-1		рп		0-	1	pri	0-1		ριι	0-1	
8.1-9.0 = 45 points	0-80	8.36		5-90				5-90			5-90			5-90	
DO			DO		()	DC				DO			DO		
	10-30	10.95		10-30				10-30			10-30			10-30	
Sub-Total	1 1	0.825	Sub-Total	1	0	Su	-Total		0	Sub-Total		0	Sub-Total	1 1	0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Str	reams)		LOGICAL INDICATOR (Applies to Inter	mittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			w	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	69.8		0-100 0-1				0-100 0-	1		0-100 0-1			0-100 0-1	
Good Sub-Total		0.698	Sub-Total	1	0	911	-Total		0	Sub-Total		0	Sub Total		0
Sup-Total		0.098	Sub-Total		U	Su	- Total		U	Sub-Total		0	Sub-Total		U
PART II - Index and U	Jnit Score		PART II - Index and U	nit Score			PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.74422222	500	444.0					•							_	
0.741333333	600	444.8	0	0	o I		0	0	0	0	0	0	0	0	U

West Virginia Stream and Wetland Valuation Metric UT17 of RTB, Intermittent (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGATI	ON BANKING and	ILF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impac	t (debit) and completion of compensatory		% Add. Mitigation	n and Monitoring Period	Loi	ng-Term Protection (Years)
mitigation (credit).						
Years	15					
Sub-Total	0.3336					
Temporal Loss-Maturity				Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and the			Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer					
corridor).				onversion		
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.365333333	600	819.2	\$655,360.00
30%	25					
Sub-Total	0.2904					
		<u>J</u>				

	PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	819.2	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
INAL PROJECTED NET BALANCE					0		0		0		

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ır project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT17 of RTB, Intermittent	819.2	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50										
	51-150										
Buffer Width		Right Bank									
	0-50										
	51-150										
Average Buffer Width/Side	0										

UT17 of RTB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:	LRH /Buffalo Mt. Surface Mine WVDEP Permit No. S-5018-07					t.	37° 45' 5.19"	Lon.	82° 15' 20.62"	WEATHER:	(55 Sunny	DATE:	May 20,	2010
STREAM CLASSIFICATION:	E	Ephemeral	IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)			UT17 of RTB - 17th Unnamed Tributary of RTB of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION (% stream slope, watershed size (acreage), unaltered or impairments)						
STREAM IMPACT LENGTH:	486	FORM OF MITIGATION:		MIT COORDI (in Decimal D	-	t.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline (C	redit)		Column No. 3- Mitigation Properties		ears	Column No. 4- Mitigation Proj Post Completion (nrs	Column No. 5- Mitigation Project	cted At Maturity (Cre	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	A	Average	HGM Sco	re (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.68		Hydrology			Hydrology				Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.75333333	Biogeochemical Cycling		0	Biogeoch	emical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.74		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicators	s	P	ART I - Physical, Chemical ar	nd Biological Ind	licators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicat	tors
	Points Range Scale	Site Score		Points Range S	Site Score			Points Ran Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL	INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RE	BP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		 Epifauna 	al Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	Embeddedness	0-20		Embedd		0-20		2. Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	13	4. Sediment Deposition	0-20			nt Deposition	0-20		Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			Flow Status	0-20	1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			cy of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	8	8. Bank Stability (LB & RB)	0-20			ability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	9 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			ve Protection (LB & RB) No Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	79	Total RBP Score	Poor	0	Total RBP		Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	margina.	0.395	Sub-Total	1 00.	0	Sub-Total		1 001	0	Sub-Total	1 00.	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stream	s)	CHEMICA	L INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General)		WVDEP W	ater Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	I)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Specific C	onductivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	1
100-199 - 85 points			nU			n LI				n Li			n L		
рп	0-1		pri	0-1		рп		0-	1	pri	0-1		ριι	0-1	
5.6-6.0 = 45 points	0-80			5-90		L		5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total		0	Sub-Total			0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Strea	ams)		AL INDICATOR (Applies to Inte	ermittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream	n Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-	1		0-100 0-1			0-100 0-1	
0 Sub-Total		0	Sub-Total	 	0	Sub-Total			0	Sub-Total		0	Sub-Total		0
Sub-Total		· ·	Sub-Total		U	Sub-Total			U	Sub-10tai		0	Sub-10tai		U
PART II - Index and U	Init Score		PART II - Index and Ui	nit Score			PART II - Index and	I Unit Score		PART II - Index and U	Init Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet U	nit Score		Index	Linear Fee	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
2.00=2.000=	400	242.22					•			-					
0.637916667	486	310.0275	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT17 of RTB, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGAT	ION BANKING and	i ILF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an imp mitigation (credit).			% Add. Mitigation	on and Monitoring Period		ong-Term Protection (Years)
Years Sub-Total	15 0.2870625					
Temporal Loss-Maturity			0 + 5/1	10 Year Monitoring		101
			Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detrituction).	: Period between completion of compensatory mitigation measures and the time required for maturity, as it relat Inction (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffe corridor).			PART IV - Ind	lex to Unit Score	Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)		Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
			1.133979167	486	551.113875	\$440,891.10
30% Sub-Total	25 0.209					
		1				
	PART	TV- Comparison of Unit Scores and Project	cted Balance			

FART V- Comparison of Onit Octores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	551.113875	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE		0		0		0					
Part VI - Mitigation Considerations (Incentives)											

	Part VI - Mitigatio	n Considerations (Incent	tiv
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for y *Note2: Place an "X" in the appropriate category (only select one).	your project		
Level I Restoration			
Level II Restoration		<u> </u>	В
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT17 of RTB, Ephemeral	551.113875	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank									
	0-50									
	51-150									
Buffer Width	Right Bank									
	0-50									
	51-150									
Average Buffer Width/Side	0									

UT1 of UT17 RTB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO (in Decimal	DEDINATES: L. Degrees)	at.	37° 45' 7.67"	Lon.	82° 15' 17.04"	WEATHER:	•	55 Sunny	DATE:	May 20,	2010
STREAM CLASSIFICATION:	ASSIFICATION: Intermittent IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)			UT	1 of UT17 of RTB - 1st UNT of % Streambed Slope, Acr			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)							
STREAM IMPACT LENGTH:	500	FORM OF MITIGATION:		MIT COORI		at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline ((Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (ırs	Column No. 5- Mitigation Project	cted At Maturity (Cro	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.69		Hydrology			Hydrol	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	0.82	0.79	Biogeochemical Cycling		0		chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicato	ors		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicat	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	CAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet))		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	15	Epifaunal Substrate/Available Cover	0-20		 Epifa 	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	Embeddedness	0-20		2. Emb	eddedness	0-20		Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	9	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	15	4. Sediment Deposition	0-20			nent Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	9	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	6	7. Frequency of Riffles (or bends)	0-20			uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	7	8. Bank Stability (LB & RB)	0-20			Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	9 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			tative Protection (LB & RB) rian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	120	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	Casoptiiriai	0.6	Sub-Total		0	Sub-To		1 001	0	Sub-Total	1 001	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ıms)	СНЕМІ	CAL INDICATOR (Applies to Intermit	tent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ams)
WVDEP Water Quality Indicators (General)	1		WVDEP Water Quality Indicators (General)		WVDE	Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		()		c Conductivity	,		Specific Conductivity	,		Specific Conductivity		
	0-90	30		0-90				0-90			0-90			0-90	
<=99 - 90 points			nU			n LI				nU			nU		
рп	0-1		рп	0-1		рп		0-1		рн	0-1		рп	0-1	
6.0-8.0 = 80 points	0-80	7.87		5-90				5-90			5-90			5-90	
DO			DO		(1)	DO				DO			DO		
	10-30	10.77		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total		0	Sub-To	tal .		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Str	reams)		GICAL INDICATOR (Applies to Inte	rmittent and Peren		BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Str	eam Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	78.48		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Very Good Sub-Total		0.7848	Cub Tatal		0	Sub-To	tal .		0	Cub Tatal		0	Cub Tatal		
Sup-Total		0.7646	Sub-Total		U	Sub-10	lai		U	Sub-Total		0	Sub-Total		U
PART II - Index and Un	nit Score		PART II - Index and Ur	nit Score			PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	t Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.700400007	F00	200 22222					0				_				
0.792466667	500	396.233333	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 of UT17 RTB, Intermittent (2 of 2)

		DARTIN I (E. (
	(See instruction	PART III - Impact Factors insert default values for MITIGATION BANKING and	1 II E/			
Temporal Loss-Construction	•	miser detault values for inition in DAMMING and		ng-term Protection		
Note: Reflects duration of aquatic functional loss between the time of an imp		% Add. Mitigation	on and Monitoring Period		ong-Term Protection (Years)	
mitigation (credit).					<u> </u>	
Years	15					
Sub-Total	0.35661					
	<u> </u>					
			10 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measures and		Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and detritt	us within riparian stream or wetland buffer					
corridor).			PART IV - Ind	lex to Unit Score Conversion		
		Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit U	
		1.46705	500	733.525	\$586,820.00	
	25					
ub-Total						
Sub-Total Temporal Loss-Maturity completion of compensatory mitigation measures and	0.35661 If the time required for maturity, as it relates	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit U	

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	733.525	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE		0		0		0					

	Part VI - Mitigation Considerations (Incen	ntives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (to the appropriate category (only select one).		
Level I Restoration		
Level II Restoration		Buffer V
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of UT17 of RTB, Intermittent	733.525	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

ILF Costs (Offsetting Debit Units) \$586,820.00

Buffer Width Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

UT1 of UT17 RTB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	ORDINATES: L I Degrees)	Lat.	37° 45' 2.58"	Lon.	82° 15' 12.84"	WEATHER:	(55 Sunny	DATE:	May 20,	, 2010
STREAM CLASSIFICATION:	SSIFICATION: Ephemeral IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)			·	JT1 of UT17 of RTB - 1st UNT o % Streambed Slope, Ad			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)							
STREAM IMPACT LENGTH:	300	FORM OF MITIGATION:		MIT COOR (in Decima		Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	oit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pr Post Completio		ars	Column No. 4- Mitigation Proje Post Completion (ars	Column No. 5- Mitigation Project	ted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGN	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.68		Hydrology			Hydr	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.75333333	Biogeochemical Cycling		0	Biog	eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.74		Habitat			Habi				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	iological Indicate	ors		PART I - Physical, Chemical a	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHY	SICAL INDICATOR (Applies to all stre	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USE	PA RBP (High Gradient Data Shee	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20			ifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	2	2. Embeddedness	0-20		2. Er	nbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20		3. Ve	locity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	2	Sediment Deposition	0-20			diment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	14	Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			equency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	Bank Stability (LB & RB)	0-20			nk Stability (LB & RB)	0-20		Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB)	0-20	16	Vegetative Protection (LB & RB)	0-20			getative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20			iparian Vegetative Zone Width (LB & RB			10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score Sub-Total	Marginal	66 0.33	Total RBP Score Sub-Total	Poor	0		RBP Score Total	Poor	0	Total RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stream	ams)	CHE	MICAL INDICATOR (Applies to Interm	ittent and Perennial S	itreams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	n		WVDEP Water Quality Indicators (General)			wvr	EP Water Quality Indicators (Gen	eral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity	.,		Specific Conductivity		0		ific Conductivity	,		Specific Conductivity	,		Specific Conductivity	,	
•	0-90			0-90			-	0-90			0-90			0-90	
100-199 - 85 points								0 00			0 00				
рН	0.1	45	рН	0.1	0	рН		0.1		рН	0.1		рН	- 0.1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		0	DO		(1)	DO				DO			DO	-	
	10-30			10-30				10-30			10-30			10-30	
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	ttent and December	2(Sub-Total BIOLOGICAL INDICATOR (Applies to Intermitt	ant and Barrarial Of	0		Total OGICAL INDICATOR (Applies to Int		0 mint ()(manus)	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	lu	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)		ent and Perenniai St	reams)			ermittent and Peren	niai Streams)		ittent and Perenn	iai Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	ai Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV :	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	/
Sub-Total		0	Sub-Total		0	Sub-	Total		0	Sub-Total		0	Sub-Total		0
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and	1 Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
FART II - III LEX AND U	Ant Goote		FART II - IIIQEX AND OF	it doub			FART II - III WEX AND	JOHN GOOR		PART II - IIIUEX and U	int Goore		PART II - IIIdex and	onit ocore	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.621666667	300	186.5	0	0	0		0	0	0	0	0	0	0	0	0
0.021000007	300	100.5	U	U	U		U .	U	U	U		U		U	

West Virginia Stream and Wetland Valuation Metric UT1 of UT17 RTB, Ephemeral (2 of 2)

PART III - Impact Factors

Temporal Loss-Construction	(See instruction
ote: Reflects duration of aquatic functional loss between the time of an imp	act (dehit) and completion of compensatory
mitigation (credit).	iot (dobit) and domplotter of dompendatory
Years	15
Sub-Total	0.27975
Temporal Loss-Maturity ote: Period between completion of compensatory mitigation measures and	
ote: Period between completion of compensatory mitigation measures and	
ote: Period between completion of compensatory mitigation measures and prinction (i.e. maturity of tree stratum to provide organic matter and detritu	
ote: Period between completion of compensatory mitigation measures and by function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	s within riparian stream or wetland buffer
ote: Period between completion of compensatory mitigation measures and by function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	s within riparian stream or wetland buffer

insert default values for MITIGATION BANKING and ILF)								
_	Long-term Protection							
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)						
	0 + 5/10 Year Monitoring	101						
	Sub-Total	0						

PART IV - Index to Unit Score Conversion						
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)			
1.097416667	300	329.225	\$263,380.00			

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	329.225	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation	n Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration		!	
Level II Restoration		<u>'</u>	Buffer V
Level III Restoration		<u>'</u>	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of UT17 of RTB, Ephemeral	329.225	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

UT18 of RTB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	ORDINATES: I Degrees)	Lat.	37° 45' 14.26"	Lon.	82° 15' 18.60"	WEATHER:	(65 Sunny	DATE:	May 20,	, 2010
STREAM CLASSIFICATION:	Ir	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT18 of RTB - 18th Unnamed % Streambed Slope, Ac			MITIGATION STREAM CLASS./SI* (% stream slope, watershed size {aci					
STREAM IMPACT LENGTH:	350	FORM OF MITIGATION:		MIT COOR (in Decima	_	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing (Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pr Post Completio		ears	Column No. 4- Mitigation Proje Post Completion (ars	Column No. 5- Mitigation Project	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HG	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.69		Hydrology			Нус	rology			Hydrology			Hydrology		
Biogeochemical Cycling	0.82	0.79	Biogeochemical Cycling		0	Bio	geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat			Hab	itat			Habitat			Habitat		
PART I - Physical, Chemical and B	Biological Indic	ators	PART I - Physical, Chemical and E	iological Indicate	ors		PART I - Physical, Chemical a	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PH'	SICAL INDICATOR (Applies to all stre	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USI	PA RBP (High Gradient Data Shee	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	15	Epifaunal Substrate/Available Cover	0-20		1. E	pifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	11	2. Embeddedness	0-20		2. E	mbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20			elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	11	Sediment Deposition	0-20		_	ediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	7	5. Channel Flow Status	0-20 0-1			hannel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			hannel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20			requency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	11	8. Bank Stability (LB & RB)	0-20			ank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	12	9. Vegetative Protection (LB & RB)	0-20			egetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Suboptimal	18 116	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0		Riparian Vegetative Zone Width (LB & RB I RBP Score) 0-20 Poor	0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20	•
Sub-Total	Suboptimai	0.58	Sub-Total	Poor	0		-Total	Poor	0	Sub-Total	Poor	0	Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stream	ams)	СНІ	MICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			wv	DEP Water Quality Indicators (Gen	eral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		(1)		cific Conductivity	,		Specific Conductivity	,		Specific Conductivity	,	
	0-90	34		0-90			-	0-90		-	0-90			0-90	
<=99 - 90 points		34									1 000				
pH	0.1		рН	0.1	(1)	рН				рН	0.1		рН	0.1	
6.0-8.0 = 80 points	0-80	7.92		5-90				5-90			5-90			5-90	
DO		0.0	DO			DO				DO	1		DO		
	10-30	10.46		10-30				10-30			10-30			10-30	
2.1.7.1	10-30	10.46	0.1.7.1	10-30			-	10-30		0.1.7.4.1	10-30		0.1.7.1.	10-30	
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial 9	Streams)	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermitt	ant and Perennial St	reams)		Total LOGICAL INDICATOR (Applies to Int	armittent and Perer	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	Sub-Total BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennis	al Streams)
WV Stream Condition Index (WVSCI)	ent and Ferennial C	Siteams)		ent and Fereninal St	reams)		Stream Condition Index (WVSCI)	erinitient and Ferei	illiai Streams)	WV Stream Condition Index (WVSCI)	intent and Ferenin	ilai Streams)	WV Stream Condition Index (WVSCI)	inittent and Ferenina	ai Streams)
WV Stream Condition index (WVSCI)			WV Stream Condition Index (WVSCI)			VV V	Stream Condition index (WVSCI)			WV Stream Condition index (WVSCI)			WV Stream Condition index (WVSCI)	T T	
Very Good	0-100 0-1	78.48		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0.7848	Sub-Total		0	Sub	-Total		0	Sub-Total		0	Sub-Total		0
PART II - Index and Un	it Coore		PART II - Index and Un	it Coore	П		PART II - Index and	I Unit Coore		PART II - Index and U	nit Coore		PART II - Index and	Unit Coore	
PART II - IIIUEX AND UN	iii Gcore		FART II - IIIQEX AND OF	it doub			FART II - IIIUEX ANG	onit ocore		PART II - III UUS ANG U	in Score		FART II - III dex and	OINT GCOIR	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.780122222	350	276 196667	0	0	0		0	0	0	0	0	0	0	0	_
0.789133333	330	276.196667	U	U	U	L	<u>U</u>	U	U	U	U	U	U	U	<u>_</u>

West Virginia Stream and Wetland Valuation Metric UT18 of RTB, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANK	KING and	IILF)		
Temporal Loss-Cons				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time	% Ad	% Add. Mitigation and Monitoring Period			ng-Term Protection (Years)	
mitigation (cred	it).					
Years Sub-Total	15 0.35511					
Temporal Loss-M	aturity		0 + 5/1	0 Year Monitoring		101
*Note: Period between completion of compensatory mitigation mea	asures and the time required for maturity, as it relates	Sub-Total				0
to function (i.e. maturity of tree stratum to provide organic matter	and detritus within riparian stream or wetland buffer					
corridor).				PART IV - Ind	lex to Unit Score C	onversion
		Final Indo	ex Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Del	bit)		(Debit)	(Offsetting Debit
		1.45	955	350	510.8425	\$408,674.00
30%	25					
Sub-Total	0.315306667					

	Unit Scores and Projec	ted Balance							
Final Unit Score (Debit) [No Net Loss Value]	510.8425	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ur project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration]	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT18 of RTB, Intermittent	510.8425	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

ILF Costs (Offsetting Debit Units) \$408,674.00

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer Width/Side	0	
Width/Side	O .	

UT18 of RTB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO (in Decimal	RDINATES: L Degrees)	_at.	37° 45' 17.24"	Lon.	82° 15' 22.02"	WEATHER:	(65 Sunny	DATE:	May 20,	, 2010
STREAM CLASSIFICATION:	E	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT18 of RTB - 18th Unnamed To % Streambed Slope, Acro			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	450	FORM OF MITIGATION:		MIT COORE (in Decimal	-	_at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.68		Hydrology			Hydro	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.75333333	Biogeochemical Cycling		0	Bioge	eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.74		Habitat			Habita	at			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicato	rs		PART I - Physical, Chemical and	Biological Indic	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epi	faunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	Embeddedness	0-20			beddedness	0-20		Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			ocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	16	Sediment Deposition	0-20			diment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			quency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	17	8. Bank Stability (LB & RB)	0-20			nk Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	17 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) parian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	100	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	g	0.5	Sub-Total		0	Sub-T			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strear	ms)	CHEN	MICAL INDICATOR (Applies to Intermit	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General))		WVDI	EP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Speci	fic Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 11	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points			nH			nН				nH			nH		
pi i	0-1		pii	0-1		Pii		0-1		pii	0-1		511	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		0	DO	_	111	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	l		Sub-Total		0	Sub-T	otal		0	Sub-Total	l l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)		OGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			wv s	tream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)	T T	ı
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	l	0	Sub-Total		0	Sub-T	otal		0	Sub-Total	l l	0	Sub-Total		0
Sub-Total		U	Sub-1 otal		U	3ub-1	Otal		U	Gub-10tai		U	Gub-10tal		U
PART II - Index and U	nit Score		PART II - Index and Ur	it Score			PART II - Index and	Jnit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.66446667	450	209 975		0	0		0	_					•	0	_
0.664166667	450	298.875	0	0	U		0	0	U	0	0	0	0	U	U

West Virginia Stream and Wetland Valuation Metric UT18 of RTB, Ephemeral (2 of 2)

				III - Impact Factors					
		(See instruction	page to insert defa	ault values for MITIGAT	ION BANKING and	l ILF)			
	oral Loss-Construction					Loi	ng-term Protection		
*Note: Reflects duration of aquatic functional loss		t (debit) and completion of compensatory			% Add. Mitigation	on and Monitoring Period	L	ong-Term Protection (Years)	
	mitigation (credit).								
		45							
Years Sub-Total		15 0.298875							
Sub-Total		0.296873							
Ter	nporal Loss-Maturity				0 + 5/1	0 Year Monitoring		101	
*Note: Period between completion of compensate		he time required for maturity, as it relates			Sub-Total	Tour Monntoning		0	
to function (i.e. maturity of tree stratum to provid									
	corridor).					PART IV - Inde	ex to Unit Score	Conversion	
					Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation		Temporal Loss-Maturity (Years)			(Debit)		(Debit)	(Offsetting Debit U	Jnits)
· ·		,			1.193041667	450	536.86875	\$429,495.00	
					1.193041007	430	330.00073	\$429,493.00	
		25							
30% Sub-Total		25 0.23							
Oub-Total		0.20							
		PART	V- Comparison of	Unit Scores and Project	ted Balance				
				, , , , , , , , , , , , , , , , , , , ,					
Final Unit Score (Debit)		Mitigation Existing		Mitigation Projected at		Mitigation Projected at		Mitigation Projected At	
[No Net Loss Value]	536.86875	Condition - Baseline		Five Years		Ten Years		Maturity	
[NO Net 2033 Value]		(Credit)		Post Completion (Credit)		Post Completion (Credit)		(Credit)	
FINAL PROJECTED NET BALANCE					0		0		0
					0		0		0
			Dart VI Mitigation	n Considerations (Incen	tivos)				
			ran vi - mingation	n Considerations (incen	uves)				

	Part VI - Mitigation
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your properties of the correct Restoration Levels (below	roject
Level I Restoration	
Level II Restoration	
Level III Restoration	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT18 of RTB, Ephemeral	536.86875	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer Width/Side	0	

UT19 of RTB, Intermittent (1 of 2)

STREAM CLASSIFICATION:				(in Decimal	Degrees)		37° 45' 14.38"		82° 15' 22.18"					May 20, 2010	
	Ir	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acri			U	T19 of RTB - 19th Unnamed % Streambed Slope, Ac			MITIGATION STREAM CLASS./SI* (% stream slope, watershed size {act					
STREAM IMPACT LENGTH:	85	FORM OF MITIGATION:		MIT COORD (in Decimal	_	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline (0	Credit)		Column No. 3- Mitigation Pr Post Completio		ars	Column No. 4- Mitigation Proje Post Completion ('S	Column No. 5- Mitigation Projec	ted At Maturity (Credit)	
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Av	verage
Hydrology	0.69		Hydrology			Hydrol	gy			Hydrology			Hydrology		
Biogeochemical Cycling	0.82	0.79	Biogeochemical Cycling		0	Biogeo	chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indica	ators	PART I - Physical, Chemical and E	Biological Indicator	rs		PART I - Physical, Chemical a	nd Biological Indic	ators	PART I - Physical, Chemical and	Biological Indica	itors	PART I - Physical, Chemical and	d Biological Indicators	
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Site	te Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	AL INDICATOR (Applies to all stre	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Shee	i)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20			unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	2. Embeddedness	0-20		2. Embe	ddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	5	3. Velocity/ Depth Regime	0-20		3. Veloc	ity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	10	Sediment Deposition	0-20		Sedir	nent Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	13	5. Channel Flow Status	0-20		5. Char	nel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		6. Char	nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20		7. Frequ	ency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20		8. Bank	Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	12	9. Vegetative Protection (LB & RB)	0-20		9. Vege	ative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20			rian Vegetative Zone Width (LB & RB			10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Suboptimal	123	Total RBP Score	Poor	0	Total R	BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.615	Sub-Total		0	Sub-To	al		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Stream	ms)	CHEMI	CAL INDICATOR (Applies to Interm	ittent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	
WVDEP Water Quality Indicators (General)	1		WVDEP Water Quality Indicators (General)			WYDE	Water Quality Indicators (Gen	eral)		WVDEP Water Quality Indicators (General	1)		WVDEP Water Quality Indicators (Genera	al)	
Specific Conductivity			Specific Conductivity		0		Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	30		0-90			•	0-90			0-90			0-90	
<=99 - 90 points	0.30	30		0-30				0-30			0.30			0.30	
рН		10	рН		(1)	рН				рН			pH		
>9.1 = 10 points	0-80	9.87		5-90				5-90			5-90			5-90	
DO			DO	_		DO				DO			DO		
1	10-30	40.77		10-30				10-30			10-30			10-30	
	10-30	10.77		10-30				10-30			10-30			10-30	
Sub-Total		0.65	Sub-Total		0	Sub-To	al		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	eams)	BIOLO	GICAL INDICATOR (Applies to Int	ermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Strea	ams)
WV Stream Condition Index (WVSCI)	<u> </u>		WV Stream Condition Index (WVSCI)			WV Str	eam Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Very Good	0-100 0-1	78.48		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0.7848	Sub-Total		0	Sub-To	al		0	Sub-Total		0	Sub-Total	 	
Sub-Total		0.7040	Gub-1 otal	l l	U	3ub-10	aı			Gub-Total		· ·	Sub-10tal		U
PART II - Index and Un	nit Score		PART II - Index and Un	it Score			PART II - Index and	I Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit	it Score
0.736633333	85	62.6138333	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT19 of RTB, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING and	ILF)		
Temporal Loss-Con	nstruction		Lo	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time		% Add. Mitigation	n and Monitoring Period		g-Term Protection (Years)
mitigation (cred	dit).				
Years	15				
Sub-Total	0.331485				
Temporal Loss-N		0 + 5/10	Year Monitoring		101
*Note: Period between completion of compensatory mitigation me		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter	r and detritus within riparian stream or wetland buffer				
corridor).			PART IV - Inc	dex to Unit Score Co	onversion
		Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)
		1.341425	85	114.021125	\$91,216.90
30%	25				
Sub-Total	0.273306667				
	PΔRT	V- Comparison of Unit Scores and Projected Balance			

		PART	V- Comparison of	Unit Scores and Projec	ted Balance				
Final Unit Score (Debit) [No Net Loss Value]	114.021125	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigatio	n Considerations (Incer	ntives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	oject		*Note ¹ : Refer	ence Instructior *Note ² : Ent
Level I Restoration				
Level II Restoration			Buffer Width	
Level III Restoration		1		C
		•		51

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT19 of RTB, Intermittent	114.021125	#DIV/0!

Extended Upland Buffer Zone

tional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer	0	
Width/Side	0	

UT19 of RTB, Ephemeral (1 of 2)

Mail Score (patich data forms)	May 20, 2010	DATE:	Sunny	65	WEATHER:	82° 15' 22.36"	Lon.	37° 45' 15.2"	: Lat.	PACT COORDINATES: (in Decimal Degrees)		Mt. Surface Mine mit No. S-5018-07			USACE FILE NO./Project Name:
Column No. 1 Impact Easting Condition (Dots) Column No. 2 Missinger Condition (Dots)													phemeral	Εţ	STREAM CLASSIFICATION:
Part Part	0	Mitigation Length:		0	RECIPITATION PAST 48 HRS:		Lon.		Lat.					15	STREAM IMPACT LENGTH:
Marriagn	jected At Maturity (Credit)	Column No. 5- Mitigation Projecte				rs				- Baseline (Credit)	Existing Condition	Column No. 2- Mitigation Exis)	Condition (Debit	Column No. 1- Impact Existing
Department of Cycling	Av	HGM Score (attach data forms):	Average		Score (attach data forms):	Average		HGM Score (attach data forms):	Ī	Average	rms):	HGM Score (attach data forms	Average		HGM Score (attach data forms):
PART - Physical, Chemical and Biological Indicators PART - Physical, Chemical and Biological Indicators		Hydrology			ology			Hydrology	ļ.			Hydrology		0.68	Hydrology
## PART 1- Physical, Chemical and Sological Indicators ## PART 1- Physical, Chemical Indicators ## PART 1- Physical, Chemical		Biogeochemical Cycling	0		eochemical Cycling	0		Biogeochemical Cycling	Ī	0		Biogeochemical Cycling	0.75333333	0.84	Biogeochemical Cycling
March Marc															Habitat
PHYSICAL NICATON (registe to all creams constructions)	and Biological Indicators	PART I - Physical, Chemical and I	ors	Biological Indicat	PART I - Physical, Chemical and E	ators	Biological Indica	PART I - Physical, Chemical and I		cal Indicators	hemical and Biologic	PART I - Physical, Chem	ors	iological Indicat	PART I - Physical, Chemical and I
SEPA NET Psign Condent bits Sheet Separate Sheet	Points Range Site		Site Score			Site Score				ts Range Site Score	Point Scal		Site Score		
Epitarus Suminaria Amenista Cover 200 Productions 200 Pr	eams classifications)	PHYSICAL INDICATOR (Applies to all streams		s classifications)	ICAL INDICATOR (Applies to all streams		s classifications)	PHYSICAL INDICATOR (Applies to all streams	Ī	cations)	es to all streams classific	PHYSICAL INDICATOR (Applies to		classifications)	PHYSICAL INDICATOR (Applies to all streams
Embedderiness	et)	USEPA RBP (High Gradient Data Sheet)			A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			Data Sheet)	USEPA RBP (High Gradient Data			USEPA RBP (High Gradient Data Sheet)
Section Sect	0-20	Epifaunal Substrate/Available Cover			faunal Substrate/Available Cover		0-20	Epifaunal Substrate/Available Cover	Ī	0	e Cover 0-20	 Epifaunal Substrate/Available Co 		0-20	Epifaunal Substrate/Available Cover
S. Selferine Deposition	0-20	2. Embeddedness		0-20	beddedness		0-20	2. Embeddedness	ŀ	0	0-20	Embeddedness	15	0-20	2. Embeddedness
S. Charrier Flow Status	0-20								ľ						
Channel Alteration	0-20								ľ						
Trequency of Rillies for brends	0-20 0-1			0-1			0-1		ľ	0-1				()-1	
8. Bins Stability (LB & RB)	0-20			_					<u>'</u>						
Sub-Total Sub-	0-20								ľ						
To Replanta Vegetative Zone With (I.B. 8 RB) 0.20 18.0 18.0 18.0 19	0-20	8. Bank Stability (LB & RB)		0-20	nk Stability (LB & RB)		0-20	8. Bank Stability (LB & RB)	/	0	0-20	8. Bank Stability (LB & RB)		0-20	8. Bank Stability (LB & RB)
Total RBP Score Marginal 87 OLA35 Delta OLA35 OLA55	0-20			0-20					ľ	0					
Sub-Total									ľ						
CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) WVDEP Water Quality Indicators (General) Specific Conductivity 100-199 - 85 points PH Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total DO Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity PH Sub-Total Sub-Total Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Personnial Streams) WVDEP Water Quality Indicators (General) Specific Conductivity Specific Conductivity PH Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score P	Poor		0	Poor		0	Poor		Į.	Poor 0				Marginal	
### WYDEP Water Quality Indicators (General) ### Specific Conductivity ### Only 19-85 points	nittent and Perennial Streams)			nt and Perennial Strea		reams)	nt and Perennial Str			erennial Streams)	ies to Intermittent and Po			and Perennial Strea	
Specific Conductivity 100-199-85 points	·									,		-	· ·		
100-199-85 points	eral)	WVDEP Water Quality Indicators (General)		I)			l)				tors (General)				
pH S. 6-6.0 = 45 points DO Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WY Stream Condition Index (WVSCI) WY Stream Condition Index (WVSCI) Sub-Total PART II - Index and Unit Score		Specific Conductivity			fic Conductivity		_	Specific Conductivity	- 1			Specific Conductivity			Specific Conductivity
PH	0-90			0-90			0-90			0	0-90			0-90	100-100 - 85 points
5.6-6.0 = 45 points		nH						nH				nH	415		nH
DO 10-30 DO 10-30 DO	5-90 0-1			0-1			0-1	1	ľ	0-1	5.0			0-1	
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) O 0-100 0-1 Sub-Total Sub-Tota	5-90			5-90			5-90				5-90			0-80	5.6-6.0 = 45 points
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total Description of the part II - Index and Unit Score PART II - Index and Unit Score Sub-Total PART II - Index and Unit Score		DO						DO	ľ			DO			DO
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) O 0-100 0-1 0 Sub-Total PART II - Index and Unit Score BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score	10-30			10-30			10-30		Į	30	10-3			10-30	
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) O 0-100 0-1 0 Sub-Total PART II - Index and Unit Score BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score		Sub Total	0		otal	0		Sub Total	ŀ	0		Sub Total			Sub Total
O 0-100 0-1 O 0 O 0-1 O 0 O 0-1 O 0 O 0-1 O 0 O 0-1 O 0 O 0-1 O 0 O 0-1 O 0 O 0 O 0 O 0 O 0 O 0 O 0 O 0 O 0 O	termittent and Perennial Stre	BIOLOGICAL INDICATOR (Applies to Intermi		nittent and Perennia			nittent and Perenni		i i	Perennial Streams)	plies to Intermittent and		reams)	nt and Perennial St	
Sub-Total 0 Sub-Total 0 Sub-Total 0 Sub-Total 0 Sub-Total 0 Sub-Total 1 Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score		WV Stream Condition Index (WVSCI)			tream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			(WVSCI)	WV Stream Condition Index (WVS			WV Stream Condition Index (WVSCI)
Sub-Total 0 Sub-Total 0 Sub-Total 0 Sub-Total 0 Sub-Total 0 Sub-Total 0 Sub-Total 5 Sub-To	0-100 0-1			0-100 0-1			0-100 0-1			00 0-1	0-10			0-100 0-1	
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score		0.1.7.1.						0.1.7.1	ļ			0.1.7.1.1			ū
		Sub-Total	0		otal	0		Sub-Total	Ŀ	0		Sub-Total	0		Sub-Total
Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index	d Unit Score	PART II - Index and Ui		Init Score	PART II - Index and Un		nit Score	PART II - Index and Ur	ľ	re	Index and Unit Scor	PART II - Inde		it Score	PART II - Index and Ui
Ellied 1 Set Sill Solle Sil	Linear Feet Unit	Index	Unit Score	Linear Feet	Index	Unit Score	Linear Feet	Index		ear Feet Unit Score	Lin	Index	Unit Score	Linear Feet	Index
	Linear Feet Onit	inuex	Jill Goole	Linear Feet	шчех	Sint Ocole	Linear Feet	much		Jill Score	Line	IIIdex		Linear Feet	index
0.647916667	0	0	0	0	0	0	0	0	J	0 0		0	9.71875	15	0.647916667

West Virginia Stream and Wetland Valuation Metric UT19 of RTB, Ephemeral (2 of 2)

	(Soo instruction	PART III - Impact Factors page to insert default values for MITIGATI	ON BANKING and	II E\		
	(See instruction	page to insert default values for wiffigati	ON BANKING and	ILF)		
Temporal Loss-Constr					ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of	an impact (debit) and completion of compensatory		% Add. Mitigation	and Monitoring Period	Lo	ng-Term Protection (Years)
mitigation (credit).						
Years	15					
Sub-Total	0.2915625					
Townson I and Mark			0 . 5/40	Variable Walter		101
Temporal Loss-Matu *Note: Period between completion of compensatory mitigation measu		}	Sub-Total	Year Monitoring		0
to function (i.e. maturity of tree stratum to provide organic matter and		l l	Sub-Total			<u> </u>
corridor).	a detritus within riparian stream of wettand baner			PART IV - Ind	ex to Unit Score C	Conversion
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.156479167	15	17.3471875	\$13,877.75
30%	25					
Sub-Total	0.217					
	<u> </u>	J				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	17.3471875	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your *Note2: Place an "X" in the appropriate category (only select one).	project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT19 of RTB, Ephemeral	17.3471875	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank			
	0-50				
	51-150				
Buffer Width	Right Bank				
	0-50				
	51-150				
Average Buffer	0				
Width/Side	· ·				

LFCB Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07	IMPACT COOF	RDINATES: Lat. Degrees)	37° 44' 51.74" N	Lon.	82° 13' 50.14" W	WEATHER:		70 Sunny	DATE:	19-May	ıy-10
STREAM CLASSIFICATION:	'	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			Left Fork of Conley E % Streambed Slope, Ac			MITIGATION STREAM CLASS./S (% stream slope, watershed size {a			Same (Mitigation is restoration	of temporary im	npacts)
STREAM IMPACT LENGTH:	585	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORD (in Decimal I		37° 44' 51.74" N	Lon.	82° 13' 50.14" W	PRECIPITATION PAST 48 HRS:	C	0	Mitigation Length:	585	5
Column No. 1- Impact Existin	g Condition (Del	bit)	Column No. 2- Mitigation Existing Con	dition - Baseline (C	Credit)	Column No. 3- Mitigation Pr Post Completion		ars	Column No. 4- Mitigation Pro Post Completion		ars	Column No. 5- Mitigation Projec	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	,	Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology	0.63		Hydrology	0.69		Hydrology	0.75	
Biogeochemical Cycling	0.86	0.82333333	Biogeochemical Cycling		0	Biogeochemical Cycling	0.48	0.5433333	Biogeochemical Cycling	0.67	0.65666667	Biogeochemical Cycling	0.84	0.8133333
Habitat	0.86		Habitat			Habitat	0.52		Habitat	0.61		Habitat	0.85	
PART I - Physical, Chemical and	l Biological Indic	cators	PART I - Physical, Chemical and E	Biological Indicator	s	PART I - Physical, Chemical ar	nd Biological Indic	ators	PART I - Physical, Chemical and	d Biological Indic	cators	PART I - Physical, Chemical and	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range S	Site Score		Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	eams classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	14	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	15
Embeddedness	0-20	11	2. Embeddedness	0-20		2. Embeddedness	0-20	11	Embeddedness	0-20	13	Embeddedness	0-20	15
Velocity/ Depth Regime	0-20	8	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13
4. Sediment Deposition	0-20	15	Sediment Deposition	0-20		4. Sediment Deposition	0-20	11	Sediment Deposition	0-20	13	Sediment Deposition	0-20	15
5. Channel Flow Status	0-20 0-1	10	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	10	5. Channel Flow Status	0-20 0-1	10	5. Channel Flow Status	0-20 0-1	10
6. Channel Alteration	0-20	15	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	Bank Stability (LB & RB)	0-20	18	Bank Stability (LB & RB)	0-20	18
Vegetative Protection (LB & RB)	0-20	16	Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	6	Vegetative Protection (LB & RB)	0-20	11	Vegetative Protection (LB & RB)	0-20	16
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)		6	10. Riparian Vegetative Zone Width (LB & RB)		11	10. Riparian Vegetative Zone Width (LB & RB)		16
Total RBP Score	Suboptimal	126	Total RBP Score	Poor	0	Total RBP Score	Suboptimal	118	Total RBP Score	Suboptimal	134	Total RBP Score	Suboptimal	150
Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	ant and Darannial Ct	0.63	Sub-Total CHEMICAL INDICATOR (Applies to Intermitten	t and Davanial Stream	0	Sub-Total CHEMICAL INDICATOR (Applies to Interm	sittent and December C	0.59	Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	tent and Deveniel Ct	0.67	Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	tent and Decembed Ctry	0.75
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perenniai St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	15)	CHEMICAL INDICATOR (Applies to Interm	nittent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitte	tent and Perennial St	treams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General)	·		WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		0	Specific Conductivity			Specific Conductivity			Specific Conductivity		
<=99 - 90 points	0-90	40		0-90		500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500
<=99 - 90 points			nH	_		900-999 - 90 points			500-399 - 50 points			500-599 - 50 points		
p11	0-1		p	0-1		ρ	0-1		5 11	0-1		p11	0-1	
6.0-8.0 = 80 points	0-80	6.58		5-90		6.0-8.0 = 80 points	5-90	6.58	6.0-8.0 = 80 points	5-90	6.58	6.0-8.0 = 80 points	5-90	6.58
DO		371	DO		(1)	DO			DO			DO		
	10-30	10.26		10-30			10-30	10.26		10-30	10.26		10-30	10.26
Sub-Total		1	Sub-Total		0	>5.0 = 30 points Sub-Total		0.55	>5.0 = 30 points Sub-Total		0.8	>5.0 = 30 points Sub-Total		
BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	ams)	BIOLOGICAL INDICATOR (Applies to Inte	termittent and Peren		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenn		BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	0.8
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
The street of th	0-100 0-1	CO 24	The same contains mask (11100),	0-100 0-1		The stream seriamen mask (11100)	0-100 0-1	CO	The street of th	0-100 0-1	CO	The street of th	0-100 0-1	co
Good	0-100 0-1	69.21		0-100 0-1		Good	0-100 0-1	68	Good	0-100 0-1	68	Good	0-100 0-1	68
Sub-Total		0.6921	Sub-Total		0	Sub-Total		0.68	Sub-Total		0.68	Sub-Total		0.68
PART II - Index and U	Init Score		PART II - Index and Ur	it Score		PART II - Index and	d Unit Score		PART II - Index and	Unit Score		PART II - Index and	Unit Score	
PART II HIGH AND	00010		1 Part II III III OT	03010		PART II THUCK AND	2 00010		PART II IIIMOA AIIM	00010		PACE III TIMEA CITA	2 00010	
Index	Linear Feet	Unit Score	Index	Linear Feet U	nit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.798683333	585	467.22975	0	585	0	0.575	585	336.375	0.68666667	585	401.7	0.778333333	585	455.325
0.130003333	363	701.22313	· ·	303		0.575	363	330.373	0.0000007	303	401.7	0.110333333	363	400.020

LFCB Temporary Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITI
*Note: Reflects duration of aquatic functional loss between the time of an impa mitigation (credit).	,	
Years Sub-Total	15 0.3594075	
*Note: Period between completion of compensatory mitigation measures and the function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
30%	25	
30% Sub-Total	25 0.309613333	

nsert default values for MITIGATION BANKING and ILF)									
	Long-term Protection								
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)							
	0 + 5/10 Year Monitoring	101							
	Sub-Total	0							

PART IV - Index to Unit Score Conversion									
Final Index Score	Linear Feet	Unit Score	ILF Costs						
(Debit)		(Debit)	(Offsetting Debit Units)						
1.467704167	585	858.6069375	\$686,885.55						

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	858.6069375	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	336.375	Mitigation Projected at Ten Years Post Completion (Credit)	401.7	Mitigation Projected At Maturity (Credit)	455.325
FINAL PROJECTED NET BALANCE					336.375		401.7		455.325

	Part VI - Mitigation	n Considerations (Incer	ntives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pr *Note2: Place an "X" in the appropriate category (only select one).			
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFCB Temporary Intermittent	858.6069375	614.68875

Extended	Upland	Buffer Zo	one
----------	--------	------------------	-----

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

*Note³: Select the appropriate mitigation type

Buffer Width		Left Bank
	0-50	Preservation and Re-vegetation
50	51-150	
Buffer Width		Right Bank
	0-50	Preservation and Re-vegetation
50	51-150	
Average Buffer Width/Side	50	

West Virginia Stream and Wetland Valuation Metric LFCB Permanent Intermittent (1 of 2)

Column No. 1- Impact Existing Col HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biology Score PHYSICAL INDICATOR (Applies to all streams class USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 2. Embeddedness 0. 3. Velocity/ Depth Regime 0. 4. Sediment Deposition	Average	IMPACT STREAM/SITE ID AND SITE DESCR (% stream slope, watershed size (acreage), unaltered or im MIT COORD (in Decimal Column No. 2- Mitigation Existing Condition - Baseline (HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicato Points Scale PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20 2. Embeddedness 0-20	DINATES: Lat. Degrees Lat. Credit Average 0 Ors	PHYSICAL INDICATOR (Applies to all streams classifications	Years Average O dicators nge Site Score	MITIGATION STREAM CLASS/SITE ID AND (% stream slope, watershed size {acreage}, unalte PRECIPITATION PAST 48 HRS: Column No. 4- Mitigation Projected at Te Post Completion (Credit) HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Points Scale PHYSICAL INDICATOR (Applies to all streams classification)	n Years Average O Indicators Range Site Score	Same (Mitigation is restoration Mitigation Length: Column No. 5- Mitigation Project HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and	ted At Maturity (Credit) Average 0
Column No. 1- Impact Existing Column	MITIGATION:	Column No. 2- Mitigation Existing Condition - Baseline (HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicato Points Scale PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20	(Credit) Average 0 ors	Column No. 3- Mitigation Projected at Five Post Completion (Credit) HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological In Points Scale PHYSICAL INDICATOR (Applies to all streams classifications)	Average 0 dicators nge Site Score	Column No. 4- Mitigation Projected at Te Post Completion (Credit) HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Points Scale	n Years Average 0 Indicators Range Site Score	Column No. 5- Mitigation Project HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat	Average O d Biological Indicators Points Range Site Score
HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Cycling PART I - Physical, Chemical and Biological Cycling Physical Indicator (Applies to all streams class USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0. 2. Embeddedness 0. 3. Velocity/ Depth Regime 0. 4. Sediment Deposition 0.	Average	HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicato Points Scale PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20	Average 0	Post Completion (Credit) HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological In Points Scale PHYSICAL INDICATOR (Applies to all streams classifications	Average 0 dicators nge Site Score	Post Completion (Credit) HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Points Scale	Average 0 Indicators Range Site Score	HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat	Average 0 d Biological Indicators Points Range Site Score
Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biology St. PHYSICAL INDICATOR (Applies to all streams class USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 2. Embeddedness 0.0 3. Velocity/ Depth Regime 0.4. Sediment Deposition 0.0	0.75 0.86 0.82333333 0.86 O.823333333 O.80 O.823333333 O.80 O.80 O.823333333 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80 O.80	Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicato Points Scale PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20	0 ors	Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological In Points Scale PHYSICAL INDICATOR (Applies to all streams classifications	dicators Site Score	Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Points Scale 1	Indicators Range Site Score	Hydrology Biogeochemical Cycling Habitat	d Biological Indicators Points Range Site Score
Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biology Physical Indicators (Applies to all streams class USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition 0.	0.86	Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicato Points Scale PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20		Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological In Points Scale PHYSICAL INDICATOR (Applies to all streams classifications	nge Site Score	Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Points Scale	Range Site Score	Biogeochemical Cycling Habitat	Points Range Site Score
PART I - Physical, Chemical and Biolombroad PART I - Physical, Chemical and Biolombroad Part I - Physical, Chemical and Biolombroad Physical I - Phy	0.86 Dological Indicators	PART I - Physical, Chemical and Biological Indicato Points Scale PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20		PART I - Physical, Chemical and Biological In Points Scale PHYSICAL INDICATOR (Applies to all streams classifications	nge Site Score	PART I - Physical, Chemical and Biological Points Scale	Range Site Score	Habitat	Points Range Site Score
PART I - Physical, Chemical and Biological Section 1 - Physical Chemical and Biological Section 1 - Physical Indiana Section 2 - Physical Indiana Section 2 - Physical Section 2	Dological Indicators	PART I - Physical, Chemical and Biological Indicato Points Scale PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20		PART I - Physical, Chemical and Biological In Points Ra Scale PHYSICAL INDICATOR (Applies to all streams classifications	nge Site Score	PART I - Physical, Chemical and Biological Points Scale	Range Site Score	***	Points Range Site Score
PHYSICAL INDICATOR (Applies to all streams class USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition		PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20		Points Scale PHYSICAL INDICATOR (Applies to all streams classifications	nge Site Score	Points Scale	Range Site Score	PART I - Physical, Chemical and	Points Range Site Score
PHYSICAL INDICATOR (Applies to all streams class USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition	0-20 10 10 0-20 7	PHYSICAL INDICATOR (Applies to all streams classifications) USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20	Site Score	PHYSICAL INDICATOR (Applies to all streams classifications		Scale			
USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 2. Embeddedness 3. Velocity/ Depth Regime 4. Sediment Deposition	0-20 10 0-20 10 0-20 7	USEPA RBP (High Gradient Data Sheet) 1. Epifaunal Substrate/Available Cover 0-20)	PHYSICAL INDICATOR (Applies to all streems electification			44
Epifaunal Substrate/Available Cover Embeddedness O Sediment Deposition	0-20 10 0-20 7	Epifaunal Substrate/Available Cover 0-20				PHYSICAL INDICATOR (Applies to all streams classification	ris)	PHYSICAL INDICATOR (Applies to all stream	s classifications)
2. Embeddedness 0. 3. Velocity/ Depth Regime 0. 4. Sediment Deposition 0.	0-20 10 0-20 7			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
3. Velocity/ Depth Regime 0- 4. Sediment Deposition 0-	0-20 7	2. Embeddedness 0-20		Epifaunal Substrate/Available Cover 0-20		Epifaunal Substrate/Available Cover 0-20		Epifaunal Substrate/Available Cover	0-20
4. Sediment Deposition 0				2. Embeddedness 0-20		2. Embeddedness 0-20		2. Embeddedness	0-20
	0.00	3. Velocity/ Depth Regime 0-20		3. Velocity/ Depth Regime 0-20		3. Velocity/ Depth Regime 0-20		Velocity/ Depth Regime	0-20
5. Channel Flow Status 0	0-20 12	4. Sediment Deposition 0-20		4. Sediment Deposition 0-20		4. Sediment Deposition 0-20		Sediment Deposition	0-20
	0-20 0-1	5. Channel Flow Status 0-20 0-1		5. Channel Flow Status 0-20	-1	5. Channel Flow Status 0-20	0-1	5. Channel Flow Status	0-20 0-1
	0-20	6. Channel Alteration 0-20		6. Channel Alteration 0-20		6. Channel Alteration 0-20		6. Channel Alteration	0-20
7. Frequency of Riffles (or bends) 0-	0-20	7. Frequency of Riffles (or bends) 0-20		7. Frequency of Riffles (or bends) 0-20		7. Frequency of Riffles (or bends) 0-20		Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB) 0-	0-20	8. Bank Stability (LB & RB) 0-20		8. Bank Stability (LB & RB) 0-20		8. Bank Stability (LB & RB) 0-20		8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB)	0-20 16	9. Vegetative Protection (LB & RB) 0-20		9. Vegetative Protection (LB & RB) 0-20		9. Vegetative Protection (LB & RB) 0-20		9. Vegetative Protection (LB & RB)	0-20
	0-20 18	10. Riparian Vegetative Zone Width (LB & RB) 0-20		10. Riparian Vegetative Zone Width (LB & RB) 0-20		10. Riparian Vegetative Zone Width (LB & RB) 0-20		Riparian Vegetative Zone Width (LB & RB)	0-20
	Suboptimal 118	Total RBP Score Poor	0	Total RBP Score Poor	0	Total RBP Score Poor	0	Total RBP Score	Poor 0
Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and	0.59	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Perennial Stream	0	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Perennia	O (Strooms)	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and Pereni	0	Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	0
CHEMICAL INDICATOR (Applies to Intermittent and	id Perenniai Streams)	CHEMICAL INDICATOR (Applies to intermittent and Perennial Stream	iiiis)	CHEMICAL INDICATOR (Applies to Intermittent and Perennia	i Streams)	CHEMICAL INDICATOR (Applies to intermittent and Pereni	niai Streams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial Streams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Genera	d)
Specific Conductivity		Specific Conductivity	0	Specific Conductivity		Specific Conductivity		Specific Conductivity	
. с	0-90 40	0-90		0-90		0-90			0-90
<=99 - 90 points		-11		-11				-11	
рн	0-1	PH 0-1		рн	-1	рн	0-1	рн	0-1
6.0-8.0 = 80 points	0-80 6.58	5-90		5-90		5-90	-		5-90
DO		DO	0	DO		DO		DO	
4/	10-30 10.26	10-30		10-30		10-30			10-30
	10.20								.5.55
Sub-Total	1	Sub-Total Sub-Total	0	Sub-Total	0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Stre	reams)	BIOLOGICAL INDICATOR (Applies to Intermittent and Per	ennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermittent and P	erennial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perennial Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Good 0-	0-100 0-1 69.21	0-100 0-1		0-100	-1	0-100	0-1		0-100 0-1
Sub-Total	0.6921	Sub-Total	0	Sub-Total	0	Sub-Total	0	Sub-Total	1
oub rotal	0.0021	out rotal	v	Cab Total	· ·	eus rotai	· ·	oub rotal	
PART II - Index and Unit S	Score	PART II - Index and Unit Score		PART II - Index and Unit Score		PART II - Index and Unit Score		PART II - Index and U	Jnit Score
Index Li	Linear Feet Unit Score	Index Linear Feet U	Unit Score	Index Linear Fe	et Unit Score	Index Linear F	eet Unit Score	Index	Linear Feet Unit Score
0.792016667	1762 1395.53337	0 0	0	0 0	0	0 0	0	0	0 0

West Virginia Stream and Wetland Valuation Metric LFCB Permanent Intermittent (2 of 2)

		DADTIII I (E (
	, <u>, , , , , , , , , , , , , , , , , , ,</u>	PART III - Impact Factors		_,		
	(See instruction	page to insert default values for MITIGATI	ON BANKING and ILI	F)		
Temporal Loss-Construction				Lo	ong-term Protection	
	t (debit) and completion of compensatory		% Add. Mitigation a	nd Monitoring Period	Long	-Term Protection (Years)
mitigation (credit).						
Years	15					
Sub-Total	Temporal Loss-Construction ration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit). Years 15					
			0 + 5/10 Ye	ar Monitoring		101
			Sub-Total			0
	within riparian stream or wetland buffer	_				
corridor).				PART IV - Ind	lex to Unit Score Cor	nversion
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.452704167	1762	2559.664742	\$2,047,731.79
		'	<u> </u>			
30%	25					
Sub-Total	0.30428					
		•				

		PART	V- Comparison of	Unit Scores and Projec	ted Balance				
Final Unit Score (Debit) [No Net Loss Value]	2559.664742	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE				0		0		0	

			0	
	Part VI - Mitigatio	n Considerations (Incer	ntives)	
Extent of Stream Restoration				Ext
*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for *Note2: Place an "X" in the appropriate category (only select one).		*Note ¹ : Refe	*Note ² : Enter the buffer w	
Level I Restoration				*Note ³ : \$
Level II Restoration			Buffer Width	
Level III Restoration				0-50
		_		51-150

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFCB Permanent Intermittent	2559.664742	#DIV/0!

Extended Upland Buffer Zone

for the definitions of the Buffer Zone Mitigation Extents and Types (below) er width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer Width/Side	0	

West Virginia Stream and Wetland Valuation Metric LFCB Ephemeral (1 of 2)

USACE FILE NO./Project Name:			Mt. Surface Mine lit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 44' 32.15"	Lon.	82° 14' 0.00"	WEATHER:	70 Sunny	DATE:	19-May-10
STREAM CLASSIFICATION:	Epheme	eral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acro				Left Fork of Conley Bra % Streambed Slope, Acre			MITIGATION STREAM CLASS./SITI			
STREAM IMPACT LENGTH:		FORM OF IITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	
Column No. 1- Impact Existing	g Condition (Debit)		Column No. 2- Mitigation Existing Con-	dition - Baseline	e (Credit)		Column No. 3- Mitigation Proj Post Completion (ars	Column No. 4- Mitigation Project Post Completion (C		Column No. 5- Mitigation Project	cted At Maturity (Credit)
HGM Score (attach data forms):	Aver	rage	HGM Score (attach data forms):		Average	H	SM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.61		Hydrology			Hy	drology			Hydrology		Hydrology	
Biogeochemical Cycling	0.84 0.7	76	Biogeochemical Cycling		0	Bi	geochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat	0.83		Habitat			Ha	oitat			Habitat		Habitat	
PART I - Physical, Chemical and	Biological Indicators		PART I - Physical, Chemical and B	iological Indicat	itors		PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and B	iological Indicators	PART I - Physical, Chemical and	d Biological Indicators
	Points Range Site S Scale	Score		Points Range Scale	Site Score			Points Range Scale	Site Score		Points Range Site Score Scale		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PH	YSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			119	EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness		6	2. Embeddedness	0-20			Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20		3.	/elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20
Sediment Deposition		4	Sediment Deposition	0-20			Sediment Deposition	0-20		Sediment Deposition	0-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20		5.	Channel Flow Status	0-20		5. Channel Flow Status	0-20	5. Channel Flow Status	0-20
6. Channel Alteration	0-20	6	6. Channel Alteration	0-1		6.	Channel Alteration	0-20		6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20		7.	requency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20	6	8. Bank Stability (LB & RB)	0-20		8.	Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB)		2	9. Vegetative Protection (LB & RB)	0-20		9.	/egetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20
10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10	Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	10. Riparian Vegetative Zone Width (LB & RB)	
Total RBP Score	Marginal 9:	12	Total RBP Score	Poor	0	To	al RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total	0.4	46	Sub-Total		0		o-Total		0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Stre	eams)	CI	EMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)
WVDEP Water Quality Indicators (General)	1)		WVDEP Water Quality Indicators (General)				DEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	al)
Specific Conductivity			Specific Conductivity			Sp	ecific Conductivity			Specific Conductivity		Specific Conductivity	
100-199 - 85 points	0-90			0-90				0-90			0-90		0-90
nH			nH			nl				nH		nH	
	0-80 0-1			0-1		<u> </u>		5-90 0-1			5-90 0-1	<i>.</i>	5-90 0-1
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90		5-90
DO			DO			DO		_		DO		DO	
	10-30			10-30				10-30			10-30		10-30
Sub-Total			Sub-Total	 	0	Sı	o-Total		0	Sub-Total	0	Sub-Total	
BIOLOGICAL INDICATOR (Applies to Intermitt	ttent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial S	Streams)		DLOGICAL INDICATOR (Applies to Interr	nittent and Perenr	ial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit		BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			w	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0	0-100 0-1			0-100 0-1			, , ,	0-100 0-1			0-100 0-1	·	0-100 0-1
Sub-Total	0	D	Sub-Total		0	Su	o-Total	<u> </u>	0	Sub-Total	0	Sub-Total	0
						_							
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and U	Init Score		PART II - Index and Un	it Score	PART II - Index and	Unit Score
Index	Linear Feet Unit S	Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
				4									
0.6575	390 256.	405	0	0		l l	0	0		0	0 0	0	

LFCB Ephemeral (2 of 2)

PART III - Impact Factors (See instruction page to insert default values for MITIGATION BANKING and ILF) Temporal Loss-Construction *Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit). 0.295875 Sub-Total **Temporal Loss-Maturity** *Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer Temporal Loss-Maturity (Years) % Add. Mitigation 25 0.222

TON BANKING and ILI)	
Lo	ng-term Protection
% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)
0 + 5/10 Year Monitoring	101
Sub-Total	0

PART IV - Index to Unit Score Conversion								
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)					
1.175375	390	458.39625	\$366,717.00					

		PART	V- Comparison of	Unit Scores and Project	ed Balance				
Final Unit Score (Debit) [No Net Loss Value]	458.39625	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for *Note2: Place an "X" in the appropriate category (only select one).	your project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Sub-Total

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFCB Ephemeral	458.39625	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width		Left Bank										
	0-50											
	51-150											
Buffer Width	Right Bank											
	0-50											
	51-150											
Average Buffer	0											
Width/Side	0											

RFCB Temporary Perennial (1 of 2)

USACE FILE NO./Project Name: LRH /Buffalo Mt. Surface Mine WVDEP Permit No. S-5018-07		IMPACT COOF	RDINATES: Lat.	37° 44' 52.99" N	Lon. 82	2° 14' 42.84" W	WEATHER:	70 Sunny	DATE:	19-May-10		
STREAM CLASSIFICATION:	FICATION: Perennial IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)			RFCB - Right Fork of Cor % Streambed Slope, Ac			MITIGATION STREAM CLASS./Si (% stream slope, watershed size {ac		Same (Mitigation is restoration of temporary impacts)			
STREAM IMPACT LENGTH:	680	FORM OF MITIGATION:		MIT COORD (in Decimal		37° 44' 52.99" N	Lon. 82	2° 14' 42.84" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	680
Column No. 1- Impact Existing C	ondition (Debit)		Column No. 2- Mitigation Existing Con-	dition - Baseline (0	Credit)	Column No. 3- Mitigation Pr Post Completio		s	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Project	ted At Maturity (Credit)
HGM Score (attach data forms):	Ave	erage	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology			Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat			Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and Bi	ological Indicators		PART I - Physical, Chemical and B	iological Indicator	rs	PART I - Physical, Chemical a	nd Biological Indicat	tors	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical and	d Biological Indicators
	Points Range Site Scale	Score		Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Site Score		Points Range Site Score
PHYSICAL INDICATOR (Applies to all streams cla	assifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stre	eams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ns classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Shee	t)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
· ·		15	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15
		13	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20 13	2. Embeddedness	0-20 15
		10	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20 13	3. Velocity/ Depth Regime	0-20 13 0-20 15
·		15 12	4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	11 12	4. Sediment Deposition	0-20 13 12	4. Sediment Deposition	
	0-1	16	Channel Flow Status Channel Alteration	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1	17	Channel Flow Status Channel Alteration	0-1	Channel Flow Status Channel Alteration	0-1
		6	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20 0-20	15	7. Frequency of Riffles (or bends)	0-20 17 0-20 15	7. Frequency of Riffles (or bends)	0-20 17 0-20 15
	· - ·	16	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18
		14	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20 16	9. Vegetative Protection (LB & RB)	0-20 16
		18	Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20		Negetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)		6	10. Riparian Vegetative Zone Width (LB & RB)	0-20	10. Riparian Vegetative Zone Width (LB & RB)	0-20 16
		135	Total RBP Score	Poor	0	Total RBP Score	Suboptimal	120	Total RBP Score	Suboptimal 136	Total RBP Score	Suboptimal 152
Sub-Total	0.	.675	Sub-Total		0	Sub-Total		0.6	Sub-Total	0.68	Sub-Total	0.76
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Stream	ns)	CHEMICAL INDICATOR (Applies to Interm	nittent and Perennial Stre	ams)	CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General	1)	WVDEP Water Quality Indicators (General	al)
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
00.00 ========	0-90	39		0-90		500 500 50	0-90	500	500 500 . 50 mainte	0-90 500	500 500 . 50 mainte	0-90 500
<=99 - 90 points			nH	_		500-599 - 50 points			500-599 - 50 points		500-599 - 50 points	
	0-80 0-1 8	. 70	p.,	5-90 0-1		511	5-90 0-1	0.70	5 11	5-90 0-1 8.73	511	5-90 0-1 8.73
8.1-9.0 = 45 points	8	3.73		3-30		8.1-9.0 = 45 points	3-90	8.73	8.1-9.0 = 45 points	5-90 8.73	8.1-9.0 = 45 points	5-90 8.73
DO			DO	_		DO			DO		DO	
	10-30	0.78		10-30		>5.0 = 30 points	10-30	10.78	>5.0 = 30 points	10-30 10.78	>5.0 = 30 points	10-30 10.78
Sub-Total	0.	.825	Sub-Total		0	Sub-Total		0.375	Sub-Total	0.625	Sub-Total	0.625
BIOLOGICAL INDICATOR (Applies to Intermitten	t and Perennial Streams	s)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	ams)	BIOLOGICAL INDICATOR (Applies to Int	termittent and Perennia	al Streams)	BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Good	0-100 0-1 72	2.08		0-100 0-1		Good	0-100 0-1	68	Good	0-100 0-1 68	Good	0-100 0-1 68
Sub-Total	0.7	7208	Sub-Total		0	Sub-Total		0.68	Sub-Total	0.68	Sub-Total	0.68
	•						•		"	<u> </u>	-	•
PART II - Index and Unit	Score		PART II - Index and Un	it Score		PART II - Index and	d Unit Score		PART II - Index and U	Init Score	PART II - Index and	Unit Score
Index	Linear Feet Unit	Score	Index	Linear Feet U	Init Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
. =			_	20-					• • • • • • • • • • • • • • • • • • • •			
0.740266667	680 503.3	381333	0	680	0	0.551666667	680	375.13333	0.661666667	680 449.933333	0.688333333	680 468.06667

West Virginia Stream and Wetland Valuation Metric RFCB Temporary Perennial (2 of 2)

			PART I	II - Impact Factors					
		(See instruction	page to insert defa	ault values for MITIGAT	ION BANKING and	ILF)			
Tempo	winction (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). War Add. Mitigation Temporal Loss-Maturity (Years)						ng-term Protection		
*Note: Reflects duration of aquatic functional loss l		t (debit) and completion of compensatory			% Add. Mitigation	n and Monitoring Period	Lo	ng-Term Protection (Years)	
	mitigation (credit).								
Vears		15							
		0.00012							
					0 + 5/1	0 Year Monitoring		101	
	Temporal Loss-Maturity Period between completion of compensatory mitigation measures and the time required for maturity, as action (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland corridor). We Add. Mitigation Temporal Loss-Maturity (1997) 30% 25 0.296106667				Sub-Total			0	
to function (i.e. maturity of tree stratum to provide	_	within riparian stream or wetland buffer							
	corridor).					PART IV - Inde	ex to Unit Score (Conversion	
% Add. Mitigation		Temporal Loss-Maturity (Years)			Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit I	Inits)
,		remperar 2000 matarity (10aro)			1.369493333	680	931.2554667	\$745,004.37	
30%		25							
Sub-Total		0.296106667							
		PART	V- Comparison of	Unit Scores and Projec	ted Balance				
	931.2554667	Condition - Baseline	0	Mitigation Projected at Five Years Post Completion (Credit)	375.1333333	Mitigation Projected at Ten Years Post Completion (Credit)	449.9333333	Mitigation Projected At Maturity (Credit)	468.0666667
FINAL PROJECTED NET BALANCE					375.1333333		449.9333333		468.0666667
			Destall BEC. C.	0	(*)				
			Part VI - Mitigation	n Considerations (Incen	itives)				
	Extent of Stream Res	storation					ed Upland Buffer Z		
Temporal Loss-Maturity Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) b-Total PART V- Co Final Unit Score (Debit) [No Net Loss Value] 931.2554667 Mitigation Existing Condition - Baseline (Credit) Part V Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one). Povel Restoration *Note1: Restoration *Note2: Place an "X" in the appropriate category (only select one).		oject		*Note ¹ : Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note ² : Enter the buffer width for each channel side (Left Bank and Right Bank)					
Years Sub-Total Temporal Loss-Maturity Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) 0.296106667 PART V- Co Final Unit Score (Debit) [No Net Loss Value] 931.2554667 Mitigation Existing Condition - Baseline (Credit) Part Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project									
Years Sub-Total Temporal Loss-Maturity Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) 0.296106667 PART V- Co Final Unit Score (Debit) [No Net Loss Value] 931.2554667 Mitigation Existing Condition - Baseline (Credit) NAL PROJECTED NET BALANCE Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).					*Note ³ : Select the appropriate mitigation type				
					Buffer Width	0.50	Left B		
Level III Restoration					50	0-50 51-150	Pr	eservation and Re-vegetation	
					Buffer Width	01-100	Right E	Pank	
					Buller Width	0-50		eservation and Re-vegetation	
						51-150		cocreation and re-vegetation	

Mitigation Unit

Yield (Credit)

549.9783333

Impact

Unit Yield (Debit)

931.2554667

Site

RFCB Temporary Perennial

Average Buffer Width/Side

25

RFCB Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:		lo Mt. Surface Mine rrmit No. S-5018-07		OORDINATES: In all Degrees)	Lat.	37° 44' 53.64"	Lon.	82° 14' 41.86"	WEATHER:	70 Sunny	DATE:	19-May-10
STREAM CLASSIFICATION:	Perennial	IMPACT STREAM/SITE ID / (% stream slope, watershed size {ac				RFCB - Right Fork of Conle % Streambed Slope, Acre			MITIGATION STREAM CLASS./SI* (% stream slope, watershed size {aci		Same (Mitigation is restoration of temporary impacts)	
STREAM IMPACT LENGTH:	790 FORM OF MITIGATION:			RDINATES: In all Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0
Column No. 1- Impact Existing C	Condition (Debit)	Column No. 2- Mitigation Existing Co	ndition - Baselin	e (Credit)		Column No. 3- Mitigation Proj Post Completion (ears	Column No. 4- Mitigation Proje Post Completion (Column No. 5- Mitigation Project	ed At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):		Average	F	GM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology		Hydrology			H	ydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0	Biogeochemical Cycling		0	В	iogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat		Habitat			Н	abitat			Habitat		Habitat	
PART I - Physical, Chemical and Bi	iological Indicators	PART I - Physical, Chemical and	Biological Indica	ators		PART I - Physical, Chemical and	Biological Inc	icators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical and	Biological Indicators
	Points Range Site Score Scale		Points Range Scale	Site Score			Points Rai	ige Site Score		Points Range Site Score		Points Range Site Score
PHYSICAL INDICATOR (Applies to all streams cl	lassifications)	PHYSICAL INDICATOR (Applies to all streams	s classifications)		P	HYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)	PHYSICAL INDICATOR (Applies to all stream	s classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			lu	SEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
	0-20 15	Epifaunal Substrate/Available Cover	0-20		1	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	2. Embeddedness	0-20		2	Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20		3	Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20
Sediment Deposition	0-20 10	Sediment Deposition	0-20		4	Sediment Deposition	0-20		Sediment Deposition	0-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20	5. Channel Flow Status	0-20		5	Channel Flow Status	0-20	1	5. Channel Flow Status	0-20	5. Channel Flow Status	0-20
6. Channel Alteration	0-20	6. Channel Alteration	0-20		6	Channel Alteration	0-20		6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20		7	Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20 12	8. Bank Stability (LB & RB)	0-20		8	Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20		9	Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20
	0-20 15	Riparian Vegetative Zone Width (LB & RB)	0-20		1	D. Riparian Vegetative Zone Width (LB & RB)	0-20		Riparian Vegetative Zone Width (LB & RB)	0-20	Riparian Vegetative Zone Width (LB & RB)	0-20
	Suboptimal 115	Total RBP Score	Poor	0		otal RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total	0.575	Sub-Total		0		ub-Total		0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitted		reams)	_	HEMICAL INDICATOR (Applies to Intermitte		Streams)	CHEMICAL INDICATOR (Applies to Intermitter		CHEMICAL INDICATOR (Applies to Intermitte	•
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	1)			VDEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (General)	WVDEP Water Quality Indicators (Genera	1)
Specific Conductivity		Specific Conductivity	T		3	pecific Conductivity			Specific Conductivity		Specific Conductivity	
<=99 - 90 points	0-90 39		0-90				0-90			0-90		0-90
pH		рН			р	Н			pH		рН	
0.4.0.0 45 mainta	0-80 0-1 8.73		5-90 0-1				5-90	1		5-90 0-1		5-90 0-1
8.1-9.0 = 45 points		DO			ь	0			DO		DO	
	10.00		T		۳		T					T
	10-30 10.78		10-30				10-30			10-30		10-30
Sub-Total	0.825	Sub-Total		0	S	ub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermitten	nt and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	В	IOLOGICAL INDICATOR (Applies to Interr	mittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perennial Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			v	V Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Good	0-100 0-1 72.08		0-100 0-1				0-100 0	1		0-100 0-1		0-100 0-1
Sub-Total	0.7208	Sub-Total	•	0	S	ub-Total		0	Sub-Total	0	Sub-Total	0
PART II - Index and Unit	t Score	PART II - Index and U	nit Score			PART II - Index and U	Init Score		PART II - Index and U	nit Score	PART II - Index and U	Jnit Score
Index	Linear Feet Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fe	unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.706933333	790 558.477333	0	0	0	F	0	0	0	0	0 0	0	0 0
<u> </u>					L							

West Virginia Stream and Wetland Valuation Metric RFCB Permanent Perennial (2 of 2)

		PART III - Impact Factors					
	(See instruction	insert default values for MITIGATION BANKING and	ILF)				
Temporal Loss-Consti	uction		Lo	ong-term Protection			
Note: Reflects duration of aquatic functional loss between the time of	an impact (debit) and completion of compensatory	% Add. Mitigation	n and Monitoring Period	Lon	g-Term Protection (Yea		
mitigation (credit).							
	45						
Years Sub Tatal	15						
Sub-Total	0.31812						
Temporal Loss-Mat	urity	0 + 5/10	Year Monitoring		101		
Note: Period between completion of compensatory mitigation measu	-	Sub-Total	Teal Monitoring		0		
to function (i.e. maturity of tree stratum to provide organic matter an					•		
corridor).	,		PART IV - Inc	dex to Unit Score Co	x to Unit Score Conversion		
		Final Index Score	Linear Feet	Unit Score	ILF Cost		
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Deb		
		1.307826667	790	1033.183067	\$826,546.		
					**,*		
200/	25						
30% ub-Total	0.282773333						
-uu- i Viai	0.202113333						

PART V- Comparison of Unit Scores and Projected Balance												
Final Unit Score (Debit) [No Net Loss Value]	1033.183067	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)				
FINAL PROJECTED NET BALANCE		0		0		0						

	Part VI - Mitigation	art VI - Mitigation Considerations (Incentives)						
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject							
Level I Restoration								
Level II Restoration			Buffer V					
Level III Restoration								

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RFCB Permanent Perrenial	1033.183067	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50										
	51-150										
Buffer Width	Right Bank										
	0-50										
	51-150										
Average Buffer Width/Side	0										

RFCB Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 44' 52.02"	Lon.	82° 14' 56.64"	WEATHER:	7	70 Sunny	DATE:	19-May	y-10
STREAM CLASSIFICATION:	CLASSIFICATION: Intermittent IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)				RFCB - Right Fork of Conle % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre							
STREAM IMPACT LENGTH:	760	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Project Post Completion (C		ırs	Column No. 5- Mitigation Project	eted At Maturity (Cre	edit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	H	GM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hy	drology			Hydrology			Hydrology		
Biogeochemical Cycling	0.78	0.80666667	Biogeochemical Cycling		0		ogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.89		Habitat			Ha	abitat			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	iological Indicat	tors		PART I - Physical, Chemical and	Biological Indi	icators	PART I - Physical, Chemical and É	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indicat	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Ran	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PI	HYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				SEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	12	Epifaunal Substrate/Available Cover	0-20		1.	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	8	Embeddedness	0-20		_	Embeddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
Velocity/ Depth Regime	0-20	9	Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	10	4. Sediment Deposition	0-20			Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	10	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20	1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	6	6. Channel Alteration	0-20		_	Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	12	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	12		0-20				0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	-
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB) Regetative Zone Width (LB & RB)	0-20 0-20	-
Total RBP Score	Suboptimal	113	Total RBP Score	Poor	0		otal RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	•	0.565	Sub-Total		0	Sı	ıb-Total	•	0	Sub-Total		0	Sub-Total	•	0
CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stre	eams)	CI	HEMICAL INDICATOR (Applies to Intermitt	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Strea	ams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General)			w	VDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		(1)	S	ecific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	39		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nl	1			nH			nH		
pii	0-1		pii	0-1		p.		0-1	1	pii	0-1		pii	0-1	
8.1-9.0 = 45 points	0-80	8.65		5-90				5-90			5-90			5-90	
DO			DO			D				DO			DO		
	10-30	11.02		10-30				10-30			10-30			10-30	
Sub-Total	1	0.825	Sub-Total	l	0	Sı	ıb-Total		0	Sub-Total	l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	streams)	ВІ	OLOGICAL INDICATOR (Applies to Inter	mittent and Perer	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)	, ,		w	V Stream Condition Index (WVSCI)	,		WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)		
Crow Zone	0-100 0-1	64.44		0-100 0-1				0-100 0-1	1		0-100 0-1			0-100 0-1	
Grey Zone Sub-Total		0.6444	Sub-Total		0	Si	ıb-Total		0	Sub-Total		0	Sub-Total		0
Sub-Total		0.0444	Sub-1 otal	Į.	U	30	ib-Total		U	Sub-Total		Ü	Sub-10tal	<u> </u> _	U
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and I	Init Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	t Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.7404	700	504.004				-		_							
0.7424	760	564.224	0	0	U		0	0	Ü	0	0	0	0	0	1 0

West Virginia Stream and Wetland Valuation Metric RFCB Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors age to insert default values for MITIGATION BANKING and	I ILF)		
Temporal Loss-Constru	ction		L	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of a	n impact (debit) and completion of compensatory	% Add. Mitigati	on and Monitoring Period	Loi	ng-Term Pro
mitigation (credit).					
Years	15				
Sub-Total	0.33408				
Temporal Loss-Matur	ity	0 + 5/-	0 Year Monitoring		10
*Note: Period between completion of compensatory mitigation measure		Sub-Total			
to function (i.e. maturity of tree stratum to provide organic matter and	detritus within riparian stream or wetland buffer				
corridor).			PART IV - Inc	dex to Unit Score C	onversion
		Final Index Score	Linear Feet	Unit Score	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(0
		1.347733333	760	1024.277333	
				•	
30%	25				
Sub-Total	0.271253333				

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	1024.277333	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	_	
FINAL PROJECTED NET BALANCE		0		0		0				

	Part VI - Mitigation Co	onsiderations (Incentives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) to the appropriate category (only select one).	for your project	
Level I Restoration		
Level II Restoration		Buffer \
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RFCB Intermittent	1024.277333	#DIV/0!

Extended Upland Buffer Zone

Long-Term Protection (Years)

101

ILF Costs (Offsetting Debit Units)

\$819,421.87

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer	0							
Width/Side	J							

RFCB Ephemeral (1 of 2)

USACE FILE NO./Project Name:			olo Mt. Surface Mine ermit No. S-5018-07		OORDINATES: mal Degrees)	Lat.	37° 44' 44.32"	Lon.	82° 15' 2.40"	WEATHER:	70 Sunny	DATE:	19-May-10	
STREAM CLASSIFICATION: Ephemeral			IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)				RFCB - Right Fork of Conley Branch of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acres		l:		
STREAM IMPACT LENGTH:	66	FORM OF MITIGATION:			ORDINATES: nal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Co	ndition - Baselin	ne (Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Projec Post Completion (Cr		Column No. 5- Mitigation Projec	ted At Maturity (Credit)	
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Avera	
Hydrology	0.61		Hydrology				Hydrology			Hydrology		Hydrology		
Biogeochemical Cycling	0.84	0.76	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0	
Habitat PART I - Physical, Chemical and	0.83 I Biological Indic	ators	Habitat PART I - Physical, Chemical and	Biological Indica	ators		Habitat PART I - Physical, Chemical an	d Biological Inc	licators	PART I - Physical, Chemical and B	iological Indicators	Habitat PART I - Physical, Chemical an	d Biological Indicators	
	Points Range	Site Score		Points Range	e Site Score			Points Rai	ige Site Score		Points Range Site Score		Points Range Site Sc	
PHYSICAL INDICATOR (Applies to all stream	Scale is classifications)		PHYSICAL INDICATOR (Applies to all stream	Scale s classifications)			PHYSICAL INDICATOR (Applies to all strea	Scale Ims classifications)		PHYSICAL INDICATOR (Applies to all streams of	Scale classifications)	PHYSICAL INDICATOR (Applies to all strear	Scale ns classifications)	
USEPA RBP (High Gradient Data Sheet)	•		USEPA RBP (High Gradient Data Sheet)	•			USEPA RBP (High Gradient Data Sheet			USEPA RBP (High Gradient Data Sheet)	,	USEPA RBP (High Gradient Data Sheet)	,	
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	7	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20	
1. Sediment Deposition	0-20	16	Sediment Deposition	0-20			Sediment Deposition	0-20		Sediment Deposition	0-20	Sediment Deposition	0-20	
5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20			5. Channel Flow Status	0-20	1	5. Channel Flow Status	0-20	Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	18	6. Channel Alteration	0-20			6. Channel Alteration	0-20		6. Channel Alteration	0-20	Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	8	8. Bank Stability (LB & RB)	0-20			8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	10	9. Vegetative Protection (LB & RB)	0-20			9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20			Riparian Vegetative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & RB)	0-20	10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Marginal	77	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0	
Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	ent and Darannial Ctr	0.385	Sub-Total CHEMICAL INDICATOR (Applies to Intermittee	at and Daranaial Ct	0		Sub-Total CHEMICAL INDICATOR (Applies to Intermi	ttent and Desensial	O Ctrooms)	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent)	ond Devennial Streems)	Sub-Total CHEMICAL INDICATOR (Applies to Intermitt	0	
		reallis)			ileanis)				Streams)	· · · ·	and Ferennial Streams)			
WVDEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (General	1)			WVDEP Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity				Specific Conductivity	1		Specific Conductivity		Specific Conductivity		
100-199 - 85 points	0-90			0-90				0-90			0-90		0-90	
oH		43	На		0		На			На		рН		
	0-80			5-90 0-1				5-90	1		5-90 0-1	·	5-90 0-1	
5.6-6.0 = 45 points	0-60			3-90				3-90			3-90		3-90	
DO			DO				DO			DO		DO		
	10-30			10-30				10-30			10-30		10-30	
Sub-Total	1 1		Sub-Total		0		Sub-Total		0	Sub-Total	0	Sub-Total	0	
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Streams	
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100 0	1		0-100 0-1		0-100 0-1	
0 Sub-Total		0	Sub-Total		0		Sub-Total		0	Sub-Total	0	Sub-Total	0	
							ous rotal				·	oub rotal		
PART II - Index and U	Jnit Score		PART II - Index and U	Init Score			PART II - Index and	Unit Score		PART II - Index and Uni	it Score	PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fe	t Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit So	
0.00077		40.4575					•					•		
0.63875	66	42.1575	0	0	1 0 11		0	0		0	0 0	0	0 0	

West Virginia Stream and Wetland Valuation Metric RFCB Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATI	ON BANKING and	ILF)			
Temporal Loss-Construction				Lo	ng-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an impact	ct (debit) and completion of compensatory		% Add. Mitigatio	n and Monitoring Period	Long-Term Protection (Years)		
mitigation (credit).							
Years Sub-Total	15 0.2874375						
Temporal Loss-Maturity			0 + 5/10	Year Monitoring	101		
*Note: Period between completion of compensatory mitigation measures and to	the time required for maturity, as it relates		Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer						
corridor).			PART IV - Index to Unit Score Conversion				
			Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)	
			1.1331875	66	74.790375	\$59,832.30	
30%	25						
Sub-Total	0.207						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)					
FINAL PROJECTED NET BALANCE		0		0		0				

	Part VI - Mitigation	n Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration]	

Site		Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RFCB Epho	emeral	74.790375	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer	0							
Width/Side	J							

West Virginia Stream and Wetland Valuation Metric UT1 RFCB, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:			Mt. Surface Mine nit No. S-5018-07	IMPACT COO	DEGrees)	37° 44' 45.62" N	Lon.	82° 14' 20.12" W	WEATHER:	70 Sunny	DATE:	19-May-10	
STREAM CLASSIFICATION:	Peren	nnial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acre			UT1 of Right Fork of Con % Streambed Slope, Ac			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac		Same (Mitigation is restoration of temporary impacts)		
STREAM IMPACT LENGTH:	350	FORM OF MITIGATION:		MIT COORI (in Decimal	-	37° 44' 45.62" N	Lon.	82° 14' 20.12" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	350	
Column No. 1- Impact Existing C	condition (Debit)		Column No. 2- Mitigation Existing Con-	dition - Baseline ((Credit)	Column No. 3- Mitigation Pr Post Completion		ears	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Proje	cted At Maturity (Credit)	
HGM Score (attach data forms):	Ave	erage	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average	
Hydrology			Hydrology			Hydrology			Hydrology		Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0	
Habitat			Habitat			Habitat			Habitat		Habitat		
PART I - Physical, Chemical and Bio	ological Indicators		PART I - Physical, Chemical and B	iological Indicato	ors	PART I - Physical, Chemical ar	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical ar	nd Biological Indicators	
	Points Range Site Scale	Score		Points Range Scale	Site Score		Points Rang Scale	e Site Score		Points Range Site Score Scale		Points Range Site Score	
PHYSICAL INDICATOR (Applies to all streams cla	assifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all street	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	15	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15	
2. Embeddedness		13	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20 13	2. Embeddedness	0-20 15	
		14	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	14	3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20 14	
		16	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20 13	Sediment Deposition	0-20 15	
	0-1	13	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	13	5. Channel Flow Status	0-20 0-1 13	5. Channel Flow Status	0-20 0-1 13	
		19	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	6. Channel Alteration	0-20 17	
. , , , ,		8	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15	7. Frequency of Riffles (or bends)	0-20 15	
, , , , , , , , , , , , , , , , , , ,		14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18	
		14	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20 16	
		20 146	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	 Riparian Vegetative Zone Width (LB & RB Total RBP Score 	Suboptimal	122	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 11 Suboptimal 138	 Riparian Vegetative Zone Width (LB & RB) Total RBP Score 	0-20 16 Suboptimal 154	
Sub-Total		0.73	Sub-Total	FOOI	0	Sub-Total	Заворина	0.61	Sub-Total	0.69	Sub-Total	0.77	
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Strea	ıms)	CHEMICAL INDICATOR (Applies to Interm	ittent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennial Streams)	
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	D	WVDEP Water Quality Indicators (General	ral)	
Specific Conductivity			Specific Conductivity		0	Specific Conductivity	,		Specific Conductivity		Specific Conductivity		
	0-90	39		0-90			0-90	500		0-90 500		0-90 500	
<=99 - 90 points			-11			500-599 - 50 points			500-599 - 50 points		500-599 - 50 points		
рп	0-1		рн	0-1		рп	0-1	8.73	рп	0-1 8.73	рн	0-1	
8.1-9.0 = 45 points	0-80	3.73		5-90		8.1-9.0 = 45 points	5-90	0.73	8.1-9.0 = 45 points	5-90	8.1-9.0 = 45 points	5-90 8.73	
DO			DO		0	DO			DO		DO		
	10-30	0.78		10-30			10-30	10.78		10-30 10.78		10-30 10.78	
Sub-Total	0.	.825	Sub-Total	 	0	>5.0 = 30 points Sub-Total		0.375	>5.0 = 30 points Sub-Total	0.625	>5.0 = 30 points Sub-Total	0.625	
BIOLOGICAL INDICATOR (Applies to Intermittent			BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	reams)	BIOLOGICAL INDICATOR (Applies to Int	ermittent and Peren		BIOLOGICAL INDICATOR (Applies to Intern		BIOLOGICAL INDICATOR (Applies to Inte		
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
Good	0-100 0-1 72	2.08		0-100 0-1		Good	0-100 0-1	68	Good	0-100 0-1 68	Good	0-100 0-1 68	
Sub-Total	0.7	7208	Sub-Total	<u> </u>	0	Sub-Total		0.68	Sub-Total	0.68	Sub-Total	0.68	
			12-02-1-0-0	·									
PART II - Index and Unit	Score		PART II - Index and Un	it Score		PART II - Index and	d Unit Score		PART II - Index and U	nit Score	PART II - Index and	Unit Score	
Index	Linear Feet Unit	Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score	
0.7500	050)		050				101.05	9.00	050 000 00	0.0010000	050 010 000	
0.7586	350 26	55.51	0	350	U	0.555	350	194.25	0.665	350 232.75	0.691666667	350 242.08333	

UT1 RFCB, Temporary Perennial (2 of 2)

PART III - Impact Factors

	(See instructio
Temporal Loss-Construction	
Note: Reflects duration of aquatic functional loss between the time of an impa mitigation (credit).	act (debit) and completion of compensator
Years	15
Sub-Total	0.34137
Temporal Loss-Maturity	
Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritu	
Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritu corridor).	is within riparian stream or wetland buffer
Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritu corridor).	is within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritu corridor).	is within riparian stream or wetland buffer

page to insert default values for MITIGATION BANKING and ILF)								
	Lor	ng-term Protection						
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)						
		404						
	0 + 5/10 Year Monitoring	101						
	Sub-Total	0						

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.40341	350	491.1935	\$392,954.80						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	491.1935	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	194.25	Mitigation Projected at Ten Years Post Completion (Credit)	232.75	Mitigation Projected At Maturity (Credit)	242.0833333	
FINAL PROJECTED NET BALANCE				194.25		232.75		242.0833333		

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restora *Note1: Reference the Instructional handout to determine the correct *Note2: Place an "X" in the appropriate category	Restoration Levels (below) for your project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 RFCB, Temporary Perennial	491.1935	326.8125

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

*Note³: Select the appropriate mitigation type

 Buffer Width
 Left Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Buffer Width
 Right Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Average Buffer Width/Side
 50

UT1 RFCB, Permanent Perennial (1 of 2)

JSACE FILE NO./Project Name:		LRH /Buffalo Mt. Surface Mine WVDEP Permit No. S-5018-07			IMPACT COORDINATES: Lat. (in Decimal Degrees) 37° 44' 47.55"			Lon.	82° 14' 20.54"	WEATHER:	70 Sunny		DATE:	19-Ma	зу-10
STREAM CLASSIFICATION: Perennial		IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)			UT1 of Right Fork of Conley Branch of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)			Same (Mitigation is restoration of temporary impacts)				
STREAM IMPACT LENGTH:	320	FORM OF MITIGATION:			DRDINATES: I nal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing (Condition (Deb	oit)	Column No. 2- Mitigation Existing Co	ndition - Baselir	ne (Credit)		Column No. 3- Mitigation Proj Post Completion		'ears	Column No. 4- Mitigation Projec Post Completion (Cr		rs	Column No. 5- Mitigation Project	ted At Maturity (Co	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	ľ	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology			Hydrology			Ī	Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling		0	<u> </u>	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat PART I - Physical, Chemical and B	Biological Indic	ators	Habitat PART I - Physical, Chemical and	Biological Indic	ators	ŀ	Habitat PART I - Physical, Chemical and	l Biological Ind	licators	Habitat PART I - Physical, Chemical and B	iological Indica	ntors	Habitat PART I - Physical, Chemical and	d Biological Indica	ators
				_			- 7 mm - 1 my oroun, orronnour una	_					. 7.1		
1	Points Range Scale	Site Score		Points Range Scale	e Site Score			Points Ran Scale	nge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		F	PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			ı	JSEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20		2	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	14	2. Embeddedness	0-20		2	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	14	3. Velocity/ Depth Regime	0-20		3	B. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	4. Sediment Deposition	0-20		4	1. Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	13	5. Channel Flow Status	0-20 0-1		5	5. Channel Flow Status	0-20	1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	19	6. Channel Alteration	0-20		6	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20		7	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	13	8. Bank Stability (LB & RB)	0-20		8	B. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB)	0-20	14	Vegetative Protection (LB & RB)	0-20		9	Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	20	10. Riparian Vegetative Zone Width (LB & RB)	0-20			10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score Sub-Total	Suboptimal	0.705	Total RBP Score Sub-Total	Poor	0	-	Fotal RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	-		Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial		CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	
· · · · · · · · · · · · · · · · · · ·			` ` ` `			-				· · · ·		,	```		
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Genera	1)			NVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		10	<u> </u>	Specific Conductivity			Specific Conductivity			Specific Conductivity		
<=99 - 90 points	0-90	39		0-90				0-90			0-90			0-90	
pH		45	pH		(1)	ī	Н			pH			pH		
	0-80	8.73		5-90				5-90	1 5.6		5-90			5-90 0-1	
8.1-9.0 = 45 points			DO.			Į.				200			DO.		
DU I			DU			<u> </u>	JU			DO			ь		
	10-30	10.78		10-30				10-30			10-30			10-30	
Sub-Total	L.	0.825	Sub-Total		0	5	Sub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)	Ī	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			١	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	72.08		0-100 0-1				0-100 0-	-1		0-100 0-1			0-100 0-1	
Good		0.7000	Out Table		0	-	Dut. Total		0	Out Tatal		0	Out. Tatal		0
Sub-Total		0.7208	Sub-Total		0	E	Sub-Total		U	Sub-Total		U	Sub-Total		U
PART II - Index and Un	it Score		PART II - Index and U	nit Score			PART II - Index and U	Jnit Score		PART II - Index and Uni	t Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.750266667	320	240.085333	0	0	0	ŀ	0	0	0	0	0	0	0	0	0
0.73020007	320	270.000000	· ·	"	"		U	U	"	ı	U	٠	l '	U	"

West Virginia Stream and Wetland Valuation Metric UT1 RFCB, Permanent Perennial (2 of 2)

		(See instruction	ART III - Impact Factors t default values for MITIGA	TION BANKING and	d ILF)				
Temp	oral Loss-Construction				Lo	ng-term Protection			
*Note: Reflects duration of aquatic functional loss	between the time of an impac	et (debit) and completion of compensatory		% Add. Mitigati	on and Monitoring Period		ong-Term Protection (Years)		
,	mitigation (credit).								
Years		15							
Sub-Total		0.33762							
Ter	mporal Loss-Maturity			0 + 5/	10 Year Monitoring		101		
*Note: Period between completion of compensate	ory mitigation measures and the	he time required for maturity, as it relates		Sub-Total			0		
to function (i.e. maturity of tree stratum to provid	le organic matter and detritus	within riparian stream or wetland buffer							
	corridor).				PART IV - Inde	ex to Unit Score	Conversion		
				Final Index Score	Linear Feet	Unit Score	ILF Costs		
% Add. Mitigation		Temporal Loss-Maturity (Years)		(Debit)	Lilleal Feet	(Debit)	(Offsetting Debit U	Inita)	
70 Add. Willigation		Temporal Loss-Maturity (Tears)						mits)	
				1.387993333	320	444.1578667	\$355,326.29		
Sub-Total		25 0.300106667 PART	on of Unit Scores and Proje	cted Balance					
Final Unit Score (Debit) [No Net Loss Value]	444.1578667	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected at Five Years Post Completion (Credit)	Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE				0		0		0	
			gation Considerations (Ince	ntives)					
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one). Level Restoration				*Note ¹ : Refe	Extended Upland Buffer Zone *Note ¹ : Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Type *Note ² : Enter the buffer width for each channel side (Left Bank and Right Bank) *Note ³ : Select the appropriate mitigation type				

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 RFCB, Permanent Perennial	444.1578667	#DIV/0!

Level II Restoration

Level III Restoration

Buffer Width

Buffer Width

Average Buffer Width/Side

0-50 51-150

0-50 51-150

0

Left Bank

Right Bank

UT1 of RFCB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	DRDINATES: La Degrees)	.at.	37° 44' 38.61"	Lon.	82° 14' 23.96"	WEATHER:	7	70 Sunny	DATE:	19-May	y-10
STREAM CLASSIFICATION:	Intermittent		Intermittent IMPACT STREAM/SITE ID AN (% stream slope, watershed size {acres				UT1 of Right Fork of Conle % Streambed Slope, Acr			MITIGATION STREAM CLASS./SITE ID (% stream slope, watershed size {acreage}					
STREAM IMPACT LENGTH:	700	FORM OF MITIGATION:		MIT COOR (in Decima		.at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (C		nrs	Column No. 5- Mitigation Project	ted At Maturity (Cre	edit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydro	logy			Hydrology			Hydrology		
Biogeochemical Cycling	0.78	0.80333333	Biogeochemical Cycling		0		ochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.88		Habitat			Habita	i			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicate	ors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicate	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	CAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	17	Epifaunal Substrate/Available Cover	0-20		1. Epif	aunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	12	Embeddedness	0-20		2. Emb	eddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	7	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	12	4. Sediment Deposition	0-20			ment Deposition	0-20		Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	7	5. Channel Flow Status	0-20 0-1			nnel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	-
6. Channel Alteration	0-20	14	6. Channel Alteration	0-20			nnel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	6	7. Frequency of Riffles (or bends)	0-20			uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20			k Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16 10	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			etative Protection (LB & RB) arian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	115	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	Gubopunia	0.575	Sub-Total	1 00.	0	Sub-To		1 00.	0	Sub-Total	1 001	0	Sub-Total	. 55.	0
CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strea	ams)	CHEM	ICAL INDICATOR (Applies to Intermit	ent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Strea	ams)
WVDEP Water Quality Indicators (General	l)		WVDEP Water Quality Indicators (General))		WVDE	P Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Specif	ic Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	39		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nH		
pii	0-1	0.05	p11	0-1		pii		0-1		ρπ	0-1		μιι	0-1	
8.1-9.0 = 45 points	0-80	8.65		5-90				5-90			5-90			5-90	
DO			DO	_		DO				DO			DO		
	10-30	11.02		10-30				10-30			10-30			10-30	
Sub-Total	1	0.825	Sub-Total	1	0	Sub-To	ntal		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	•	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	treams)		GICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)	T T		WV Stream Condition Index (WVSCI)			WV St	ream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Grey Zone	0-100 0-1	64.44		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	1	0.6444	Sub-Total	1	0	Sub-To	ntal		0	Sub-Total		0	Sub-Total		0
Sub-Total		0.0444	Sub-1 otal	<u>l</u>	U	Sub-10	nai		· ·	Sub-Total		0	Sub-10tal		U
PART II - Index and U	Jnit Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.7404	700	E40.69					0								
0.7424	700	519.68	0	0	U		0	0	U	0	0	0	0	0	1 0

West Virginia Stream and Wetland Valuation Metric UT1 of RFCB, Intermittent (2 of 2)

	(See instruction			
Temporal Loss-Construct	`			
*Note: Reflects duration of aquatic functional loss between the time of an mitigation (credit).				
Years	15			
Sub-Total	0.33408			
Temporal Loss-Maturity				
Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates				
to function (i.e. maturity of tree stratum to provide organic matter and de corridor).	tritus within riparian stream or wetland buffer			
% Add. Mitigation	Temporal Loss-Maturity (Years)			
30%	25			
Sub-Total Sub-Total	0.272586667			
	PART			
	PARI			

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	944.3466667	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

		Part VI - Mitigation	Considerations (Incen	tives)	
*Note1: Reference the Instructional handout to	of Stream Restoration o determine the correct Restoration Levels (below) for your pro the appropriate category (only select one).	oject		*Note ¹ : Refere	∍nce
evel I Restoration					
Level II Restoration				Buffer Width	
Level III Restoration					
			!		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of RFCB, Intermittent	944.3466667	#DIV/0!

Extended Upland Buffer Zone

nce Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank						
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer Width/Side	0							

UT1 of RFCB Ephemeral (1 of 2)

USACE FILE NO./Project Name:			DMt. Surface Mine mit No. S-5018-07		ORDINATES: La Degrees)	Lat.	37° 44' 35.38"	Lon.	82° 14' 25.52"	WEATHER:	7	70 Sunny	DATE:	19-May	y-10
STREAM CLASSIFICATION:	Ir	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT1 of Right Fork of Conk % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	40	FORM OF MITIGATION:			RDINATES: L al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (0		ars	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGN	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.61		Hydrology			Hydr	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.76	Biogeochemical Cycling		0	Biog	eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.83		Habitat			Habi				Habitat			Habitat		
PART I - Physical, Chemical and I	Biological Indica	ators	PART I - Physical, Chemical and E	Biological Indicat	tors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	itors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHY	SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USE	PA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Ep	ifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	2. Embeddedness	0-20		2. Er	nbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			locity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	15	Sediment Deposition	0-20			diment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	18	6. Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			equency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20			nk Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16 20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) iparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	101	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	margina.	0.505	Sub-Total	7 001	0		Total	1 001	0	Sub-Total	7 001	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stre	ams)	CHE	MICAL INDICATOR (Applies to Intermitt	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitte	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)			WVE	EP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	ral)	
Specific Conductivity			Specific Conductivity				ific Conductivity			Specific Conductivity	,		Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points			-11							-11					
рп	0-1		рп	0-1		рп		0-1		рп	0-1		рн	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			DO				DO	1		DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	l l		Sub-Total		0	Sub-	Total		0	Sub-Total	<u> </u>	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	treams)		OGICAL INDICATOR (Applies to Inter	mittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			wv :	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	1
0		0	Out Total			0.4	Facial			Out Tatal	1	0	Out Tatal		
Sub-Total		0	Sub-Total		U	Sub-	Total		U	Sub-Total		0	Sub-Total		U
PART II - Index and Ur	nit Score		PART II - Index and Ur	it Score			PART II - Index and	Unit Score		PART II - Index and Ui	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.00===	4.5	20.75						_		-				_	_
0.66875	40	26.75	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 of RFCB Ephemeral (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGATION E	BANKING and	ILF)		
Temporal Loss-Construction				Loi	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impact	ct (debit) and completion of compensatory		% Add. Mitigation	n and Monitoring Period	Lo	ng-Term Protection (Years)
mitigation (credit).						
Years	15					
Sub-Total	0.3009375					
Temporal Loss-Maturity			0 + 5/10	Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and t		Sub-To	Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer					
corridor).				PART IV - Inde	ex to Unit Score C	onversion
		Fina	al Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit U
			1.2006875	40	48.0275	\$38,422.00
			•			
30%	25					
Sub-Total	0.231					

	PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	48.0275	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE	IAL PROJECTED NET BALANCE						0		0		

				U	
		Part VI - Mitigation	Considerations (Incen	itives)	
	Extent of Stream Restoration				
*Note1: Reference	e the Instructional handout to determine the correct Restoration Levels (below) for your proj	ect		*Note ¹ : Refer	rence Instructio *Note ² : En
	*Note2: Place an "X" in the appropriate category (only select one).				*Note": En
Level I Restoration					
Level II Restoration				Buffer Width	
Level III Restoration					
•	-		<u>.</u>		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of RFCB, Ephemeral	48.0275	#DIV/0!

Extended Upland Buffer Zone

ctional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

UT1 of UT1 of RFCB, Temporary Intermittent (1 of 2)

Part Part	USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07	IMPACT COORDINATES (in Decimal Degrees)	: Lat.	37° 44' 44.38" N	Lon.	82° 14' 19.74" W	WEATHER:		70 Sunny	DATE:	19-1	May-10
Automation Column No. Stranger (Particus) C	STREAM CLASSIFICATION:		Intermittent										Same (Mitigation is restoration	n of temporary	impacts)
Column C	STREAM IMPACT LENGTH:	100		Permittee Responsible-Onsite		Lat.	37° 44' 44.38" N	Lon.	82° 14' 19.74" W	PRECIPITATION PAST 48 HRS:		0	Mitigation Length:		100
### A PRIT Prysical Commiss and Evolugian Industrial ### A PRIT Prysical Commiss and	Column No. 1- Impact Existir	ng Condition (Del	bit)	Column No. 2- Mitigation Existing Co	ndition - Baseline (Credit)				Years			ears	Column No. 5- Mitigation Proje	cted At Maturity	(Credit)
Part Part	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
The content	Hydrology													_	
### PART 1 - Prysect, Chemical and Encapeab Inchestors PART 1 - Prysect, Chemical and Encapeab Inchestors PART 1 - Prysect, Chemical and Encapeab Inchestors	Biogeochemical Cycling		0.79333333		0				0.493333333			0.60666667	, ,		0.7466667
Similar			cators		Biological Indicators				dicators			icators			icators
## MISCAL MICCATOR (years to interest controllance) ## MISCAL MICCATOR (years to int		Points Range Scale	Site Score						Site Score			e Site Score			ge Site Score
Subject Subj	PHYSICAL INDICATOR (Applies to all stream			PHYSICAL INDICATOR (Applies to all stream			PHYSICAL INDICATOR (Applies to all stream			PHYSICAL INDICATOR (Applies to all stream			PHYSICAL INDICATOR (Applies to all strea		
Subject Subj	USERA RRR (High Cradient Data Shoot)			LISERA BRD (High Cradient Data Shoot)			USERA PRR (High Credient Date Sheet)			USEBA BBB (High Credient Data Sheet)			LISERA DRD (High Credient Date Shoot)		
Control Application Control Application		0-20	15		0-20			0-20	11		0-20	13			15
Vector Copen Regime	2. Embeddedness								11	•	_		1		
Cleared Flow States 2-3	3. Velocity/ Depth Regime								13			13			
Charter Alexanon Sub Sub Sub	Sediment Deposition	0-20	15	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20		Sediment Deposition	0-20	
Charried Alexendron Osc 16 Charried Alexendron Osc	5. Channel Flow Status	0-20	15	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	15	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
Bask Stability 1.8 x R5	6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		6. Channel Alteration		17	6. Channel Alteration	0-20		6. Channel Alteration	0-20	
A Second register for the SE RES 0.20 15 15 15 15 15 15 15 1	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
	8. Bank Stability (LB & RB)								18		_		, , ,		
Total NBP Score Support 147	or regerance retreatment (== or ri=)						or regeration (LL erric)		6						
Sub-Total									6						
Chemical molicators (General) Chemical molicators (Chemical molicators (General) Chemical molicators (Chemical moli		Suboptimal						Suboplimai			Suboptimal			Suboptimal	
Specific Conductivity		ent and Perennial St						ent and Perennial St			nt and Perennial			tent and Perennial S	
## ## ## ## ## ## ## ## ## ## ## ## ##		al)			1)			al)			l)			al)	
Sob-599-50 points	Specific Conductivity			Specific Conductivity			Specific Conductivity	<u> </u>		Specific Conductivity			Specific Conductivity		
##	<-99 - 90 points	0-90	40		0-90		500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500
6.0-8.0 = 80 points 5-90 7.41 6.0-8.0 = 80 points 5-90 7	pH		600	На			pH			pH			pH		
6.0-8.0 = 80 points		0-80	7.41		5-90 0-1			5-90 0-1	7.41		5-90 0-1	7.41		5-90	7.41
10-30 10-3	6.0-8.0 = 80 points	1 0 00	7.41		0 00		6.0-8.0 = 80 points		7.41	6.0-8.0 = 80 points	1 0 00	7.41	-	1 0 00	7.41
Sub-Total Sub-To	DO			ВО			ВО	<u> </u>		ро			ро		
Divide Sub-Total Sub-Tot		10-30	10.53		10-30		>5.0 = 30 points	10-30	10.53	>5.0 = 30 points	10-30	10.53	>5.0 = 30 points	10-30	10.53
V Stream Condition Index (WVSCI)	Sub-Total	•	1	Sub-Total	0				0.55		•	0.8			0.8
Good Good	BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intern	mittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perer	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)
Good Good Sub-Total O Sub-Tota	WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score Index Unit Score	Good	0-100 0-1	74.1		0-100 0-1		Good	0-100 0-1	68	Good	0-100 0-1	68	Good	0-100 0-	68
Index Linear Feet Unit Score Index Linear Feet Unit Score Unit Score Unit Score Unit Score Unit Score Unit Score	Sub-Total	'	0.741	Sub-Total	0				0.68		<u>'</u>	0.68			0.68
	PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index a	nd Unit Score		PART II - Index and U	Init Score		PART II - Index and	Unit Score	
0.80933333 100 80.933333 0 100 80.933333 0 100 66.583333 100 66.583333 0 0.74916667 100 74.916667	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
	0.80933333	100	80.9333333	0	100 0		0.554166667	100	55.41666667	0.665833333	100	66.5833333	0.749166667	100	74.916667

West Virginia Stream and Wetland Valuation Metric UT1 of UT1 of RFCB, Temporary Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors to insert default values for MITIGATION BANKING a	and ILF)		
Temporal Loss-Construc	etion		L	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of ar mitigation (credit).		% Add. Mitic	ation and Monitoring Period	Lo	ng-Term Protection (Years)
Years Sub-Total	15 0.3642				
Temporal Loss-Maturi	itv	0.	+ 5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measure	s and the time required for maturity, as it relates	Sub-Total	Ü		0
to function (i.e. maturity of tree stratum to provide organic matter and o corridor).	letritus within riparian stream or wetland buffer			idex to Unit Score C	
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Sco (Debit)	re Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Un
		1.503666667	100	150.3666667	\$120,293.33
30% Sub-Total	25 0.330133333				
	PART	omparison of Unit Scores and Projected Balance			

	PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	150.3666667	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	55.41666667	Mitigation Projected at Ten Years Post Completion (Credit)	66.58333333	Mitigation Projected At Maturity (Credit)	74.91666667		
FINAL PROJECTED NET BALANCE				55.41666667		66.58333333		74.91666667			

			0017
	Restoration		itives)
*Note1: Reference the Instructional handout to determine	e the correct Restoration Levels (below) for your project		
evel I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of UT1 of RFCB, Temporary Intermittent	150.3666667	101.1375

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$120,293.33

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank									
	0-50	Preservation and Re-vegetation								
50	51-150									
Buffer Width	Right Bank									
	0-50	Preservation and Re-vegetation								
50	51-150									
Average Buffer Width/Side	50									

West Virginia Stream and Wetland Valuation Metric UT2 of UT1 of RFCB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 44' 36.37"	Lon.	82° 14' 26.14"	WEATHER:	7	0 Sunny	DATE:	19-Ma	чу-10
STREAM CLASSIFICATION:	TION: Intermittent IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)				UT2 of UT1 of Right Fork of C % Streambed Slope, Acre			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea							
STREAM IMPACT LENGTH:	2	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (Cro		rs	Column No. 5- Mitigation Project	ted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.81	0.79333333	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.82		Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical and E	iological Indica	tors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and Bi	ological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)			PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams cl	assifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	15	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20			0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	11	Embeddedness	0-20			2. Embeddedness	0-20			0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20			0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	15	4. Sediment Deposition	0-20			4. Sediment Deposition	0-20			0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	15	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20 0-1		1	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16 15	6. Channel Alteration	0-20			6. Channel Alteration	0-20			0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	16	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20		· · · · · · · · · · · · · · · · · · ·	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	,	0-20			, , , , , , , , , , , , , , , , , , , ,	0-20			0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			0-20 0-20		Vegetative Protection (LB & RB) RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	147	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	•	0.735	Sub-Total		0		Sub-Total	•	0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stre	eams)		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	streams)	CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity				Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	40		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH				nH			nH			nH		
pii	0-1		pii	0-1)	0-1		511	0-1		pii	0-1	
6.0-8.0 = 80 points	0-80	7.41		5-90				5-90			5-90			5-90	
DO			DO				DO			DO			DO	_	
	10-30	10.53		10-30				10-30			10-30			10-30	
Sub-Total	l l	1	Sub-Total	l	0		Sub-Total		0	Sub-Total	l I	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	al Streams)
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)	, , ,			WV Stream Condition Index (WVSCI)		_	WV Stream Condition Index (WVSCI)	,		WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	74.1		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	l	0.741	Sub-Total	L	0		Sub-Total		0	Sub-Total	l	0	Sub-Total		0
odb Total		0.141	load Total	l	· ·		Cub Total		v	oub rotal		Ü	oub rotal	-	
PART II - Index and Ur	nit Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Unit	Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.00000000	_	4.04000007	2				•	_							_
0.809333333	2	1.61866667	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT2 of UT1 of RFCB, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING and	ILF)		
Temporal Loss-Co	<u> </u>	pago to moort doladit valdoo for mirro, thort 2, that is a		ong-term Protection	
Note: Reflects duration of aquatic functional loss between the ti		% Add. Mitigation	n and Monitoring Period		ng-Term Protection (Years
mitigation (cr		<u></u>	<u> </u>		
Years	15				
Sub-Total	0.3642	-			
Temporal Loss	s-Maturity	0 + 5/10	Year Monitoring		101
Note: Period between completion of compensatory mitigation n		Sub-Total	-		0
vote: I chod between completion of compensatory mitigation in	measures and the time required for maturity, as it relates	Sub-10tal			U
		Sub-10tal			U
	tter and detritus within riparian stream or wetland buffer	Sub-10tal	PART IV - In	dex to Unit Score C	
to function (i.e. maturity of tree stratum to provide organic mat corridor)	tter and detritus within riparian stream or wetland buffer).	Final Index Score	PART IV - Inc	dex to Unit Score C	
to function (i.e. maturity of tree stratum to provide organic mat	tter and detritus within riparian stream or wetland buffer	Final Index Score			Conversion
to function (i.e. maturity of tree stratum to provide organic mate corridor)	tter and detritus within riparian stream or wetland buffer).	Final Index Score		Unit Score	onversion ILF Costs
to function (i.e. maturity of tree stratum to provide organic mate corridor)	tter and detritus within riparian stream or wetland buffer).	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	Conversion ILF Costs (Offsetting Debi
to function (i.e. maturity of tree stratum to provide organic mate corridor) % Add. Mitigation	tter and detritus within riparian stream or wetland buffer). Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	Conversion ILF Costs (Offsetting Debi
to function (i.e. maturity of tree stratum to provide organic mate corridor)	tter and detritus within riparian stream or wetland buffer).	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	Conversion ILF Costs (Offsetting Debi

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	3.007333333	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

	tion Considerations (Incentives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration *Note2: Place an "X" in the appropriate category (only selections)		
evel I Restoration		
_evel II Restoration		Buffer
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT2 of UT1 of RFCB, Intermittent	3.007333333	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank									
	0-50									
	51-150									
Buffer Width	Right Bank									
	0-50									
	51-150									
Average Buffer	0									
Width/Side	· ·									

West Virginia Stream and Wetland Valuation Metric UT2 of UT1 of RFCB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO	RDINATES: L Degrees)	Lat.	37° 44' 37.11"	Lon.	82° 14' 26.54"	WEATHER:	7	70 Sunny	DATE:	19-Ma	ay-10
STREAM CLASSIFICATION:	E	Ephemeral IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)					UT2 of UT1 of Right Fork of C % Streambed Slope, Acr		MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)						
STREAM IMPACT LENGTH:	133	FORM OF MITIGATION:		MIT COORI (in Decimal		Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline ((Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGN	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.61		Hydrology			Hydr	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.76	Biogeochemical Cycling		0	Biog	eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.83		Habitat			Habi				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indica	ators	PART I - Physical, Chemical and I	Biological Indicato	ors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHY	SICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USE	PA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Ep	ifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	Embeddedness	0-20		2. Er	nbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			locity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	15	Sediment Deposition	0-20			diment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			equency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20			nk Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16 20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) iparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	99	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	margina.	0.495	Sub-Total		0		Total		0	Sub-Total	1 001	0	Sub-Total	1 001	0
CHEMICAL INDICATOR (Applies to Intermitten	at and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ms)	CHE	MICAL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)		wvr	EP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)	1		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity				ific Conductivity	,		Specific Conductivity			Specific Conductivity	,	
•	0-90			0-90			-	0-90			0-90			0-90	
100-199 - 85 points								0 00			0.00		••	0 00	
рН	0-1		рН	0-1		рН		0-1		рн	0-1		рН	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		0	DO		0	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	l		Sub-Total		0	Cub	Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Str	reams)		OGICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn		BIOLOGICAL INDICATOR (Applies to Intel	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			wv :	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
0				1											
Sub-Total		0	Sub-Total		0	Sub-	Total		0	Sub-Total		0	Sub-Total		0
PART II - Index and U	nit Score		PART II - Index and Ur	nit Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.66625	133	88.61125	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT2 of UT1 of RFCB, Ephemeral (2 of 2)

		(See instruction	ART III - Impact Factors t default values for MITIGATION BANK	KING and	ILF)			
Temp	oral Loss-Construction				Loi	ng-term Protection	1	
*Note: Reflects duration of aquatic function		an impact (debit) and completion of	% Add	d. Mitigation	n and Monitoring Period		ong-Term Protection (Years)	
	ensatory mitigation (credit).	, , , ,		<u>J</u>	<u> </u>			
Years		15						
Sub-Total		0.2998125						
	mporal Loss-Maturity			0 + 5/10	Year Monitoring		101	
e: Period between completion of compensato			Sub-Total				0	
unction (i.e. maturity of tree stratum to provid	ne organic matter and detritus corridor).	s witnin riparian stream or wetiand buffer						
	comaor).				PART IV - Inde	ex to Unit Score	Conversion	
			Final Inde		Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation		Temporal Loss-Maturity (Years)	(Deb	bit)		(Debit)	(Offsetting Debit I	Jnits)
			1.1950	0625	133	158.9433125	\$127,154.65	
							, , , , , , ,	
2007		25						
30% Total		25 0.229						
		DART	on of Unit Coarse and Drainated Dalam					
Final Unit Score (Debit) [No Net Loss Value]	158.9433125	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
		Mitigation Existing Condition - Baseline	Mitigation Projected at Five Years		Ten Years	0	Maturity	0
[No Net Loss Value]		Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected at Five Years Post Completion (Credit)		Ten Years	0	Maturity	0
[No Net Loss Value]	Extent of Stream Re	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected at Five Years Post Completion (Credit) 0 gation Considerations (Incentives)		Ten Years Post Completion (Credit) Extend	ed Upland Buffer	Maturity (Credit)	
[No Net Loss Value] NAL PROJECTED NET BALANCE *Note1: Reference the Instructio *Note2: F	Extent of Stream Re	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) 0 gation Considerations (Incentives)		Ten Years Post Completion (Credit) Extend nce Instructional handout for the c *Note ² : Enter the buffer width	ed Upland Buffer a	Maturity (Credit) Zone er Zone Mitigation Extents and Types (Left Bank and Right Bank)	0 s (below)
[No Net Loss Value] IAL PROJECTED NET BALANCE *Note1: Reference the Instructio *Note2: Fel I Restoration	Extent of Stream Renal handout to determine the c	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) 0 gation Considerations (Incentives)	ote ¹ : Referen	Ten Years Post Completion (Credit) Extend nce Instructional handout for the c *Note ² : Enter the buffer width	ed Upland Buffer à definitions of the Buffe for each channel side (t the appropriate mitig	Maturity (Credit) Zone er Zone Mitigation Extents and Types (Left Bank and Right Bank) ation type	
*Note1: Reference the Instructio *Note2: Fel I Restoration	Extent of Stream Renal handout to determine the c	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) 0 gation Considerations (Incentives)	ote ¹ : Referen	Ten Years Post Completion (Credit) Extend nce Instructional handout for the c *Note ² : Enter the buffer width c *Note ³ : Select	ed Upland Buffer a definitions of the Buffe for each channel side (Maturity (Credit) Zone er Zone Mitigation Extents and Types (Left Bank and Right Bank) ation type	
[No Net Loss Value] AL PROJECTED NET BALANCE *Note1: Reference the Instructio *Note2: F II Restoration III Restoration	Extent of Stream Renal handout to determine the c	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) 0 gation Considerations (Incentives)	ote ¹ : Referen	Extend nce Instructional handout for the a *Note ² : Enter the buffer width *Note ³ : Select	ed Upland Buffer à definitions of the Buffe for each channel side (t the appropriate mitig	Maturity (Credit) Zone er Zone Mitigation Extents and Types (Left Bank and Right Bank) ation type	
[No Net Loss Value] AL PROJECTED NET BALANCE *Note1: Reference the Instructio *Note2: F II Restoration III Restoration	Extent of Stream Renal handout to determine the c	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) gation Considerations (Incentives) *No	ote ¹ : Referen	Ten Years Post Completion (Credit) Extend nce Instructional handout for the c *Note ² : Enter the buffer width c *Note ³ : Select	ed Upland Buffer a definitions of the Buffe for each channel side (t the appropriate mitig Left E	Maturity (Credit) Zone or Zone Mitigation Extents and Types (Left Bank and Right Bank) ation type Bank	
*Note1: Reference the Instructio *Note2: F	Extent of Stream Renal handout to determine the c	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) 0 gation Considerations (Incentives)	ote ¹ : Referen	Extend nce Instructional handout for the a *Note ² : Enter the buffer width *Note ³ : Select	ed Upland Buffer à definitions of the Buffe for each channel side (t the appropriate mitig	Maturity (Credit) Zone or Zone Mitigation Extents and Types (Left Bank and Right Bank) ation type Bank	
*Note1: Reference the Instructio *Note2: Fel I Restoration	Extent of Stream Renal handout to determine the c	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) gation Considerations (Incentives) *No	ote ¹ : Referen	Extend nce Instructional handout for the c *Note ² : Enter the buffer width *Note ³ : Select 0-50 51-150	ed Upland Buffer a definitions of the Buffe for each channel side (t the appropriate mitig Left E	Maturity (Credit) Zone or Zone Mitigation Extents and Types (Left Bank and Right Bank) ation type Bank	
[No Net Loss Value] [AL PROJECTED NET BALANCE *Note1: Reference the Instructio *Note2: F	Extent of Stream Renal handout to determine the c	Mitigation Existing Condition - Baseline (Credit) estoration correct Restoration Levels (below) for your pr	Mitigation Projected at Five Years Post Completion (Credit) gation Considerations (Incentives) *No	ote ¹ : Referen	Extend nce Instructional handout for the c *Note ² : Enter the buffer width *Note ³ : Select 0-50 51-150 0-50	ed Upland Buffer a definitions of the Buffe for each channel side (t the appropriate mitig Left E	Maturity (Credit) Zone or Zone Mitigation Extents and Types (Left Bank and Right Bank) ation type Bank	

Mitigation Unit Yield (Credit)

#DIV/0!

Impact Unit Yield (Debit)

158.9433125

Site

UT2 of UT1 of RFCB, Ephemeral

UT2 of RFCB, Temporary Intermittent (1 of 2)

Hydrology 0.75 Biogeochemical Cycling 0.81 0.7933333 Habitat 0.82 PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators Points Range Site Score Scale Range Site Score Scale Range Site Score Scale Range Site Score Scale Range Site Score Range	Mitigation Length: 180 Column No. 5- Mitigation Projected At Maturity (Credit) HGM Score (attach data forms): Average Hydrology 0.71 Biogeochemical Cycling 0.75 Habitat 0.78 PART I - Physical, Chemical and Biological Indicators
Column No. 1- Impact Existing Condition (Debit) HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators Points Range Site Score Scale Range Site Score Column No. 2- Mitigation Projected at Five Years Post Completion (Credit) HGM Score (attach data forms): Average Hydrology Biogeochemical Cycling 0.47 Habitat D.49333333 Habitat PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators Points Range Site Score Scale Range Site Score Scale Range Site Score	Column No. 5- Mitigation Projected At Maturity (Credit) HGM Score (attach data forms): Average Hydrology D.60666667 Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicators Site Score
Column No. 1- impact Existing Condition (Debt) HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators Points Range Site Score Scale Range Site Score Scale Range Site Score Column No. 2- Mitigation Existing Condition - Baseline (Credit) Post Completion (Credit) Post Completion (Credit) HGM Score (attach data forms): Average Hydrology D.58 Biogeochemical Cycling D.47 D.4933333333 Habitat PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemica	Average HGM Score (attach data forms): Average
Hydrology 0.75 Biogeochemical Cycling 0.81 0.79333333 Habitat 0.82 PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical and Biological Indicators Points Scale Range Site Score Scale Scale Scale Scale Scale Range Site Score Scale Range	Average Hydrology 0.71 Biogeochemical Cycling 0.75 Habitat 0.78 PART I - Physical, Chemical and Biological Indicators Site Score
Biogeochemical Cycling 0.81 0.79333333 Habitat 0.82 DART I - Physical, Chemical and Biological Indicators PART I - Physi	0.6066667 Biogeochemical Cycling Habitat O.78 PART I - Physical, Chemical and Biological Indicators Site Score Site Score
Biogeochemical Cycling	0.6066667 Biogeochemical Cycling Habitat O.78 PART I - Physical, Chemical and Biological Indicators Site Score Site Score
Habitat PART I - Physical, Chemical and Biological Indicators PA	tors PART I - Physical, Chemical and Biological Indicators Site Score Points Range Site Score
Points Range Site Score Points Scale Points Scale Points Range Site Score Points Range Points Points Range Points Range Points Range Points Points Points Points Points	Site Score Points Range Site Score
Scale Scale Scale Scale	Site Score Points Range Site Score
PINACOL INDICATOR (C. C. C. C. C. C. C. C. C. C. C. C. C. C	
PHYSICAL INDICATOR (Applies to all streams classifications) PHYSICAL INDICATOR (Applies to all streams classifications) PHYSICAL INDICATOR (Applies to all streams classifications) PHYSICAL INDICATOR (Applies to all streams classifications)	PHYSICAL INDICATOR (Applies to all streams classifications)
USEPA RBP (High Gradient Data Sheet) USEPA RBP (High Gradient Data Sheet) USEPA RBP (High Gradient Data Sheet)	USEPA RBP (High Gradient Data Sheet)
1. Epifaunal Substrate/Available Cover 0-20 13 1. Epifaunal Substrate/Available Cover 0-20 1. Epifaunal Substrate/Available Cover 0-20 1. Epifaunal Substrate/Available Cover 0-20 1. Epifaunal Substrate/Available Cover 0-20	1. Epifaunal Substrate/Available Cover 0-20 15
2. Embeddedness 0-20 3 2. Embeddedness 0-20 2. Embeddedness 0-20 11 2. Embeddedness 0-20	2. Embeddedness 0-20 15
3. Velocity/ Depth Regime 0-20 8 3. Velocity/ Depth Regime 0-20 9. Solution	13 3. Velocity/ Depth Regime 0-20 13
4. Sediment Deposition 0-20 11 4. Sediment Deposition 0-20 4. Sediment Deposition 0-20 4. Sediment Deposition 0-20 4. Sediment Deposition 0-20 5.	4. Sediment Deposition 0-20 15
5. Channel Flow Status 0-20 0-1 12 5. Channel Flow Status 0-20 0-1 5. Channel Flow Status 0-20	12 5. Channel Flow Status 0-20 0-1
6. Channel Alteration 0-20 17 6. Channel Alteration 0-20 6. Channel Alteration 0-20 6. Channel Alteration 0-20 6. Channel Alteration 0-20 6. Channel Alteration 0-20 7. Channel Alterat	17 6. Channel Alteration 0-20 17
7. Frequency of Riffles (or bends) 0-20 8 7. Frequency of Riffles (or bends) 0-20 7. Frequency 0-20 7. Frequency 0-20 7. Frequency 0-20 7. Frequency 0-20 7. Frequency	7. Frequency of Riffles (or bends) 0-20 15
8. Bank Stability (LB & RB) 0-20 14 8. Bank Stability (LB & RB) 0-20 8. Bank Stability (LB & RB) 0-	18 8. Bank Stability (LB & RB) 0-20 18
9. Vegetative Protection (LB & RB) 0-20 16 9. Vegetative Protection (LB & RB) 0-20 9. Vegetative Protection (LB & RB) 0-20 6 9. Vegetative Protection (LB & RB) 0-20	9. Vegetative Protection (LB & RB) 0-20 16
10. Riparian Vegetative Zone Width (LB & RB) 0-20 16 10. Riparian Vegetative Zone Width (LB & RB) 0-20 10. Riparian Vegetative Zone Width (LB & RB	11 10. Riparian Vegetative Zone Width (LB & RB) 0-20 16 136 Total RBP Score Suboptimal 152
Total RBP Score Suboptimal 118 Total RBP Score Poor 0 Total RBP Score Suboptimal 120 Total RBP Score Suboptimal Sub-Total Sub-	136
CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams) CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams) CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams) CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams)	
WVDEP Water Quality Indicators (General) WVDEP Water Quality Indicators (General) WVDEP Water Quality Indicators (General) WVDEP Water Quality Indicators (General)	WVDEP Water Quality Indicators (General)
Specific Conductivity Specific Conductivity Specific Conductivity Specific Conductivity Specific Conductivity Specific Conductivity	Specific Conductivity
0-90 40 0-90 500 500 500 500 500 500 500 500 500 5	500 0-90 500
<=99 - 90 points 500-599 - 50 points 500-599 - 50 points 500-599 - 50 points	500-599 - 50 points
pH pH pH pH	pH
8.1-9.0 = 45 points 0-80 0-1 8.23 8.1-9.0 = 45 points 5-90 0-1 8.23 8.1-9.0 = 45 points 5-90 0-1	8.23 8.1-9.0 = 45 points 5-90 8.23
DO DO DO	DO DO
10-30 10.8 10-30 10-30 10.8 10-30	10.8
	>5.0 = 30 points 0.625 Sub-Total 0.625
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams)	
WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI)	WV Stream Condition Index (WVSCI)
Very Good 0-100 0-1 78.91 0-100 0-1 Good 0-100 0-1 68 Good 0-100 0-1	68 Good 0-100 0-1 68
Sub-Total 0.7891 Sub-Total 0 Sub-Total 0.68 Sub-Total	0.68 Sub-Total 0.68
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score	PART II - Index and Unit Score
Index Linear Feet Unit Score Index Linear Fee	Unit Score Index Linear Feet Unit Score
0.764016667 180 137.523 0 180 0 180 0 0.5225 180 94.05 0.634166667 180	114.15 0.7175 180 129.15

West Virginia Stream and Wetland Valuation Metric UT2 of RFCB, Temporary Intermittent (2 of 2)

	(See instruction	PART III - Impact Fac page to insert default values for
Temporal Loss-Construction		
Note: Reflects duration of aquatic functional loss between the time of an impa mitigation (credit).	ct (debit) and completion of compensatory	
Years	15	
Sub-Total	0.3438075	
Temporal Loss-Maturity		
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
30%	25	
	0.29388	

r MITIGATI	ION BANKING and ILF)	
	Loi	ng-term Protection
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)
	0 + 5/10 Year Monitoring	101
	Sub-Total	0

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.401704167	180	252.30675	\$201,845.40						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	252.30675	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	94.05	Mitigation Projected at Ten Years Post Completion (Credit)	114.15	Mitigation Projected At Maturity (Credit)	129.15	
FINAL PROJECTED NET BALANCE					94.05		114.15		129.15	

	Considerations (Incen	ntives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pr *Note2: Place an "X" in the appropriate category (only select one).			
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT2 of RFCB, Temporary Intermittent	252.30675	174.3525

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank
	0-50	Preservation and Re-vegetation
50	51-150	
Buffer Width		Right Bank
	0-50	Preservation and Re-vegetation
50	51-150	
Average Buffer Width/Side	50	

West Virginia Stream and Wetland Valuation Metric UT3 of RFCB, Temporary Perennial (1 of 2)

Procedure Proc	USACE FILE NO./Project Name:		RH /Buffalo Mt. Sur NVDEP Permit No. S			OORDINATES: nal Degrees)	Lat.	37° 44' 53.57" N	Lon.	82° 14' 46.27" W	WEATHER:		70 Sunny	DATE:	19-Ma	y-10	
MITCHANCE 1	STREAM CLASSIFICATION:			CLASSIFICATION: Perennial						e ^r					Same (Mitigation is restoration	of temporary im	pacts)
Volume of a displaced below Section Sect	STREAM IMPACT LENGTH: 14					_	Lat.	37° 44' 53.57" N	Lon.	82° 14' 46.27" W	PRECIPITATION PAST 48 HRS:	()	Mitigation Length:	140	0	
Months	Column No. 1- Impact Existing Con	ndition (Debit)	Col	umn No. 2- Mitigation Existing Co	ndition - Baselin	e (Credit)		Post Completion ('ears			ars	Column No. 5- Mitigation Project	eted At Maturity (Cr	redit)	
Page Page	HGM Score (attach data forms):	Average	HGM S	core (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	
Mary Mary	Hydrology		Hydrolo	ogy				Hydrology			Hydrology			Hydrology			
PART Physical Chemical methodological below Part Physical Chemical met	Biogeochemical Cycling	0	Biogeo	chemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0	
No. Section			Habitat														
See See	PART I - Physical, Chemical and Biolo	ogical Indicators		PART I - Physical, Chemical and	Biological Indica	ators		PART I - Physical, Chemical and	Biological Ind	licators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators	
IEEPA REP (Flight Outsider Date Share)					Points Range Scale	Site Score				nge Site Score			Site Score			Site Score	
Figure of Submissional Course Section Figure of Submissional Course Section Figure of Submissional Course Section Figure of Submissional Course Section Sectio	PHYSICAL INDICATOR (Applies to all streams class	sifications)	PHYSIC	CAL INDICATOR (Applies to all stream	s classifications)			PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		
	USEPA RBP (High Gradient Data Sheet)		USEPA	RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			
	, ,	-20 10	1. Epifa	unal Substrate/Available Cover	0-20				0-20	11		0-20	13		0-20	15	
Specimen Procession Specimen Procession	2. Embeddedness 0-	-20 15	2. Embe	eddedness	0-20			2. Embeddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15	
Contract Plane States																13	
Common Abstraction				•							·					15	
Frequency of Riffes (or bands)		0-1			0-1				0-	-1		0-1			0-1	12	
No. Stands Company		_,														18	
				, ,										· , , , , , , , , , , , , , , , , , , ,		15	
10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R R 10. Splater supplimes zone with 10. A R 10. Splater supplimes zone		_,		**************************************				, , , , , , , , , , , , , , , , , , , ,	0-20	18	, ,			** = ******		18	
Total RBP Score										6						16	
Sub-Total O.655				, ,												16	
CHEMICAL NDICATOR (Applies to Intermitted and Junit Scores					Poor	0			Suboptima			Suboptimal			Suboptimal	153 0.765	
## WDEP Water Quality Indicators (General)					nt and Perennial Str				ent and Perennial			ent and Perennial St			ent and Perennial Stre		
Specific Conductivity																	
Martin					1)				I)			ıl)			al)		
Signature Sign			Specific	Conductivity		10		Specific Conductivity			Specific Conductivity	1		Specific Conductivity			
PH	<=99 - 90 points	-90 41			0-90			500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500	
6.0-8.0 = 80 points	pH	0.0	pН			0		рН			pH			pH			
6.0-8.0 = 80 points	0-	-80 0-1 7.12			5-90 0-1				5-90	-1 7.12		5-90 0-1	7 12		5-90 0-1	7.13	
Sub-Total	6.0-8.0 = 80 points	7.13			0 00			6.0-8.0 = 80 points	0.00	7.13	6.0-8.0 = 80 points	0.00	7.13	6.0-8.0 = 80 points	0 00	7.15	
Sub-Total	DO	5.1	DO			(1)		DO			DO			DO			
Sub-Total	10-)-30 10.58			10-30			>5.0 - 30 points	10-30	10.58	>5.0 = 30 points	10-30	10.58	>5.0 - 30 points	10-30	10.58	
WV Stream Condition Index (WVSCI) Grey Zone O-100 O-1 O-1 O-10 O-1 O-10 O-1 O-1	Sub-Total	1	Sub-Tot	al	1	0				0.55		1	0.8			0.8	
Grey Zone 0-100 0-1 64.52 Sub-Total 0-100 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0	BIOLOGICAL INDICATOR (Applies to Intermittent at	and Perennial Streams)	BIOLOG	GICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Intern	nittent and Pere	•	BIOLOGICAL INDICATOR (Applies to Interd	mittent and Perenr		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia		
Grey Zone Grey Z	WV Stream Condition Index (WVSCI)		WV Str	eam Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			
Grey Zone Grey Z	0-1	100 0-1 64.52			0-100 0-1				0-100 0-	64.52		0-100 0-1	64.52		0-100 0-1	64.52	
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score Index Index Linear Feet Unit Score Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Index Linear Feet Unit Score Index	Grey Zone										,			,			
Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Unit Score Unit Score Index Linear Feet Unit Score Unit	Sub-Total	0.6452	Sub-Tot	al		0		Sub-Total		0.6452	Sub-Total		0.6452	Sub-Total		0.6452	
	PART II - Index and Unit S	Score		PART II - Index and U	nit Score			PART II - Index and U	Init Score		PART II - Index and I	Jnit Score		PART II - Index and	Unit Score		
	lada:	The State of the S		la desi	line-F-	Unit Co		la dess	Liner	Limit Co	b. 1	Lines For	Huit Coore	L. dec.	Line Free	Linit O	
0.776733333	Index	inear Feet Unit Score	е	Index	Linear Feet	Unit Score		Index	Linear Fee	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	
	0.776733333	140 108.74266	57	0	140	0		0.600066667	140	84.009333	0.710066667	140	99.4093333	0.736733333	140	103.14267	

West Virginia Stream and Wetland Valuation Metric UT3 of RFCB, Temporary Perennial (2 of 2)

	(See instruction	III - Impact Factors ault values for MITIGATION BANKING an	d II E)		
Temporal Loss-Co	<u> </u>	dan values for infrience for Barrano an	<u> </u>	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the tim mitigation (cre	e of an impact (debit) and completion of compensatory	% Add. Mitigat	ion and Monitoring Period		ng-Term Protection (Years)
Years Sub-Total	15 0.34953				
Temporal Loss-I	Maturity	0 + 5/	/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation me	asures and the time required for maturity, as it relates	Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matte	and detritus within riparian stream or wetland buffer				
corridor).			PART IV - In	dex to Unit Score C	onversion
0/ A L. N		Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units
		1.436956667	140	201.1739333	\$160,939.15
30%	25				
Sub-Total Sub-Total	0.310693333				

PART V- Comparison of Unit Scores and Projected Balance										
	Final Unit Score (Debit) [No Net Loss Value]	201.1739333	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	84.00933333	Mitigation Projected at Ten Years Post Completion (Credit)	99.40933333	Mitigation Projected At Maturity (Credit)	103.1426667
	FINAL PROJECTED NET BALANCE					84.00933333		99.40933333		103.1426667

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pr *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration			
Level II Restoration			Buffer
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT3 of RFCB, Temporary Perennial	201.1739333	139.2426

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank										
	0-50	Preservation and Re-vegetation										
50	51-150											
Buffer Width		Right Bank										
	0-50	Preservation and Re-vegetation										
50	51-150											
Average Buffer Width/Side	50											

West Virginia Stream and Wetland Valuation Metric UT4 of RFCB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO (in Decimal	RDINATES: Lat Degrees)	t.	37° 44' 52.89"	Lon.	82° 14' 52.75"	WEATHER:	7	70 Sunny	DATE:	19-May-	-10
STREAM CLASSIFICATION:	ı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				T4 of Right Fork of Conl % Streambed Slope, Act			MITIGATION STREAM CLASS./S (% stream slope, watershed size {a					
STREAM IMPACT LENGTH:	220	FORM OF MITIGATION:		MIT COORE (in Decimal		t.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		,,_,_,,
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline (Credit)		olumn No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Pro Post Completion		ars	Column No. 5- Mitigation Proje	cted At Maturity (Cred	adit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score	(attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology				Hydrology			Hydrology		
Biogeochemical Cycling	0.81	0.79333333	Biogeochemical Cycling		0		ical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.82		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicato	rs	PAR	T I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical ar	nd Biological Indicato	ors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL IN	IDICATOR (Applies to all strea	ıms classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all strea	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP	(High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet))	
Epifaunal Substrate/Available Cover	0-20	10	Epifaunal Substrate/Available Cover	0-20		1. Epifaunal S	Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	10	Embeddedness	0-20		Embedded		0-20		2. Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	8	3. Velocity/ Depth Regime	0-20			epth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	15	4. Sediment Deposition	0-20		4. Sediment [•	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	7 16	5. Channel Flow Status	0-20 0-1		5. Channel FI		0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration 7. Frequency of Riffles (or bends)	0-20	5	6. Channel Alteration	0-20		6. Channel Al		0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
	0-20	12	7. Frequency of Riffles (or bends)	0-20			of Riffles (or bends) lity (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	_
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20			7 \ /	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	_
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Protection (LB & RB) egetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB, Vegetative Zone Width (LB & RB)	0-20 0-20	_
Total RBP Score	Suboptimal	113	Total RBP Score	Poor	0	Total RBP Sc		Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.565	Sub-Total		0	Sub-Total			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strear	ms)	CHEMICAL II	NDICATOR (Applies to Intermit	ttent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stream	ıms)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General)		WVDEP Wate	er Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (Genera	nl)		WVDEP Water Quality Indicators (General	ral)	
Specific Conductivity			Specific Conductivity			Specific Con	ductivity			Specific Conductivity			Specific Conductivity	_	
	0-90	40		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nH		
pii	0-1		p11	0-1		рп		0-1		pii	0-1		p11	0-1	
6.0-8.0 = 80 points	0-80	7.41		5-90				5-90			5-90			5-90	
DO			DO	_		DO				DO			DO		
	10-30	10.53		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total		0	Sub-Total			0	Sub-Total	I I	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Stre	eams)	BIOLOGICAL	. INDICATOR (Applies to Inte	ermittent and Perer	inial Streams)	BIOLOGICAL INDICATOR (Applies to Intere	mittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial S	Streams)
WV Stream Condition Index (WVSCI)	T T		WV Stream Condition Index (WVSCI)			WV Stream (Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	74.1		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0.741	Sub-Total	<u> </u>	0	Sub-Total			0	Sub-Total	l l	0	Sub-Total		0
edb retai		0.141	Odb Fotor			oub Total			· ·	out rotal		v	Cub Total		
PART II - Index and L	Unit Score		PART II - Index and Ur	it Score			PART II - Index and	Unit Score		PART II - Index and I	Jnit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Jnit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score
0-21	600	474.00	_										_		
0.781	220	171.82	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT4 of RFCB, Intermittent (2 of 2)

		DADT III. June of Footons			
	(See instruction	PART III - Impact Factors	.d II E\		
	<u> </u>	page to insert default values for MITIGATION BANKING a	<u> </u>		
Temporal Loss-Con				ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time		% Add. Mitiga	tion and Monitoring Period	Long	g-Term Protection (Years)
mitigation (cred	it).				
Years	15				
Sub-Total	0.35145				
					404
Temporal Loss-M			5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation mea		Sub-Total			U
to function (i.e. maturity of tree stratum to provide organic matter	and detritus within riparian stream or wetiand buffer				
corridor).			PART IV - In	dex to Unit Score Co	nversion
		Final Index Scor	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit
		1.439916667	220	316.7816667	\$253,425.33
30%	25				
Sub-Total	0.307466667				

PART V- Comparison of Unit Scores and Projected Balance												
Final Unit Score (Debit) [No Net Loss Value]	316.7816667	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)				
FINAL PROJECTED NET BALANCE				0		0		0				

	Part VI - Mitigation Conside	erations (Incentives)
	, a	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct *Note2: Place an "X" in the appropriate category.	t Restoration Levels (below) for your project	*Note ¹ : F
Level I Restoration		
Level II Restoration		Buffer Width
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT4 of RFCB, Intermittent	316.7816667	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$253,425.33

: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer	0	
Width/Side	J	

UT4 of RFCB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC	DRDINATES: L I Degrees)	at.	37° 44' 53.64"	Lon.	82° 14' 54.15"	WEATHER:	7	70 Sunny	DATE:	19-May	y-10
STREAM CLASSIFICATION:	E	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT4 of Right Fork of Con % Streambed Slope, Ac			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac					
STREAM IMPACT LENGTH:	230	FORM OF MITIGATION:		MIT COOR (in Decimal	_	_at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pr Post Completion		ears	Column No. 4- Mitigation Proj Post Completion (rs	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.61		Hydrology			Hydro	logy			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.76	Biogeochemical Cycling		0	Bioge	ochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.83		Habitat			Habita				Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and E	Siological Indicate	ors		PART I - Physical, Chemical ar	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	id Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	ICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				A RBP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epif	faunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	10	2. Embeddedness	0-20			beddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			ocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	12 0	4. Sediment Deposition	0-20			diment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	_
5. Channel Flow Status 6. Channel Alteration	0-20 0-1	17	Channel Flow Status Channel Alteration	0-20 0-1			annel Flow Status annel Alteration	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			guency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20 0-20	
8. Bank Stability (LB & RB)	0-20	5	8. Bank Stability (LB & RB)	0-20			nk Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	12	9. Vegetative Protection (LB & RB)	0-20			getative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	20	10. Riparian Vegetative Zone Width (LB & RB)	0-20			parian Vegetative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score	Marginal	76	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.38	Sub-Total		0	Sub-T	otal		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strea	ams)	CHEM	MICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Strea	eams)
WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDE	EP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	l)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Speci	fic Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 11	0-90			0-90				0-90			0-90			0-90	/
100-199 - 85 points			nH			nН				nH			nH		
pri	0-1		p	0-1		pi i		5.00 0-1		p	0-1		pii	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	1		Sub-Total		0	Sub-T	otal	1	0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Str	reams)	BIOLO	OGICAL INDICATOR (Applies to Inte	ermittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV S	tream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	/
Sub-Total	1 1	0	Sub-Total		0	Sub-T	otal		0	Sub-Total	1	0	Sub-Total		0
			u.											l.	
PART II - Index and U	Unit Score		PART II - Index and Un	it Score			PART II - Index and	I Unit Score		PART II - Index and U	Init Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
	9	440.005	_					-		_	-		_	_	
0.6375	230	146.625	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT4 of RFCB, Ephemeral (2 of 2)

			PART I	II - Impact Factors					
		(See instruction			ION BANKING and	d ILF)			
Temp	oral Loss-Construction					Lo	ng-term Protection		
	Temporal Loss-Maturity riod between completion of compensatory mitigation measures and the time required for maturity, as it relates on (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) % Add. Mitigation Temporal Loss-Maturity (Years) ### Add. Mitigation **Condition - Baseline (Credit) ### Part VI - Com Extent of Stream Restoration **Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project **Note2: Place an "X" in the appropriate category (only select one). #### Extent of Stream Restoration **Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project **Note2: Place an "X" in the appropriate category (only select one).				% Add. Mitigati	on and Monitoring Period	Lo	ong-Term Protection (Years)	
compe	Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit). Years Sub-Total Temporal Loss-Maturity eriod between completion of compensatory mitigation measures and the time required for maturity, as it relates tion (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). **Add. Mitigation** Temporal Loss-Maturity (Years) 30% PART V- Con Mitigation Existing								
Years		15							
	Temporal Loss-Maturity eriod between completion of corpanic matter and detritus within riparian stream or wetland buffer corridor). **Temporal Loss-Maturity** eriod between completion of compensatory mitigation measures and the time required for maturity, as it relates from (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). **Add. Mitigation** Temporal Loss-Maturity (Years) **Add. Mitigation** **Temporal Loss-Maturity (Years) **O Add. Mitigation** **Temporal Loss-Maturity (Years) **O Add. Mitigation** **Temporal Loss-Maturity (Years) **O Add. Mitigation** **Temporal Loss-Maturity (Years) **O Add. Mitigation** **Temporal Loss-Maturity (Years) **O Add. Mitigation** **Temporal Loss-Maturity (Years) **O Add. Mitigation** **Temporal Loss-Maturity (Years) **O Add. Mitigation** **Temporal Loss-Maturity (Years) **O Condition - Baseline (Credit) **PROJECTED NET BALANCE** **PROJECTED NET BALANCE**					10 Year Monitoring		101	
	Temporal Loss-Construction *Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit). Years Sub-Total Temporal Loss-Maturity Period between completion of compensatory mitigation measures and the time required for maturity, as it relates nation (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). **Add. Mitigation Temporal Loss-Maturity (Years) **Add. Mitigation Temporal Loss-Maturity (Years) **Add. Mitigation Temporal Loss-Maturity (Years) **Add. Mitigation Temporal Loss-Maturity (Years) **Legisland Substitution **Note Loss Value] **Extent of Stream Restoration **Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your projestors are an "X" in the appropriate category (only select one).				Sub-Total			U	
lo random (nor maiamy or not on alam to proma	_	The manual particular of the manual carret				PART IV - Inde	ex to Unit Score	Conversion	
					Final Index Score		Unit Score	ILF Costs	
% Add. Mitigation		Temporal Loss-Maturity (Years)			(Debit)	Emour Foot	(Debit)	(Offsetting Debit	Units)
_					1.130375	230	259.98625	\$207,989.00	
					1.100070	200	200.00020	Ψ201,000.00	
30%		25							
Sub-Total		0.206							
			•						
		DADT	V Comparison of	Unit Socres and Project	ated Palance				
		PARI	v- Companson of	Unit Scores and Projec	teu balance				
Final Unit Score (Debit)				Mitigation Projected at Five Years		Mitigation Projected at		Mitigation Projected At	
	259.98625			Post Completion		Ten Years		Maturity	
[No Not 2000 Yalaus]		(Credit)		(Credit)		Post Completion (Credit)		(Credit)	
FINAL PROJECTED NET BALANCE					0		0		0
					•				
			Part VI - Mitigation	Considerations (Incer	ntives)				
	Extent of Stream Re	estoration				Extend	ed Upland Buffer 2	Zone	
			oject		*Note ¹ : Refer			r Zone Mitigation Extents and Type	s (below)
*Note2: P	lace an "X" in the appropriate	category (only select one).				*Note ² : Enter the buffer width			
Temporal Loss-Maturity *Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). *Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). Temporal Loss-Maturity (Years) *Note: Reference the Instructional handout to determine the correct Restoration Levels (below) for your process.						*Note*: Selec	t the appropriate mitig		
Level II Restoration					Buffer Width	0.50	Left E	Bank	
Level III Restoration						0-50 51-150			
					Buffer Width	51-150	Right	Bank	
					Buildi Widii	0-50	rtight	<u>Juni</u>	
						51-150			
					Average Buffer	0			
					Width/Side	, and the second			
		lmesst	Mitigation Unit						
Site			Mitigation Unit Yield (Credit)						
		Offic Field (Debit)	riela (Gredit)						
UT4 of RFCB, Ephem	eral	259.98625	#DIV/0!						

West Virginia Stream and Wetland Valuation Metric UT5 of RFCB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: La Degrees)	Lat.	37° 44' 48.67"	Lon.	82° 15' 2.71"	WEATHER:	7	70 Sunny	DATE:	19-Ma	ay-10
STREAM CLASSIFICATION:	ı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT5 of Right Fork of Conle % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	120	FORM OF MITIGATION:			RDINATES: L al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		·
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (C		ırs	Column No. 5- Mitigation Project	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGN	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydr	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.81	0.79333333	Biogeochemical Cycling		0		eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.82		Habitat			Habi	at			Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicat	ors		PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and É	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHY	SICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				PA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	7	Epifaunal Substrate/Available Cover	0-20		1. Ep	ifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	11	Embeddedness	0-20		2. Er	nbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	1	3. Velocity/ Depth Regime	0-20			locity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	13	Sediment Deposition	0-20			diment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	1	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20			annel Alteration	0-20		Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	1	7. Frequency of Riffles (or bends)	0-20			equency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	10	8. Bank Stability (LB & RB)	0-20			nk Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	12 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) iparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	91	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	marginar	0.455	Sub-Total	1 001	0		Total	1 00.	0	Sub-Total	1 001	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stre	ams)	CHE	MICAL INDICATOR (Applies to Intermitte	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	ıl)		WVDEP Water Quality Indicators (General)			WVE	EP Water Quality Indicators (General	ıl)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Spec	ific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	40		0-90				0-90			0-90			0-90	/
<=99 - 90 points			nU			nH.				nU			nH		
рп	0-1		pri	0-1		рп		0-1		pri	0-1		pri	0-1	
6.0-8.0 = 80 points	0-80	7.41		5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30	10.53		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total		0	Sub-	Total	<u> </u>	0	Sub-Total	<u> </u>	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)		OGICAL INDICATOR (Applies to Inter	mittent and Pereni	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			wv:	Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	74.1		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	/
Good Sub-Total	1	0.741	Sub-Total		0	Sub-	Total	l l	0	Sub-Total		0	Sub Total		0
Sub-Total		0.741	Sub-10tal		U	Sub-	Total		U	Sub-Total		0	Sub-Total		U
PART II - Index and U	Jnit Score		PART II - Index and Un	it Score			PART II - Index and t	Init Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.76000007	400	04.52			0		0	_				0	•		
0.762666667	120	91.52	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT5 of RFCB, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING a	nd ILF)		
Temporal Loss-Construction	,		<u> </u>	ong-term Protection	<u> </u>
*Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	et (debit) and completion of compensatory	% Add. Mitig	ation and Monitoring Period		ong-Term Prote
Years Sub Tatal	15				
Sub-Total	0.3432				
Temporal Loss-Maturity		0 -	5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		Sub-Total	PART IV - Inc	lex to Unit Score	Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Sco (Debit)	e Linear Feet	Unit Score (Debit)	(Offs
		1.398666667	120	167.84	
30%	25				
Sub-Total	0.2928				

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	167.84	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of RFCB, Intermittent	167.84	#DIV/0!

Extended Upland Buffer Zone

Long-Term Protection (Years)

ILF Costs (Offsetting Debit Units)

\$134,272.00

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank					
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer	0						
Width/Side	O						

UT5 of RFCB, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO	ORDINATES: L Il Degrees)	_at.	37° 44' 48.55"	Lon.	82° 15' 4.43"	WEATHER:	7	70 Sunny	DATE:	19-May	y-10
STREAM CLASSIFICATION:	E	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT5 of Right Fork of Conle % Streambed Slope, Acr			MITIGATION STREAM CLASS./SiT (% stream slope, watershed size {aci					
STREAM IMPACT LENGTH:	180	FORM OF MITIGATION:		MIT COOR (in Decima	_	_at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (ars	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGIV	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.61		Hydrology			Hydr	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.84	0.76	Biogeochemical Cycling		0		eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.83		Habitat			Habit	at			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indica	ators	PART I - Physical, Chemical and E	Biological Indicat	ors		PART I - Physical, Chemical and	l Biological Indi	cators	PART I - Physical, Chemical and	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	itors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEF	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Ep	faunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	17	2. Embeddedness	0-20			beddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20			ocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	4. Sediment Deposition	0-20			diment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	18 0	6. Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	16	7. Frequency of Riffles (or bends)	0-20			quency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20			(== =)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	20	Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) parian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	103	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.515	Sub-Total		0	Sub-	otal		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	ams)	CHE	MICAL INDICATOR (Applies to Intermit	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)			WVD	EP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(1)	Spec	fic Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 11	0-90			0-90				0-90			0-90			0-90	/
100-199 - 85 points			nH			nН				nH			nH		
pi i	0-1		pii	0-1		pii		0-1		pri	0-1		μιι	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO		111	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	/
Sub-Total	l		Sub-Total	<u> </u>	0	Sub-	otal		0	Sub-Total	l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	treams)		OGICAL INDICATOR (Applies to Inter	mittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			wv s	tream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	1 1	0	Sub-Total		0	Sub-	otal		0	Sub-Total	1 1	0	Sub-Total	1 1	0
oub Total			Oub (Viai	<u>t</u>	U	Gub-	Otal		· ·	Cul-Total		0	Sub-10tal		U
PART II - Index and U	nit Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
									_			_			
0.67125	180	120.825	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT5 of RFCB, Ephemeral (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGAT	TON BANKING and I	LF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impac	t (debit) and completion of compensatory		% Add. Mitigation	and Monitoring Period	Lo	ng-Term Protection (Years)
mitigation (credit).						
Years	15					
Sub-Total	0.3020625					
						404
Temporal Loss-Maturity				Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus			Sub-Total			0
corridor).	within riparian stream or wettand burier			DARTIV Ind	ov to Unit Coore (`anyoraian
00111401/).					ex to Unit Score (
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.2063125	180	217.13625	\$173,709.00
30%	25					
Sub-Total	0.233					
	PART	V- Comparison of Unit Scores and Project	cted Balance			

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)				
FINAL PROJECTED NET BALANCE					0		0		0

Buffer Width

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Resto *Note1: Reference the Instructional handout to determine the correct *Note2: Place an "X" in the appropriate cates.	ct Restoration Levels (below) for your project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of RFCB, Ephemeral	217.13625	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Left Bank

	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer	0	
Width/Side	0	

RFHC, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: La (in Decimal Degrees)	at. 37° 43' 36.54"	N Lon.	82° 13' 46.55" W	WEATHER:	75 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:		Perennial	IMPACT STREAM/SITE ID A			k of Hell Creek of Piger Slope, Acre Watershed			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)		on of temporary impacts)
STREAM IMPACT LENGTH:	1245	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES: (in Decimal Degrees)	at. 37° 43' 36.54"	N Lon.	82° 13' 46.55" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	1245
Column No. 1- Impact Existin	ng Condition (Dek	it)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)	Post	itigation Projected at Five Completion (Credit)	Years	Column No. 4- Mitigation Pro Post Completion		Column No. 5- Mitigation Proj	ected At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data	orms):	Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Averag
Hydrology			Hydrology		Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat			Habitat		Habitat			Habitat		Habitat	
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicators	PART I - Physical,	Chemical and Biological I	ndicators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical a	and Biological Indicators
	Points Range Scale	Site Score		Points Range Site Score		Points R Scale	ange Site Score		Points Range Site Score		Points Range Site Scor
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)	PHYSICAL INDICATOR (App	ies to all streams classification	s)	PHYSICAL INDICATOR (Applies to all stream	s classifications)	PHYSICAL INDICATOR (Applies to all stre	eams classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient	Data Sheet)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Shee	ıt)
Epifaunal Substrate/Available Cover	0-20	6	Epifaunal Substrate/Available Cover	0-20	 Epifaunal Substrate/Availal 		11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15
2. Embeddedness	0-20	2	2. Embeddedness	0-20	2. Embeddedness	0-20	11	2. Embeddedness	0-20 13	2. Embeddedness	0-20 15
3. Velocity/ Depth Regime	0-20	6	3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20 13	3. Velocity/ Depth Regime	0-20
Sediment Deposition	0-20	3	Sediment Deposition	0-20	4. Sediment Deposition	0-20	11	Sediment Deposition	0-20	Sediment Deposition	0-20 15
5. Channel Flow Status	0-20	11	5. Channel Flow Status	0-20	Channel Flow Status	0-20	11	5. Channel Flow Status	0-20	5. Channel Flow Status	0-20
6. Channel Alteration	0-20	7	6. Channel Alteration	0-20	6. Channel Alteration	0-20	15	6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or be	nds) 0-20	15	7. Frequency of Riffles (or bends)	0-20 15	7. Frequency of Riffles (or bends)	0-20 15
8. Bank Stability (LB & RB)	0-20	3	8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18
9. Vegetative Protection (LB & RB)	0-20	3	Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB a	(RB) 0-20	6	9. Vegetative Protection (LB & RB)	0-20 11	9. Vegetative Protection (LB & RB)	0-20 16
10. Riparian Vegetative Zone Width (LB & RB)	0-20	5	10. Riparian Vegetative Zone Width (LB & RB)	0-20	10. Riparian Vegetative Zone W		6	10. Riparian Vegetative Zone Width (LB & RB)	0-20 11	10. Riparian Vegetative Zone Width (LB & RB	
Total RBP Score	Poor	51	Total RBP Score	Poor 0	Total RBP Score	Suboptir	nal 117	Total RBP Score	Suboptimal 133	Total RBP Score	Suboptimal 149
Sub-Total		0.255	Sub-Total	0	Sub-Total		0.585	Sub-Total	0.665	Sub-Total	0.745
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Streams)	CHEMICAL INDICATOR (App	lies to Intermittent and Perenni	al Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	CHEMICAL INDICATOR (Applies to Interm	nittent and Perennial Streams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indic	ators (General)		WVDEP Water Quality Indicators (Genera	al)	WVDEP Water Quality Indicators (Gene	eral)
Specific Conductivity			Specific Conductivity		Specific Conductivity			Specific Conductivity		Specific Conductivity	
	0-90	121		0-90		0-90	500		0-90 500		0-90 500
100-199 - 85 points	1				500-599 - 50 po	nts		500-599 - 50 points		500-599 - 50 points	
рн	0-1		рн	0-1	рн	1	0-1	рн	0.1	рн	0-1
6.0-8.0 = 80 points	0-80	7.55		5-90	6.0-8.0 = 80 poi	5-90	7.55	6.0-8.0 = 80 points	5-90 7.55	6.0-8.0 = 80 points	5-90 7.55
DO		80	DO		DO 0.0 0.0 0 por			DO		DO	
	10-30	9.95		10-30		10-30	9.95		10-30 9.95		10-30 9.95
Sub-Total	10-30	0.975	Sub-Total	0	>5.0 = 30 poin	s 10-30	0.55	>5.0 = 30 points Sub-Total	0.8	>5.0 = 30 points Sub-Total	0.8
BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt		BIOLOGICAL INDICATOR (A	pplies to Intermittent and Pe		BIOLOGICAL INDICATOR (Applies to Interi		BIOLOGICAL INDICATOR (Applies to Inf	
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	,
······································	0-100 0-1	68.94	······································	0-100 0-1	N V Guidani Gonanion mao	,	0-1 68	The same contains mask (11156)	0-100 0-1 68	The sum contains mask (11 100)	0-100 0-1 68
Good	0-100			0-100	Good	0-100		Good		Good	
Sub-Total		0.6894	Sub-Total	0	Sub-Total		0.68	Sub-Total	0.68	Sub-Total	0.68
PART II - Index and	Unit Score		PART II - Index and Ur	it Score	PART II	- Index and Unit Score		PART II - Index and U	Init Score	PART II - Index an	d Unit Score
TAICH HUGA UNU			PART II BINGS CHILL OF		i alvi ii			Part II mask and t		PART II HIUGA UII	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear F	eet Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Sco
25555	4		_	10.17				6 =	10.15		1015
0.6398	1245	796.551	0	1245 0	0.605	1245	753.225	0.715	1245 890.175	0.741666667	1245 923.37

West Virginia Stream and Wetland Valuation Metric RFHC, Temporary Perennial (2 of 2)

	(See instruction	PART III - Impact Fact page to insert default values for
Temporal Loss-Construction		
Note: Reflects duration of aquatic functional loss between the time of an impac	t (debit) and completion of compensatory	1
mitigation (credit).		
Years	15	
Sub-Total	0.28791	
		1
Temporal Loss-Maturity		
Note: Period between completion of compensatory mitigation measures and the	ne time required for maturity, as it relates	1
to function (i.e. maturity of tree stratum to provide organic matter and detritus		
corridor).	•	
0/ A LL BANC - C		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
		4
		4
30%	25 0.25592	

sert default values for MITIGATION BANKING and ILF)										
	Loi	Long-term Protection								
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)								
	0 + 5/10 Year Monitoring	101								
	Sub-Total	0								

PART IV - Index to Unit Score Conversion								
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)					
1.18363	1245	1473.61935	\$1,178,895.48					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	1473.61935	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	753.225	Mitigation Projected at Ten Years Post Completion (Credit)	890.175	Mitigation Projected At Maturity (Credit)	923.375
FINAL PROJECTED NET BALANCE				753.225		890.175		923.375	

Р	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your proje *Note2: Place an "X" in the appropriate category (only select one).			
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RFHC, Temporary Perennial	1473.61935	923.375

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width	Left Bank					
	0-50					
	51-150					
Buffer Width	Right Bank					
	0-50					
	51-150					
Average Buffer	0					
Width/Side	0					

RFHC, Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:		o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 43' 50.55"	Lon.	82° 13' 50.47"	WEATHER:	75 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	Perennial	IMPACT STREAM/SITE ID (% stream slope, watershed size {a			Right Fork of Hell Creel % Streambed Slope, Acre W			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size (acreag		ON: Same (Mitigation is restoration	of temporary impacts)
STREAM IMPACT LENGTH: 2	FORM OF MITIGATION:		MIT COORDINATES: (in Decimal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	1245
Column No. 1- Impact Existing Co	ondition (Debit)	Column No. 2- Mitigation Existing Co	ndition - Baseline (Credit)		Column No. 3- Mitigation Project Post Completion (Cr		ars	Column No. 4- Mitigation Projecte Post Completion (Cree		Column No. 5- Mitigation Projec	ted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	<u> </u>	Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	
Habitat	•	Habitat	•		Habitat		•	Habitat	0	Habitat	
PART I - Physical, Chemical and Bio	ological Indicators	PART I - Physical, Chemical and	Biological Indicators		PART I - Physical, Chemical and Bi	iological Indi	cators	PART I - Physical, Chemical and Bio	logical Indicators	PART I - Physical, Chemical and	d Biological Indicators
P	Points Range Site Score		Points Range Site Score			Points Rang Scale	e Site Score	P	coints Range Site Score		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams class	ssifications)	PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams c	classifications)		PHYSICAL INDICATOR (Applies to all streams cla	ssifications)	PHYSICAL INDICATOR (Applies to all stream	ns classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20 11	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20
4. Sediment Deposition	0-20	Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	5. Channel Flow Status	0-20
6. Channel Alteration	0-20	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20 12	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20 7	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20			0-20	8. Bank Stability (LB & RB)	0-20
	0-20 7	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20			0-20	9. Vegetative Protection (LB & RB)	0-20
	0-20 12	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20			0-20	10. Riparian Vegetative Zone Width (LB & RB)	
	Marginal 100	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total Sub-Total	0.5	Sub-Total	0		Sub-Total		0	Sub-Total Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermittent and	d Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent	and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent ar	nd Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	il)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	al)
Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
100-199 - 85 points	0-90 121		0-90			0-90			0-90		0-90
100-199 - 85 points		nH			nH			nH		nH	
pri	0-1	pri	0-1		pri	0-1		pri	0-1	pri	0-1
6.0-8.0 = 80 points	0-80 7.55		5-90			5-90			5-90		5-90
DO		DO			DO			DO		DO	
	10-30 9.95		10-30			10-30			10-30		10-30
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent a	0.975 and Perennial Streams)	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial Streams)		Sub-Total BIOLOGICAL INDICATOR (Applies to Intermite	ttent and Peren	0 nial Streams)	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermitte)	0 nt and Perennial Streams)	Sub-Total BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Streams)
WV Stream Condition Index (WVSCI)	,	WV Stream Condition Index (WVSCI)	,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	,	WV Stream Condition Index (WVSCI)	
Very Good	0-100 0-1 85.62		0-100 0-1			0-100 0-1		C	0-100 0-1		0-100 0-1
Sub-Total	0.8562	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
PART II - Index and Unit	Score	PART II - Index and U	Init Score		PART II - Index and Unit	it Score		PART II - Index and Unit	Score	PART II - Index and	Unit Score
Index	Linear Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index L	inear Feet Unit Score	Index	Linear Feet Unit Score
0.777066667	2795 2171.90133	0	1245 0		0	1245	0	0	1245 0	0	1245 0
	İ					L					

West Virginia Stream and Wetland Valuation Metric RFHC, Permanent Perennial (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING and	d ILF)		
Temporal Loss-Constru	iction		Lo	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of		% Add. Mitigation	on and Monitoring Period		ong-Term Protection (Years)
mitigation (credit).					
Years	15				
Sub-Total	0.34968				
Temporal Loss-Matu	rity	0 + 5/1	10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measur	es and the time required for maturity, as it relates	Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and	detritus within riparian stream or wetland buffer				
corridor).			PART IV - Ind	lex to Unit Score (Conversion
		Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit U
		1.437573333	2795	4018.017467	\$3,214,413.97
30%	25				
Sub-Total	0.310826667				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	4018.017467	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	0	Mitigation Projected at Ten Years Post Completion (Credit)	0	Mitigation Projected At Maturity (Credit)	0
FINAL PROJECTED NET BALANCE		0		0		0			

	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RFHC, Permanent Perennial	4018.017467	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

ILF Costs (Offsetting Debit Units) \$3,214,413.97

Buffer Width Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07		DORDINATES: Land Degrees)	Lat.	37° 43' 17.89"	Lon.	82° 13' 59.99"	WEATHER:	7	75 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:	'	ntermittent	IMPACT STREAM/SITE ID / (% stream slope, watershed size (ac				Right Fork of Hell Cre % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size (acre					
STREAM IMPACT LENGTH:	800	FORM OF MITIGATION:			PRDINATES: L nal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existin	g Condition (Del	pit)	Column No. 2- Mitigation Existing Co	ndition - Baselin	ne (Credit)		Column No. 3- Mitigation Proje Post Completion (ears	Column No. 4- Mitigation Project Post Completion (C		ırs	Column No. 5- Mitigation Project	ted At Maturity (C	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	F	GM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Н	ydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.88	Biogeochemical Cycling		0	В	iogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat PART I - Physical, Chemical and	0.92	eators	Habitat PART I - Physical, Chemical and	Riological India	atore	Н	PART I - Physical, Chemical and	Riological Indi	cators	Habitat PART I - Physical, Chemical and E	Riological Indic	ators	Habitat PART I - Physical, Chemical and	d Riological India	eators
PART 1 - Physical, Chemical and	i biological illuic	ators	FARTT- Filysical, Chemical and	Biological illuic	ators		PART 1 - Physical, Chemical and	Biological illu	Cators	PART 1 - Filysical, Chemical and E	siological illuic	ators	PART 1 - Physical, Chemical and	a biological illuic	alors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Ran	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream:	s classifications)		P	HYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			U	SEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	14	Epifaunal Substrate/Available Cover	0-20		1	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	2. Embeddedness	0-20		2	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	15	3. Velocity/ Depth Regime	0-20		3	Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	12	Sediment Deposition	0-20		4	Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	12	5. Channel Flow Status	0-20 0-1		5	Channel Flow Status	0-20		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17	Channel Alteration	0-20		6	Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	17	7. Frequency of Riffles (or bends)	0-20		7	Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20		8	Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB)	0-20	14	Vegetative Protection (LB & RB)	0-20		9	Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	19	10. Riparian Vegetative Zone Width (LB & RB)	0-20		1	D. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score Sub-Total	Suboptimal	149 0.745	Total RBP Score Sub-Total	Poor	0		otal RBP Score ub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0
Sub-1 otal CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St		CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St			HEMICAL INDICATOR (Applies to Intermitte	nt and Perennial		CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Str	
	_	,		_	•				•			,			•
WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (Genera	1)			VDEP Water Quality Indicators (Genera	1)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity			9	pecific Conductivity			Specific Conductivity			Specific Conductivity		
<=99 - 90 points	0-90	44		0-90				0-90			0-90			0-90	
pH		0.0	pH		0	р	Н			pH			pH		
	0-80	6.86		5-90 0-1				5-90			5-90			5-90	
6.0-8.0 = 80 points	1	3.00				_	_								
ро — — — — — — — — — — — — — — — — — — —			ВО			<u> </u>	0			Ю			ДО		
	10-30	10.07		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total	1	0	S	ub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)	В	IOLOGICAL INDICATOR (Applies to Intern	nittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			ν	V Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	69.59		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Good		0.6050	Cub Tatal		0		uh Tatal		0	Cub Tatal		0	Cult Total		0
Sub-Total		0.6959	Sub-Total		0	5	ub-Total		U	Sub-Total		U	Sub-Total		U
PART II - Index and U	Unit Score		PART II - Index and U	nit Score			PART II - Index and U	nit Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	-	Index	Linear Fee	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Scor
0.846816667	800	677 452222	0	0	0	-	0	0		0	0	0	0	0	0
0.848810807	800	677.453333	V	U	"		U	"	J V J	'	U	U	l v	U	U

West Virginia Stream and Wetland Valuation Metric RFHC, Intermittent (2 of 2)

		PART III - Impact Factors					
	(See instruction	page to insert default values for MITIGATI	ON BANKING and IL	.F)			
Temporal Loss-Construction				Lo	ng-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an important	act (debit) and completion of compensatory		% Add. Mitigation a	and Monitoring Period	Long	g-Term Protection (Years)	
mitigation (credit).	mitigation (credit).						
Years	15						
Sub-Total	0.3810675						
Temporal Loss-Maturity			0 + 5/10 Year Monitoring		101		
*Note: Period between completion of compensatory mitigation measures and			Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and detritu	s within riparian stream or wetland buffer						
corridor).			PART IV - Index to Unit Score			Conversion	
			Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)	
			1.5533375	800	1242.67	\$994,136.00	
30%	25						
Sub-Total	0.325453333						
		•					

		PART	V- Comparison of	Unit Scores and Projec	ted Balance				
Final Unit Score (Debit) [No Net Loss Value]	1242.67	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	n Considerations (Incen	tives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration]	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RFHC, Intermittent	1242.67	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank				
	0-50				
	51-150				
Buffer Width	Right Bank				
	0-50				
	51-150				
Average Buffer	0				
Width/Side	· ·				

RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 43' 11.43"	Lon.	82° 13' 58.43"	WEATHER:	7	75 Sunny	DATE:	20-Ma	ау-10
STREAM CLASSIFICATION:	ı	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				Right Fork of Hell Cr % Streambed Slope, Acro			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	685	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		,_,_,,_,,
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	e (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (C		ırs	Column No. 5- Mitigation Project	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Ī	Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.85	Biogeochemical Cycling		0	Ī	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.92		Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indica	tors		PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and É	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)			PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	12	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	12	4. Sediment Deposition	0-20		ľ	4. Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1		į.	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	18 0	6. Channel Alteration	0-20		Ľ	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	11	7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	13	8. Bank Stability (LB & RB)	0-20		ľ		0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	15	Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20		ŀ	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	81	Total RBP Score	Poor	0	-	Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	Ť	0.405	Sub-Total		0		Sub-Total	•	0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stre	eams)	ľ	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Str	eams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General)			,	WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity				Specific Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 14	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points			nH				nH			nH			nH		
pii	0-1		pii	0-1		ľ	911	0-1		β11	0-1		μιι	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			ļ	DO			DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	<u> </u>		Sub-Total		0	-	Sub-Total		0	Sub-Total	l l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	al Streams)
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			1	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	,	ı
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	<u> </u>	0	Sub-Total		0	<u> </u>	Sub-Total		0	Sub-Total		0	Sub-Total		0
Sub-Total		U	Sub-Total		U	Ľ	Sub-Total		U	Sub-Total		Ü	Sub-10tai		U
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and I	Jnit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	ŀ	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.0075	005	474 70275		_			•								_
0.68875	685	471.79375	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric RFHC, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATI	ION BANKING and	ILF)		
Temporal Loss-Construction			Lo	ng-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).		% Add. Mitigation	and Monitoring Period	Lo	ng-Term Protection (Years)	
Years 25 Sub-Total 0.5165625						
Temporal Loss-Maturity		0 + 5/10 Year Monitoring		101		
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		Sub-Total	PART IV - Ind	ex to Unit Score (0 Conversion	
% Add. Mitigation	Temporal Loss-Maturity (Years)		Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
			1.2580625	685	861.7728125	\$689,418.25
10% Sub-Total	10 0.05275					
		(1)				

	PART V- Comparison of Unit Scores and Projected Balance								
Final Unit Score (Debit) [No Net Loss Value]	861.7728125	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE	INAL PROJECTED NET BALANCE				0		0		0

	litigation Considerations (Incenti	
Extent of Stream Res *Note1: Reference the Instructional handout to determine the co *Note2: Place an "X" in the appropriate c	prrect Restoration Levels (below) for your project	
_evel I Restoration		
Level II Restoration		B
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
RFHC, Ephemeral	861.7728125	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank				
	0-50				
	51-150				
Buffer Width	Right Bank				
	0-50				
	51-150				
Average Buffer	0				
Width/Side	J				

UT1 of RFHC, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:		Buffalo Mt. Surface Mine EP Permit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 44′ 7.65" N	Lon.	82° 13' 59.69" W	WEATHER:	75 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	Perennial		AND SITE DESCRIPTION: creage}, unaltered or impairments)		UT1 - 1st UNT of Right Fork o % Streambed Slope, Acre		•	MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac		N: Same (Mitigation is restoration	n of temporary impacts)
STREAM IMPACT LENGTH: 53	FORM OF MITIGATION		MIT COORDINATES: (in Decimal Degrees)	Lat.	37° 44' 7.65" N	Lon.	82° 13' 59.69" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	535
Column No. 1- Impact Existing Con	ndition (Debit)	Column No. 2- Mitigation Existing Co	ondition - Baseline (Credit)		Column No. 3- Mitigation Proj Post Completion (ears	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology		Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat		Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and Biolo	ogical Indicators	PART I - Physical, Chemical and	I Biological Indicators		PART I - Physical, Chemical and	Biological Indi	icators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical at	nd Biological Indicators
Poir Sca	ints Range Site Score		Points Range Site Score			Points Rang Scale	ge Site Score		Points Range Site Score Scale		Points Range Site Score
PHYSICAL INDICATOR (Applies to all streams class	sifications)	PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet))
Epifaunal Substrate/Available Cover 0-2	20 12	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15
	20 15	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20 13	Embeddedness	0-20 15
	20 10	Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20 13	3. Velocity/ Depth Regime	0-20 13
4. Sediment Deposition 0-2		Sediment Deposition	0-20		4. Sediment Deposition	0-20	11	Sediment Deposition	0-20 13	Sediment Deposition	0-20 15
i	0-1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20	9	5. Channel Flow Status	0-20 10	5. Channel Flow Status	0-20 0-1 10
	20 17	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	6. Channel Alteration	0-20 17
7. Frequency of Riffles (or bends) 0-2		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15	7. Frequency of Riffles (or bends)	0-20 15
	20 10	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18
	20 16 20 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	6	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 11 0-20 11	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 16 0-20 16
. ,	uboptimal 136	Total RBP Score	Poor 0		Total RBP Score	Suboptimal		Total RBP Score	Suboptimal 134	Total RBP Score	Suboptimal 150
Sub-Total	0.68	Sub-Total	0		Sub-Total	Gubopunia	0.585	Sub-Total	0.67	Sub-Total	0.75
CHEMICAL INDICATOR (Applies to Intermittent and	Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (Genera	D	WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
0-5	90 121		0-90			0-90	500		0-90 500		0-90 500
100-199 - 85 points					500-599 - 50 points			500-599 - 50 points		500-599 - 50 points	
pn	0-1	рн	0-1		рп	0-1	1	рп	0-1	рн	0-1
6.0-8.0 = 80 points	80 7.55		5-90		6.0-8.0 = 80 points	5-90	7.55	6.0-8.0 = 80 points	5-90 7.55	6.0-8.0 = 80 points	5-90 7.55
DO		DO			DO			DO		DO	
10-	-30 9.95		10-30		E.O. OO mainta	10-30	9.95	5.0	10-30 9.95	5.0 00 mainte	10-30 9.95
Sub-Total	0.975	Sub-Total			>5.0 = 30 points Sub-Total		0.55	>5.0 = 30 points Sub-Total	0.8	>5.0 = 30 points Sub-Total	0.8
BIOLOGICAL INDICATOR (Applies to Intermittent ar		BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intern	mittent and Perer	· ·	BIOLOGICAL INDICATOR (Applies to Intern	· ·	BIOLOGICAL INDICATOR (Applies to Inte	
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0-1	100 0-1 85.62		0-100 0-1			0-100 0-1	68		0-100 0-1 68		0-100 0-1 68
Very Good		O. t. Tatal			Good		0.00	Good	0.60	Good	0.50
Sub-Total	0.8562	Sub-Total	0		Sub-Total		0.68	Sub-Total	0.68	Sub-Total	0.68
PART II - Index and Unit So	core	PART II - Index and I	Jnit Score		PART II - Index and U	Jnit Score		PART II - Index and U	Init Score	PART II - Index and	Unit Score
Index Lir	near Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Fee	t Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.837066667	535 447.830667	0	535 0		0.605	535	323.675	0.716666667	535 383.416667	0.743333333	535 397.68333

West Virginia Stream and Wetland Valuation Metric UT1 of RFHC, Temporary Perennial (2 of 2)

PART III - Impact F age to insert default values f	(See instruction page	
		Temporal Loss-Construction
	(debit) and completion of compensatory	Reflects duration of aquatic functional loss between the time of an impac
		mitigation (credit).
	45	V
	15	Years Out Table
	0.37668	Sub-Total
		Temporal Loss-Maturity
	time required for maturity, as it relates	Period between completion of compensatory mitigation measures and to
		Period between completion of compensatory mitigation measures and traction (i.e. maturity of tree stratum to provide organic matter and detritus
		nction (i.e. maturity of tree stratum to provide organic matter and detritus
		nction (i.e. maturity of tree stratum to provide organic matter and detritus
	vithin riparian stream or wetland buffer	nction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).
	vithin riparian stream or wetland buffer	nction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).
	vithin riparian stream or wetland buffer	nction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).
	vithin riparian stream or wetland buffer	nction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).

sert default values for MITIGATI	ON BANKING and ILF)	
	Lo	ng-term Protection
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)
	0 + 5/10 Year Monitoring	101
	Sub-Total	0

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.548573333	535	828.4867333	\$662,789.39						

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	828.4867333	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	323.675	Mitigation Projected at Ten Years Post Completion (Credit)	383.4166667	Mitigation Projected At Maturity (Credit)	397.6833333
FINAL PROJECTED NET BALANCE	INAL PROJECTED NET BALANCE						383.4166667		397.6833333

		Part VI - Mitigation	n Considerations (Incer	itives)
*Note1: Referenc	Extent of Stream Restoration te the Instructional handout to determine the correct Restoration Levels (below) for your properties an "X" in the appropriate category (only select one).	oject		
Level I Restoration				
Level II Restoration				Buffer \
Level III Restoration				

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 RFHC, Temporary Perennial	828.4867333	536.8725

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width Left Bank 0-50 Preservation and Re-vegetation 51-150 **Buffer Width** Right Bank 0-50 Preservation and Re-vegetation 51-150 Average Buffer 50 Width/Side

UT1 RFHC, Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 44' 6.95"	82° 13' 55.64"	WEATHER:	75 Sunny	DATE:	20-May-10	
STREAM CLASSIFICATION:		Perennial	IMPACT STREAM/SITE ID / (% stream slope, watershed size {ac			UT1 - 1st UNT of Right Fork of Hell Creek of % Streambed Slope, Acre Watershed, N		MITIGATION STREAM CLASS./SITE IE (% stream slope, watershed size {acreage}		Same (Mitigation is restoration	n of temporary impacts)	s)
STREAM IMPACT LENGTH:	1355	FORM OF MITIGATION:		MIT COORDINATES: (in Decimal Degrees)	Lat.	Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:		
Column No. 1- Impact Existin	ng Condition (Deb	pit)	Column No. 2- Mitigation Existing Col	ndition - Baseline (Credit)		Column No. 3- Mitigation Projected at Five Ye Post Completion (Credit)	ars	Column No. 4- Mitigation Projected Post Completion (Cred		Column No. 5- Mitigation Proje	cted At Maturity (Credit)	
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Ave	/erage
Hydrology			Hydrology			Hydrology		Hydrology		Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling	0		Biogeochemical Cycling	0	Biogeochemical Cycling	0	Biogeochemical Cycling		0
Habitat			Habitat			Habitat		Habitat		Habitat		
PART I - Physical, Chemical and	d Biological Indica	ators	PART I - Physical, Chemical and	Biological Indicators		PART I - Physical, Chemical and Biological Indi	cators	PART I - Physical, Chemical and Biolo	ogical Indicators	PART I - Physical, Chemical ar	nd Biological Indicators	
	Points Range Scale	Site Score		Points Range Site Score Scale		Points Scale Rang	e Site Score		ints Range Site Score		Points Range Site	Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams classifications)		PHYSICAL INDICATOR (Applies to all streams class	sifications)	PHYSICAL INDICATOR (Applies to all streat	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet))	/ /
Epifaunal Substrate/Available Cover	0-20	9	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover 0-20		Epifaunal Substrate/Available Cover O-	20	Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	11	Embeddedness	0-20		2. Embeddedness 0-20		2. Embeddedness 0-	20	2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	8	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime 0-20			20	3. Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	12	Sediment Deposition	0-20		4. Sediment Deposition 0-20		4. Sediment Deposition 0-		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	9	5. Channel Flow Status	0-20		5. Channel Flow Status 0-20		5. Channel Flow Status 0-	20 0-1	5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	14	6. Channel Alteration	0-20		6. Channel Alteration 0-20			20	Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	11	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends) 0-20		7. Frequency of Riffles (or bends) 0-	20	Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	10	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB) 0-20		Bank Stability (LB & RB) 0-	20	8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	15	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB) 0-20			20	9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB) 0-20			20	Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score	Suboptimal	117	Total RBP Score	Poor 0		Total RBP Score Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor	0
Sub-Total		0.585	Sub-Total	0		Sub-Total	0	Sub-Total	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent and	Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)	
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)	
Specific Conductivity	1		Specific Conductivity	0.00		Specific Conductivity		Specific Conductivity		Specific Conductivity		
400 400 05 14	0-90	121		0-90		0-90		0-	90		0-90	
100-199 - 85 points			nU			nU		nU		n Li		
рп	0-1		рп	0-1		pn 0-1		рп	0-1	рп	0-1	
6.0-8.0 = 80 points	0-80	7.55		5-90		5-90		5-	90		5-90	
DO		100	DO			DO		DO		DO		
	10-30	9.95		10-30		10-30		10	-30		10-30	
											1.000	
Sub-Total		0.975	Sub-Total	0		Sub-Total	0	Sub-Total	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Interm	littent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermittent	and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial Stream	ams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
Very Good	0-100 0-1	85.62		0-100 0-1		0-100 0-1		0-	100 0-1		0-100 0-1	
Sub-Total	•	0.8562	Sub-Total	0		Sub-Total	0	Sub-Total	0	Sub-Total		0
PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and Unit Score		PART II - Index and Unit S	core	PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score		Index Linear Feet	Unit Score	Index Li	near Feet Unit Score	Index	Linear Feet Unit	t Score
										-		
0.8054	1355	1091.317	0	0 0		0 0	0	0	0 0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 RFHC, Permanent Perennial (2 of 2)

PART III - Impact Factors

Temporal Loss-Construction	(See instruction
lote: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	t (debit) and completion of compensatory
Years	15
Sub-Total	0.36243
Temporal Loss-Maturity	ha tima raquirad for maturity, as it relates
Note: Period between completion of compensatory mitigation measures and the	
lote: Period between completion of compensatory mitigation measures and the founction (i.e. maturity of tree stratum to provide organic matter and detritus	
Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer

insert default values for MITIGAT	ION BANKING and ILF)	
	Loi	ng-term Protection
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)
	0 + 5/10 Year Monitoring	101
	Sub-Total	0

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
•	4255		1						
1.48999	1355	2018.93645	\$1,615,149.16						

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	2018.93645	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	r project		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of RFHC, Permanent Perennial	2018.93645	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50										
	51-150										
Buffer Width		Right Bank									
	0-50										
	51-150										
Average Buffer	0										
Width/Side	J										

UT1 of RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC	PRDINATES: L Degrees)	Lat.	37° 44' 12.91"	Lon.	82° 14' 18.37"	WEATHER:	7	75 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:	ı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				UT1 - 1st UNT of Right Fork o % Streambed Slope, Acre		•	MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea					
STREAM IMPACT LENGTH:	350	FORM OF MITIGATION:		MIT COOR (in Decimal	_	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existin	g Condition (Del	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Proj Post Completion		ars	Column No. 4- Mitigation Projec Post Completion (Cr		ırs	Column No. 5- Mitigation Project	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	H	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Ну	irology			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0	Bio	geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.72		Habitat			Ha	pitat			Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicato	ors		PART I - Physical, Chemical and	Biological Indi	cators	PART I - Physical, Chemical and B	iological Indica	ators	PART I - Physical, Chemical an	d Biological Indic	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PH	YSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams of	lassifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			us	EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	9	Epifaunal Substrate/Available Cover	0-20		1.	pifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	10	Embeddedness	0-20			mbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	8	Velocity/ Depth Regime	0-20			/elocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	9	4. Sediment Deposition	0-20			Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	8	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	15 11	6. Channel Alteration	0-20			Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	13	7. Frequency of Riffles (or bends)	0-20			requency of Riffles (or bends) Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	17	8. Bank Stability (LB & RB)	0-20			/egetative Protection (LB & RB)	0-20		,	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regular (LB & RB) Regular (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	118	Total RBP Score	Poor	0		al RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.59	Sub-Total		0	Su	o-Total		0	Sub-Total		0	Sub-Total	•	0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	СН	EMICAL INDICATOR (Applies to Intermitte	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial Str	eams)
WVDEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (General)		w	DEP Water Quality Indicators (General	nl)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Sp	ecific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	43		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nH				nH			nH		
pii	0-1		p11	0-1		Pil		0-1		pii	0-1		μιι	0-1	
6.0-8.0 = 80 points	0-80	7.07		5-90				5-90			5-90			5-90	
DO	_		DO			DC				DO			DO		
	10-30	9.95		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total	 	0	Su	p-Total		0	Sub-Total	l l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Str	reams)		LOGICAL INDICATOR (Applies to Inter	nittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perenni	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)	, ,		w	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)	ı	1
Good	0-100 0-1	68.33		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0.6833	Sub-Total	1	0	Su	p-Total		0	Sub-Total	1	0	Sub-Total		0
Sub-Total		0.0033	Sub-Total	<u>. </u>	U	Su	FTOtal		, v	Sub-10tal	Į.	V	Sub-10tal		U
PART II - Index and U	Jnit Score		PART II - Index and Ur	nit Score			PART II - Index and U	Init Score		PART II - Index and Uni	t Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.77055	250	260 6025					0	_			0				_
0.77055	350	269.6925	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 of RFHC, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATIO	ON BANKING and	ILF)		
Temporal Loss-Construction	<u> </u>			L	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impact mitigation (credit).	t (debit) and completion of compensatory		% Add. Mitigation	and Monitoring Period		ng-Term Pro
Years Sub-Total	15 0.3467475					
Temporal Loss-Maturity			0 + 5/10	Year Monitoring		10
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus detritus detritus detritus detritus detritus detritus			Sub-Total			
corridor).	,			PART IV - In	dex to Unit Score C	onversion
% Add. Mitigation	Temporal Loss-Maturity (Years)		Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	(0
			1.420404167	350	497.1414583	
30%	25				•	
Sub-Total	0.303106667					

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	497.1414583	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE				0		0		0		

Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one). Restoration		Considerations (Incen	tives)
*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of RFHC, Intermittent	497.1414583	#DIV/0!

Extended Upland Buffer Zone

Long-Term Protection (Years)

101

ILF Costs

(Offsetting Debit Units)

\$397,713.17

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50										
	51-150										
Buffer Width		Right Bank									
	0-50										
	51-150										
Average Buffer	0										
Width/Side	0										

UT1 of RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	DRDINATES: I I Degrees)	Lat.	37° 44' 14.65"	Lon.	82° 14' 20.09"	WEATHER:	7	5 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:	1	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT1 - 1st UNT of Right Fork of % Streambed Slope, Acro			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea					
STREAM IMPACT LENGTH:	250	FORM OF MITIGATION:		MIT COOR (in Decima		Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Projec Post Completion (Cr		rs	Column No. 5- Mitigation Project	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HG	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hy	Irology			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0	Bio	geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.72		Habitat			Hal	itat			Habitat			Habitat		
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicate	ors		PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and B	iological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		РН	SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			us	EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. E	pifaunal Substrate/Available Cover	0-20			0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	11	2. Embeddedness	0-20		2. E	mbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	5	4. Sediment Deposition	0-20			sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			requency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	12	8. Bank Stability (LB & RB)	0-20			ank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			regetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	78	Total RBP Score	Poor	0		al RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.39	Sub-Total		0		-Total		0	Sub-Total Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strea	ams)	СН	EMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General)	1		wv	DEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(1)		ecific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points	1														
рн	0-1		рн	0-1		рн		0-1		рн	0-1		рн	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		(1)	DO		(1)	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total	<u> </u>	0	Sul	-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	reams)		LOGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perenni		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			wv	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
0			2.1.7.1			-							0.1.7.1.		
Sub-Total		0	Sub-Total		U	Sul	-Total		U	Sub-Total		0	Sub-Total		U
PART II - Index and U	Jnit Score		PART II - Index and Un	it Score			PART II - Index and I	Jnit Score		PART II - Index and Uni	t Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
2.00.000		400.04000	•										•		
0.651666667	250	162.916667	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 of RFHC, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors ge to insert default values for MITIGATION BANKING a	nd ILF)			
Temporal Loss-Construction			Lo	ng-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an impa mitigation (credit).	act (debit) and completion of compensatory	% Add. Mitiga	tion and Monitoring Period	Long	g-Term Protection (Years)	
Years 15 Sub-Total 0.29325						
Temporal Loss-Maturity		0+	5/10 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detrituction).		Sub-Total Final Index Sco		ex to Unit Score Conversion Unit Score ILF Costs		
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)	Ellical Feet	(Debit)	(Offsetting Debit Units)	
		1.152916667	250	288.2291667	\$230,583.33	
30% Sub-Total	25 0.208					
	PART	Comparison of Unit Scores and Projected Balance				

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	288.2291667	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE				0		0		0		

			•	
	tives)			
Extent of Stream Restoration			*N-4-1. D-6	erence Instructional ha
*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).		"Note : Ref	*Note ² : Enter th	
Level I Restoration		1		
Level II Restoration			Buffer Width	
Level III Restoration				0-50
		=		51-15

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of RFHC, Ephemeral	288.2291667	#DIV/0!

Extended Upland Buffer Zone

handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50										
	51-150										
Buffer Width		Right Bank									
	0-50										
	51-150										
Average Buffer	0										
Width/Side	J										

UT10 of UT1 of RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			DMt. Surface Mine mit No. S-5018-07	IMPACT COO	DRDINATES: L. I Degrees)	at.	37° 44' 14.15"	Lon.	82° 14' 16.82"	WEATHER:	7	75 Sunny	DATE:	20-May	ıy-10
STREAM CLASSIFICATION:	lı	Intermittent IMPACT STREAM/SITE ID A (% stream slope, watershed size {acre				UT10 of UT1 of Right Fork of Hell Creek of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree		MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)							
STREAM IMPACT LENGTH:	80	FORM OF MITIGATION:		MIT COOR (in Decima		_at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydro	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.78	0.78	Biogeochemical Cycling		0		eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.81		Habitat			Habita	ıt			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicat	ors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	2	Epifaunal Substrate/Available Cover	0-20		1. Epi	faunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	2	2. Embeddedness	0-20		2. Em	beddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	2	3. Velocity/ Depth Regime	0-20			ocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	1	Sediment Deposition	0-20			diment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	3	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	2	6. Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	2	7. Frequency of Riffles (or bends)	0-20			equency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	10	8. Bank Stability (LB & RB)	0-20		<u> </u>	nk Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	10 14	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) parian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Poor	48	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	1 001	0.24	Sub-Total	1 001	0	Sub-T		1 001	0	Sub-Total	1 001	0	Sub-Total	1 00.	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stream	ams)	CHEM	MICAL INDICATOR (Applies to Intermitte	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVD	EP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity	,		Specific Conductivity				ific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	43		0-90				0-90			0-90			0-90	/
<=99 - 90 points			nU			n LI				all .			n L		
рп	0-1		рп	0-1		рп		0-1		рн	0-1		рп	0-1	
6.0-8.0 = 80 points	0-80	7.07		5-90		1		5-90			5-90			5-90	
DO			DO	_		DO				DO			DO		
	10-30	9.95		10-30				10-30			10-30			10-30	/
Sub-Total		1	Sub-Total		0	Sub-T	otal		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial St	reams)		OGICAL INDICATOR (Applies to Inter	mittent and Peren		BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			wv s	tream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	68.33		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	1
Good		0.0000	Out. Total		0	0.1.7			0	Out Table			Out. Tatal		
Sub-Total		0.6833	Sub-Total	J	U	Sub-T	otal		U	Sub-Total		0	Sub-Total		U
PART II - Index and U	nit Score		PART II - Index and Ur	nit Score			PART II - Index and l	Unit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
								_		_			_	_	
0.71055	80	56.844	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT10 of UT1 of RFHC, Intermittent (2 of 2)

	(0.1.1.1)	ATION DANKING	=\				
	(See instruction	GATION BANKING and I	LF)				
Temporal Loss-Co		Long-term Protection					
Note: Reflects duration of aquatic functional loss between the ti		% Add. Mitigation	and Monitoring Period	Loi	ng-Term Protection (Years)		
mitigation (cr	edit).						
Years	15						
Sub-Total	0.3197475						
Temporal Loss	-Maturity	0 + 5/10 Year Monitoring			101		
Note: Period between completion of compensatory mitigation n		Sub-Total			0		
to function (i.e. maturity of tree stratum to provide organic matt	er and detritus within riparian stream or wetland buffer						
corridor)			PART IV - In	dex to Unit Score C	onversion		
		Final Index Score	Linear Feet	Unit Score	ILF Costs		
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit		
		1.2867375	80	102.939	\$82,351.20		
30%	25 0.25644						

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	102.939	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE				0		0		0			

Part VI -	Mitigation	n Considerations (Incen	tives)
ect Restoration Levels (below) for your project			
			Buffe
	Part VI - oration ect Restoration Levels (below) for your project egory (only select one).	oration ect Restoration Levels (below) for your project	ect Restoration Levels (below) for your project egory (only select one).

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of UT1 of RFHC, Intermittent	102.939	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank							
	0-50								
	51-150								
Buffer Width	Right Bank								
	0-50								
	51-150								
Average Buffer	0								
Width/Side	· ·								

UT11 of UT1 of RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No, S-5018-07	IMPACT COC (in Decima	DRDINATES: La I Degrees)	at.	37° 44' 11.54"	Lon.	82° 14' 18.22"	WEATHER:	7	75 Sunny	DATE:	20-May	y-10
STREAM CLASSIFICATION:	I	Intermittent IMPACT STREAM/SITE ID Al (% stream slope, watershed size (acre							MITIGATION STREAM CLASS,/SITE ID AND SITE DESCRIPTION (% stream slope, watershed size (acreage), unaltered or impairments)						
STREAM IMPACT LENGTH:	435	FORM OF MITIGATION:		MIT COOR (in Decima		at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (0		ars	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Sc	ore (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolog	у			Hydrology			Hydrology		
Biogeochemical Cycling	0.78	0.78	Biogeochemical Cycling		0		nemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.81		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	eators	PART I - Physical, Chemical and I	Biological Indicate	ors	F	PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	itors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICA	L INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA R	BP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	3	Epifaunal Substrate/Available Cover	0-20		1. Epifaun	nal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	4	2. Embeddedness	0-20		2. Embed	dedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	4	3. Velocity/ Depth Regime	0-20		Velocity	y/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	3	Sediment Deposition	0-20			ent Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	7	Channel Flow Status	0-20		Channe	el Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	9	Channel Alteration	0-20			el Alteration	0-20		6. Channel Alteration	0-20		Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	4	7. Frequency of Riffles (or bends)	0-20			ncy of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	11	Bank Stability (LB & RB)	0-20			tability (LB & RB)	0-20		Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20			tive Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20	18 77	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	10. Riparia Total RBF	an Vegetative Zone Width (LB & RB)		0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score		
Sub-Total	Marginal	0.385	Sub-Total	Poor	0	Sub-Total		Poor	0	Sub-Total	Poor	0	Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	and Perennial Stream	ams)		AL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (Genera	n		WVDEP Water Quality Indicators (General	1		WVDEP	Nater Quality Indicators (Gener	·al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity	,		Specific Conductivity		0		Conductivity	.,		Specific Conductivity			Specific Conductivity	<u>,</u>	
-	0-90	43		0-90			-	0-90			0-90			0-90	1
<=99 - 90 points	0.00			1 0 00				0 00			0.00		••	0 00	
рн	0-1		рн	0-1		рн		0-1		рн	0-1		рн	0-1	
6.0-8.0 = 80 points	0-80	7.07		5-90				5-90			5-90			5-90	
DO			DO		10	DO				DO			DO		
	10-30	9.95		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total	1	0	Sub-Total			0	Sub-Total		0	Sub-Total	1	
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial St	reams)		CAL INDICATOR (Applies to Inte	rmittent and Peren		BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn		BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)		·	WV Stream Condition Index (WVSCI)			WV Strea	m Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	68.33		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Good	0.00			0 100 0 1				0.00			0.00			0.00	
Sub-Total		0.6833	Sub-Total		0	Sub-Total			0	Sub-Total		0	Sub-Total		0
PART II - Index and U	Jnit Score		PART II - Index and Ur	nit Score			PART II - Index and	Unit Score		PART II - Index and Ui	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.734716667	435	319.60175	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT11 of UT1 of RFHC, Intermittent (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGATION BANKING and	d ILF)			
Temporal Loss-Cons	ruction		Lo	ng-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit)		% Add. Mitigati	on and Monitoring Period	Lo	ong-Term Protection (Years)	
Years	15					
Sub-Total	0.3306225					
Temporal Loss-Ma	urity	0 + 5/	10 Year Monitoring	101		
*Note: Period between completion of compensatory mitigation meas		Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter at corridor).	ia aetritus witnin riparian stream or wetiana buller		PART IV - Ind	ex to Unit Score (Conversion	
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Un	
		1.3411125	435	583.3839375	\$466,707.15	
30%	25					
Sub-Total	0.275773333					

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	583.3839375	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE			0		0		0			

	Part VI - Mitigation Co	onsiderations (Incentives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (belease) *Note2: Place an "X" in the appropriate category (only select one).	ow) for your project	
Level I Restoration		
Level II Restoration		Buffer
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT11 of UT1 of RFHC, Intermittent	583.3839375	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$466,707.15

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank					
	0-50					
	51-150					
Buffer Width	Right Bank					
	0-50					
	51-150					
Average Buffer Width/Side	0					

UT11 of UT1 of RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No, S-5018-07	IMPACT COOF	RDINATES: La Degrees)	at.	37° 43' 49.06"	Lon.	82° 13' 51.12"	WEATHER:	7	70 Sunny	DATE:	20-May	ıy-10
STREAM CLASSIFICATION:	1	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				UT4 - 4th UNT of Right Fork % Streambed Slope, Ac			MITIGATION STREAM CLASS./SI (% stream slope, watershed size (ac					
STREAM IMPACT LENGTH:	645	FORM OF MITIGATION:		MIT COORD (in Decimal I		at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existin	g Condition (Del	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline (C	Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proj Post Completion (ırs	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	,	Average	HGM So	ore (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolog	y			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0	Biogeoc	nemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.72		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicator	'S		PART I - Physical, Chemical ar	nd Biological Indi	icators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range S	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICA	AL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA F	RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		 Epifaui 	nal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	14	2. Embeddedness	0-20		2. Embed	dedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	/
Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			y/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	7	Sediment Deposition	0-20			ent Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			el Flow Status	0-20 0-1	1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	19	6. Channel Alteration	0-20			el Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			ncy of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20			Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	15 20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20			tive Protection (LB & RB) an Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Regular (LB & RB) Regular (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB, Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	91	Total RBP Score	Poor	0	Total RBI		Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	margina.	0.455	Sub-Total	1 00.	0	Sub-Tota		1 001	0	Sub-Total	. 55.	0	Sub-Total	1 00.	0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stream	ns)	CHEMIC	AL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stream	eams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General	1		WVDEP	Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	D		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity				Conductivity			Specific Conductivity	,		Specific Conductivity	,	
	0-90			0-90				0-90			0-90			0-90	/
100-199 - 85 points			-11			-11				ell.			n11		
рп	0-1		рп	0-1		рп		0-1	1	рп	0-1		рн	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO		0.00	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	1 1		Sub-Total		0	Sub-Tota			0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Stre	ams)		CAL INDICATOR (Applies to Inte	ermittent and Perer	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream	am Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
_	0-100 0-1			0-100 0-1				0-100 0-1	1		0-100 0-1			0-100 0-1	
0 Sub-Total		0	Cub Tatal			Sub-Tota			0	Cub Total		0	Cub Total		
Sub-Total		0	Sub-Total		U	Sub-Tota			U	Sub-Total		0	Sub-Total		U
PART II - Index and U	Jnit Score		PART II - Index and Ur	it Score			PART II - Index and	Unit Score		PART II - Index and U	Init Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet U	nit Score		Index	Linear Fee	t Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
A AAT		400 0000-	_				_	_		_	_		_	_	
0.667916667	645	430.80625	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT11 of UT1 of RFHC, Ephemeral (2 of 2)

*Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of comitigation (credit). Years Sub-Total Temporal Loss-Construction *Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of comitigation (credit).	pensatory	% Add. Mitigation a	Lond Monitoring Period	ong-term Protection	
mitigation (credit). Years 15	pensatory	% Add. Mitigation a	nd Monitoring Period	Long	
1.00.0				20119	-Term Protection (Years)
Temporal Loss-Maturity		0 + 5/10 Ye	ear Monitoring		101
*Note: Period between completion of compensatory mitigation measures and the time required for maturity,		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wet	nd buffer				
corridor).		PART IV - Index to Unit Score Conversion		iversion	
% Add. Mitigation Temporal Loss-Maturi	(Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Un
		1.189479167	645	767.2140625	\$613,771.25
30% 25					
Sub-Total 0.221					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	767.2140625	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Miti	igation Considerations (Incentives)
Extent of Strea *Note1: Reference the Instructional handout to determine *Note2: Place an "X" in the appro	e the correct Restoration Levels (below) for your project	
Level I Restoration		
Level II Restoration		Buffer
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT11 of UT1 of RFHC, Ephemeral	767.2140625	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank				
	0-50				
	51-150				
Buffer Width		Right Bank			
	0-50				
	51-150				
Average Buffer	0				
Width/Side	· ·				

UT4 of RFHC, Temporary Perennial (1 of 2)

Common Programment Common Commo	20-May-10
Column No. 1 import Extring Continue (No. 1 import Extring C	storation of temporary impacts)
Control of the Page 1 Service Control of the Page 2 Service Control of the Page 2 Service Control of the Page 3 Servic	50
Part Project Part Part Project Part Project Part Project Part Project Part Project Part Project Part Project Part Part Project Part Part Project Part Part Project Part Part Part Part Part Part Part Part Part Part Part Part Part Part Part Part Part Part Par	ion Projected At Maturity (Credit)
Rispancial Application Company	ns): Average
Figure F	
PART I - Physical, Chemical and Biological Indicators PART I - Physical, Chemical a	0
Part Part	
Seal	emical and Biological Indicators
SEPA NET Prigh Condent Data Share	Points Range Site Score Scale
Epithural Stotherior Available Cover 28	to all streams classifications)
Epithania Substrate/Available Cover 2.50 1.50	ta Sheet)
3 Selective Depart Regime 9-20 4 4 5 5 6 6 6 6 6 6 6 6	Cover 0-20 15
4. Sediment Deposition 9-20	0-20
Scheme Fow Status Scheme	0-20
6. Channel Alteration	0-20 15
7. Frequency of Riffles (or bends)	0-20 0-1
B. Bank Stability (LB & RB)	0-20 17
A Vegetative Protection (LB A RB)	
10, Reparts Negetative Zone Width (LB & RB) 0-20 10, Reparts Negetative Zone Wi	0-20 18
Total RBP Score Suboptimal 141 Sub-Total Total RBP Score Poor Outside	
Sub-Total 0.705 Sub-Total 0.705 CHEMICAL INDICATOR (Applies to Intermittent and Perennial Streams)	
Chemical Indicators (Applies to Intermittent and Perennial Streams) Chemical Indicators (General) WVDEP Water Quality Indicators (General) WVDEP W	Suboptimal 157 0.785
Specific Conductivity	to Intermittent and Perennial Streams)
Specific Conductivity	rs (General)
10-190 - 85 points 0-90	3 (General)
10-19-19-59 points 1-19-19-19-59 points 1-19-19-19-59 points 1-19-19-59 nts 1-19-59 points 1-19-5	0-90 500
6.0-8.0 = 80 points	0-90
6.0-8.0 = 80 points	
DO	5-90 7.55
Sub-Total Sub-To	
Sub-Total Sub-To	10-30 9.95
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Very Good O-100 O-1 Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams)	0.8
Very Good 0-100 0-1 85.62 Sub-Total 0.8562 Sub-Total 0.100 0-1 0-100 0-1 0-100 0-1 68 Sub-Total Sub	ies to Intermittent and Perennial Streams)
Very Good Good Good Good Good Good Good Goo	VSCI)
Very Good Good Good Good Good Good Good Goo	0-100 0-1 68
	0.68
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score	0.68
	ndex and Unit Score
Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index	Linear Feet Unit Score
0.8454 50 42.27 0 50 0 0.618333333 50 30.916667 0.728333333 50 36.4166667 0.755	50 37.75

West Virginia Stream and Wetland Valuation Metric UT4 of RFHC, Temporary Perennial (2 of 2)

PART III - Impact Facto age to insert default values for M	(See instruction page	
		Temporal Loss-Construction
	debit) and completion of compensatory	Reflects duration of aquatic functional loss between the time of an im
		mitigation (credit).
	15	Years
	0.38043	Sub-Total
		Temporal Loss-Maturity
		Period between completion of compensatory mitigation measures ar ction (i.e. maturity of tree stratum to provide organic matter and detri corridor).
	Temporal Loss-Maturity (Years)	% Add. Mitigation
	Temporal Loss-Maturity (Years)	% Add. Mitigation

sert default values for MITIGATION BANKING and ILF)							
	Long-term Protection						
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)					
	0 + 5/10 Year Monitoring	101					
	Sub-Total	0					

PART IV - Index to Unit Score Conversion								
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)					
1.56399	50	78.1995	\$62,559.60					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	78.1995	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	30.91666667	Mitigation Projected at Ten Years Post Completion (Credit)	36.41666667	Mitigation Projected At Maturity (Credit)	37.75
FINAL PROJECTED NET BALANCE		30.91666667		36.41666667		37.75			

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration			
Level II Restoration			Buffer
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT4 of RFHC, Temporary Perennial	78.1995	37.75

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer	0						
Width/Side	O						

UT4 of RFHC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07	IMPACT COORDIN (in Decimal Degr		37° 43' 48.23" N	Lon.	82° 13' 53.11" W	WEATHER:		70 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:	1	ntermittent	IMPACT STREAM/SITE ID (% stream slope, watershed size {a			UT4 - 4th UNT of Right Fo			MITIGATION STREAM CLASS./S (% stream slope, watershed size {			Same (Mitigation is restoration	n of temporary in	mpacts)
STREAM IMPACT LENGTH:	455	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINA (in Decimal Degr		37° 43' 48.23" N	Lon.	82° 13' 53.11" W	PRECIPITATION PAST 48 HRS:		0	Mitigation Length:	45	55
Column No. 1- Impact Existin	ng Condition (Del	pit)	Column No. 2- Mitigation Existing Co	ondition - Baseline (Cred	it)	Column No. 3- Mitigation Post Comple	n Projected at Five etion (Credit)	Years	Column No. 4- Mitigation Pro Post Completion		ars	Column No. 5- Mitigation Proje	ected At Maturity (C	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Aver	age	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology	0.69		Hydrology	0.73		Hydrology	0.77	
Biogeochemical Cycling	0.97	0.89	Biogeochemical Cycling	0)	Biogeochemical Cycling	0.56	0.616666667	Biogeochemical Cycling	0.78	0.72	Biogeochemical Cycling	0.88	0.84
Habitat	0.95		Habitat			Habitat	0.6		Habitat	0.65		Habitat	0.87	
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and	d Biological Indicators		PART I - Physical, Chemica	al and Biological In	dicators	PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical a	nd Biological Indic	cators
	Points Range Scale	Site Score		Points Range Site S	Score		Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)	1		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness	0-20	13	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15
3. Velocity/ Depth Regime	0-20	6	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13
Sediment Deposition	0-20	11	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20	13	Sediment Deposition	0-20	15
5. Channel Flow Status	0-20 0-1	8	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	8	5. Channel Flow Status	0-20	10	5. Channel Flow Status	0-20	10
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20	12	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18
9. Vegetative Protection (LB & RB)	0-20	12	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	11	9. Vegetative Protection (LB & RB)	0-20	16
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	6	10. Riparian Vegetative Zone Width (LB & RB)	0-20	11	10. Riparian Vegetative Zone Width (LB & RB)	0-20	16
Total RBP Score	Suboptimal	125	Total RBP Score	Poor 0)	Total RBP Score	Suboptimal	116	Total RBP Score	Suboptimal	134	Total RBP Score	Suboptimal	150
Sub-Total		0.625	Sub-Total	C)	Sub-Total		0.58	Sub-Total		0.67	Sub-Total		0.75
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	eams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)		CHEMICAL INDICATOR (Applies to Interm	ittent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermi	ttent and Perennial Str	reams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General	ral)		WVDEP Water Quality Indicators (Gene	ral)	
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	44		0-90			0-90	500		0-90	500		0-90	500
<=99 - 90 points						500-599 - 50 points			500-599 - 50 points			500-599 - 50 points		
рн	0-1		рн	0-1		рн	0-1		рн	0-1		рн	0-1	
6.0-8.0 = 80 points	0-80	6.86		5-90		6.0-8.0 = 80 points	5-90	6.86	6.0-8.0 = 80 points	5-90	6.86	4.6-5.5 = 10 points	5-90	5
DO		(3))	DO			DO			DO			DO		
	10-30	10.07		10-30			10-30	10.07		10-30	10.07		10-30	10.07
	10-30	10.07		10-30		>5.0 = 30 points	10-30		>5.0 = 30 points	10-30		>5.0 = 30 points	10-30	
Sub-Total		1	Sub-Total)	Sub-Total		0.55	Sub-Total		0.8	Sub-Total		0.45
BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perenni	nial Streams)
WV Stream Condition Index (WVSCI)	T I		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	69.59		0-100 0-1		Good	0-100 0-1	68	Good	0-100 0-1	68	Good	0-100 0-1	68
Sub-Total	l l	0.6959	Sub-Total	()	Sub-Total	I	0.68	Sub-Total		0.68	Sub-Total		0.68
					<u> </u>									
PART II - Index and I	Unit Score		PART II - Index and I	Unit Score		PART II - Index	and Unit Score		PART II - Index and	Unit Score		PART II - Index and	d Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit S	Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
	455	ATO 47075	_	455 0		0.61				455	326.841667			333.66667
0.831816667		378.476583					455	277.55	0.718333333			0.73333333	455	

West Virginia Stream and Wetland Valuation Metric UT4 of RFHC, Temporary Intermittent (2 of 2)

PART III - Impact Factors

	(See instruction
Temporal Loss-Construction	
Note: Reflects duration of aquatic functional loss between the time of an impac	t (debit) and completion of compensatory
mitigation (credit).	
Years	15
Sub-Total	0.3743175
T 11 55 4 14	
Temporal Loss-Maturity	
	ne time required for maturity, as it relates
	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and the	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus	· · · · · · · · · · · · · · · · · · ·
Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus	· · · · · · · · · · · · · · · · · · ·
Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer Temporal Loss-Maturity (Years)
*Note: Period between completion of compensatory mitigation measures and the tofunction (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer

age to insert default values for MITIGATION BANKING and ILF)								
	Long-term Protection							
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)						
	0 + 5/10 Year Monitoring	101						
	Sub-Total	0						

PART IV - Index to Unit Score Conversion								
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)					
1.5155875	455	689.5923125	\$551,673.85					

PART V- Comparison of Unit Scores and Projected Balance										
	Final Unit Score (Debit) [No Net Loss Value]	689.5923125	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	277.55	Mitigation Projected at Ten Years Post Completion (Credit)	326.8416667	Mitigation Projected At Maturity (Credit)	333.6666667
	FINAL PROJECTED NET BALANCE				277.55		326.8416667		333.6666667	

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT4 RFHC, Temporary Intermittent	689.5923125	450.45

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank								
	0-50	Preservation and Re-vegetation								
50	51-150									
Buffer Width		Right Bank								
	0-50	Preservation and Re-vegetation								
50	51-150									
Average Buffer Width/Side	50									

UT4 of RFHC, Permanent Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 43' 48.32"	Lon.	82° 13' 56.85"	WEATHER:	7	70 Sunny	DATE:	20-Ma	y-10
STREAM CLASSIFICATION:	li	ntermittent		IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)			UT4 - 4th UNT of Right Fork of Hell Creek of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)			Same (Mitigation is restoration	of temporary im	ipacts)
STREAM IMPACT LENGTH:	1185	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	e (Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Project Post Completion (Cr		ars	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.89	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.95		Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indica	tors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and Bi	ological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)			PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams of	lassifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	14	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		1	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	10	Embeddedness	0-20			2. Embeddedness	0-20			0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	7	Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20			0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	10	4. Sediment Deposition	0-20			4. Sediment Deposition	0-20		·	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	9	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20 0-1			0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20			6. Channel Alteration	0-20			0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20	9	7. Frequency of Riffles (or bends)	0-20			Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20			0-20		7. Frequency of Riffles (or bends)	0-20	
, , , , , , , , , , , , , , , , , , , ,	0-20	11	8. Bank Stability (LB & RB)	0-20			, , , , , , , , , , , , , , , , , , , ,	0-20			0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	16	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	115	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.575	Sub-Total		0		Sub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stre	eams)		CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	ıl)		WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(1)		Specific Conductivity			Specific Conductivity			Specific Conductivity		
00 00 == 1=1=	0-90	44		0-90				0-90			0-90			0-90	
<=99 - 90 points	L		nH				nH			nH			nH		
	0-80	0.00	p	5-90 0-1				5-90 0-1		p.,	5-90 0-1		p	5-90 0-1	
6.0-8.0 = 80 points	0-80	6.86		5-90				5-90			5-90			5-90	
DO		53	DO		(1)		DO			DO			DO		
	10-30	10.07		10-30				10-30			10-30			10-30	
Sub-Total	I I	1	Sub-Total	l	0		Sub-Total		0	Sub-Total	L .	0	Sub-Total	l l	0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, , , , , , , , , , , , , , , , , , ,	
Good	0-100 0-1	69.59		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	1 1	0.6959	Sub-Total		0		Sub-Total		0	Sub-Total	1	0	Sub-Total		0
Sub-10tal		0.0333	Sub-Total		U		Sub-Total		U	Sub-Total		U	Sub-10tai		U
PART II - Index and U	Jnit Score		PART II - Index and Ur	it Score			PART II - Index and	Unit Score		PART II - Index and Unit	t Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.000 /22222	440=	075 00775											_		
0.823483333	1185	975.82775	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT4 of RFHC, Permanent Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGAT	ION BANKING and	ILF)				
Temporal Loss-Construction				Lo	ng-term Protection			
*Note: Reflects duration of aquatic functional loss between the time of an impact	ct (debit) and completion of compensatory		% Add. Mitigatio	n and Monitoring Period		ong-Term Protection (Years)		
*Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensation (credit). Years Sub-Total Temporal Loss-Maturity *Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it references.								
					101			
	he time required for maturity, as it relates		0 + 5/10 Sub-Total	O Year Monitoring		0		
to function (i.e. maturity of tree stratum to provide organic matter and detritus			Sub-Total			<u> </u>		
corridor).	mann npanan or out of modaria barrer			PART IV - Inde	ex to Unit Score C	Conversion		
			Final Index Score	Linear Feet	Unit Score	ILF Costs		
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)		
			1.4968375	1185	1773.752438	\$1,419,001.95		
30%	25							
Sub-Total	0.302786667							
	_	-						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	1773.752438	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

				/
Part VI - Mitigation	Considerations (Incen	itives)		
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).		*Note ¹ : Refe	Extending the second se	e definiti h for eac
Level I Restoration			*Note ³ : Sele	ect the a
Level II Restoration		Buffer Width		
Level III Restoration			0-50	
·			51-150	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT4 of RFHC, Permanent Intermittent	1773.752438	#DIV/0!

Upland Buffer Zone

initions of the Buffer Zone Mitigation Extents and Types (below) each channel side (Left Bank and Right Bank)

appropriate mitigation type

Buffer Width		Left Bank					
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer	0						
Width/Side	O						

UT4 of RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07	IMPACT COOF (in Decimal I	RDINATES: La Degrees)	at.	37° 43' 49.06"	Lon.	82° 13' 51.12"	WEATHER:	7	70 Sunny	DATE:	20-May	ıy-10
STREAM CLASSIFICATION:		Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				UT4 - 4th UNT of Right Fork % Streambed Slope, Acr			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac					
STREAM IMPACT LENGTH:	10	FORM OF MITIGATION:		MIT COORD (in Decimal I	-	at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Cor	ndition - Baseline (C	Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proj Post Completion (ırs	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Sc	ore (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolog	iy			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0	Biogeocl	nemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.72		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicator	'S		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICA	AL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA F	RBP (High Gradient Data Sheet))		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epifaur	nal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	2. Embeddedness	0-20		Embed	dedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	/
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			y/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	4. Sediment Deposition	0-20			ent Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			el Flow Status	0-20		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			el Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			ncy of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	10	8. Bank Stability (LB & RB)	0-20			Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	12 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			ative Protection (LB & RB) an Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	87	Total RBP Score	Poor	0	Total RBF		Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.435	Sub-Total		0	Sub-Tota			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	at and Perennial Stream	ns)	CHEMICA	AL INDICATOR (Applies to Intermit	ttent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	D		WVDEP Water Quality Indicators (General)		WVDEP	Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity	.,		Specific Conductivity				Conductivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	/
100-199 - 85 points			m11			-11				-11			m11		
рп	0-1		рп	0-1		рп		0-1		рп	0-1		рп	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total		0	Sub-Tota			0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	ams)		CAL INDICATOR (Applies to Inte	ermittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Strea	am Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	1
0		0	Out Tatal		0	Out Total			0	Out Tatal		0	Out Tatal		
Sub-Total		0	Sub-Total		U	Sub-Tota			U	Sub-Total		0	Sub-Total		U
PART II - Index and U	Jnit Score		PART II - Index and Ur	nit Score			PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet U	Init Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.662916667	10	6.62916667	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT4 of RFHC, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANK	NG and	ILF)		
Temporal Loss-Construction	n			L	ong-term Protection	
flects duration of aquatic functional loss between the time of an in	pact (debit) and completion of compensatory	% Add	Mitigation	and Monitoring Period	Lo	ng-Term Pro
mitigation (credit).						
Years Sub-Total	15 0.2983125					
Temporal Loss-Maturity			0 + 5/10	Year Monitoring		10
riod between completion of compensatory mitigation measures a		Sub-Total				
on (i.e. maturity of tree stratum to provide organic matter and detr	tus within riparian stream or wetland buffer					
corridor).				PART IV - Inc	dex to Unit Score C	conversion
		Final Inde	Score	Linear Feet	Unit Score	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Deb			(Debit)	(0
		1.17822	9167	10	11.78229167	
30%	25					
	0.217					

PART V- Comparison of Unit Scores and Projected Balance										
	Final Unit Score (Debit) [No Net Loss Value]	11.78229167	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
	FINAL PROJECTED NET BALANCE				0		0		0	

	Part VI - Mitigation	n Considerations (Incen	ntives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	roject		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT4 of RFHC, Ephemeral	11.78229167	#DIV/0!

Extended Upland Buffer Zone

Long-Term Protection (Years)

101

ILF Costs (Offsetting Debit Units)

\$9,425.83

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank						
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer Width/Side	0							

UT1 of UT4 of RFHC, Temporary Intermittent (1 of 2)

•		o Mt. Surface Mine rmit No. S-5018-07	IMPACT COORDINATES (in Decimal Degrees)	S: Lat.	37° 43' 48.08" N	Lon.	82° 13' 56.56" W	WEATHER:		70 Sunny	DATE:	20-Ma	ay-10	
STREAM CLASSIFICATION:	CLASSIFICATION: Intermittent IMPACT STREAM/SITE ID AN (% stream slope, watershed size {acrea				UT1 of UT4 of Right Fork % Streambed Slope, A			MITIGATION STREAM CLASS./3 (% stream slope, watershed size {			Same (Mitigation is restoration	of temporary in	mpacts)	
STREAM IMPACT LENGTH:	90	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES: (in Decimal Degrees)	Lat.	37° 43' 48.08" N	Lon.	82° 13' 56.56" W	PRECIPITATION PAST 48 HRS:		0	Mitigation Length:	9	00
Column No. 1- Impact Existin	ng Condition (Debi	it)	Column No. 2- Mitigation Existing Co	ndition - Baseline (Credit)		Column No. 3- Mitigation F Post Completi		Years	Column No. 4- Mitigation Pro Post Completion		ears	Column No. 5- Mitigation Project	ted At Maturity (C	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology	0.69		Hydrology	0.73		Hydrology	0.77	
Biogeochemical Cycling	0.97	0.89	Biogeochemical Cycling	0		Biogeochemical Cycling	0.56	0.616666667	Biogeochemical Cycling	0.78	0.72	Biogeochemical Cycling	0.88	0.84
Habitat	0.95		Habitat			Habitat	0.6		Habitat	0.65		Habitat	0.87	
PART I - Physical, Chemical and	nd Biological Indica	ators	PART I - Physical, Chemical and	Biological Indicators		PART I - Physical, Chemical a	and Biological Inc	dicators	PART I - Physical, Chemical an	nd Biological Ind	licators	PART I - Physical, Chemical and	l Biological Indic	cators
	Points Range Scale	Site Score		Points Range Site Score Scale			Points Range Scale	Site Score		Points Rang Scale	ge Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	2	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	13
2. Embeddedness	0-20	2	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15
3. Velocity/ Depth Regime	0-20	2	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13 13	3. Velocity/ Depth Regime	0-20	13
4. Sediment Deposition	0-20	1	4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	11	4. Sediment Deposition	0-20	10	4. Sediment Deposition	0-20	15 10
5. Channel Flow Status	0-20 0-1	6	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	17	5. Channel Flow Status	0-20 0-1	17	5. Channel Flow Status	0-20 0-1	17
6. Channel Alteration	0-20	3	6. Channel Alteration	0-20		6. Channel Alteration	0-20	15	6. Channel Alteration	0-20	15	6. Channel Alteration	0-20	15
7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	18	7. Frequency of Riffles (or bends)	0-20	18	7. Frequency of Riffles (or bends)	0-20	18
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	6	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	15 18	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	11 11	9. Vegetative Protection (LB & RB)	0-20	16 16
Total RBP Score	0-20 Marginal	64	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	Poor 0		Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Suboptimal	116	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Suboptimal		Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Suboptimal	148
Sub-Total	Marginal	0.32	Sub-Total	0		Sub-Total	Ouboptimal	0.58	Sub-Total	Ouboptimal	0.67	Sub-Total	Odboptimai	0.74
CHEMICAL INDICATOR (Applies to Intermitte	tent and Perennial Stre		CHEMICAL INDICATOR (Applies to Intermitte			CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre		CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennial		CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	
WVDEP Water Quality Indicators (General	ral)		WVDEP Water Quality Indicators (Genera	n.		WVDEP Water Quality Indicators (Genera	WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)				
Specific Conductivity	ai)		Specific Conductivity	'		Specific Conductivity			Specific Conductivity	iai)	Specific Conductivity			
	0-90	43		0-90			0-90	500		0-90	500	, , , , , , , , , , , , , , , , , , ,	0-90	500
<=99 - 90 points	0-90	43		0-90		500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500
рН		8.0	pH	(1)		рН			рН			рН		
6080 00:	0-80	7.07		5-90		6.0.8.0	5-90 0-1	7.07	6080 00 ==:=t=	5-90	7.07	6000 00	5-90 0-1	7.07
6.0-8.0 = 80 points			DO			6.0-8.0 = 80 points			6.0-8.0 = 80 points			6.0-8.0 = 80 points		
	10.00	0.05		T.,,,,			10.00	0.05		10.5	0.05		1000	
	10-30	9.95		10-30		>5.0 = 30 points	10-30	9.95	>5.0 = 30 points	10-30	9.95	>5.0 = 30 points	10-30	9.95
Sub-Total		1	Sub-Total	0		Sub-Total		0.55	Sub-Total		0.8	Sub-Total		8.0
BIOLOGICAL INDICATOR (Applies to Interm	mittent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intern	mittent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perer	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	mittent and Perenni	nial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	,		WV Stream Condition Index (WVSCI)	,		WV Stream Condition Index (WVSCI)	,	
	0-100 0-1	68.33		0-100 0-1			0-100 0-1	68		0-100 0-1	68		0-100 0-1	68
Good Sub-Total		0.6833	Sub-Total	0		Good Sub-Total		0.68	Good Sub-Total		0.68	Good Sub-Total		0.68
Sub-10tal		0.0033	Sub-1 otal		J	Sub-1 otal		0.08	Sub-Total		0.00	Sub-Total		0.00
PART II - Index and	Unit Score		PART II - Index and U	PART II - Index and Unit Score		PART II - Index and Unit Score		PART II - Index and Unit Score			PART II - Index and Unit Score			
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.778883333	90	70.0995	0	90 0		0.61	90	54.9	0.718333333	90	64.65	0.79	90	71.1

West Virginia Stream and Wetland Valuation Metric UT1 of UT4 of RFHC, Temporary Intermittent (2 of 2)

		DADT III. Lancart Footons				
	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKI	ING and IL	F)		
Temporal Loss-Constr	uction			Lo	ong-term Protection	
s duration of aquatic functional loss between the time of mitigation (credit).		% Add.	. Mitigation a	and Monitoring Period		ong-Term Protection (
Years	15					
Sub-Total	0.3504975					
Temporal Loss-Mati	ırity	-	0 + 5/10 Ye	ear Monitoring		101
between completion of compensatory mitigation measurements.		Sub-Total				0
.e. maturity of tree stratum to provide organic matter an corridor).	d detritus within riparian stream or wetland buffer		PART IV - Index to Unit Score Conversion			Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index (Debi		Linear Feet	Unit Score (Debit)	ILF (Offsetting
		1.3964	875	90	125.683875	\$100
			•		•	
30%	25					
	0.267106667					

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value] 125.683875 Mitigation Existing Condition - Baseline (Credit)		0	Mitigation Projected at Five Years Post Completion (Credit)	54.9	Mitigation Projected at Ten Years Post Completion (Credit)	64.65	Mitigation Projected At Maturity (Credit)	71.1			
FINAL PROJECTED NET BALANCE					54.9		64.65		71.1		

	Part VI - Mitigation							
Extent of Stream Re *Note1: Reference the Instructional handout to determine the c *Note2: Place an "X" in the appropriate	correct Restoration Levels (below) for your project							
evel I Restoration								
Level II Restoration		Buffer						
Level III Restoration								

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 UT4 RFHC, Temporary Intermittent	125.683875	95.985

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$100,547.10

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank									
	0-50	Preservation and Re-vegetation									
50	51-150										
Buffer Width	Right Bank										
	0-50	Preservation and Re-vegetation									
50	51-150										
Average Buffer Width/Side	50										

UT3 of UT4 of RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No, S-5018-07		DORDINATES: nal Degrees)	Lat.	37° 43' 43.97"	Lon.	82° 14' 6.03"	WEATHER:	7	5 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION: Intermi		ntermittent	IMPACT STREAM/SITE ID / (% stream slope, watershed size {ac				UT3 of UT4 of Right Fork of % Streambed Slope, Acre		•	MITIGATION STREAM CLASS./SITI (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	290	FORM OF MITIGATION:			PRDINATES: nal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existin	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Co	ndition - Baselin	ne (Credit)		Column No. 3- Mitigation Pro		Years	Column No. 4- Mitigation Project Post Completion (C		rs	Column No. 5- Mitigation Project	ted At Maturity (Ci	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	Ī	IGM Score (attach data forms):	()	Average	HGM Score (attach data forms):	,	Average	HGM Score (attach data forms):		Average
Hydrology	0.74		Hydrology			Ī	lydrology			Hydrology			Hydrology		
Biogeochemical Cycling	1	0.85	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.81		Habitat			ŀ	Habitat			Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and	Biological Indic	ators		PART I - Physical, Chemical and	l Biological In	dicators	PART I - Physical, Chemical and B	iological Indica	itors	PART I - Physical, Chemical and	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Ra Scale	nge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream:	s classifications)		ı	PHYSICAL INDICATOR (Applies to all stream	ns classifications)	PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			ī	JSEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	10	Epifaunal Substrate/Available Cover	0-20			. Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	9	2. Embeddedness	0-20		2	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	8	Velocity/ Depth Regime	0-20		3	B. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	11	Sediment Deposition	0-20		4	I. Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	10	5. Channel Flow Status	0-20 0-1		5	5. Channel Flow Status	0-20	ı-1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	15	Channel Alteration	0-20		6	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	6	7. Frequency of Riffles (or bends)	0-20		7	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	8	8. Bank Stability (LB & RB)	0-20		8	B. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB)	0-20	14	Vegetative Protection (LB & RB)	0-20		9	Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	12	10. Riparian Vegetative Zone Width (LB & RB)	0-20			Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score Sub-Total	Marginal	103 0,515	Total RBP Score Sub-Total	Poor	0	_	Total RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0
Sub-10tal CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St		CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St			SUD- I OTAI CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennia		CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	
			` ` ` `			-			,	· · · ·		,	```		
WVDEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (Genera	1)			NVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity			1	Specific Conductivity			Specific Conductivity			Specific Conductivity		
<=99 - 90 points	0-90	44		0-90				0-90			0-90			0-90	
Ha Ha		(0)	На		(1)	ī	ЭН			На			Н		
	0-80	6.77		5-90 0-1		ľ		5-90	⊢1		5-90 0-1			5-90 0-1	
6.0-8.0 = 80 points	0-00	0.77		3-90		L		3-30			3-30			3-30	
DO			DO			1	00			DO			DO		
	10-30	9.52		10-30				10-30			10-30			10-30	
Sub-Total	1	1	Sub-Total		0	9	Sub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Per	ennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			,	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	66.64		0-100 0-1				0-100	I-1		0-100 0-1			0-100 0-1	
Grey Zone	0.00	00.04		0.00		L		0.00			0.00			0.00	
Sub-Total		0.6664	Sub-Total		0	5	Sub-Total		0	Sub-Total		0	Sub-Total		0
PART II - Index and U	Jnit Score		PART II - Index and U	nit Score			PART II - Index and U	Jnit Score		PART II - Index and Un	t Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fe	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Scor
0.700	922	200 20 40 5				ŀ									
0.788566667	290	228.684333	0	0	0		0	0	0 1	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT3 of UT4 of RFHC, Intermittent (2 of 2)

PART III - Impact Factors (See instruction page to insert default values for MITIGATION BANKING and ILF) Temporal Loss-Construction Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit). Years					
Temporal Loss-Construction			Lo	ng-term Protection	
	ct (debit) and completion of compensatory	% Add. Mitigation	n and Monitoring Period	Lo	ng-Term Protection (Years)
Temporal Loss-Maturity		0 + 5/1	0 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and	Sub-Total			0	
	s within riparian stream or wetland buffer				
% Add. Mitigation	Temporal Loss-Maturity (Years)		Linear Feet		
		1.434275	290	415.93975	\$332,751.80
30% Sub-Total	25 0.290853333				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value] 415.93975 Mitigation Existing Condition - Baseline (Credit)				Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE					0		0		0		

	ation Considerations (Incentives)	
Extent of Stream Res *Note1: Reference the Instructional handout to determine the co *Note2: Place an "X" in the appropriate ca	rrect Restoration Levels (below) for your project	
Level I Restoration		
Level II Restoration		Buffer
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT3 of UT4 of RFHC, Intermittent	415.93975	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

UT3 of UT4 of RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO (in Decimal	PRDINATES: La Degrees)	at.	37° 43' 44.59"	Lon.	82° 14' 8.40"	WEATHER:	7	5 Sunny	DATE:	20-May	ıy-10
STREAM CLASSIFICATION:	1	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT3 of UT4 of Right Fork of % Streambed Slope, Acr			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	20	FORM OF MITIGATION:		MIT COORI (in Decimal		at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline ((Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		rs	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolo	gy			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0		chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.72		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicato	ors		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and É	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	AL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epifa	ınal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	15	Embeddedness	0-20			ddedness	0-20		Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20			ity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	4. Sediment Deposition	0-20			nent Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16 0	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	10	7. Frequency of Riffles (or bends)	0-20			ency of Riffles (or bends) Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20 0-20	12	8. Bank Stability (LB & RB)	0-20			*·····) (== *···=)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			ative Protection (LB & RB) rian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	87	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	<u> </u>	0.435	Sub-Total		0	Sub-Tot	al	•	0	Sub-Total		0	Sub-Total	•	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	ms)	СНЕМІС	CAL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General))		WVDEF	Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Specific	Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 11	0-90			0-90				0-90			0-90			0-90	/
100-199 - 85 points			nH			nН				nH			nН		
pii	0-1		pii	0-1		рп		0-1		pii	0-1		ρπ	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	/
Sub-Total	l		Sub-Total		0	Sub-Tot	al		0	Sub-Total		0	Sub-Total	- 1	0
BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)	BIOLOG	GICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perenn	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			WV Str	am Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)	, , ,	
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	l l	0	Sub-Total		0	Sub-Tot	al	- 1	0	Sub-Total		0	Sub-Total		0
Cab Total			logo voice		V	Sub-101			Ü			Ü			
PART II - Index and U	nit Score		PART II - Index and Ur	nit Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet l	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.662916667	20	13.2583333	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT3 of UT4 of RFHC, Ephemeral (2 of 2)

		rs			
	(See instruction	TIGATION BANKING and	d ILF)		
Temporal Loss-Cons	truction		L	ong-term Protection	<u> </u>
lote: Reflects duration of aquatic functional loss between the time	of an impact (debit) and completion of compensatory	% Add. Mitigati	ion and Monitoring Period	Lo	ong-Term Protection (Yea
mitigation (credit). -				
Years	15				
Sub-Total	0.2983125				
T	donte	0 . 5/	(40 V M % - %		101
Temporal Loss-Ma Note: Period between completion of compensatory mitigation meas		0 + 5/1 Sub-Total	10 Year Monitoring	0	
to function (i.e. maturity of tree stratum to provide organic matter a		Sub-10tal			<u> </u>
corridor).	and delined million repaired each of mediana surrel		PART IV - Inc	dex to Unit Score	Conversion
		Final Index Score	Linear Feet	Unit Score	ILF Cos
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Deb
		1.178229167	20	23.56458333	\$18,851.
2007	25				
30%	0.217				

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	23.56458333	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE		0		0		0				

	ation Considerations (Incentives)	
Extent of Stream *Note1: Reference the Instructional handout to determine t *Note2: Place an "X" in the appropr	the correct Restoration Levels (below) for your project	
_evel I Restoration		
Level II Restoration		Buffer \
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT3 of UT4 of RFHC, Ephemeral	23.56458333	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer	0							
Width/Side	O .							

UT5 of RFHC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDIN (in Decimal Degr		37° 43' 38.65" N	Lon.	82° 13' 45.23" W	WEATHER:	75 Sunn	ny	DATE:	20-May	ay-10
STREAM CLASSIFICATION:	1	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {act			UT5 of Right Fork of He % Streambed Slope, Ac			MITIGATION STREAM CLASS./S (% stream slope, watershed size {a			Same (Mitigation is restoration	of temporary im	ipacts)
STREAM IMPACT LENGTH:	100	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINA (in Decimal Degr	-	37° 43' 38.65" N	Lon.	82° 13' 45.23" W	PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	100	i0
Column No. 1- Impact Existir	ng Condition (Del	pit)	Column No. 2- Mitigation Existing Cor	ndition - Baseline (Cred	it)	Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Pro Post Completion			Column No. 5- Mitigation Project	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Avei	rage	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Avera	age	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology	0.69		Hydrology	0.73		Hydrology	0.77	
Biogeochemical Cycling	0.97	0.89	Biogeochemical Cycling	()	Biogeochemical Cycling	0.56	0.6166667	Biogeochemical Cycling	0.78 0.77	2	Biogeochemical Cycling	0.88	0.84
Habitat	0.95		Habitat			Habitat	0.6		Habitat	0.65		Habitat	0.87	
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicators		PART I - Physical, Chemical an	nd Biological Indi	cators	PART I - Physical, Chemical and	I Biological Indicators		PART I - Physical, Chemical and	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Site S	icore		Points Rang Scale	e Site Score		Points Range Site So	core		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	:)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	7	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13		Epifaunal Substrate/Available Cover	0-20	15
Embeddedness	0-20	5	Embeddedness	0-20		2. Embeddedness	0-20	11	Embeddedness	0-20		Embeddedness	0-20	15
Velocity/ Depth Regime	0-20	5	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	Velocity/ Depth Regime	0-20 13		Velocity/ Depth Regime	0-20	13
4. Sediment Deposition	0-20	14	Sediment Deposition	0-20		4. Sediment Deposition	0-20	11	Sediment Deposition	0-20 13		Sediment Deposition	0-20	15
5. Channel Flow Status	0-20 0-1	8	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20	8	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	10
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	14	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20	6	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 11 0-20 11		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16 16
Total RBP Score	Marginal	102	Total RBP Score	Poor (Total RBP Score	Suboptimal	116	Total RBP Score	Suboptimal 134		Total RBP Score	Suboptimal	150
Sub-Total	, margina	0.51	Sub-Total	(Sub-Total	Gabopania	0.58	Sub-Total	0.6		Sub-Total	Casopania	0.75
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	at and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	43		0-90			0-90	500		0-90 500	0		0-90	500
<=99 - 90 points			nU			500-599 - 50 points			500-599 - 50 points			500-599 - 50 points	'	
рп	0-1		рп	0-1		рп	0-1		рп	0-1	_	рп	0-1	
6.0-8.0 = 80 points	0-80	7.07		5-90		6.0-8.0 = 80 points	5-90	7.07	6.0-8.0 = 80 points	5-90 7.0		6.0-8.0 = 80 points	5-90	7.07
DO			DO			DO			DO			DO		
	10-30	9.95		10-30		>5.0 = 30 points	10-30	9.95	>5.0 = 30 points	10-30 9.9	5	>5.0 = 30 points	10-30	9.95
Sub-Total		1	Sub-Total			>5.0 = 30 points Sub-Total		0.55	Sub-Total	0.8	В	Sub-Total		0.8
BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Peren		BIOLOGICAL INDICATOR (Applies to Interi			BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	68.33		0-100 0-1		Good	0-100 0-1	68	Good	0-100 0-1 68	3	Good	0-100 0-1	68
Sub-Total	_	0.6833	Sub-Total)	Sub-Total		0.68	Sub-Total	0.6	18	Sub-Total		0.68
odb rotal		0.0000	odb Total			Cub Fotal		0.00	ous rotal	0.0		odo Total		0.00
PART II - Index and	Unit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score		PART II - Index and l	Jnit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit S	Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit So	core	Index	Linear Feet	Unit Score
0.81055	100	81.055	0	100	· I	0.61	100	61	0.718333333	100 71.833	2222	0.791666667	100	79.166667

West Virginia Stream and Wetland Valuation Metric UT5 of RFHC, Temporary Intermittent (2 of 2)

		PART III - Impact Factors			
	(See instruction	age to insert default values for MITIGATION BANKING and	d ILF)		
Temporal Loss-Constr	uction		L	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit).	an impact (debit) and completion of compensatory	% Add. Mitigati	on and Monitoring Period	Lo	ong-Term Protection (Years)
Years	15				
Sub-Total	0.3647475				
Temporal Loss-Mati	Temporal Loss-Maturity		10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measurements	res and the time required for maturity, as it relates	Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter an corridor).	d detritus within riparian stream or wetland buffer		PART IV - Inc	dex to Unit Score (Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit U
		1.4677375	100	146.77375	\$117,419.00
			ı	•	
30%	25				
Sub-Total Sub-Total	0.29244				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	146.77375	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	61	Mitigation Projected at Ten Years Post Completion (Credit)	71.83333333	Mitigation Projected At Maturity (Credit)	79.16666667
FINAL PROJECTED NET BALANCE		61		71.83333333		79.16666667			

	Considerations (Incen	itives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	roject		
Level I Restoration			
Level II Restoration			Buffer
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 RFHC, Temporary Intermittent	146.77375	106.875

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

ILF Costs (Offsetting Debit Units) \$117,419.00

Buffer Width Left Bank 0-50 Preservation and Re-vegetation 51-150 **Buffer Width** Right Bank 0-50 Preservation and Re-vegetation 51-150 Average Buffer 50 Width/Side

UT6 of RFHC, Temporary Intermittent (1 of 2)

Column No. 1- Impact Existing Co HGM Score (attach data forms): Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Bio	0.75 0.97 0.95	Average	IMPACT STREAM/SITE ID. (% stream slope, watershed size (ad Permittee Responsible-Onsite Column No. 2- Mitigation Existing Co	MIT COORE	DINATES: Land Degrees)	UT6 of Right Fork of % Streambed Slope,		, Mature Tree	MITIGATION STREAM CLASS./S (% stream slope, watershed size {a			ion of temporary in	mpacts)
Column No. 1- Impact Existing Control of the Column No. 1- Impact Existing Control of the Column No. 1- Impact Existing Control of the Column No. 1- Impact Existing Column No. 1- Impact Exist	0.75 0.97 0.95	MITIGATION: t) Average	Column No. 2- Mitigation Existing Co	(in Decimal	Degrees)	t. 37° 43' 37.66" N	Lon.						
Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Bio	0.75 0.97 0.95	Average		ondition - Baseline ((Credit)			82° 13' 45.46" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	10	00
Hydrology Biogeochemical Cycling Habitat PART I - Physical, Chemical and Bio	0.97 0.95		HGM Score (attach data forms):		Orcuity	Column No. 3- Mitigatio Post Compl	on Projected at Five letion (Credit)	Years	Column No. 4- Mitigation Pro Post Completion		Column No. 5- Mitigation Pro	ojected At Maturity (C	Credit)
Biogeochemical Cycling Habitat PART I - Physical, Chemical and Bio	0.97 0.95				Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Avera	ge HGM Score (attach data forms):		Average
Habitat PART I - Physical, Chemical and Bio	0.95		Hydrology			Hydrology	0.69		Hydrology	0.73	Hydrology	0.77	
PART I - Physical, Chemical and Bio		0.89	Biogeochemical Cycling		0	Biogeochemical Cycling	0.56	0.616666667	Biogeochemical Cycling	0.78 0.72	Biogeochemical Cycling	0.88	0.84
	iological Indica		Habitat			Habitat	0.6		Habitat	0.65	Habitat	0.87	
		itors	PART I - Physical, Chemical and	l Biological Indicato	ors	PART I - Physical, Chemic	cal and Biological In	dicators	PART I - Physical, Chemical and	d Biological Indicators	PART I - Physical, Chemical	and Biological Indic	cators
	Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Site Sco	ore	Points Range Scale	ge Site Score
PHYSICAL INDICATOR (Applies to all streams class	lassifications)		PHYSICAL INDICATOR (Applies to all streams	ns classifications)		PHYSICAL INDICATOR (Applies to all stre	eams classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	PHYSICAL INDICATOR (Applies to all str	reams classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Shee	et)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data She	eet)	
Epifaunal Substrate/Available Cover	0-20	12	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness	0-20	4	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20 13	2. Embeddedness	0-20	15
	0-20	6	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20 13	3. Velocity/ Depth Regime	0-20	13
	0-20	12	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20 13		0-20	15
5. Channel Flow Status	0-20	8	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	8	5. Channel Flow Status	0-20 10	5. Channel Flow Status	0-20	10
	0-20	17	6 Channel Alteration	0-20		6 Channel Alteration	0-20 0-1	17	6. Channel Alteration	0-20 0-1 17	6 Channel Alteration	0-20	17
	0-20	6	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15		0-20	15
	0-20	10	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18		0-20	18
	0-20	12	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)		2 1 1	0-20	16
	0-20	8	Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RE)		6	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 11 0-20 11			16
	Marginal	95	Total RBP Score	Poor	0	Total RBP Score	Suboptimal	116	Total RBP Score	Suboptimal 134		Suboptimal	150
Sub-Total	J. J. J. J. J. J. J. J. J. J. J. J. J. J	0.475	Sub-Total		0	Sub-Total		0.58	Sub-Total	0.67			0.75
CHEMICAL INDICATOR (Applies to Intermittent an	and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Strear	ms)	CHEMICAL INDICATOR (Applies to Interm	mittent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Streams)	CHEMICAL INDICATOR (Applies to Inter	mittent and Perennial Str	reams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (Gen	neral)		WVDEP Water Quality Indicators (Gener	al)	WVDEP Water Quality Indicators (Ger	neral)	
Specific Conductivity			Specific Conductivity		(0)	Specific Conductivity			Specific Conductivity		Specific Conductivity		
	0-90	43		0-90			0-90	500		0-90 500		0-90	500
<=99 - 90 points	0.00	40		0 00		500-599 - 50 points	0.00		500-599 - 50 points	000	500-599 - 50 points		000
рН	0.4	(0)	рН	0.4	(0)	рН	0.4		рН		рН		
6.0-8.0 = 80 points	0-80	7.07		5-90		6.0-8.0 = 80 points	5-90	7.07	6.0-8.0 = 80 points	5-90 ⁰⁻¹ 7.07	6.0-8.0 = 80 points	5-90	7.07
o.u-o.u = ou points			DO			0.0-6.0 = 80 points			6.0-6.0 = 80 points		6.0-8.0 = 80 points		
Т								0.05		T			
1	10-30	9.95		10-30		>5.0 = 30 points	10-30	9.95	>5.0 = 30 points	10-30 9.95	>5.0 = 30 points	10-30	9.95
Sub-Total		1	Sub-Total		0	Sub-Total		0.55	Sub-Total	0.8	Sub-Total		0.8
BIOLOGICAL INDICATOR (Applies to Intermittent	nt and Perennial S	treams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial Stre	eams)	BIOLOGICAL INDICATOR (Applies to Inf	ntermittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial Stream	BIOLOGICAL INDICATOR (Applies to I	ntermittent and Perenn	iial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	<u> </u>	
Good	0-100 0-1	68.33		0-100 0-1		Good	0-100 0-1	68	Good	0-100 0-1 68	Good	0-100 0-1	68
Sub-Total	1	0.6833	Sub-Total		0	Sub-Total	- I	0.68	Sub-Total	0.68		I I	0.68
									<u>u</u>		, , , , , , , , , , , , , , , , , , , ,		
PART II - Index and Unit	t Score		PART II - Index and U	Jnit Score		PART II - Index	x and Unit Score		PART II - Index and	Unit Score	PART II - Index a	nd Unit Score	
Index L	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Sc	ore Index	Linear Feet	Unit Score
								33.0					
0.804716667	100	80.4716667	0	100	0	0.61	100	61	0.718333333	100 71.8333	333 0.791666667	100	79.166667

West Virginia Stream and Wetland Valuation Metric UT6 of RFHC, Temporary Intermittent (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGATION BANKING	and ILF)			
Temporal Loss-Construct	ion		L	ong-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an	impact (debit) and completion of compensatory	% Add. Mi	% Add. Mitigation and Monitoring Period		Long-Term Protection (Years)	
mitigation (credit).						
Years	15					
Sub-Total	0.3621225					
Temporal Loss-Maturity	,		0 + 5/10 Year Monitoring		101	
	*Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates		0 + 3/10 Teal Mollitoring		0	
to function (i.e. maturity of tree stratum to provide organic matter and de		Sub-Total				
corridor).	,		PART IV - In	dex to Unit Score C	onversion	
		Final Index S	core Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)	
		1.4546125	5 100	145.46125	\$116,369.00	
	25					
30% Sub-Total	0.287773333					
	l e e e e e e e e e e e e e e e e e e e					

PART V- Comparison of Unit Scores and Projected Balance										
	Final Unit Score (Debit) [No Net Loss Value]	145.46125	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	61	Mitigation Projected at Ten Years Post Completion (Credit)	71.83333333	Mitigation Projected At Maturity (Credit)	79.16666667
	FINAL PROJECTED NET BALANCE					61		71.83333333		79.16666667

	Part VI - Mitigation Conside	erations (Incentives)
Extent of Stream Re *Note1: Reference the Instructional handout to determine the c- *Note2: Place an "X" in the appropriate of	orrect Restoration Levels (below) for your project	*N
Level I Restoration		
Level II Restoration		Buffer Wid
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT6 RFHC, Temporary Intermittent	145.46125	106.875

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Left Bank idth 0-50 Preservation and Re-vegetation 51-150 **Buffer Width** Right Bank 0-50 Preservation and Re-vegetation 51-150 Average Buffer 50

Width/Side

UT7 of RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:		/Buffalo Mt. Surface Mine DEP Permit No. S-5018-07	IMPACT COORDINATES (in Decimal Degrees)	: Lat.	37° 43' 30.31"	Lon.	82° 13' 52.21"	WEATHER:	78 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	Intermittent		ID AND SITE DESCRIPTION: te {acreage}, unaltered or impairments)		UT7 of Right Fork of He % Streambed Slope, Acr			MITIGATION STREAM CLASS./SITE I (% stream slope, watershed size {acreage			
STREAM IMPACT LENGTH:	135 FORM MITIGAT		MIT COORDINATES: (in Decimal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	
Column No. 1- Impact Existing (Condition (Debit)	Column No. 2- Mitigation Existing	Condition - Baseline (Credit)	•	Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Projecte Post Completion (Cred		Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.74	Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	1 0.85	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat	0.81	Habitat			Habitat			Habitat	•	Habitat	
PART I - Physical, Chemical and B		PART I - Physical, Chemical	and Biological Indicators		PART I - Physical, Chemical an	d Biological Ind	licators	PART I - Physical, Chemical and Biol	ogical Indicators	PART I - Physical, Chemical ar	nd Biological Indicators
	Points Range Site Score Scale		Points Range Site Score			Points Ran Scale	ge Site Score	Pi S	pints Range Site Score cale		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams of	classifications)	PHYSICAL INDICATOR (Applies to all st	reams classifications)		PHYSICAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams class	ssifications)	PHYSICAL INDICATOR (Applies to all strea	ms classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data She	et)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20	 Epifaunal Substrate/Available Cover 	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	 Epifaunal Substrate/Available Cover 	0-20
2. Embeddedness	0-20	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness)-20	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20
4. Sediment Deposition	0-20	Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition)-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20 9	Channel Flow Status	0-20		5. Channel Flow Status	0-20	1	5. Channel Flow Status	0-20	5. Channel Flow Status	0-20
6. Channel Alteration	0-20	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB)	0-20 14	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20
10. Riparian Vegetative Zone Width (LB & RB)	0-20 20	10. Riparian Vegetative Zone Width (LB & R			10. Riparian Vegetative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & RB)	0-20	10. Riparian Vegetative Zone Width (LB & RB)	
Total RBP Score	Marginal 98	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total	0.49	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Inter	mittent and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent an	d Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennial Streams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Ge	neral)		WVDEP Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity		Specific Conductivity	0		Specific Conductivity			Specific Conductivity		Specific Conductivity	
	0-90 41		0-90			0-90			0-90		0-90
<=99 - 90 points		-11						-11			
рп	0-1	рн	0-1		рп	0-	1	рн	0-1	рн	0-1
6.0-8.0 = 80 points	0-80 7.58		5-90			5-90			5-90		5-90
DO		DO			DO			DO		DO	
	10-30 10.25		10-30			10-30			0-30		10-30
	10-00					10-30					10-30
Sub-Total	1	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to In	termittent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitter	nt and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Cood	0-100 0-1 68.77		0-100 0-1			0-100 0-	1	0	-100 0-1		0-100 0-1
Good Sub-Total	0.6877	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
Oub-Total	0.0077	Oub-10ter			Oub-10tal		U	Oub-10tal	V	Oub-Total	
PART II - Index and Un	it Score	PART II - Index a	nd Unit Score		PART II - Index and	Unit Score		PART II - Index and Unit S	Score	PART II - Index and	Unit Score
Index	Linear Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Fee	et Unit Score	Index	inear Feet Unit Score	Index	Linear Feet Unit Score
0.78795	135 106.37325	0	0 0		0	0	0	0	0 0	0	0 0
0.10130	100.37325	Ů			U	"	٧	J	· ·	l "	

West Virginia Stream and Wetland Valuation Metric UT7 of RFHC, Intermittent (2 of 2)

	(See instruction	PART III - Impact Facton page to insert default values for N
Temporal Loss-Construction		
Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	t (debit) and completion of compensatory	
Years	15	
Sub-Total	0.3545775	
Temporal Loss-Maturity		
*Note: Period between completion of compensatory mitigation measures and to to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
% Add. Mitigation	Temporal Loss-Maturity (Years)	

es for MITIGAT	es for MITIGATION BANKING and ILF)								
	Loi	ng-term Protection							
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)							
	0 + 5/10 Year Monitoring	101							
	Sub-Total	0							

PART IV - Index to Unit Score Conversion							
Final Index Score Linear Feet Unit Score ILF Costs (Debit) (Debit) (Offsetting Debit)							
1.4328875	135	193.4398125	\$154,751.85				

PART V- Comparison of Unit Scores and Projected Balance								
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE		0		0		0		

	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT7 RFHC, Intermittent	193.4398125	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer	0							
Width/Side	J							

UT7 of RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No, S-5018-07	IMPACT COO (in Decimal	RDINATES: Lat Degrees)		7° 43' 27.82"	Lon.	82° 13' 39.25"	WEATHER:	;	78 Sunny	DATE:	20-May	y-10
STREAM CLASSIFICATION:		Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				T7 of Right Fork of Ho Streambed Slope, Ac			MITIGATION STREAM CLASS./\$ (% stream slope, watershed size {					
STREAM IMPACT LENGTH:	385	FORM OF MITIGATION:		MIT COORE (in Decimal				Lon.		PRECIPITATION PAST 48 HRS:	C	0	Mitigation Length:		
Column No. 1- Impact Existin	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		mn No. 3- Mitigation Pr Post Completion		ears	Column No. 4- Mitigation Pro Post Completion		ars	Column No. 5- Mitigation Proje	ected At Maturity (Cre	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (a	tach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology				Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0	Biogeochemica	Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.72		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	eators	PART I - Physical, Chemical and E	Biological Indicato	ors	PART	- Physical, Chemical ar	nd Biological Indi	cators	PART I - Physical, Chemical an	d Biological Indic	cators	PART I - Physical, Chemical a	nd Biological Indicat	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDI	CATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (H	gh Gradient Data Sheet	:)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	:)	
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		 Epifaunal Sub 	strate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	5	2. Embeddedness	0-20		Embeddednes	s	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20		Velocity/ Dept		0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	18	Sediment Deposition	0-20		Sediment Dep		0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1		5. Channel Flow		0-20		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20		6. Channel Alter		0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	13	8. Bank Stability (LB & RB)	0-20		8. Bank Stability	(== +: ::=)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	13 16	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			tection (LB & RB) ative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Marginal	82	Total RBP Score	Poor	0	Total RBP Score		Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	ind gira	0.41	Sub-Total		0	Sub-Total		1 001	0	Sub-Total	1 00.	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strear	ms)	CHEMICAL IND	CATOR (Applies to Interm	ittent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial St	treams)	CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial Strea	eams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General))		WVDEP Water	Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (Gene	eral)	
Specific Conductivity			Specific Conductivity			Specific Condu	ctivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	/
100-199 - 85 points			5 4			n LI				m LI			nU		
pri	0-1		pri	0-1		рп		0-1		pri	0-1		рп	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO		0	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total	1	0	Sub-Total		<u> </u>	0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)		DICATOR (Applies to Inte	ermittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenn	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Cor	dition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
_	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	1
0 Sub-Total		0	Cub Total		0	Sub-Total			0	Cub Tatal		0	Cub Tatal		
Sub-Total		0	Sub-Total		U	Sub-Total			U	Sub-Total		U	Sub-Total		U
PART II - Index and U	Unit Score		PART II - Index and Ur	nit Score			PART II - Index and	Unit Score		PART II - Index and	Unit Score		PART II - Index and	d Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
			_				_		_	_	_	_	_	_	
0.65666667	385	252.816667	0	0	0	1	0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT7 of RFHC, Ephemeral (2 of 2)

			PART III - Impact	Factors				
		(See instruction	page to insert default values		d ILF)			
Tomr	ooral Loss-Construction	(ccc mem ucuen	page to moore account variable		<u> </u>	ng-term Protection		
*Note: Reflects duration of aquatic functional loss		ct (debit) and completion of compensatory		% Add. Mitigat	tion and Monitoring Period	Long-Term Protection (Years)		
	mitigation (credit).	. (70 7 tad. Willigat	and Morntoning Fortica		ong remit recedion (rears)	
Years		15						
Sub-Total		0.2955						
_							404	
Temporal Loss-Maturity					/10 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer				Sub-Total			<u> </u>	
to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor).				DART IV - Ind	ex to Unit Score	Conversion		
	,			<u> </u>				
% Add. Mitigation		Townsyell and Maturity (Vacua)		Final Index Score	Linear Feet	Unit Score	ILF Costs	- \
% Add. Miligation		Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Unit	5)
				1.164166667	385	448.2041667	\$358,563.33	
30%		25						
Sub-Total		0.212						
		PART	V- Comparison of Unit Score	s and Projected Balance				
Final Unit Score (Debit) [No Net Loss Value]	448.2041667	Mitigation Existing Condition - Baseline (Credit)	Five	Projected at Years letion (Credit)	Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	

			(Greatt)		r ost completion (credit)		1 ost completion (credit)		(Orealt)	
	FINAL PROJECTED NET BALANCE					0		0		0
Part VI - Mitigation					n Considerations (Incer	ntives)				
	*Note1: Reference the Instruction *Note2: PI	Extent of Stream Renal handout to determine the collace an "X" in the appropriate of		*Note ¹ : Refer	ence Instructional handout for the *Note ² : Enter the buffer width		er Zone Mitigation Extents and Types (Left Bank and Right Bank)	(below)		

Level I Restoration		*Note ³ : Select the appropriate mitigation type				
Level II Restoration	But	ıffer Width		Left Bank		
Level III Restoration			0-50			
			51-150			
	But	ıffer Width		Right Bank		
			0-50			
			51-150			
	A	Average Buffer	0			
		Width/Side	U			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT7 of RFHC, Ephemeral	448.2041667	#DIV/0!

UT10 of RFHC, Perennial (1 of 2)

USACE FILE NO./Project Name:		alo Mt. Surface Mine ermit No, S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	: Lat.	37° 43' 19.23"	Lon.	82° 13' 56.12"	WEATHER:	75	Sunny	DATE:	20-May-1	10
STREAM CLASSIFICATION:	Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			UT10 of Right Fork of Hell Ci % Streambed Slope, Acre Wa			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size (acrea)					
STREAM IMPACT LENGTH: 50	FORM OF MITIGATION:		MIT COORDINATES: (in Decimal Degrees)	Lat.	L	Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		,_,_,,
Column No. 1- Impact Existing Condi	ition (Debit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Projecte Post Completion (Cre		s	Column No. 4- Mitigation Project Post Completion (Cre		5	Column No. 5- Mitigation Project	cted At Maturity (Credi	dit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology		Hydrology			Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat		Habitat			Habitat			Habitat			Habitat		
PART I - Physical, Chemical and Biologi	ical Indicators	PART I - Physical, Chemical and E	Biological Indicators		PART I - Physical, Chemical and Bio	ological Indicat	tors	PART I - Physical, Chemical and Bio	ological Indicat	ors	PART I - Physical, Chemical an	d Biological Indicator	rs
Points Scale	S Range Site Score		Points Range Site Score Scale			Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams classific	cations)	PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams cla	lassifications)		PHYSICAL INDICATOR (Applies to all streams cla	assifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover 0-20	8	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness 0-20		Embeddedness	0-20			0-20			0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime 0-20		Velocity/ Depth Regime	0-20			0-20			0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition 0-20		4. Sediment Deposition	0-20			0-20		·	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status 0-20	0-1	5. Channel Flow Status	0-20 0-1			0-20 0-1			0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration 0-20		6. Channel Alteration	0-20			0-20		1	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends) 0-20		7. Frequency of Riffles (or bends)	0-20		. , , , , ,	0-20		1 2 1	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB) 0-20 9. Vegetative Protection (LB & RB) 0-20		8. Bank Stability (LB & RB)	0-20			0-20			0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB) 0-20 10. Riparian Vegetative Zone Width (LB & RB) 0-20		Vegetative Protection (LB & RB) Regular Negetative Zone Width (LB & RB)	0-20			0-20 0-20			0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20	
, ,	arginal 90	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total Sub-Total	0.45	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total	·	0
CHEMICAL INDICATOR (Applies to Intermittent and Pe	erennial Streams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermittent a	nd Perennial Strea	ams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ns)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		
0-90	42		0-90			0-90			0-90			0-90	
<=99 - 90 points		nH			nH			nH.			nH		
0.00	0-1	pii	0-1		pri	0-1		p11	0-1		pii	0-1	
6.0-8.0 = 80 points	7.18		5-90			5-90			5-90			5-90	
DO		DO			DO			DO			DO		
10-30	9.89		10-30			10-30			10-30			10-30	
Sub-Total	1	Sub-Total	<u> </u>		Sub-Total	l .	0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermittent and	Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennia	al Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	l Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial St	Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Good 0-100	0 0-1 67.71		0-100 0-1			0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	0.6771	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
oub-Total	0.0771	Oub-10tal	U		Oub-Total		Ü	Oub-10tal	<u> </u>	Ü	Sub-18tai		
PART II - Index and Unit Sco	ore	PART II - Index and Ur	nit Score		PART II - Index and Unit	Score		PART II - Index and Unit	Score		PART II - Index and	Unit Score	
Index Line	ear Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score
0.709033333	50 35.4516667	0	0 0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT10 of RFHC, Perennial (2 of 2)

	(See instruction	PART III - Impact Factors o insert default values for MITIGATION BANKING and	d ILF)		
Temporal Loss-Construction			Lo	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impairment mitigation (credit).	ct (debit) and completion of compensatory	% Add. Mitigati	on and Monitoring Period		ong-Term Protection (Years)
Years Sub-Total	15 0.319065				
Temporal Loss-Maturity		0 + 5/	10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	s within npanan stream or wetland buller		PART IV - Inc	dex to Unit Score (Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
		1.311711667	50	65.58558333	\$52,468.47
	25 0.283613333				
Sub-Total Sub-Total	0.263613333				
	PART	mparison of Unit Scores and Projected Balance			

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	65.58558333	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

Part VI - N	litigation Considerations	s (Incentives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).		*Note ¹ : Ref	erence Instructional ha
Level I Restoration			
Level II Restoration		Buffer Width	
Level III Restoration			0-50
			51-150

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of RFHC, Perennial	65.58558333	#DIV/0!

Extended Upland Buffer Zone

handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank						
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer	0							
Width/Side	0							

UT10 of RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	DRDINATES: La I Degrees)	at.	37° 43' 19.63"	Lon.	82° 13' 56.88"	WEATHER:	7	75 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT10 of Right Fork of He % Streambed Slope, Acro			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	325	FORM OF MITIGATION:		MIT COOR (in Decima		at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		·
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (0		ırs	Column No. 5- Mitigation Project	ted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.74		Hydrology			Hydrol	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	1	0.85	Biogeochemical Cycling		0		chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.81		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicate	ors		PART I - Physical, Chemical and	l Biological Indi	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	CAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	7	Epifaunal Substrate/Available Cover	0-20		 Epifa 	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	10	Embeddedness	0-20			eddedness	0-20		Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	9	Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	10	4. Sediment Deposition	0-20			ment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	11	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	6	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	4	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			uency of Riffles (or bends) Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	10	,	0-20			**************************************	0-20		, ,	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	8	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			tative Protection (LB & RB) rian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	91	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.455	Sub-Total		0	Sub-To	al		0	Sub-Total	•	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strea	ams)	CHEMI	CAL INDICATOR (Applies to Intermitt	ent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	il)		WVDEP Water Quality Indicators (General))		WVDE	Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Specifi	Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	43		0-90				0-90			0-90			0-90	/
<=99 - 90 points			nH			nН				nH			nH		
pii	0-1		pii	0-1		PII		0-1		pii	0-1		μιι	0-1	
6.0-8.0 = 80 points	0-80	7.07		5-90				5-90			5-90			5-90	
DO			DO	_		DO				DO			DO	_	
	10-30	9.95		10-30				10-30			10-30			10-30	/
Sub-Total	I I	1	Sub-Total	1	0	Sub-To	al	<u> </u>	0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	reams)	BIOLO	GICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, ,		WV Str	eam Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	68.33		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	/
Good Sub-Total	1 1	0.6833	Sub-Total	1	0	Sub-To	al		0	Sub-Total	<u> </u>	0	Sub-Total		0
Sub-Total		0.0033	Sub-1 otal	<u>l</u>	U	3ub-10	aı		U	Sub-Total		Ü	Sub-10tal		U
PART II - Index and U	Jnit Score		PART II - Index and Ur	it Score			PART II - Index and I	Jnit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.70400000	205	252.040553					•				_		•		
0.781383333	325	253.949583	0	0	U		0	0	Ü	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT10 of RFHC, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors ert default values for MITIGATION BANKING ar	nd ILF)		
Temporal Loss-Construction	(211 21 111 1		<u> </u>	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impa mitigation (credit).	ct (debit) and completion of compensatory	% Add. Mitiga	tion and Monitoring Period		ong-Term Protection (Years)
Years Sub-Total	15 0.3516225				
Temporal Loss-Maturity		0+5	s/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus		Sub-Total			0
corridor).	within riparian stream of wettand burier		PART IV - Inc	dex to Unit Score	Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
		1.4181125	325	460.8865625	\$368,709.25
				•	
30%	25				
Sub-Total Sub-Total	0.285106667				
	PART	ison of Unit Scores and Projected Balance			

	PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	460.8865625	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of RFHC, Intermittent	460.8865625	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank					
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer	0						
Width/Side	· ·						

UT10 of RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO (in Decimal	RDINATES: La Degrees)	t.	37° 43' 18.76"	Lon.	82° 13' 54.08"	WEATHER:	7	75 Sunny	DATE:	20-M ay	y-10
STREAM CLASSIFICATION:	1	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT10 of Right Fork of Ho % Streambed Slope, Acr			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac					
STREAM IMPACT LENGTH:	10	FORM OF MITIGATION:		MIT COORE (in Decimal		t.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		olumn No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proj Post Completion (ars	Column No. 5- Mitigation Proje	cted At Maturity (Cre	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score	(attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology				Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0		ical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.72		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicato	rs	PAR	TI - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical ar	nd Biological Indicat	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL II	NDICATOR (Applies to all strea	ıms classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all strea	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP	(High Gradient Data Sheet))		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet))	
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epifaunal S	Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	6	Embeddedness	0-20		Embedded		0-20		2. Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20			epth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	4	4. Sediment Deposition	0-20		4. Sediment [•	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1		5. Channel Fl		0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16 0	6. Channel Alteration	0-20		6. Channel Al		0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	10	7. Frequency of Riffles (or bends)	0-20			of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	8	8. Bank Stability (LB & RB)	0-20			, (== +: ::=)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Protection (LB & RB) egetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	62	Total RBP Score	Poor	0	Total RBP So		Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.31	Sub-Total		0	Sub-Total			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strear	ms)	CHEMICAL I	NDICATOR (Applies to Intermit	ttent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stream	ams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General))		WVDEP Wat	er Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (Genera	nl)		WVDEP Water Quality Indicators (General	ral)	
Specific Conductivity			Specific Conductivity			Specific Con	ductivity			Specific Conductivity			Specific Conductivity		
400 400 05 11	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points			nH			nН				nH			nH		
pi i	0-1		pii	0-1		рп		0-1		ρπ	0-1		jii	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		(1)	DO	_		DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total		0	Sub-Total			0	Sub-Total	<u> </u>	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)		INDICATOR (Applies to Inte	ermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	mittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream (Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	l	0	Sub-Total		0	Sub-Total			0	Sub-Total	l l	0	Sub-Total		0
oub Total		· ·	odo Total		<u> </u>	oub Total			· ·	out rotal			ous rotal		
PART II - Index and U	nit Score		PART II - Index and Ur	it Score			PART II - Index and	Unit Score		PART II - Index and U	Jnit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
									_		_	_		_	
0.631666667	10	6.31666667	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT10 of RFHC, Ephemeral (2 of 2)

Temporal Loss-Co	nstruction		L	ong-term Protection	
Note: Reflects duration of aquatic functional loss between the tim mitigation (cre	e of an impact (debit) and completion of compensatory	% Add. Mitigation	and Monitoring Period		g-Term Protection (Years)
Years Sub-Total	15 0.28425				
Temporal Loss-I	Maturity	0 + 5/10	Year Monitoring		101
*Note: Period between completion of compensatory mitigation me to function (i.e. maturity of tree stratum to provide organic matte	easures and the time required for maturity, as it relates	Sub-Total			0
corridor).	·		PART IV - Inc	dex to Unit Score Co	nversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Unit
		1.107916667	10	11.07916667	\$8,863.33
				•	
30%	25				
Sub-Total Sub-Total	0.192				

				1.107916667	10	11.07916667	\$8,863.33			
30% Sub-Total		25 0.192								
PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	11.07916667	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE				0		0		0		
	Part VI - Mitigation Considerations (Incentives)									

	Part VI - Mitigatior
Extent of Stream Restoration	
*Note1: Reference the Instructional handout to determine the correct Restoration Lev	
*Note2: Place an "X" in the appropriate category (only select of	one).
Level I Restoration	
Level II Restoration	
Level III Restoration	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of RFHC, Ephemeral	11.07916667	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units)

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank						
	0-50							
	51-150							
Buffer Width		Right Bank						
	0-50							
	51-150							
Average Buffer Width/Side	0							

UT11 of RFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No, S-5018-07		ORDINATES: I al Degrees)	Lat.	37° 43' 13.54"	Lon.	82° 14' 1.86"	WEATHER:	7	75 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:	li	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {act				UT11 of Right Fork of He % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	120	FORM OF MITIGATION:			RDINATES: I al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HC	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Ну	irology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.89	Biogeochemical Cycling		0		geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.95		Habitat			Ha	oitat			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicat	tors		PART I - Physical, Chemical and	Biological Indi	ators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PH	YSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			us	EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	8	Epifaunal Substrate/Available Cover	0-20		1.	pifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	9	Embeddedness	0-20			mbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	6	3. Velocity/ Depth Regime	0-20			/elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	11	4. Sediment Deposition	0-20			Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	4	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	9	6. Channel Alteration	0-20			Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	13	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			requency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	15		0-20				0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	17	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			regetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	106	Total RBP Score	Poor	0		al RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.53	Sub-Total		0	Su	o-Total	•	0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stre	eams)	СН	EMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Str	eams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		w۱	DEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(1)	Sp	ecific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	43		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nH	_	
pi i	0-1		pii	0-1		pii.		0-1		511	0-1		μιι	0-1	
6.0-8.0 = 80 points	0-80	7.07		5-90		L		5-90			5-90			5-90	
DO			DO			DC				DO			DO		
	10-30	9.95		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total		0	Su	o-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial S	Streams)		LOGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			w۱	Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Ocean	0-100 0-1	68.33		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Good Sub-Total		0.6833	Sub-Total		0	Su	-Total		0	Sub-Total		0	Sub Total		0
Sub-Total		0.0033	Sub-1 otal		U	Su	- Total		U	Sub-Total		0	Sub-Total		U
PART II - Index and U	nit Score		PART II - Index and Ur	nit Score			PART II - Index and I	Jnit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.04055555	400	07.000					•						•		
0.813883333	120	97.666	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT11 of RFHC, Intermittent (2 of 2)

	(See instruction	T III - Impact Factors efault values for MITIGATION BANKING and	d ILF)		
Temporal Loss-Const	ruction		Į	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit)		% Add. Mitigation	on and Monitoring Period	Lor	ng-Term Protection (Y
Years	15				
Sub-Total	0.3662475				
Temporal Loss-Ma	turity	0 + 5/·	10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation meas		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter at corridor).	nd detritus within riparian stream or wetland buffer		PART IV - In	dex to Unit Score C	onversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF C (Offsetting D
		1.4752375	120	177.0285	\$141,6
30%	25				
ub-Total	0.295106667				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	177.0285	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ır project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT11 of RFHC, Intermittent	177.0285	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$141,622.80

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank								
	0-50								
	51-150								
Buffer Width		Right Bank							
	0-50								
	51-150								
Average Buffer	0								
Width/Side	J								

UT11 of RFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No, S-5018-07	IMPACT COOR (in Decimal I	RDINATES: Lat. Degrees)	37° 43' 12.67"	Lon.	82° 14' 4.82"	WEATHER:	75 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:		Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				Fork of Hell Creek of Pigo lope, Acre Watershed, M		MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea			
STREAM IMPACT LENGTH:	380	FORM OF MITIGATION:		MIT COORD (in Decimal I			Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	
Column No. 1- Impact Existin	g Condition (Del	bit)	Column No. 2- Mitigation Existing Con	dition - Baseline (C	credit)	Post C	gation Projected at Five Ye ompletion (Credit)	ars	Column No. 4- Mitigation Project Post Completion (Cr		Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	1	Average	HGM Score (attach data for	rms):	Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.75		Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0.88	0.78333333	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat	0.72		Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and	d Biological Indic	cators	PART I - Physical, Chemical and E	Biological Indicator	s	PART I - Physical, Ch	emical and Biological Indi	cators	PART I - Physical, Chemical and Bi	ological Indicators	PART I - Physical, Chemical at	nd Biological Indicators
	Points Range Scale	Site Score		Points Range S	Site Score		Points Rang Scale	e Site Score		Points Range Site Score Scale		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applie	s to all streams classifications)		PHYSICAL INDICATOR (Applies to all streams of	assifications)	PHYSICAL INDICATOR (Applies to all stream	ams classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient D	ata Sheet)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		 Epifaunal Substrate/Available 			-	0-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	13	2. Embeddedness	0-20		2. Embeddedness	0-20		1	0-20	2. Embeddedness	0-20
Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20			0-20	Velocity/ Depth Regime	0-20
4. Sediment Deposition	0-20	13	Sediment Deposition	0-20		Sediment Deposition	0-20			0-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1			0-20 0-1	5. Channel Flow Status	0-20 0-1
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		6. Channel Alteration	0-20		1	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bend	-/			0-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		1 1	0-20	8. Bank Stability (LB & RB)	0-20
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	12 17	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		 Vegetative Protection (LB & I Riparian Vegetative Zone Widt 				0-20 0-20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20
Total RBP Score	Marginal	85	Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total	ind gira	0.425	Sub-Total	1 00.	0	Sub-Total	1 001	0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	treams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	is)	CHEMICAL INDICATOR (Applie	es to Intermittent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicat	ors (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
400 400 05 11	0-90			0-90			0-90			0-90		0-90
100-199 - 85 points			nH			nH			nH		nН	
pii	0-1		511	0-1		ριι	0-1		pii	0-1	ρπ	0-1
5.6-6.0 = 45 points	0-80			5-90			5-90			5-90		5-90
DO			DO			DO			DO		DO	
	10-30			10-30			10-30			10-30		10-30
Sub-Total			Sub-Total		0	Sub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ams)	BIOLOGICAL INDICATOR (Ap	olies to Intermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0	0-100 0-1			0-100 0-1			0-100 0-1			0-100 0-1		0-100 0-1
Sub-Total	1	0	Sub-Total	1	0	Sub-Total		0	Sub-Total	0	Sub-Total	0
					<u> </u>	-35 (0.00)				v		, ,
PART II - Index and U	Unit Score		PART II - Index and Ur	nit Score		PART II -	Index and Unit Score		PART II - Index and Unit	: Score	PART II - Index and	I Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet U	nit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
					_			_				
0.660416667	380	250.958333	0	0	0	0	0	0	0	0 0	0	0 0

West Virginia Stream and Wetland Valuation Metric UT11 of RFHC, Ephemeral (2 of 2)

	(See instruction	
Temporal Loss-Constr	uction	
Note: Reflects duration of aquatic functional loss between the time of mitigation (credit).	an impact (debit) and completion of compensatory	
Years	15	
Sub-Total	0.2971875	
Temporal Loss-Maturity		
*Note: Period between completion of compensatory mitigation measu to function (i.e. maturity of tree stratum to provide organic matter an		
corridor).	d detitus within ripanan stream of wetland butter	
% Add. Mitigation	Temporal Loss-Maturity (Years)	
<u> </u>	, , , ,	
30%	25	
Sub-Total	0.215	

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	445.5895833	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation Considera	tions (Incentives)
*Note1: Reference the Instructional handout to determine	nm Restoration e the correct Restoration Levels (below) for your project priate category (only select one).	*N
Level I Restoration		
Level II Restoration		Buffer Wid
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT11 of RFHC, Ephemeral	445.5895833	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

ILF Costs (Offsetting Debit Units) \$356,471.67

idth Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

LFHC, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:		alo Mt. Surface Mine ermit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 42' 49.08" N	Lon.	82° 13' 10.26" W	WEATHER:	6	65 Sunny	DATE:	20-May-1	-10
STREAM CLASSIFICATION:	Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {ac			Left Fork of Hell Co % Streambed Slope, Ac			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {at			Same (Mitigation is restoration	of temporary impa	acts)
STREAM IMPACT LENGTH: 1140	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES: (in Decimal Degrees)	Lat.	37° 42' 49.08" N	Lon.	82° 13' 10.26" W	PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	1140	<i></i>
Column No. 1- Impact Existing Condi	tion (Debit)	Column No. 2- Mitigation Existing Cor	ndition - Baseline (Credit)		Column No. 3- Mitigation Propertion		ars	Column No. 4- Mitigation Pro Post Completion		ırs	Column No. 5- Mitigation Project	cted At Maturity (Cred	dit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology		Hydrology		Hydrolo	gy			Hydrology			Hydrology		
Biogeochemical Cycling	0	Biogeochemical Cycling	0		hemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat		Habitat		Habitat				Habitat			Habitat		
PART I - Physical, Chemical and Biolog	cal Indicators	PART I - Physical, Chemical and	Biological Indicators		PART I - Physical, Chemical ar	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicator	ors
Points Scale	Range Site Score		Points Range Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams classified	ations)	PHYSICAL INDICATOR (Applies to all streams	classifications)	PHYSIC	AL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			RBP (High Gradient Data Sheet	:)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover 0-20		Epifaunal Substrate/Available Cover	0-20	1. Epifau	nal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness 0-20		2. Embeddedness	0-20		ddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15
3. Velocity/ Depth Regime 0-20		3. Velocity/ Depth Regime	0-20		ty/ Depth Regime	0-20	14	3. Velocity/ Depth Regime	0-20	14	3. Velocity/ Depth Regime	0-20	14
4. Sediment Deposition 0-20		4. Sediment Deposition	0-20		ent Deposition	0-20	<u>11</u>	4. Sediment Deposition	0-20	13 16	4. Sediment Deposition	0-20	15 16
5. Channel Flow Status 0-20 6. Channel Alteration 0-20	0-1	Channel Flow Status Channel Alteration	0-20 0-1		nel Flow Status nel Alteration	0-20 0-1	17	Channel Flow Status Channel Alteration	0-20 0-1	17	Channel Flow Status Channel Alteration	0-20 0-1	17
6. Channel Alteration 0-20 7. Frequency of Riffles (or bends) 0-20	8	7. Frequency of Riffles (or bends)	0-20		ency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15
7. Frequency of Riffles (or bends) 0-20 8. Bank Stability (LB & RB) 0-20		8. Bank Stability (LB & RB)	0-20		Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18
9. Vegetative Protection (LB & RB) 0-20 0-20		9. Vegetative Protection (LB & RB)	0-20		ative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	11	9. Vegetative Protection (LB & RB)	0-20	16
10. Riparian Vegetative Zone Width (LB & RB) 0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		ian Vegetative Zone Width (LB & RB)		6	Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20	11	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)		16
, ,	optimal 140	Total RBP Score	Poor 0		P Score	Suboptimal	125	Total RBP Score	Suboptimal	141	Total RBP Score	Suboptimal	157
Sub-Total	0.7	Sub-Total	0	Sub-Tota	al		0.625	Sub-Total		0.705	Sub-Total		0.785
CHEMICAL INDICATOR (Applies to Intermittent and Pe	rennial Streams)	CHEMICAL INDICATOR (Applies to Intermitter	at and Perennial Streams)	CHEMIC	AL INDICATOR (Applies to Intermi	ittent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Stream	ms)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)	WVDEP	Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity		Specific Conductivity		Specific	Conductivity			Specific Conductivity			Specific Conductivity		
0-90	43		0-90		500 500 50 mainta	0-90	500	500 500 50	0-90	500	500 500 . 50 mainte	0-90	500
<=99 - 90 points		nH		nH	500-599 - 50 points			500-599 - 50 points			500-599 - 50 points		
0.00	0-1	p.11	0-1	pii.		5-90 0-1	40.45	p	5-90 0-1	40.45	p	0-1	40.45
>9.1 = 10 points	10.15		5-90		>9.1 = 10 points	5-90	10.15	>9.1 = 10 points	5-90	10.15	>9.1 = 10 points	5-90	10.15
DO		DO		DO				DO			DO		
10-30	11.17		10-30		>5.0 = 30 points	10-30	11.17	>5.0 = 30 points	10-30	11.17	>5.0 = 30 points	10-30	11.17
Sub-Total	0.65	Sub-Total	0	Sub-Tota			0.2	Sub-Total	1	0.45	Sub-Total		0.45
BIOLOGICAL INDICATOR (Applies to Intermittent and	Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)	BIOLOG	ICAL INDICATOR (Applies to Inte	ermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interr	mittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial S	Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		WV Stre	am Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
0-100 Fair	0-1 53.63		0-100 0-1		Fair	0-100 0-1	53.63	Fair	0-100 0-1	53.63	Fair	0-100 0-1	53.63
Sub-Total	0.4363	Sub-Total	0	Sub-Tota			0.4363	Sub-Total		0.4363	Sub-Total		0.4363
	<u> </u>												
PART II - Index and Unit Sco	re	PART II - Index and U	nit Score		PART II - Index and	Unit Score		PART II - Index and U	Jnit Score		PART II - Index and	Unit Score	
Index Line	ar Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score
							:						
0.595433333 1	140 678.794	0	1140 0		0.420433333	1140	479.294	0.530433333	1140	604.694	0.5571	1140	635.094

West Virginia Stream and Wetland Valuation Metric LFHC, Temporary Perennial (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGA	TION BANKING and II	_F)	
Temporal Loss-Construction	1			Ĺ	ong-term Protection
ote: Reflects duration of aquatic functional loss between the time of an imp mitigation (credit).	act (debit) and completion of compensatory		% Add. Mitigation	and Monitoring Period	
Years	15				
Sub-Total	0.267945				
Temporal Loss-Maturity			0 + 5/10 Y	ear Monitoring	
lote: Period between completion of compensatory mitigation measures an o function (i.e. maturity of tree stratum to provide organic matter and detri			Sub-Total		
corridor).	ac mamin npanan ca cam or notiona sumo.			PART IV - In	dex to Unit Scor
% Add. Mitigation	Temporal Loss-Maturity (Years)		Final Index Score (Debit)	Linear Feet	Unit Score (Debit)
			1.101551667	1140	1255.7689
9997	25				
o-Total	0.238173333				

% Add. Mitigation a	nd Monitoring Period	Lo	Long-Term Protection (Years)				
0 + 5/10 Ye	ear Monitoring		101				
Sub-Total			0				
	DADT IV In	dov to Unit Coons	Comunica de la comunica del la comunica de la comun				
PART IV - Index to Unit Score Conversion							
Final Index Score	Linear Feet	Unit Score	ILF Costs				
(Debit)		(Debit)	(Offsetting Debit Units)				

\$1,004,615.12

	PART V- Comparison								
Final Unit Score (Debit) [No Net Loss Value]	1255.7689	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	479.294	Mitigation Projected at Ten Years Post Completion (Credit)	604.694	Mitigation Projected At Maturity (Credit)	635.094
FINAL PROJECTED NET BALANCE					479.294		604.694		635.094

	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFHC, Temporary Perennial	1255.7689	809.74485

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width Left Bank 0-50 Preservation and Re-vegetation 51-150 **Buffer Width** Right Bank 0-50 Preservation and Supplemental Planting 51-150 Average Buffer 50 Width/Side

West Virginia Stream and Wetland Valuation Metric LFHC, Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:		uffalo Mt. Surface Mine Permit No. S-5018-07	IMPACT COORDINATES (in Decimal Degrees)	E Lat.	37° 43' 53.05"	Lon.	32° 13' 10.02"	WEATHER:	6	5 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	Perennial	IMPACT STREAM/SITE ID / (% stream slope, watershed size {ac			Left Fork of Hell Creek of Streambed Slope, Acre Wa			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acreag			Same (Mitigation is restoration	of temporary impacts)
STREAM IMPACT LENGTH: 11	10 FORM OF MITIGATION	:	MIT COORDINATES: (in Decimal Degrees)	Lat.	L	Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0
Column No. 1- Impact Existing Cor	ndition (Debit)	Column No. 2- Mitigation Existing Con	ndition - Baseline (Credit)		Column No. 3- Mitigation Projecte Post Completion (Cre			Column No. 4- Mitigation Projecte Post Completion (Cre		s	Column No. 5- Mitigation Projec	ted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Averag
Hydrology		Hydrology			Hydrology			Hydrology			Hydrology	
Biogeochemical Cycling	0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0
Habitat		Habitat			Habitat			Habitat			Habitat	
PART I - Physical, Chemical and Biol	ogical Indicators	PART I - Physical, Chemical and	Biological Indicators		PART I - Physical, Chemical and Bio	ological Indicato	ors	PART I - Physical, Chemical and Bio	logical Indica	tors	PART I - Physical, Chemical and	d Biological Indicators
	ints Range Site Score		Points Range Site Score Scale			Points Range Scale	Site Score		oints Range Scale	Site Score		Points Range Site Sco Scale Scale
PHYSICAL INDICATOR (Applies to all streams class	sifications)	PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams cla	assifications)		PHYSICAL INDICATOR (Applies to all streams cla	ssifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover 0	20 12	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20
-	20 14	Embeddedness	0-20		2. Embeddedness	0-20			0-20		2. Embeddedness	0-20
	20 11	3. Velocity/ Depth Regime	0-20			0-20			0-20		3. Velocity/ Depth Regime	0-20
·	20 13	Sediment Deposition	0-20		·	0-20		-	0-20		Sediment Deposition	0-20
	0-1	5. Channel Flow Status	0-20 0-1			0-20 0-1		1	0-20 0-1		5. Channel Flow Status	0-20 0-1
•	20 16	6. Channel Alteration	0-20			0-20			0-20		6. Channel Alteration	0-20
	20 10	7. Frequency of Riffles (or bends)	0-20		 	0-20			0-20		7. Frequency of Riffles (or bends)	0-20
, , , , , , , , , , , , , , , , , , ,	20 15	Bank Stability (LB & RB)	0-20			0-20			0-20		8. Bank Stability (LB & RB)	0-20
	20 14 17	Vegetative Protection (LB & RB) Regular Regul	0-20 0-20			0-20			0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20
. , ,	uboptimal 137	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor 0
Sub-Total	0.685	Sub-Total	0		Sub-Total	7 001	0	Sub-Total	1 001	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermittent and	Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Strea	ams)	CHEMICAL INDICATOR (Applies to Intermittent ar	d Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Genera	al)
Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity	
. 0	90 19		0-90			0-90			0-90			0-90
<=99 - 90 points		-11			all			-11			-11	
рп	0-1	рн	0-1		рн	0-1		рн	0-1		рн	0-1
>9.1 = 10 points	9.12		5-90			5-90			5-90			5-90
DO		DO			DO			DO			DO	
10	-30 10.15		10-30			10-30			0-30			10-30
Sub-Total	0.65	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermittent a		BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitte	nt and Perennia	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Streams
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	
0-	100 0-1 70.73		0-100 0-1			0-100 0-1			0-100 0-1			0-100 0-1
Good		Out Tatal			Out Total		0	Out Tatal		0	Out. Tatal	
Sub-Total	0.7073	Sub-Total	U		Sub-Total		U	Sub-Total	<u> </u>	0	Sub-Total	U
PART II - Index and Unit S	core	PART II - Index and U	nit Score		PART II - Index and Unit	Score		PART II - Index and Unit	Score		PART II - Index and	Unit Score
Index Li	near Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index L	inear Feet	Unit Score	Index	Linear Feet Unit Sc
0.00000000		-									-	
0.680766667	1110 755.651	0	0 0		0	0	0	0	0	0	0	0 0

West Virginia Stream and Wetland Valuation Metric LFHC, Permanent Perennial (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING and	1 II E/			
Townsyell and Comptyrists	· ·			na torm Dretection		
Temporal Loss-Constructi		0/ 8 1 1 8 8 2 2		ng-term Protection		
Note: Reflects duration of aquatic functional loss between the time of an in mitigation (credit).	npact (debit) and completion of compensatory	% Add. Mitigati	on and Monitoring Period	Lo	ong-Term Protection (Years)	
Years	15					
Sub-Total	0.306345					
Temporal Loss-Maturity		0 + 5/	10 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measures a	nd the time required for maturity, as it relates	Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and det	ritus within riparian stream or wetland buffer					
corridor).			PART IV - Ind	ex to Unit Score Conversion		
		Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Uni	
		1.259418333	1110	1397.95435	\$1,118,363.48	
30%	25					
ub-Total	0.272306667					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	1397.95435	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Considerations (Incen	tives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFHC, Permanent Perennial	1397.95435	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$1,118,363.48

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank			
	0-50			
	51-150			
Buffer Width	Right Bank			
	0-50			
	51-150			
Average Buffer Width/Side	0			

West Virginia Stream and Wetland Valuation Metric LFHC, Intermittent (1 of 2)

			falo Mt. Surface Mine IMPACT COORDINA Permit No. S-5018-07 (in Decimal Degre			Lat.	37° 42' 36.78"	Lon.	82° 13' 22.94"	WEATHER:		55 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:		ntermittent	IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)				Left Fork of Hell Cre % Streambed Slope, Acre	•		MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)					
STREAM IMPACT LENGTH:	615	FORM OF MITIGATION:			DRDINATES: mal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0)
Column No. 1- Impact Existing Condition (Debit)			Column No. 2- Mitigation Existing Condition - Baseline (Credit)				Column No. 3- Mitigation Projected at Five Years Post Completion (Credit)			Column No. 4- Mitigation Projected at Ten Years Post Completion (Credit)			Column No. 5- Mitigation Projected At Maturity (Credit)		
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	Ī	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.89333333	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat PART I - Physical, Chemical and	0.96	eators	Habitat PART I - Physical, Chemical and	Riological Indic	eators		Habitat PART I - Physical, Chemical and	l Riological Ind	licators	Habitat PART I - Physical, Chemical and B	tiological Indic	ators	Habitat PART I - Physical, Chemical an	d Riological Indica	eators
FACT 1- Filysical, Olicilical and	u biological illuit	Sators	PART 1- Physical, Chemical and	Biological illuic	alors		PART 1- Physical, Chemical and	i Biologicai iliu	icators	FART 1- Filysical, Chemical and B	noiogicai iliuic	ators	PARTI-Filysical, Gliefilical all	a Biological illuica	ators
	Points Range Scale	Site Score		Points Range Scale	e Site Score			Points Ran Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams classifications)				PHYSICAL INDICATOR (Applies to all streams classifications)			PHYSICAL INDICATOR (Applies to all streams classifications)			PHYSICAL INDICATOR (Applies to all streams classifications)		
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	16	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	12	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	14	Sediment Deposition	0-20		Ŀ	4. Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	12	5. Channel Flow Status	0-20		1	5. Channel Flow Status	0-20	1	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			6. Channel Alteration	0-20		6. Channel Alteration	0-20		Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20		L	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20			8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20			9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	Riparian Vegetative Zone Width (LB & RB)	0-20			10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Suboptimal	135	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.675	Sub-Total		0	1	Sub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	treams)		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Str	reams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			•	WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)		
Specific Conductivity			Specific Conductivity				Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	42		0-90				0-90			0-90			0-90	
<=99 - 90 points													-11		
рн	0-1		рн	0-1			рн	0-	1	рн	0-1		рн	0-1	
6.0-8.0 = 80 points	0-80	7.99		5-90				5-90	•		5-90			5-90	
DO			DO			l	DO	1		DO			DO		
	10-30	10.73		10-30		ľ		10-30			10-30			10-30	
	10-30	10.73		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total		0	Ŀ	Sub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perenni	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			1	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	33.69		0-100 0-1				0-100 0-	1		0-100 0-1			0-100 0-1	
Poor Sub Total		0.2360	Sub Total		0	1	Sub Total		0	Sub Total	l	0	Sub Total		0
Sub-Total		0.2369	Sub-Total		0	Ľ	Sub-Total		U	Sub-Total		U	Sub-Total		U
PART II - Index and Unit Score			PART II - Index and U	nit Score			PART II - Index and Unit Score			PART II - Index and Unit Score			PART II - Index and Unit Score		
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Scor
0.765346667	645	470 66075	0		0	<u> </u>	0		0	0	0	0	0	0	
0.765316667	615	470.66975	0	0	ı U II		U	0		u U	0	0	0	ı U	0

West Virginia Stream and Wetland Valuation Metric LFHC, Intermittent (2 of 2)

		PART III - Impact Factors			
	(See instruction	pe to insert default values for MITIGATION BANKING and	II E\		
	(See instruction	le to insert default values for will IGATION BANKING and	<u> </u>		
Temporal Loss-Construction				ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impa	ct (debit) and completion of compensatory	% Add. Mitigation	and Monitoring Period	Long	g-Term Protection (Years)
mitigation (credit).					
Years	15				
Sub-Total	0.3443925				
Temporal Loss-Maturity		0 + 5/10	Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer				
corridor).			PART IV - Inc	dex to Unit Score Co	nversion
		Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)
		1.364629167	615	839.2469375	\$671,397.55
		<u></u>		•	
30%	25				
Sub-Total Sub-Total	0.25492				

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	839.2469375	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ur project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration]	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFHC, Intermittent	839.2469375	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank					
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer	0						
Width/Side	· ·						

West Virginia Stream and Wetland Valuation Metric

LFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC	DRDINATES: La I Degrees)	at.	37° 42' 26.85"	Lon.	82° 13' 19.97"	WEATHER:	6	55 Sunny	DATE:	20-Мау-	-10
STREAM CLASSIFICATION:	I	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				Left Fork of Hell Cre % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	255	FORM OF MITIGATION:		MIT COOR (in Decimal		at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	,, _ ,_,
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (0		rs	Column No. 5- Mitigation Project	cted At Maturity (Cred	edit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrol	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.85	Biogeochemical Cycling		0	Biogeo	chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.92		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicate	ors		PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical an	nd Biological Indicato	ors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	CAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epifa	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	10	2. Embeddedness	0-20		2. Embe	eddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	12	Sediment Deposition	0-20			ment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20			nel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	16	Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20		7. Frequ	uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	Bank Stability (LB & RB)	0-20		8. Bank	Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	12	9. Vegetative Protection (LB & RB)	0-20		9. Vege	tative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	Riparian Vegetative Zone Width (LB & RB)	0-20			arian Vegetative Zone Width (LB & RB)			Riparian Vegetative Zone Width (LB & RB)	0-20		Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score	Marginal	82	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.41	Sub-Total		0	Sub-Tot			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	CHEMIC	CAL INDICATOR (Applies to Intermitt	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Strear	ms)
WVDEP Water Quality Indicators (General	l)		WVDEP Water Quality Indicators (General			WVDEF	Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gener	ral)	
Specific Conductivity	_		Specific Conductivity	_	0	Specifi	c Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 14	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points			nU			nU				all			nH		
рп	0-1		рн	0-1		рп		0-1		рп	0-1		рн	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		0.00	DO		0	DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
	10-30			10-30				10-30			10-30			10'30	
Sub-Total			Sub-Total		0	Sub-Tot			0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial St	reams)	BIOLO	GICAL INDICATOR (Applies to Inter	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial S	Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	- I		WV Str	eam Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	II.	0	Sub-Total		0	Sub-Tot	.al	, ,	0	Sub-Total		0	Sub-Total		0
		<u>—</u>													
PART II - Index and U	Jnit Score		PART II - Index and Ur	nit Score			PART II - Index and I	Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.55	0	475.05	-							-					
0.69	255	175.95	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric LFHC, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGAT	ON BANKING and	ILF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impa	ct (debit) and completion of compensatory		% Add. Mitigatio	n and Monitoring Period	Lo	ng-Term Protection (Years)
mitigation (credit).						
Years Sub-Total	15 0.3105					
Temporal Loss-Maturity			0 + 5/10	Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and			Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer					
corridor).				PART IV - Ind	ex to Unit Score C	Conversion
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.2125	255	309.1875	\$247,350.00
30%	25					
Sub-Total	0.212					

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	309.1875	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

Part	t VI - Mitigation	Considerations (Incen	tives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).			*Note ¹ : Refe	Ext rence Instructional handout for *Note ² : Enter the buffer
Level I Restoration				*Note ³ : \$
Level II Restoration			Buffer Width	
Level III Restoration				0-50
				51-150

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFHC, Ephemeral	309.1875	#DIV/0!

Extended Upland Buffer Zone

for the definitions of the Buffer Zone Mitigation Extents and Types (below) er width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank							
	0-50								
	51-150								
Buffer Width		Right Bank							
	0-50								
	51-150								
Average Buffer Width/Side	0								

West Virginia Stream and Wetland Valuation Metric

UT1 of LFHC, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:		alo Mt. Surface Mine Permit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 43' 19.14" N	Lon.	82° 13' 23.22" W	WEATHER:	65 Sunny	DATE:	20-May-10	
STREAM CLASSIFICATION:	M CLASSIFICATION: Perennial IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)			UT1 of Left Fork of Hell % Streambed Slope, Acre			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac		ON: Same (Mitigation is restoration	Same (Mitigation is restoration of temporary impacts)		
STREAM IMPACT LENGTH: 785	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES: (in Decimal Degrees)	Lat.	37° 43' 19.14" N	Lon.	82° 13' 23.22" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	785	
Column No. 1- Impact Existing Condi	ition (Debit)	Column No. 2- Mitigation Existing Cor	ndition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Proje	cted At Maturity (Credit)	
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average	
Hydrology		Hydrology			Hydrology			Hydrology		Hydrology		
Biogeochemical Cycling	0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0	
Habitat		Habitat			Habitat			Habitat		Habitat		
PART I - Physical, Chemical and Biolog	ical Indicators	PART I - Physical, Chemical and I	Biological Indicators		PART I - Physical, Chemical and	d Biological Ind	icators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical ar	nd Biological Indicators	
Point: Scale	Range Site Score		Points Range Site Score			Points Ran Scale	ge Site Score		Points Range Site Score Scale		Points Range Site Score Scale	
PHYSICAL INDICATOR (Applies to all streams classified)	cations)	PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover 0-20	8	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15	
2. Embeddedness 0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20 13	Embeddedness	0-20 15	
3. Velocity/ Depth Regime 0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20 13	Velocity/ Depth Regime	0-20 13	
4. Sediment Deposition 0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	11	4. Sediment Deposition	0-20 13	Sediment Deposition	0-20 15	
5. Channel Flow Status 0-20	()-1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-	10	5. Channel Flow Status	0-20 0-1 10	5. Channel Flow Status	0-20 0-1 10	
6. Channel Alteration 0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20 17	6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends) 0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15	7. Frequency of Riffles (or bends)	0-20 15	
8. Bank Stability (LB & RB) 0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18	
9. Vegetative Protection (LB & RB) 0-20 10. Riparian Vegetative Zone Width (LB & RB) 0-20		Vegetative Protection (LB & RB) Regran Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	6	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 11 0-20 11	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 16 0-20 16	
	arginal 110	Total RBP Score	Poor 0		Total RBP Score	Suboptima		Total RBP Score	Suboptimal 134	Total RBP Score	Suboptimal 150	
Sub-Total	0.55	Sub-Total	0		Sub-Total	Cubopiiiia	0.59	Sub-Total	0.67	Sub-Total	0.75	
CHEMICAL INDICATOR (Applies to Intermittent and Pe	erennial Streams)	CHEMICAL INDICATOR (Applies to Intermitter	at and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)	
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General			WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (Genera	D)	WVDEP Water Quality Indicators (Gene	ral)	
Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity		
0-90	19		0-90			0-90	500		0-90 500		0-90 500	
<=99 - 90 points	-	-11			500-599 - 50 points			500-599 - 50 points		500-599 - 50 points		
рп	0-1	рп	0-1		рп	0-	1	рн	0-1	рп	0-1	
>9.1 = 10 points	9.12		5-90		>9.1 = 10 points	5-90	9.12	>9.1 = 10 points	5-90 9.12	>9.1 = 10 points	5-90 9.12	
DO		DO			DO			DO		DO		
10-30	10.65		10-30		5 0 20 nointe	10-30	10.65	. 5.0 . 20 mainta	10-30 10.65	. 5.0 . 20 main!	10-30 10.65	
Sub-Total	0.65	Sub-Total	0		>5.0 = 30 points Sub-Total		0.2	>5.0 = 30 points Sub-Total	0.45	>5.0 = 30 points Sub-Total	0.45	
BIOLOGICAL INDICATOR (Applies to Intermittent and		BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Pere		BIOLOGICAL INDICATOR (Applies to Intern	The second secon	BIOLOGICAL INDICATOR (Applies to Inte		
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
0-100	0-1 70.73		0-100 0-1			0-100 0-	1 68		0-100 0-1 68		0-100 0-1 68	
Good Sub-Total	0.7073	Sub-Total	0		Good Sub-Total		0.68	Good Sub-Total	0.68	Good Sub-Total	0.68	
Sub-10tal	0.7073	Sub-10tal	U		Sub-Total		0.00	Sub-Total	0.00	Sub-Total	0.00	
PART II - Index and Unit Sco	re	PART II - Index and U	nit Score		PART II - Index and I	Unit Score		PART II - Index and U	Init Score	PART II - Index and	Unit Score	
Index Line	ar Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Fee	unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score	
0.635766667	785 499.076833	0	785 0		0.49	785	384.65	0.6	785 471	0.62666667	785 491.9333	

West Virginia Stream and Wetland Valuation Metric UT1 of LFHC, Temporary Perennial (2 of 2)

	(See instruction
Temporal Loss-Cons	•
Note: Reflects duration of aquatic functional loss between the time	of an impact (debit) and completion of compensatory
mitigation (credit	<i>y.</i>
Years Sub-Total	15 0.286095
Sub-Total	0.200033
Temporal Loss-Ma	aturity
Note: Period between completion of compensatory mitigation meas to function (i.e. maturity of tree stratum to provide organic matter a	
corridor).	
% Add. Mitigation	Temporal Loss-Maturity (Years)
0004	25
30% Jub-Total	0.254306667
up-1 otal	0.20400001

PART V- Comparison of Unit Scores and Projected Balance												
Final Unit Score (Debit) [No Net Loss Value]	923.2921417	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	384.65	Mitigation Projected at Ten Years Post Completion (Credit)	471	Mitigation Projected At Maturity (Credit)	491.9333333			
FINAL PROJECTED NET BALANCE		384.65		471		491.9333333						

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	roject		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of LFHC, Temporary Perennial	923.2921417	664.11

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Buffer Width		Right Bank						
	0-50	Preservation and Re-vegetation						
50	51-150							
Average Buffer Width/Side	50							

West Virginia Stream and Wetland Valuation Metric

UT1 of LFHC, Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 43' 19.75"	82° 13' 22.00"	WEATHER:	65 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	TREAM CLASSIFICATION: Perennial IMPACT STREAM/SITE ID AND SITE DE (% stream slope, watershed size {acreage}, unaltered				UT1 of Left Fork of Hell Creek of Pige % Streambed Slope, Acre Watershed, M		MITIGATION STREAM CLASS./SITE ID (% stream slope, watershed size {acreage}		Same (Mitigation is restoration of temporary impacts)		
STREAM IMPACT LENGTH:	1385	FORM OF MITIGATION:		MIT COORDINATES: (in Decimal Degrees)	Lat.	Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0
Column No. 1- Impact Existin	ng Condition (Deb	it)	Column No. 2- Mitigation Existing Col	ndition - Baseline (Credit)		Column No. 3- Mitigation Projected at Five Ye Post Completion (Credit)	ars	Column No. 4- Mitigation Projected Post Completion (Credi		Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology			Hydrology			Hydrology		Hydrology		Hydrology	
Biogeochemical Cycling		0	Biogeochemical Cycling	0		Biogeochemical Cycling	0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat			Habitat			Habitat		Habitat		Habitat	
PART I - Physical, Chemical and	d Biological Indica	ators	PART I - Physical, Chemical and	Biological Indicators		PART I - Physical, Chemical and Biological Indi	cators	PART I - Physical, Chemical and Biolo	gical Indicators	PART I - Physical, Chemical a	nd Biological Indicators
	Points Range Scale	Site Score		Points Range Site Score Scale		Points Scale Rang	e Site Score	Poi Sc:	nts Range Site Score		Points Range Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams classifications)		PHYSICAL INDICATOR (Applies to all streams class	ifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet	
Epifaunal Substrate/Available Cover	0-20	9	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover 0-20		Epifaunal Substrate/Available Cover O-	20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	9	Embeddedness	0-20		2. Embeddedness 0-20		2. Embeddedness 0-	20	2. Embeddedness	0-20
Velocity/ Depth Regime	0-20	9	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime 0-20		Velocity/ Depth Regime 0-:		Velocity/ Depth Regime	0-20
Sediment Deposition	0-20	9	Sediment Deposition	0-20		4. Sediment Deposition 0-20		4. Sediment Deposition 0-:		Sediment Deposition	0-20
5. Channel Flow Status	0-20	12	5. Channel Flow Status	0-20		5. Channel Flow Status 0-20		5. Channel Flow Status 0-:	20 0-1	5. Channel Flow Status	0-20 0-1
6. Channel Alteration	0-20	13	6. Channel Alteration	0-20		6. Channel Alteration 0-20		6. Channel Alteration 0-:	20	Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends) 0-20		7. Frequency of Riffles (or bends) 0-	20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20	15	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB) 0-20		8. Bank Stability (LB & RB) 0-:	20	8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB)	0-20	15	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB) 0-20		9. Vegetative Protection (LB & RB) 0-:		9. Vegetative Protection (LB & RB)	0-20
10. Riparian Vegetative Zone Width (LB & RB)	0-20	15	Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB) 0-20		Riparian Vegetative Zone Width (LB & RB) O-		Riparian Vegetative Zone Width (LB & RB)	
Total RBP Score	Suboptimal	121	Total RBP Score	Poor 0		Total RBP Score Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total		0.605	Sub-Total	0		Sub-Total	0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermitter	at and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent and Perennial S	streams)	CHEMICAL INDICATOR (Applies to Intermittent and	Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General			WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity	_		Specific Conductivity			Specific Conductivity		Specific Conductivity		Specific Conductivity	
	0-90	19		0-90		0-90		0-:	90		0-90
<=99 - 90 points			nU			nU		nli		n U	
рп	0-1		рп	0-1		pn 0-1		рп	0-1	рп	0-1
>9.1 = 10 points	0-80	9.12		5-90		5-90		5-	90		5-90
DO		33	DO			DO		DO		DO	
	10-30	10.65		10-30		10-30		10-	30		10-30
											.0 00
Sub-Total		0.65	Sub-Total	0		Sub-Total	0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermittent	and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Good	0-100 0-1	70.73		0-100 0-1		0-100 0-1		0-1	00 0-1		0-100 0-1
Sub-Total	,	0.7073	Sub-Total	0		Sub-Total	0	Sub-Total	0	Sub-Total	0
PART II - Index and (Unit Score		PART II - Index and U	nit Score		PART II - Index and Unit Score		PART II - Index and Unit So	core	PART II - Index and	Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score		Index Linear Feet	Unit Score	Index Lir	near Feet Unit Score	Index	Linear Feet Unit Scor
	4007	205 2005	-								
0.6541	1385	905.9285	0	0 0		0 0	0	0	0 0 1	. ^	0 0

West Virginia Stream and Wetland Valuation Metric UT1 of LFHC, Permanent Perennial (2 of 2)

		PART III - Impact Factors			
	(See instruction	page to insert default values for MITIGATION BANKING an	d ILF)		
Temporal Loss-Construction			Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impa	ct (debit) and completion of compensatory	% Add. Mitigati	on and Monitoring Period	Lo	ng-Term Protection (Years)
mitigation (credit).					
Years	15				
Sub-Total Sub-Total	0.294345				
T 11 11 11 11					404
Temporal Loss-Maturity			10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and		Sub-Total			U
to function (i.e. maturity of tree stratum to provide organic matter and detritude	s within riparian stream or wetland buffer				
corridor).			PART IV - Ind	ex to Unit Score C	Conversion
		Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)
		1.210085	1385	1675.967725	\$1,340,774.18
					<u> </u>
30%	25				
Sub-Total	0.26164				
- Jub-Total	0.20104				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	1675.967725	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE					0		0		0		

	Part VI - Mitigation Co	onsiderations (Incentives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) to the appropriate category (only select one).		
Level I Restoration		
Level II Restoration	Buffer \	
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of LFHC, Permanent Perennial	1675.967725	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer	0						
Width/Side	J						

West Virginia Stream and Wetland Valuation Metric UT1 of LFHC, Intermittent (1 of 2)

CTDEAM OF ACCIDICATION		mit No. S-5018-07	(in Decimal Degrees)		37° 43' 19.75"		82° 13' 22.00"		65 Sunny		20-May-10
STREAM CLASSIFICATION:	Intermittent	IMPACT STREAM/SITE ID AI (% stream slope, watershed size (acre		•	1st Unnamed Trib of Left Fork % Streambed Slope, Acre		•	MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acre-			
STREAM IMPACT LENGTH:	FORM OF MITIGATION:		MIT COORDINATES: (in Decimal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0
Column No. 1- Impact Existing Co.	ondition (Debit)	Column No. 2- Mitigation Existing Cond	dition - Baseline (Credit)		Column No. 3- Mitigation Proj Post Completion (s	Column No. 4- Mitigation Project Post Completion (Co		Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.71	Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0.95 0.87	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
PART I - Physical, Chemical and Biol	0.95 logical Indicators	PART I - Physical, Chemical and B	iological Indicators		PART I - Physical, Chemical and	l Biological Indicat	ors	Habitat PART I - Physical, Chemical and B	iological Indicators	PART I - Physical, Chemical ar	nd Biological Indicators
	oints Range Site Score		Points Range Site Score			Points Range Scale	Site Score		Points Range Site Score		Points Scale Range Site Score
PHYSICAL INDICATOR (Applies to all streams class	ssifications)	PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)	PHYSICAL INDICATOR (Applies to all stream	ams classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet))
	0-20 12	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	Epifaunal Substrate/Available Cover	0-20
	0-20	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20
	0-20 11	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20
·	0-20 9	Sediment Deposition Channel Flow Status	0-20		Sediment Deposition Channel Flow Status	0-20		Sediment Deposition Channel Flow Status	0-20	Sediment Deposition Channel Flow Status	0-20
	0-20 0-20	6. Channel Alteration	0-20 0-20 0-1		Channel Alteration	0-20 0-20 0-1		6. Channel Alteration	0-20 0-20 0-1	6. Channel Alteration	0-20 0-20 0-1
	0-20 12	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20
	0-20 13	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20
	0-20 16	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20
10. Riparian Vegetative Zone Width (LB & RB)	0-20 18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	10. Riparian Vegetative Zone Width (LB & RB)	
	Suboptimal 124	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total CHEMICAL INDICATOR (Applies to Intermittent and	0.62	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent	ond Baronnial Strooms)		Sub-Total CHEMICAL INDICATOR (Applies to Intermittee	ant and Barannial Stra	0 ama)	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent	and Perannial Streams)	Sub-Total CHEMICAL INDICATOR (Applies to Intermit	ttent and Paranaial Streams)
	d Felerillal Streams)						anis)		and Ferennial Streams)		
WVDEP Water Quality Indicators (General) Specific Conductivity		WVDEP Water Quality Indicators (General) Specific Conductivity			WVDEP Water Quality Indicators (General Specific Conductivity	al)		WVDEP Water Quality Indicators (General) Specific Conductivity		WVDEP Water Quality Indicators (Gene Specific Conductivity	ral)
	0-90 42	opeomo conductivity	0-90		opeome conductivity	0-90		opeome Gondactivity	0-90	opeome conductivity	0-90
<=99 - 90 points			0.30			0 30			0.30		0.30
рн	0-1	рн	0-1		рн	0-1		рн	0-1	рн	0-1
6.0-8.0 = 80 points	0-80 7.99		5-90			5-90			5-90		5-90
DO		DO			DO			DO		DO	
1	0-30 10.73		10-30			10-30			10-30		10-30
Sub-Total	1	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intern	mittent and Perennia	l Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Poor 0-	0-100 0-1 33.69		0-100 0-1			0-100 0-1			0-100 0-1		0-100 0-1
Sub-Total	0.2369	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
PART II - Index and Unit S	Score	PART II - Index and Uni	it Score		PART II - Index and U	Jnit Score		PART II - Index and Uni	it Score	PART II - Index and	I Unit Score
Index L	inear Feet Unit Score	index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.744483333	1180 878.490333	0	0 0		0	0	0	0	0 0	0	0 0

West Virginia Stream and Wetland Valuation Metric UT1 of LFHC, Intermittent (2 of 2)

	(See instruction	RT III - Impact Factors default values for MITIGATION BANKING and	i ILF)		
Temporal Loss-Co	struction		L	ong-term Protection	
Note: Reflects duration of aquatic functional loss between the tim mitigation (cre		% Add. Mitigation	on and Monitoring Period	Lor	ng-Term Protection (Years
Years	15				
Sub-Total	0.3350175				
Temporal Loss-I	Maturity	0 + 5/	10 Year Monitoring		101
Note: Period between completion of compensatory mitigation me	easures and the time required for maturity, as it relates	Sub-Total	<u> </u>		0
to function (i.e. maturity of tree stratum to provide organic mattee corridor).	r and detritus within riparian stream or wetland buffer		PART IV - In	dex to Unit Score C	Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debi
		1.3270875	1180	1565.96325	\$1,252,770.
				•	
30%	25				
	0.247586667				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	1565.96325	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation Consideration	ons (Incentives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) fo *Note2: Place an "X" in the appropriate category (only select one).	r your project	
Level I Restoration		
Level II Restoration		Buffer V
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of LFHC, Intermittent	1565.96325	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank								
	0-50								
	51-150								
Buffer Width	Right Bank								
	0-50								
	51-150								
Average Buffer Width/Side	0								

West Virginia Stream and Wetland Valuation Metric UT1 of LFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC	DRDINATES: L I Degrees)	_at.	37° 42' 58.39"	Lon.	82° 13' 40.99"	WEATHER:	6	55 Sunny	DATE:	20-Мау-	<i>y</i> -10
STREAM CLASSIFICATION:	I	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				1st Unnamed Trib of Left Ford % Streambed Slope, Acc			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	250	FORM OF MITIGATION:		MIT COOR (in Decimal	_	_at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cre	edit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydro	logy			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.85	Biogeochemical Cycling		0	Bioge	ochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.92		Habitat			Habita				Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicate	ors		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical and	d Biological Indicato	iors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	CAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	A RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epif	aunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	2. Embeddedness	0-20		2. Eml	peddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	18	Sediment Deposition	0-20			ment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			nnel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20			nnel Alteration	0-20		6. Channel Alteration	0-20		Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	18	Bank Stability (LB & RB)	0-20			k Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	18	Vegetative Protection (LB & RB)	0-20			etative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	20	10. Riparian Vegetative Zone Width (LB & RB)	0-20			arian Vegetative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score Sub-Total	Marginal	0.535	Total RBP Score Sub-Total	Poor	0	Sub-T	RBP Score	Poor	0	Total RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitter	at and Perennial Strea			ICAL INDICATOR (Applies to Intermi	tent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial St		CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Strear	ams)
WVDEP Water Quality Indicators (General	ı).		WVDEP Water Quality Indicators (General	1		WVDE	P Water Quality Indicators (Gene	ral\		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	cal)	
Specific Conductivity			Specific Conductivity				ic Conductivity	iai)		Specific Conductivity			Specific Conductivity	ai)	
<u> </u>	0-90			0-90				0-90			0-90		,	0-90	
100-199 - 85 points	0-90			0-90				0-90			0-90			0-90	
рН		43	рН		(1)	pН				рН			рН		
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90 0-1	
0.0-0.0 = 40 points	1		DO	-		DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total		0	Sub-T	otal		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Str	reams)	BIOLO	GICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial S	I Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV St	ream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	I I	0	Sub-Total	-	0	Sub-T	ntal		0	Sub-Total		0	Sub-Total		0
						Oub-11				1016					
PART II - Index and U	Jnit Score		PART II - Index and U	nit Score			PART II - Index and	Unit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.72125	250	180.3125	0	0	0		0	0	0	0	0	0	0	0	. 0

West Virginia Stream and Wetland Valuation Metric UT1 of LFHC, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors	E\			
	(See instruction	age to insert default values for MITIGATION BANKING and	ILF)			
Temporal Loss-Constru	ıction		Lo	ong-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of a	an impact (debit) and completion of compensatory	% Add. Mitigatio	n and Monitoring Period	Long	g-Term Protection (Years)	
mitigation (credit).						
Years	15					
Sub-Total	0.3245625					
					404	
Temporal Loss-Matu			Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measure		Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and	detritus within riparian stream or wetland buffer					
corridor).			PART IV - Inc	dex to Unit Score Co	Conversion	
		Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)	
		1.2828125	250	320.703125	\$256,562.50	
30%	25					
Sub-Total	0.237					
	<u> </u>					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	320.703125	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

				U	
		Part VI - Mitigation	n Considerations (Incer	itives)	
			T		
	Extent of Stream Restoration				ı
*Note1: Reference t	he Instructional handout to determine the correct Restoration Levels (below) for your pro	oject		*Note ¹ : Refe	erence Instructional handou
	*Note2: Place an "X" in the appropriate category (only select one).				*Note ² : Enter the buffe
Level I Restoration					*Note
Level II Restoration				Buffer Width	
Level III Restoration					0-50
•		-	=		51-150

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of LFHC, Ephemeral	320.703125	#DIV/0!

Extended Upland Buffer Zone

dout for the definitions of the Buffer Zone Mitigation Extents and Types (below) ouffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank									
	0-50									
	51-150									
Buffer Width	Right Bank									
	0-50									
	51-150									
Average Buffer	0									
Width/Side	J									

West Virginia Stream and Wetland Valuation Metric UT2 of UT1 of LFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 43' 18.26"	Lon.	82° 13' 32.74"	WEATHER:	6	65 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				UT2 of UT1 of Left Fork of I % Streambed Slope, Acre			MITIGATION STREAM CLASS./SITI (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	300	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	e (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (Co		ırs	Column No. 5- Mitigation Project	eted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	Ħ	GM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.63		Hydrology			H	ydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.93	0.81	Biogeochemical Cycling		0		iogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.87		Habitat			H	abitat			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indica	tors		PART I - Physical, Chemical and	l Biological Indi	cators	PART I - Physical, Chemical and B	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indic	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PI	HYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			U	SEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	5	Epifaunal Substrate/Available Cover	0-20		1.	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	3	2. Embeddedness	0-20		2.	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	3	3. Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	2	Sediment Deposition	0-20		_	Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	5	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	11	6. Channel Alteration	0-20		_	Channel Alteration	0-20		Channel Alteration	0-20		Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	4	7. Frequency of Riffles (or bends)	0-20			Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20			Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	16	9. Vegetative Protection (LB & RB)	0-20			Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Marginal	19 82	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0		Riparian Vegetative Zone Width (LB & RB) tal RBP Score	0-20 Poor	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0
Sub-Total	Maryinai	0.41	Sub-Total	Pool	0		ub-Total	POOL	0	Sub-Total	FOOI	0	Sub-Total	Pool	0
CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stre	eams)	C	HEMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Str	eams)
WVDEP Water Quality Indicators (General	D		WVDEP Water Quality Indicators (General)		w	VDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity				pecific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	55		0-90				0-90			0-90			0-90	
<=99 - 90 points	1														
pH	0.1	40	рН	0.1		pi	4	0.1		рН	0.1		рН	0.1	
8.1-9.0 = 45 points	0-80	8.64		5-90				5-90			5-90			5-90	
DO		(0)	DO	•	0.00	D	0			DO			DO		
	10-30	10.73		10-30				10-30			10-30			10-30	
	10-30			10-30		L		10-50			10 30			10-50	
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermit	ittant and Barannial	0.825	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermiti	ont and Barannial S	O Strooms)		ub-Total OLOGICAL INDICATOR (Applies to Inter	mittant and Baron	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermit	tont and Baranni	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Inter	mittant and Baranni	ial Strooms)
WV Stream Condition Index (WVSCI)	itterit and Fereninal	Streams)	WV Stream Condition Index (WVSCI)	ent and Ferennial C	birearris)		V Stream Condition Index (WVSCI)	inittent and Feren	niai Streams)	WV Stream Condition Index (WVSCI)	ttent and Ferenin	iai Streams)	WV Stream Condition Index (WVSCI)	millent and Ferenin	iai Streams)
WW Stream Condition index (WVSCI)		0.4.50	WW Stream Condition index (WVSCI)			**	V Stream Condition maex (VVVSCI)			WV Stream Condition index (WVSCI)			WV Stream Condition index (WVSCI)		
Grey Zone	0-100 0-1	64.53		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total		0.6453	Sub-Total	•	0	Sı	ub-Total	•	0	Sub-Total	•	0	Sub-Total	•	0
PART II - Index and U	Init Score		PART II - Index and Ur	nit Score			PART II - Index and I	Init Score		PART II - Index and Uni	it Score		PART II - Index and	Unit Score	
PART II - III US AND U	Jint Goore		FART II - IIIUEX AND OF	iii 300ie			PART II - III dex and (Jiiit Goole		PART II - III GEX AND UNI	ii Gcore		FART II - IIIdex and	GIIII GCOIR	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.718383333	300	215.515	0	0	0	F	0	0	0	0	0	0	0	0	0
0.7 10303333	300	213.313	<u> </u>	U	U				Ū	Ü	U	,	<u> </u>	Ū	

West Virginia Stream and Wetland Valuation Metric UT2 of UT1 of LFHC, Intermittent (2 of 2)

		PART III - Impact Factors				
	(See instruction		ION BANKING and	ILF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impact	t (debit) and completion of compensatory		% Add. Mitigation	n and Monitoring Period	Lo	ng-Term Protection (Years)
mitigation (credit).						
Years	15					
Sub-Total	0.3232725					
						404
Temporal Loss-Maturity				Year Monitoring		
			Sub-Total			Ü
	witnin riparian stream or wetiand buπer					
cornaor).	ween the time of an impact (debit) and completion of compensatory itigation (credit). 15	Conversion				
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.2923625	300	387.70875	\$310,167.00
30%						
Sub-Total	0.250706667					

	PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	387.70875	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)				
FINAL PROJECTED NET BALANCE		0		0		0						

	itigation Considerations (Incentives)	
Extent of Stream Restormal Properties of Stream Restormal Properties (*Note1: Reference the Instructional handout to determine the corrow *Note2: Place an "X" in the appropriate cate	rect Restoration Levels (below) for your project	
Level I Restoration		
Level II Restoration		Buffe
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT2 of UT1 of LFHC, Intermittent	387.70875	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank							
	0-50								
	51-150								
Buffer Width	Right Bank								
	0-50								
	51-150								
Average Buffer Width/Side	0								

West Virginia Stream and Wetland Valuation Metric UT5 of UT1 of LFHC, Intermittent (1 of 2)

		lo Mt. Surface Mine IMPACT COORDINATES: La (in Decimal Degrees)		Lat.	37° 42' 59.88"	Lon.	82° 13' 39.43"	WEATHER:	6	55 Sunny	DATE:	20-May-10			
STREAM CLASSIFICATION: Intermittent IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)					UT5 of UT1 of Left Fork of Hell Creek of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree				MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)						
STREAM IMPACT LENGTH:	80	FORM OF MITIGATION:			RDINATES: I al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0	
Column No. 1- Impact Existing	Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (Ci		ars	Column No. 5- Mitigation Project	cted At Maturity (Cro	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HC	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.63		Hydrology			Ну	Irology			Hydrology			Hydrology		
Biogeochemical Cycling	0.93	0.81	Biogeochemical Cycling		0		geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.87		Habitat			На	itat			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indica	tors		PART I - Physical, Chemical and	Biological Indi	ators	PART I - Physical, Chemical and B	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indicat	itors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PH	/SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			US	EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20		1.	pifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	2. Embeddedness	0-20		2.	mbeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	5	3. Velocity/ Depth Regime	0-20			elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	Sediment Deposition	0-20			sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	6	5. Channel Flow Status	0-20 0-1			channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			channel Alteration	0-20		Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20			requency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	16	Bank Stability (LB & RB)	0-20			ank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB)	0-20	16	Vegetative Protection (LB & RB)	0-20			egetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	20	10. Riparian Vegetative Zone Width (LB & RB)	0-20			Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score Sub-Total	Suboptimal	129 0.645	Total RBP Score Sub-Total	Poor	0		al RBP Score -Total	Poor	0	Total RBP Score Sub-Total	Poor	0	Total RBP Score Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stre	eams)	СН	EMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	eams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	1		w	DEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity	, I		Specific Conductivity		(1)		ecific Conductivity	,		Specific Conductivity			Specific Conductivity		
	0-90	55		0-90			-	0-90			0-90			0-90	
<=99 - 90 points											0.00				
pH	0.1	45	рН	0.1		рН		0.1		рН	0.1		рН	0.1	
8.1-9.0 = 45 points	0-80	8.64		5-90				5-90			5-90			5-90	
DO		100	DO	<u>'</u>	(1)	DC				DO			DO		
	10-30	10.67		10-30				10-30			10-30			10-30	
	10-30			10-30	-	_		10-30			10-30	-		10-30	
Sub-Total		0.825	Sub-Total		0		-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial S	streams)		LOGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	il Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			W	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Grey Zone	0-100 0-1	64.53		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	/
Sub-Total		0.6453	Sub-Total	,	0	Su	-Total		0	Sub-Total	· ·	0	Sub-Total	,	0
						_									
PART II - Index and U	nit Score		PART II - Index and Ur	nit Score			PART II - Index and I	Jnit Score		PART II - Index and Uni	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.75755	90	60 604	0	_	0		0	0	0	0	0	0	0	0	
0.75755	80	60.604	U	0	U	L	<u> </u>	U	U	U	U	U	U	U	<u>u</u>

West Virginia Stream and Wetland Valuation Metric UT5 of UT1 of LFHC, Intermittent (2 of 2)

	(0)		
	(See instruction p		
Temporal Loss-			
ote: Reflects duration of aquatic functional loss between the			
mitigation (credit).		
Years	15		
Sub-Total	0.3408975		
Temporal Los			
Period between completion of compensatory mitigation measures and the time required for maturity, as it relates			
o function (i.e. maturity of tree stratum to provide organic ma	· ·		
corrido	r).		
% Add. Mitigation	Temporal Loss-Maturity (Years)		
9994	25		
o-Total	25 0.28204		

	PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	110.439	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)				
INAL PROJECTED NET BALANCE					0		0		0			

	Part VI - Mitig	ation Considerations (Incentives)
Extent of Stream *Note1: Reference the Instructional handout to determine t *Note2: Place an "X" in the appropr	the correct Restoration Levels (below) for your project	
_evel I Restoration		
Level II Restoration		Buffer \
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of UT1 of LFHC, Intermittent	110.439	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank									
	0-50									
	51-150									
Buffer Width	Right Bank									
	0-50									
	51-150									
Average Buffer	0									
Width/Side	J									

West Virginia Stream and Wetland Valuation Metric

UT5 of UT1 of LFHC, Ephemeral (1 of 2)

		falo Mt. Surface Mine IMPACT COORDINATES: La (in Decimal Degrees)			Lat.	37° 42' 59.13"	Lon.	82° 13' 37.87"	WEATHER:	65 Sunny		DATE:	20-May-10	0	
STREAM CLASSIFICATION: Ephemeral IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)					UT5 of UT1 of Left Fork of Hell Creek of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree				MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)						
STREAM IMPACT LENGTH:	120	FORM OF MITIGATION:			RDINATES: L al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (C		rs	Column No. 5- Mitigation Project	cted At Maturity (Credit	it)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	А	Average
Hydrology	0.75		Hydrology			Hydro	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.87	Biogeochemical Cycling		0	Bioge	ochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.89		Habitat			Habita				Habitat			Habitat		
PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicat	ors		PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and B	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indicators	s
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range S Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	ICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEF	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epi	faunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	6	2. Embeddedness	0-20			beddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			ocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	10	Sediment Deposition	0-20			diment Deposition	0-20		Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	10	6. Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			quency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	10	8. Bank Stability (LB & RB)	0-20			nk Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	10 16	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) parian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	62	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	, g	0.31	Sub-Total		0	Sub-T			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	at and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stre	ams)	CHE	IICAL INDICATOR (Applies to Intermit	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Streams	s)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)			WVD	EP Water Quality Indicators (Gener	ai)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity				fic Conductivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points			-11	1				1					-11	1	
рн	0-1		рн	0-1		рн		0-1		рн	0-1		рн	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		(1)	DO			DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total		0	Sub-T	otal		0	Sub-Total		0	Sub-Total		
BIOLOGICAL INDICATOR (Applies to Intermitte	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)		OGICAL INDICATOR (Applies to Inte	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perenni		BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial Str	treams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			wv s	tream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
0		•	2 + 7 + 1		-	0.1.7							0.1.7.1.1		
Sub-Total		0	Sub-Total		U	Sub-T	otal		U	Sub-Total		0	Sub-Total		U
PART II - Index and Ur	nit Score		PART II - Index and Ur	it Score			PART II - Index and	Jnit Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Ur	Jnit Score
0.5==	400	24					•						_		
0.675	120	81	0	0	0	1	0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT5 of UT1 of LFHC, Ephemeral (2 of 2)

		ART III - Impact Factors					
	(See instruction	t default values for MITIGATION BANKING an	d ILF)				
Temporal Loss-Construction	n		L	ong-term Protection			
Note: Reflects duration of aquatic functional loss between the time of an im	pact (debit) and completion of compensatory	% Add. Mitigat	ion and Monitoring Period	Loi	ng-Term Protection (Years)		
mitigation (credit).							
Years	15						
Sub-Total	0.30375						
Temporal Loss-Maturity		0+5	/10 Year Monitoring		101		
*Note: Period between completion of compensatory mitigation measures at		Sub-Total	710 Teal Worldoning		0		
to function (i.e. maturity of tree stratum to provide organic matter and detr							
corridor).	,		PART IV - Inc	dex to Unit Score C	onversion		
		Final Index Score	Linear Feet	Unit Score	ILF Costs		
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Ur		
		1.17075	120	140.49	\$112,392.00		
30%	25						
Sub-Total	0.192						

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	140.49	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
INAL PROJECTED NET BALANCE				0		0		0	

	Part VI - Mitigation						
Extent of Stream *Note1: Reference the Instructional handout to determine th *Note2: Place an "X" in the appropria	e correct Restoration Levels (below) for your project						
_evel I Restoration							
Level II Restoration		Buffer					
Level III Restoration							

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of UT1 of LFHC, Ephemeral	140.49	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width Left Bank 0-50 51-150 **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0 Width/Side

West Virginia Stream and Wetland Valuation Metric

UT8 of LFHC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			lo Mt. Surface Mine rrmit No. S-5018-07	IMPACT COC	DRDINATES: La	at.	37° 42' 50.28" N	Lon.	82° 13' 9.87" W	WEATHER:		65 Sunny	DATE:	20-Mi	May-10
STREAM CLASSIFICATION:	TION: Intermittent IMPACT STREAM/SITE ID AN (% stream slope, watershed size {acres											Same (Mitigation is restoration of temporary impacts)			
STREAM IMPACT LENGTH:	115	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COOR (in Decima		at.	37° 42' 50.28" N	Lon.	82° 13' 9.87" W	PRECIPITATION PAST 48 HRS:		0	Mitigation Length:	11	115
Column No. 1- Impact Existin	ng Condition (De	bit)	Column No. 2- Mitigation Existing Co	ondition - Baseline	(Credit)			on Projected at Five \	Years	Column No. 4- Mitigation Pr Post Completion		'ears	Column No. 5- Mitigation Project	ted At Maturity (0	(Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM So	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolog	ду	0.7		Hydrology	0.73		Hydrology	0.77	
Biogeochemical Cycling	0.97	0.88666667	Biogeochemical Cycling		0	Biogeoc	hemical Cycling	0.56	0.626666667	Biogeochemical Cycling	0.78	0.72666667	Biogeochemical Cycling	0.88	0.8533333
Habitat	0.94		Habitat			Habitat		0.62		Habitat	0.67		Habitat	0.91	
PART I - Physical, Chemical an	nd Biological Indi	cators	PART I - Physical, Chemical and	d Biological Indicat	ors		PART I - Physical, Chemic	cal and Biological Inc	dicators	PART I - Physical, Chemical an	d Biological Ind	licators	PART I - Physical, Chemical and	d Biological Indic	icators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	Site Score		Points Rang Scale	ge Site Score		Points Range Scale	ge Site Score
PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSIC	AL INDICATOR (Applies to all str	eams classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)	1		USEPA RBP (High Gradient Data Sheet)			USEPA F	RBP (High Gradient Data She	et)		USEPA RBP (High Gradient Data Sheet)	1		USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	9	Epifaunal Substrate/Available Cover	0-20			nal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness	0-20	10	2. Embeddedness	0-20		2. Embed	ddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15
3. Velocity/ Depth Regime	0-20	7	3. Velocity/ Depth Regime	0-20		Velocit	ty/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13
Sediment Deposition	0-20	12	Sediment Deposition	0-20		Sedime	ent Deposition	0-20	12	Sediment Deposition	0-20	14	Sediment Deposition	0-20	15
5. Channel Flow Status	0-20 0-1	6	5. Channel Flow Status	0-20		Chann	nel Flow Status	0-20	8	5. Channel Flow Status	0-20	9	5. Channel Flow Status	0-20	10
6. Channel Alteration	0-20	13	6. Channel Alteration	0-20		Chann	nel Alteration	0-20	17	6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20	5	7. Frequency of Riffles (or bends)	0-20		7. Freque	ency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20	11	8. Bank Stability (LB & RB)	0-20		8. Bank S	Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18
9. Vegetative Protection (LB & RB)	0-20	11	Vegetative Protection (LB & RB)	0-20			ative Protection (LB & RB)	0-20	6	Vegetative Protection (LB & RB)	0-20	11	Vegetative Protection (LB & RB)	0-20	16
10. Riparian Vegetative Zone Width (LB & RB)		17	Riparian Vegetative Zone Width (LB & RB)				ian Vegetative Zone Width (LB & R		6	Riparian Vegetative Zone Width (LB & RB)		11	Riparian Vegetative Zone Width (LB & RB)	0-20	16
Total RBP Score	Marginal	101	Total RBP Score	Poor	0	Total RBI		Suboptimal	117	Total RBP Score	Suboptimal		Total RBP Score	Suboptimal	
Sub-Total		0.505	Sub-Total		0	Sub-Tota			0.585	Sub-Total		0.67	Sub-Total		0.75
CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial S	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Strea	ams)	CHEMIC	AL INDICATOR (Applies to Interr	mittent and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	Streams)
WVDEP Water Quality Indicators (General	ral)		WVDEP Water Quality Indicators (General	al)			Water Quality Indicators (Ger	neral)		WVDEP Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (Genera	al)	
Specific Conductivity			Specific Conductivity		(1)	Specific	Conductivity			Specific Conductivity			Specific Conductivity	_	
<=99 - 90 points	0-90	55		0-90			500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500	500-599 - 50 points	0-90	500
<=99 - 90 points			nH		(1)	nH	300-399 - 30 points			500-599 - 50 points			500-399 - 30 points		
p11	0-1		p11	0-1		pi i		0-1		p11	0-1		ρπ	0-1	
8.1-9.0 = 45 points	0-80	8.64		5-90			8.1-9.0 = 45 points	5-90	8.64	8.1-9.0 = 45 points	5-90	8.64	8.1-9.0 = 45 points	5-90	8.64
DO		(2.0)	DO		0	DO	·			DO			DO		
	10-30	10.67		10-30				10-30	10.67		10-30	10.67		10-30	10.67
Out Tatal			Out Total			O. I. T. I.	>5.0 = 30 points		0.375	>5.0 = 30 points			>5.0 = 30 points		
Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	mittent and Perennia	0.825	Sub-Total BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial St	0	Sub-Tota	ICAL INDICATOR (Applies to In	atermittent and Perenni		Sub-Total BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Pere	0.625	Sub-Total BIOLOGICAL INDICATOR (Applies to Interr	mittent and Perent	0.625
WV Stream Condition Index (WVSCI)	THEORE AND T CICINIA	Cucanay	WV Stream Condition Index (WVSCI)	interit did i cicimia ot	i cama)		am Condition Index (WVSCI)	nermittent und i eremit	ar or carrisy	WV Stream Condition Index (WVSCI)	Timitent and Ferei	illiai Garcanis)	WV Stream Condition Index (WVSCI)	mittent und 1 erenni	mar otreams)
WV Stream Condition index (WVSCI)		04.50	WV Stream Condition index (WVSCI)	0-100 0-1		VV Sue	in Condition index (WV3CI)	0-100 0-1	04.50	WV Stream Condition index (WVSCI)		64.50	WV Stream Condition index (WVSCI)		04.50
Grey Zone	0-100 0-1	64.53		0-100 0-1			Grey Zone	0-100 0-1	64.53	Grey Zone	0-100 0-1	64.53	Grey Zone	0-100 0-1	64.53
Sub-Total		0.6453	Sub-Total		0	Sub-Tota	ıl		0.6453	Sub-Total		0.6453	Sub-Total		0.6453
D.D.T.	I I I - '		2.22	H-'- 0			2.27			2.27.	11-21 0-			U-'' 0	
PART II - Index and	Unit Score		PART II - Index and	Unit Score			PAKI (I - Inde	x and Unit Score		PART II - Index and	Unit Score		PART II - Index and I	Jnit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.77055	445	99 94225		445			0.500000000	445	66 904 50000	0.00740007	445	79.0724467	0.70000000	445	07 700000
0.77255	115	88.84325	U	115	0		0.580883333	115	66.80158333	0.686716667	115	78.9724167	0.763383333	115	87.789083

West Virginia Stream and Wetland Valuation Metric UT8 of LFHC, Temporary Intermittent (2 of 2)

			PARTI	II - Impact Factors					
		(See instruction	page to insert defa	ault values for MITIGAT	ION BANKING and	IILF)			
Temp	oral Loss-Construction					Loi	ng-term Protection		
*Note: Reflects duration of aquatic functional loss		t (debit) and completion of compensatory			% Add. Mitigation	on and Monitoring Period	Long-Term Protection (Years)		
	mitigation (credit).								
Years		15							
Sub-Total		0.3476475							
Cub Total		0.041 041 0							
Ten	nporal Loss-Maturity				0 + 5/1	101			
*Note: Period between completion of compensato	ry mitigation measures and th				Sub-Total			0	
to function (i.e. maturity of tree stratum to provide	•	within riparian stream or wetland buffer							
	corridor).					PART IV - Inde	ex to Unit Score (Conversion	
					Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation Temporal Loss-Maturity (Yea		Temporal Loss-Maturity (Years)			(Debit)		(Debit)	(Offsetting Debit	Units)
				1.383570833	115	159.1106458	\$127,288.52		
								. ,	
30%		25							
Sub-Total		0.263373333							
		PART	V- Comparison of	Unit Scores and Projec	ted Balance				
Final Unit Score (Debit) [No Net Loss Value]	159.1106458	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	66.80158333	Mitigation Projected at Ten Years Post Completion (Credit)	78.97241667	Mitigation Projected At Maturity (Credit)	87.78908333
FINAL PROJECTED NET BALANCE					66.80158333		78.97241667		87.78908333
			Dort VI Mitigation	Considerations (Incom	4:				
			Part VI - Mitigation	n Considerations (Incen	tives)				
	Extent of Stream Res	storation				Extend	ed Upland Buffer Z	one	
*Note1: Reference the Instruction	nal handout to determine the co	prect Restoration Levels (below) for your pro	oject		*Note1: Refer	ence Instructional handout for the			s (below)
*Note2: P	lace an "X" in the appropriate c	ategory (only select one).				*Note ² : Enter the buffer width			
Level I Restoration						*Note ³ : Selec	t the appropriate mitiga	tion type	
Level II Restoration					Buffer Width		Left B	ank	
Level III Restoration						0-50		eservation and Re-vegetation	
				-	50	51-150			
					Buffer Width		Right E		
						0-50	Pr	eservation and Re-vegetation	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT8 of LFHC, Temporary Intermittent	159.1106458	118.5152625

0-50 51-150

50

Average Buffer Width/Side

West Virginia Stream and Wetland Valuation Metric UT9 of LFHC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			lo Mt. Surface Mine ermit No. S-5018-07	IMPACT COO (in Decimal		37° 42' 49.03" N	Lon.	82° 13' 10.59" W	WEATHER:		65 Sunny	DATE:	20-M	lay-10
STREAM CLASSIFICATION:	Intermittent IMPACT STREAM/SITE ID AND SI (% stream slope, watershed size {acreage}, un			· · · · · · · · · · · · · · · · · · ·				MITIGATION STREAM CLASS./S (% stream slope, watershed size {	Same (Mitigation is restoration of temporary impacts)					
STREAM IMPACT LENGTH:	135	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORE (in Decimal		37° 42' 49.03" N	Lon.	82° 13' 10.59" W	PRECIPITATION PAST 48 HRS:		0	Mitigation Length:	1:	35
Column No. 1- Impact Existi	ing Condition (De	ebit)	Column No. 2- Mitigation Existing Co	ndition - Baseline (Credit)		gation Projected at Five ompletion (Credit)	Years	Column No. 4- Mitigation Pro Post Completion		ears	Column No. 5- Mitigation Proje	cted At Maturity (0	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms)	:	Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrology	0.7		Hydrology	0.73		Hydrology	0.76	
Biogeochemical Cycling	0.97	0.89333333	Biogeochemical Cycling		0	Biogeochemical Cycling	0.56	0.62666667	Biogeochemical Cycling	0.78	0.72666667	Biogeochemical Cycling	0.88	0.8466667
Habitat	0.96		Habitat			Habitat	0.62		Habitat	0.67		Habitat	0.9	
PART I - Physical, Chemical ar	nd Biological Indi	cators	PART I - Physical, Chemical and	Biological Indicato	ors	PART I - Physical, Che	emical and Biological In	ndicators	PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical ar	nd Biological Indic	cators
	Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score		Points Rang Scale	e Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all strea	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to a	Il streams classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	ıms classifications)	
USEPA RBP (High Gradient Data Sheet))		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data S	Sheet)		USEPA RBP (High Gradient Data Sheet)	1		USEPA RBP (High Gradient Data Sheet))	
Epifaunal Substrate/Available Cover	0-20	8	Epifaunal Substrate/Available Cover	0-20		1. Epifaunal Substrate/Available Cov		11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness	0-20	8	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15
3. Velocity/ Depth Regime	0-20	6	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13
Sediment Deposition	0-20	8	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20	13	Sediment Deposition	0-20	15
5. Channel Flow Status	0-20 0-1	4	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	8	5. Channel Flow Status	0-20	8	5. Channel Flow Status	0-20	10
6. Channel Alteration	0-20	14	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20	12	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18
9. Vegetative Protection (LB & RB)	0-20	13	9. Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	11	9. Vegetative Protection (LB & RB)	0-20	16
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		 Riparian Vegetative Zone Width (LB 	& RB) 0-20	6	10. Riparian Vegetative Zone Width (LB & RB)	0-20	11	10. Riparian Vegetative Zone Width (LB & RB)	0-20	16
Total RBP Score	Marginal	98	Total RBP Score	Poor	0	Total RBP Score	Suboptimal	116	Total RBP Score	Suboptimal	132	Total RBP Score	Suboptimal	150
Sub-Total		0.49	Sub-Total		0	Sub-Total		0.58	Sub-Total		0.66	Sub-Total		0.75
CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennial S	streams)	CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial Strear	ms)	CHEMICAL INDICATOR (Applies to I	ntermittent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennial St	treams)
WVDEP Water Quality Indicators (General	ral)		WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gener	ral)		WVDEP Water Quality Indicators (General	ral)	
Specific Conductivity			Specific Conductivity		(1)	Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	55		0-90			0-90	500		0-90	500		0-90	500
<=99 - 90 points						500-599 - 50 points			500-599 - 50 points			500-599 - 50 points		
рн	0-1		рн	0-1		рн	0-1		рн	0-1		рн	0-1	
8.1-9.0 = 45 points	0-80	8.64		5-90		8.1-9.0 = 45 points	5-90	8.64	8.1-9.0 = 45 points	5-90	8.64	8.1-9.0 = 45 points	5-90	8.64
DO			DO			DO			DO			DO		
	10-30	10.67		10-30			10-30	10.67		10-30	10.67		10-30	10.67
	10-30			10-30		>5.0 = 30 points	10-30		>5.0 = 30 points	10-30		>5.0 = 30 points	10-30	
Sub-Total		0.825	Sub-Total		0	Sub-Total		0.375	Sub-Total		0.625	Sub-Total		0.625
BIOLOGICAL INDICATOR (Applies to Interr	mittent and Perennia	l Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial Stre	eams)	BIOLOGICAL INDICATOR (Applies	to Intermittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perenn	nial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVS	· /		WV Stream Condition Index (WVSCI)	<u> </u>		WV Stream Condition Index (WVSCI)		
Grey Zone	0-100 0-1	64.53		0-100 0-1		Grey Zone	0-100 0-1	64.53	Grey Zone	0-100 0-1	64.53	Grev Zone	0-100 0-1	64.53
Sub-Total		0.6453	Sub-Total		0	Sub-Total	l l	0.6453	Sub-Total	1	0.6453	Sub-Total		0.6453
042 7044		0.0.00	eas rota			oub rotal		0.0.00	out rotal		0.0.00	oub Total		0.0.00
PART II - Index and	d Unit Score		PART II - Index and U	nit Score		PART II - Ir	ndex and Unit Score		PART II - Index and	Unit Score		PART II - Index and	I Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
писх	Linear reet	Sint Coole	ШМОХ	Linear reet		IIIdex	Linear r eet	Jiii Osore	писх	Linear i eet	Sint Coole	ilidex	Linear reet	J.II. 00016
0.773383333	135	104.40675	0	135	0	0.58005	135	78.30675	0.68505	135	92.48175	0.76005	135	102.60675
			II.	1		l <u> </u>				ı			1	ı

West Virginia Stream and Wetland Valuation Metric UT9 of LFHC, Temporary Intermittent (2 of 2)

t Factors	PART III - Impa						
s for MITIGATION BANKING and ILF)	(See instruction page to insert default valu						
		Temporal Loss-Construc					
% Add. Mitigation and Monito	(debit) and completion of compensatory	Note: Reflects duration of aquatic functional loss between the time of an					
		mitigation (credit).					
	15	Years					
	0.3480225	Sub-Total					
0 + 5/10 Year Monitorin		Temporal Loss-Maturity					
Sub-Total	e time required for maturity, as it relates	Note: Period between completion of compensatory mitigation measures					
	vithin riparian stream or wetland buffer	o function (i.e. maturity of tree stratum to provide organic matter and o					
		corridor).					
Final Index Score Line							
(Debit)	Temporal Loss-Maturity (Years)	% Add. Mitigation					
1.382779167							
	25	30%					

DN BANKING allu ILF)									
ng-term Protection									
Long-Term Protection (Years)									
101									
0									

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.382779167	135	186.6751875	\$149,340.15						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	186.6751875	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	78.30675	Mitigation Projected at Ten Years Post Completion (Credit)	92.48175	Mitigation Projected At Maturity (Credit)	102.60675	
FINAL PROJECTED NET BALANCE		78.30675		92.48175		102.60675				

F	Considerations (Incen	tives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your proje *Note2: Place an "X" in the appropriate category (only select one).	ect		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT9 of LFHC, Temporary Intermittent	186.6751875	138.5191125

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Buffer Width	Right Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Average Buffer Width/Side	50							

West Virginia Stream and Wetland Valuation Metric UT10 of LFHC, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:			Mt. Surface Mine mit No. S-5018-07	IMPACT COORD (in Decimal De		37° 42' 44.13" N	Lon. 8	2° 13' 12.83" W	WEATHER:	65 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	P	Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acri			10th Unnamed Trib of Left For % Streambed Slope, Act		•	MITIGATION STREAM CLASS./SI* (% stream slope, watershed size {ac		Same (Mitigation is restoration	n of temporary impacts)
STREAM IMPACT LENGTH:	35	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDIN (in Decimal De	-	37° 42' 44.13" N	Lon. 8	2° 13' 12.83" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	35
Column No. 1- Impact Existing C	Condition (Debi	t)	Column No. 2- Mitigation Existing Con	dition - Baseline (Cre	edit)	Column No. 3- Mitigation Pro Post Completion		s	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Project	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Av	rerage	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology			Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat			Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and Bi	iological Indica	tors	PART I - Physical, Chemical and E	Biological Indicators		PART I - Physical, Chemical ar	nd Biological Indicat	ors	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical an	nd Biological Indicators
	Points Range Scale	Site Score		Points Range Site	e Score		Points Range Scale	Site Score		Points Range Site Score		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams of	lassifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	:)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	ı
Epifaunal Substrate/Available Cover	0-20	15	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15
	0-20	14	2. Embeddedness	0-20		2. Embeddedness	0-20	11	Embeddedness	0-20 13	2. Embeddedness	0-20 15
	0-20	11	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20 13	3. Velocity/ Depth Regime	0-20 13
	0-20	16	Sediment Deposition	0-20		Sediment Deposition	0-20	11	4. Sediment Deposition	0-20 13	Sediment Deposition	0-20 15
	0-20 0-1	15	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	14	5. Channel Flow Status	0-20 0-1	5. Channel Flow Status	0-20 0-1 14
	0-20	16	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	6. Channel Alteration	0-20
	0-20	7	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20 15
	0-20	14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20 18
	0-20	12	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20 16
	0-20	18 138	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	•	 Riparian Vegetative Zone Width (LB & RB) Total RBP Score 		6	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 11	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	
Sub-Total	Suboptimal	0.69	Sub-Total		0	Sub-Total	Suboptimal	122 0.61	Sub-Total	Suboptimal 138	Sub-Total	Suboptimal 154 0.77
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Stre		CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial Stre		CHEMICAL INDICATOR (Applies to Intermitted		CHEMICAL INDICATOR (Applies to Intermit	
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General	D	WVDEP Water Quality Indicators (Gener	ral)
Specific Conductivity			Specific Conductivity		(1)	Specific Conductivity)		Specific Conductivity	,	Specific Conductivity	
	0-90	19		0-90			0-90	500		0-90 500		0-90 500
<=99 - 90 points		10				500-599 - 50 points			500-599 - 50 points	3 33	500-599 - 50 points	3 33
pH	0.1		pH	0.1		рН	0.1		рН	0.1	рН	0.1
>9.1 = 10 points	0-80	9.12		5-90		>9.1 = 10 points	5-90	9.12	>9.1 = 10 points	5-90 9.12	>9.1 = 10 points	5-90 9.12
DO		30	DO		0	DO			DO		DO	
	10-30	10.15		10-30			10-30	10.15		10-30 10.15		10-30 10.15
Sub-Total	10 00	0.65	Sub-Total	10 00	0	>5.0 = 30 points Sub-Total	10 00	0.2	>5.0 = 30 points Sub-Total	0.45	>5.0 = 30 points Sub-Total	0.45
BIOLOGICAL INDICATOR (Applies to Intermitter	nt and Perennial S		BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Stream	ns)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennia		BIOLOGICAL INDICATOR (Applies to Interm		BIOLOGICAL INDICATOR (Applies to Intel	· ·
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
	0-100 0-1	70.73		0-100 0-1			0-100 0-1	68		0-100 0-1 68		0-100 0-1 68
Good						Good		2.22	Good		Good	
Sub-Total		0.7073	Sub-Total		0	Sub-Total		0.68	Sub-Total	0.68	Sub-Total	0.68
PART II - Index and Uni	t Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score		PART II - Index and U	nit Score	PART II - Index and	Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Uni	t Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
II.		23.8851667		35		0.49666667		17.383333	0.60666667	35 21.2333333		

West Virginia Stream and Wetland Valuation Metric

UT10 of LFHC, Temporary Perennial (2 of 2)

	(See instruction	PART III - Impact Fa page to insert default values fo
Temporal Loss-Construction		
Note: Reflects duration of aquatic functional loss between the time of an impact mitigation (credit).	t (debit) and completion of compensatory	
Years	15	
Sub-Total	0.307095	
Temporal Loss-Maturity		
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus vectoridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
30%	25	
Sub-Total	0.272973333	

es for MITIGATION BANKING and ILF)							
	Lor	ng-term Protection					
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)					
	0 + 5/10 Year Monitoring	101					
	Sub-Total	0					

PART IV - Index to Unit Score Conversion								
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)					
1.262501667	35	44.18755833	\$35,350.05					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	44.18755833	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	17.38333333	Mitigation Projected at Ten Years Post Completion (Credit)	21.23333333	Mitigation Projected At Maturity (Credit)	22.16666667
FINAL PROJECTED NET BALANCE					17.38333333		21.23333333		22.16666667

	Part VI - Mitigation (
*Note1: Referenc	oject				
Level I Restoration					
Level II Restoration				Buffer \	
Level III Restoration					

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of LFHC, Temporary Perennial	44.18755833	29.925

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Buffer Width	Right Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Average Buffer Width/Side	50							

West Virginia Stream and Wetland Valuation Metric UT10 of LFHC, Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:		/Buffalo Mt. Surface Mine DEP Permit No. S-5018-07	IMPACT COORDINATES (in Decimal Degrees)	: Lat.	37° 42' 43.24"	Lon.	82° 13' 12.66"	WEATHER:	6	5 Sunny	DATE:	20-May-10	0
STREAM CLASSIFICATION:	Perennial		O AND SITE DESCRIPTION: acreage}, unaltered or impairments)		10th Unnamed Trib of Left Fork o % Streambed Slope, Acre V			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea@			Same (Mitigation is restoration	of temporary impac	cts)
STREAM IMPACT LENGTH: 1	FORM MITIGAT		MIT COORDINATES: (in Decimal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing Co	ndition (Debit)	Column No. 2- Mitigation Existing C	ondition - Baseline (Credit)		Column No. 3- Mitigation Project Post Completion (C		'S	Column No. 4- Mitigation Projecte Post Completion (Cre		'S	Column No. 5- Mitigation Project	cted At Maturity (Credit	it)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	А	Average
Hydrology		Hydrology			Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat		Habitat			Habitat			Habitat			Habitat		
PART I - Physical, Chemical and Bio	logical Indicators	PART I - Physical, Chemical an	d Biological Indicators		PART I - Physical, Chemical and B	Biological Indica	tors	PART I - Physical, Chemical and Bio	ological Indica	itors	PART I - Physical, Chemical an	d Biological Indicators	s
	pints Range Site Score cale		Points Range Site Score			Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range S Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams class	ssifications)	PHYSICAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams cla	assifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
-	0-20 15	Epifaunal Substrate/Available Cover	0-20		· ·	0-20			0-20		Epifaunal Substrate/Available Cover	0-20	
	0-20 14	2. Embeddedness	0-20		2. Embeddedness	0-20			0-20		2. Embeddedness	0-20	
	0-20 11	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20			0-20		3. Velocity/ Depth Regime	0-20	
	0-20 16 0-20 15	4. Sediment Deposition	0-20		4. Sediment Deposition	0-20		·	0-20		4. Sediment Deposition	0-20	
	0-1	Channel Flow Status Channel Alteration	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1			0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1	
	0-20 16 0-20 7	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20			0-20		7. Frequency of Riffles (or bends)	0-20	
	0-20 14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20			0-20		8. Bank Stability (LB & RB)	0-20	
	0-20 12	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		, ,	0-20		9. Vegetative Protection (LB & RB)	0-20	
	0-20 18	10. Riparian Vegetative Zone Width (LB & RB)			Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20			0-20		Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)		
. ,	Suboptimal 138	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total Sub-Total	0.69	Sub-Total	0		Sub-Total	•	0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent an	d Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermittent a	nd Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Streams	s)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	/
Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		
)-90 19		0-90			0-90			0-90			0-90	
<=99 - 90 points		n Li			nU			n Li			»U		
pri	0-1	pri	0-1		pri	0-1		pri	0-1		рп	0-1	
>9.1 = 10 points	9.12		5-90			5-90			5-90			5-90	
DO		DO			DO			DO			DO		
1	0-30 10.15		10-30			10-30			10-30			10-30	
Sub-Total	0.65	Sub-Total	1 0		Sub-Total	<u> </u>	0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermittent		BIOLOGICAL INDICATOR (Applies to Interest	mittent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial Str	treams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	,		WV Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)		
Good	-100 0-1 70.73		0-100 0-1			0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	0.7073	Sub-Total			Sub-Total	<u> </u>	0	Sub-Total		0	Sub-Total		
Cub Total	0.1013	Dub-1 otal			Oub Total		· ·	odo Total	Į.	U	Odb-10tal		U
PART II - Index and Unit	Score	PART II - Index and	Unit Score		PART II - Index and Un	it Score		PART II - Index and Unit	Score		PART II - Index and	Unit Score	
Index L	inear Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Ur	Jnit Score
0.000422222	4445 005 040455		0 0		•	_		6	0		•	0	
0.682433333	1415 965.643167	0			0	0	U	0	0	0	0	0	U

West Virginia Stream and Wetland Valuation Metric UT10 of LFHC, Permanent Perennial (2 of 2)

			PART I	II - Impact Factors						
		(See instruction	page to insert defa	ult values for MITIGAT	ON BANKING and	I ILF)				
Temp	oral Loss-Construction					Lo	ong-term Protection			
*Note: Reflects duration of aquatic functional loss		t (debit) and completion of compensatory			% Add. Mitigation	on and Monitoring Period		ong-Term Protection (Years)		
	mitigation (credit).									
		45								
Years Sub-Total	Years 15 Sub-Total 0.307095									
Sub-10tal 0.307093										
Temporal Loss-Maturity					0 + 5/1	0 Year Monitoring		101		
*Note: Period between completion of compensato			Sub-Total	3		0				
to function (i.e. maturity of tree stratum to provide	_	within riparian stream or wetland buffer								
corridor).						PART IV - Inde	ex to Unit Score	Conversion		
					Final Index Score	Linear Feet	Unit Score	ILF Costs		
% Add. Mitigation		Temporal Loss-Maturity (Years)			(Debit)		(Debit)	(Offsetting Debit U	Inits)	
					1.262501667	1415	1786.439858	\$1,429,151.89)	
30%		25								
Sub-Total		0.272973333								
		PART	V- Comparison of	Unit Scores and Projec	ted Ralance					
		I AIXI	V Companison of		tea Balarioe					
Final Unit Score (Debit)		Mitigation Existing		Mitigation Projected at		Mitigation Projected at		Mitigation Projected At		
[No Net Loss Value]	1786.439858	Condition - Baseline		Five Years		Ten Years		Maturity		
[NO Net Loss Value]		(Credit)		Post Completion (Credit)		Post Completion (Credit)		(Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	
					<u> </u>		<u> </u>		<u> </u>	
			Part VI - Mitigation	Considerations (Incen	tives)					
				•	•					
	Extent of Stream Po	storation				Evtand	ed Unland Buffer 7	Zone		
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project					*Note ¹ : Refer	Extended Upland Buffer Zone *Note ¹ : Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and ¹				
*Note1: Reference the instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).			Oject		*Note: Reference instructional handout for the definitions of the Buffer Zone Mitigation Extents and Type *Note ² : Enter the buffer width for each channel side (Left Bank and Right Bank)				(201011)	
Level I Restoration							t the appropriate mitiga			
Level II Restoration					Buffer Width		Left B	Bank		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of LFHC, Permanent Perennial	1786.439858	#DIV/0!

Level III Restoration

0-50 51-150

0-50 51-150

0

Buffer Width

Average Buffer Width/Side

Right Bank

West Virginia Stream and Wetland Valuation Metric

UT10 of LFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINA (in Decimal Degree		37° 42' 29.21"	Lon.	82° 13' 7.99"	WEATHER:	65	Sunny	DATE:	20-May-1	10
STREAM CLASSIFICATION:		Intermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			10th Unnamed Trib of Left For % Streambed Slope, Ac			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acreae					
STREAM IMPACT LENGTH:	1480	FORM OF MITIGATION:		MIT COORDINATE (in Decimal Degree	_		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:		
Column No. 1- Impact Existi	ng Condition (De	bit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		Years	Column No. 4- Mitigation Project Post Completion (Cre			Column No. 5- Mitigation Project	ed At Maturity (Credi	dit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Averag	е	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.71		Hydrology			Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.95	0.87	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.95		Habitat	Valania di satana		Habitat	d Biological In	l'antaux	Habitat Blazzina Charried and Bi			Habitat	Distantant budings	
PART I - Physical, Chemical an	id Biological Indi	cators	PART I - Physical, Chemical and E	liological Indicators		PART I - Physical, Chemical an	id Biological Inc	dicators	PART I - Physical, Chemical and Bio	ological Indicato	ors	PART I - Physical, Chemical and	Biological Indicator	irs
	Points Range Scale	Site Score		Points Range Site Scor	е		Points Ra Scale	nge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	PHYSICAL INDICATOR (Applies to all streams cla	assifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet))		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	12	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	13	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20			0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	14	4. Sediment Deposition	0-20		4. Sediment Deposition	0-20		·	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	13	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20	-1		0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		6. Channel Alteration	0-20			0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		` ` ` ` ` ` ` ` ` ` ` ` `	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	9	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20			0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	17	Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	122	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.61	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennia	l Streams)	CHEMICAL INDICATOR (Applies to Intermittent a	nd Perennial Strea	ms)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams	ms)
WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	rai)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Genera	D	
Specific Conductivity	.,		Specific Conductivity			Specific Conductivity	,		Specific Conductivity			Specific Conductivity		
	0-90	42		0-90			0-90			0-90			0-90	
<=99 - 90 points		·-	-11											
рн	0-1		рн	0-1		рн		-1	рн	0-1		рн	0-1	
6.0-8.0 = 80 points	0-80	7.99		5-90			5-90			5-90			5-90	
DO			DO			DO			DO			DO		
	10-30	10.73		10-30			10-30			10-30			10-30	
Sub-Total		1	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte			BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Pere		BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perennial St	Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	33.69		0-100 0-1			0-100 0	-1		0-100 0-1			0-100 0-1	
Poor			Out Tabel			Out Tabel		0			0	Out. Tatal		
Sub-Total		0.2369	Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
PART II - Index and	Unit Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score		PART II - Index and Unit	Score		PART II - Index and U	Jnit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Sco	ore	Index	Linear Fe	et Unit Score	Index	Linear Feet U	Unit Score	Index	Linear Feet U	Unit Score
0.742816667	1480	1099.36867	0	0 0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT10 of LFHC, Intermittent (2 of 2)

	,	page to insert default values for MITIGATION B	BANKING and I	LF)		
Temporal Loss-Construction				Lor	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impact (of mitigation (credit).	<u> </u>	% Add. Mitigation	and Monitoring Period	Loi	ng-Term Protection (Years)	
Years Sub-Total	15 0.3342675					
Temporal Loss-Maturity		0 + 5/10	Year Monitoring	101		
*Note: Period between completion of compensatory mitigation measures and the	*Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates		Гotal	Ŭ		0
to function (i.e. maturity of tree stratum to provide organic matter and detritus with corridor).	ithin riparian stream or wetland buffer			DARTIV Inde	ex to Unit Score C	Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)		al Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
		1	1.3233375	1480	1958.5395	\$1,566,831.60
30%	25					
Sub-Total	0.246253333					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	1958.5395	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

	tion Considerations (Incentives)	
Extent of Stream Re *Note1: Reference the Instructional handout to determine the c *Note2: Place an "X" in the appropriate	correct Restoration Levels (below) for your project	
evel I Restoration		
Level II Restoration		Buffer
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of LFHC, Intermittent	1958.5395	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						

West Virginia Stream and Wetland Valuation Metric UT10 of LFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:		Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 42' 22.50"	Lon.	82° 13' 00.67"	WEATHER:	65 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr		•	10th Unnamed Trib of Left Fork % Streambed Slope, Acre			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size (acres			
STREAM IMPACT LENGTH:	FORM OF MITIGATION:		MIT COORDINATES: (in Decimal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0
Column No. 1- Impact Existing C	Condition (Debit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Proje Post Completion (s	Column No. 4- Mitigation Projec Post Completion (Cr		Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.75	Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0.97 0.87	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat PART I - Physical, Chemical and Bio	0.89 iological Indicators	Habitat PART I - Physical, Chemical and B	iological Indicators		Habitat PART I - Physical, Chemical and	Biological Indicat	ors	Habitat PART I - Physical, Chemical and B	iological Indicators	Habitat PART I - Physical, Chemical ar	nd Biological Indicators
	Points Range Site Score	•	Points Range Site Score		•	Points Range		-	Points Range Site Score	•	Points Range Site Score
	Scale		Scale			Scale			Scale		Scale
PHYSICAL INDICATOR (Applies to all streams cla	classifications)	PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams of	lassifications)	PHYSICAL INDICATOR (Applies to all strea	·
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)	1 1		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
-	0-20 0	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover Evaluation of the state o	0-20		· ·	0-20	Epifaunal Substrate/Available Cover Substrate Available Cover	0-20
 	0-20 11 0	Embeddedness Velocity/ Depth Regime	0-20 0-20		Embeddedness Velocity/ Depth Regime	0-20 0-20		Embeddedness Velocity/ Depth Regime	0-20 0-20	Embeddedness Velocity/ Depth Regime	0-20 0-20
	0-20 0-20 10	Velocity/ Depth Regime Sediment Deposition	0-20		Velocity/ Depth Regime Sediment Deposition	0-20			0-20	Velocity/ Depth Regime Sediment Deposition	0-20
·	0-20	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	5. Channel Flow Status	0-20
	0-20 0-1 16	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	6. Channel Alteration	0-20
 	0-20	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20
	0-20 10	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20
Vegetative Protection (LB & RB)	0-20 12	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20
	0-20 18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	Riparian Vegetative Zone Width (LB & RB)	0-20
Total RBP Score	Marginal 77	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total CHEMICAL INDICATOR (Applies to Intermittent a	0.385	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)		Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial Stre	ams)	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent)	and Perennial Streams)	Sub-Total CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)
WVDEP Water Quality Indicators (General)	and i dicinial dicams)	WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Genera		umo)	WVDEP Water Quality Indicators (General)	and i dicinial dicans)	WVDEP Water Quality Indicators (General	
Specific Conductivity		Specific Conductivity			Specific Conductivity	' <u>'</u>		Specific Conductivity		Specific Conductivity	lai)
	0-90	,	0-90		· · · · · · · · · · · · · · · · · · ·	0-90		,	0-90		0-90
100-199 - 85 points	0.50		0.30			0.30			0.30		0.30
pH	0-1	рн	0-1		рН	0-1		рН	0-1	рН	0.1
5.6-6.0 = 45 points	0-80		5-90			5-90			5-90		5-90
DO		DO			DO			DO		DO	
	10-30		10-30			10-30			10-30		10-30
Sub-Total		Sub-Total			Sub-Total		0	Sub-Total	0	Sub-Total	
BIOLOGICAL INDICATOR (Applies to Intermitten	nt and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perennia	l Streams)	BIOLOGICAL INDICATOR (Applies to Intermit		BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0	0-100 0-1		0-100 0-1			0-100 0-1			0-100 0-1		0-100 0-1
Sub-Total	0	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
PART II - Index and Unit	it Score	PART II - Index and Un	it Score		PART II - Index and U	nit Score		PART II - Index and Uni	t Score	PART II - Index and	Unit Score
lader.	Linear Foot Unit Coars	lg dev	Lincor Foot Unit Cook		la dess	Lines Fast	Unit Coors	le dou	Linear Foot Unit Coore	la des	Linear Feet Unit Course
Index	Linear Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.69375	30 20.8125	0			0	0	n	0	0 0	0	0 0

West Virginia Stream and Wetland Valuation Metric UT10 of LFHC, Ephemeral (2 of 2)

		DADT III. Impact Factors			
	(See instruction	PART III - Impact Factors insert default values for MITIGATION BANKING an	d II F)		
Tamanan Laga Onna	<u> </u>	Insert default values for Militioa Flori Bankino all	<u> </u>	taus Duatastiau	
Temporal Loss-Cons		0(A 11 A 8%)		ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time mitigation (credi	, ,	% Add. Mittgati	ion and Monitoring Period	Lon	ng-Term Protection (Ye
Years	15				
Sub-Total	0.3121875				
Temporal Loss-Ma	aturity	0+5	/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation mea		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter a					
corridor).			PART IV - In	dex to Unit Score Co	onversion
		Final Index Score	Linear Feet	Unit Score	ILF Co
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting De
		1.2129375	30	36.388125	\$29,110
30%	25				
Sub-Total	0.207				
and the same of th	0.20				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	36.388125	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

	Part VI - Mitigation Considerations (Incentiv	ves)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration I *Note2: Place an "X" in the appropriate category (only select		
Level I Restoration		
Level II Restoration	В	Buffer \
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT10 of LFHC, Ephemeral	36.388125	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$29,110.50

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank							
	0-50								
	51-150								
Buffer Width		Right Bank							
	0-50								
	51-150								
Average Buffer Width/Side	0								

West Virginia Stream and Wetland Valuation Metric UT1 of UT10 of LFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07	IMPACT COO (in Decimal	RDINATES: La Degrees)	at.	37° 42' 38.15"	Lon.	82° 13' 7.52"	WEATHER:	•	55 Sunny	DATE:	20-May-1	10
STREAM CLASSIFICATION:	ı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT1-UT10 of Left Fork of % Streambed Slope, Act			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	475	FORM OF MITIGATION:		MIT COOR!		at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ırs	Column No. 5- Mitigation Project	cted At Maturity (Credi	lit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	1	Average
Hydrology	0.75		Hydrology			Hydrolo	gy			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.88666667	Biogeochemical Cycling		0		chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.94		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	eators	PART I - Physical, Chemical and E	Biological Indicato	rs		PART I - Physical, Chemical an	d Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicators	rs
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range S	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	AL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet))		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	10	Epifaunal Substrate/Available Cover	0-20		 Epifa 	ınal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	12	2. Embeddedness	0-20			ddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	8	Velocity/ Depth Regime	0-20			ity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	12	4. Sediment Deposition	0-20			nent Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	5	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	<u>14</u> 5	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	13	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			ency of Riffles (or bends) Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	13	, ,	0-20				0-20		,	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	17	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20			ative Protection (LB & RB) rian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	109	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.545	Sub-Total		0	Sub-Tot	al	•	0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitted	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	ms)	CHEMIC	CAL INDICATOR (Applies to Intermi	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams	ns)
WVDEP Water Quality Indicators (General	il)		WVDEP Water Quality Indicators (General)	1		WVDEF	Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity			Specific	Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	48.5		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nH		
pii	0-1	0.00	pri	0-1		ρπ		0-1		ρπ	0-1		pii	0-1	
8.1-9.0 = 45 points	0-80	8.32		5-90				5-90			5-90			5-90	
DO			DO	_		DO				DO			DO		
	10-30	10.7		10-30				10-30			10-30			10-30	
Sub-Total	I	0.825	Sub-Total		0	Sub-Tot	al		0	Sub-Total	l l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)	BIOLOG	GICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial St	Streams)
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			WV Str	am Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Fair	0-100 0-1	49.11		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	11	0.3911	Sub-Total	<u> </u>	0	Sub-Tot	al		0	Sub-Total		0	Sub-Total		0
edb retai		0.0011	ous rotal			Cub 10	м		· ·	oub rotal		Ü	oub rotal	I	
PART II - Index and U	Jnit Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score
				_	_				_			_		_	
0.73685	475	350.00375	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 of UT10 of LFHC, Intermittent (2 of 2)

pact Factors alues for MITIGATION BANKING and ILF)		
		Temporal Loss-Constructi
% Add. Mitigation and Monitoring P	(debit) and completion of compensatory	te: Reflects duration of aquatic functional loss between the time of an i
		mitigation (credit).
	15	Years
	0.3315825	Sub-Total
0 + 5/10 Year Monitoring		Temporal Loss-Maturity
Sub-Total	e time required for maturity, as it relates	te: Period between completion of compensatory mitigation measures
		function (i.e. maturity of tree stratum to provide organic matter and de
PART		corridor).
Final Index Score Linear Fee		
(Debit)	Temporal Loss-Maturity (Years)	% Add. Mitigation
1.303245833 475		
	25	2007
	0.234813333	30% Total

•••	ON BANKING and ILI)	
		ng-term Protection
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)
	0 + 5/10 Year Monitoring	101
	Sub-Total Sub-Total	0
	-	

PART IV - Index to Unit Score Conversion								
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)					
1.303245833	475	619.0417708	\$495,233.42					

	PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	619.0417708	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	

	Part VI - Mitigation	n Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	roject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of UT10 of LFHC, Intermittent	619.0417708	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width		Left Bank							
	0-50								
	51-150								
Buffer Width		Right Bank							
	0-50								
	51-150								
Average Buffer	0								
Width/Side	0								

West Virginia Stream and Wetland Valuation Metric UT1 of UT10 of LFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 42' 40.88"	Lon.	82° 13' 3.63"	WEATHER:	6	55 Sunny	DATE:	20-May	y-10
STREAM CLASSIFICATION:	E	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				UT1-UT10 of Left Fork of F % Streambed Slope, Acro			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	91	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	e (Credit)		Column No. 3- Mitigation Pro Post Completion		ears	Column No. 4- Mitigation Project Post Completion (C		ırs	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	F	GM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			H	ydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.87	Biogeochemical Cycling		0	В	iogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.89		Habitat			Н	abitat			Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indica	tors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indicat	itors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		P	HYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			U	SEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1.	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	2. Embeddedness	0-20		2.	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	17 0	4. Sediment Deposition	0-20			Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	16	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	0	6. Channel Alteration	0-20			Channel Alteration Frequency of Riffles (or bends)	0-20		Channel Alteration Frequency of Riffles (or bends)	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	10	7. Frequency of Riffles (or bends)	0-20		_	Bank Stability (LB & RB)	0-20			0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	12	8. Bank Stability (LB & RB)	0-20				0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) D. Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	89	Total RBP Score	Poor	0		otal RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.445	Sub-Total		0	S	ub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stre	eams)	С	HEMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	1		v	VDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity				pecific Conductivity	,		Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	1
100-199 - 85 points			nU			n				all			nU	/ /	
рп	0-1		рн	0-1		Þ	1	0-1		рн	0-1		рп	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	1
DO		0	DO	, – –		D	0			DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total			Sub-Total	1 1	0	S	ub-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial S	Streams)		OLOGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			W	V Stream Condition Index (WVSCI)		_	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
_	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	1
0 Sub-Total		0	Sub-Total	1	0	c	ub-Total		0	Sub-Total		0	Sub Total		
Sub-Total		U	Sub-Total		U	3	ub-10tai		U	Sub-Total		0	Sub-Total		U
PART II - Index and Un	nit Score		PART II - Index and Ur	it Score			PART II - Index and I	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.7027	0.1	04.40005				F							•		
0.70875	91	64.49625	0	0	U		0	0	U	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 of UT10 of LFHC, Ephemeral (2 of 2)

		PART III - Impact Factors					
	(See instruction page	nsert default values for MITIGA	TION BANKING and	d ILF)			
Temporal Loss-Construction					ng-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an impact	t (debit) and completion of compensatory		% Add. Mitigati	on and Monitoring Period	Lo	ong-Term Protection (Years)	
mitigation (credit).							
Years	15						
Sub-Total	0.3189375						
Temporal Loss-Maturity			0 + 5/	10 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measures and to	ne time required for maturity, as it relates		Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer						
corridor).				PART IV - Inde	ex to Unit Score	Conversion	
			Final Index Score		Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)	Lilleal Teet	(Debit)	(Offsetting Debit U	Inite)
70 Add. Miligation	Temporal Loss-Maturity (Tears)						iiiis)
			1.2466875	91	113.4485625	\$90,758.85	
30%	25						
Sub-Total	0.219						
	-						
	PART V-	arison of Unit Scores and Proj	ected Balance				
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected a Five Years Post Completion (Cred		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE			0		0		0
	Pa	Mitigation Considerations (Inc	entives)				
Extent of Stream Re	storation			Evtond	ed Upland Buffer 2	Zone	
*Note1: Reference the Instructional handout to determine the c			*Note1. Pefe			r Zone Mitigation Extents and Types	(below)
*Note2: Place an "X" in the appropriate			Note . Nere	*Note ² : Enter the buffer width			(below)
	anogery (emy esteer eme).				t the appropriate mitiga		
Level I Restoration			- 44 144 14				
Level II Restoration			Buffer Width	0.50	Left B	ank	
Level III Restoration				0-50			
			Duffer Wish	51-150	Dial C	Donk	
			Buffer Width	0-50	Right I	Dalik	
				51-150			
			Average Buffer	31-130			
			Width/Side	0			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of UT10 of LFHC, Ephemeral	113.4485625	#DIV/0!

West Virginia Stream and Wetland Valuation Metric UT1 of UT1 of UT10 of LFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07		DORDINATES: nal Degrees)	Lat.	37° 43' 38.64"	Lon.	82° 13' 3.79"	WEATHER:	69	5 Sunny	DATE:	20-Ma	ay-10
STREAM CLASSIFICATION:		ntermittent	IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)				UT1-UT1-UT10 of Left Fork of Hell Creek of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)					
STREAM IMPACT LENGTH:	337	FORM OF MITIGATION:			DRDINATES: nal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	,—,—,—, ,
Column No. 1- Impact Existin	ng Condition (Del	bit)	Column No. 2- Mitigation Existing Co	ndition - Baselin	ne (Credit)		Column No. 3- Mitigation Proj Post Completion		ears	Column No. 4- Mitigation Project Post Completion (Cr		s	Column No. 5- Mitigation Projec	ted At Maturity (Co	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	F	GM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Н	ydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.89333333	Biogeochemical Cycling		0	В	iogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat PART I - Physical, Chemical and	0.96	eators	Habitat PART I - Physical, Chemical and	Riological India	ators	Н	PART I - Physical, Chemical and	Riological Ind	icators	Habitat PART I - Physical, Chemical and Bi	ological Indica	tors	Habitat PART I - Physical, Chemical and	d Riological Indica	ators
PART 1 - Physical, Chemical and	u biologicai iliuli	sators	FARTT- Physical, Chemical and	_			PART 1 - Physical, Chemical and	_		PART 1 - Physical, Chemical and Bi	ological illuica	tors	FARTT- Friysical, Chemical and	u biological iliulca	alors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Ran Scale	ge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		P	HYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams of	lassifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			U	SEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	4	Epifaunal Substrate/Available Cover	0-20		1	Epifaunal Substrate/Available Cover	0-20			0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	6	2. Embeddedness	0-20		2	Embeddedness	0-20		Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	5	3. Velocity/ Depth Regime	0-20		3	Velocity/ Depth Regime	0-20			0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	5	Sediment Deposition	0-20		4	Sediment Deposition	0-20		1	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	3	5. Channel Flow Status	0-20		5	Channel Flow Status	0-20	1	Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	11	6. Channel Alteration	0-20		6	Channel Alteration	0-20	•	Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	4	7. Frequency of Riffles (or bends)	0-20		7	Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	12	8. Bank Stability (LB & RB)	0-20		8	Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20		9	Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	16	10. Riparian Vegetative Zone Width (LB & RB)	0-20		1	D. Riparian Vegetative Zone Width (LB & RB)	0-20			0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Marginal	80	Total RBP Score	Poor	0	Ī	otal RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.4	Sub-Total		0	S	ub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	reams)	C	HEMICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Stre	ams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (Genera	I)		v	VDEP Water Quality Indicators (General	ıl)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		(1)	S	pecific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	48.5		0-90				0-90			0-90			0-90	
<=99 - 90 points		.0.0				L		1							
рН	- 0.4	49	pH	- 0.4	10	р	H		4	рН	- 0.4		рН	0-1	
8.1-9.0 = 45 points	0-80	8.32		5-90				5-90	1		5-90			5-90	
8.1-9.0 = 45 points			DO			D	n			DO			DO		
	T	40 -		T		۳		T		T				T	
	10-30	10.7		10-30				10-30			10-30			10-30	
Sub-Total		0.825	Sub-Total		0	S	ub-Total		0	Sub-Total	·	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)	В	IOLOGICAL INDICATOR (Applies to Inter	mittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennia	al Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			v	V Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	49.11		0-100 0-1				0-100 0-	1		0-100 0-1			0-100 0-1	/
Fair Sub Total		0.2011	Sub Total		0		ub Total		0	Sub Total		0	Sub Total		
Sub-Total		0.3911	Sub-Total		0	3	ub-Total		U	Sub-Total	<u>l</u>	U	Sub-Total		
PART II - Index and	Unit Score		PART II - Index and U	nit Score			PART II - Index and U	Init Score		PART II - Index and Unit	t Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	F	Index	Linear Fee	t Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.716016667	227	244 207647				F	0	0			0			_	
0.736036667	337	241.297617	0	0	1 U II	1	0			0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT1 of UT1 of UT10 of LFHC, Intermittent (2 of 2)

			PARTI	II - Impact Factors					
		(See instruction	page to insert defa	ult values for MITIGAT	ION BANKING and	I ILF)			
	oral Loss-Construction						ng-term Protection		
*Note: Reflects duration of aquatic functional loss		t (debit) and completion of compensatory			% Add. Mitigation	on and Monitoring Period	Lo	ong-Term Protection (Years)	
	mitigation (credit).								
Sub-Total		0.3222075							
					0 + 5/1	0 Year Monitoring		101	
					Sub-Total			0	
to function (i.e. maturity of tree stratum to provid	_	within riparian stream or wetland buffer							
	corridor).					PART IV - Inde	ex to Unit Score	Conversion	
					Final Index Score	Linear Feet	Unit Score	ILF Costs	
% Add Mitigation		Temporal Loss-Maturity (Years)			(Debit)	Linear Foot	(Debit)	(Offsetting Debit U	Inite)
70 / taa. Willigation		Temperal 2000 matarity (Tears)							Jiile J
					1.253704167	337	422.4983042	\$337,998.64	
30%		25							
			<u>.</u>						
		PART	V- Comparison of	Unit Scores and Project	ted Balance				
		. ,	· · · · · · · · · · · · · · · · · · ·		atou Bulanto				
		Mitigation Existing		Mitigation Projected at		Mitigation Projected at		Mitigation Projected At	
Final Unit Score (Debit)	122 1083012			Five Years		Ten Years		Maturity	
[No Net Loss Value]	422.4903042							-	
		(Credit)		Post Completion (Credit)		Post Completion (Credit)		(Credit)	
FINAL PROJECTED NET BALANCE					0		•		
					U		0		0
			Part VI - Mitigation	Considerations (Incen	itives)				
	Extent of Stream Box	storation				Evtond	ed Unland Buffer 3	Zone	
*Net-1 Defended by the last		Extended Upland Buffer Zone *Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (be							
		, , , , , ,	oject		*Note : Reference instructional handout for the definitions of the Buffer Zone mitigation Extens *Note ² : Enter the buffer width for each channel side (Left Bank and Right Bai				(below)
	lace all A ill the appropriate t	category (office select offer.			*Note: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note ³ : Select the appropriate mitigation type				
(Credit)						Note : Selec			
					Buffer Width		Left B	Bank	
Level III Restoration						0-50			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of UT1 of UT10 of LFHC, Intermittent	422.4983042	#DIV/0!

0-50 51-150

0-50 51-150

0

Buffer Width

Average Buffer Width/Side

Right Bank

West Virginia Stream and Wetland Valuation Metric UT2 of UT10 of LFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COO (in Decimal	RDINATES: La Degrees)	at.	37° 42' 21.63"	Lon.	82° 13' 4.72"	WEATHER:	6	65 Sunny	DATE:	20-May-1	-10
STREAM CLASSIFICATION:	CLASSIFICATION: Intermittent IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)			UT2-UT10 of Left Fork of Hell Creek of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree				MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr							
STREAM IMPACT LENGTH:	350	FORM OF MITIGATION:		MIT COORE (in Decimal		at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	,,_,,_,,
Column No. 1- Impact Existin	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (0		nrs	Column No. 5- Mitigation Projec	cted At Maturity (Cred	edit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolo	gy			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.89333333	Biogeochemical Cycling		0		themical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.96		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	l Biological Indic	cators	PART I - Physical, Chemical and E	Biological Indicato	rs		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical and	d Biological Indicator	ors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	AL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	8	Epifaunal Substrate/Available Cover	0-20		 Epifa 	ınal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	16	Embeddedness	0-20			ddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
Velocity/ Depth Regime	0-20	7	Velocity/ Depth Regime	0-20			ty/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	15	4. Sediment Deposition	0-20			ent Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	10	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17 8	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			ency of Riffles (or bends) Stability (LB & RB)	0-20		Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	_
8. Bank Stability (LB & RB)	0-20 0-20	15	,	0-20		<u> </u>	ative Protection (LB & RB)	0-20		,	0-20		8. Bank Stability (LB & RB)	0-20	_
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	17	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20			ian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20	_
Total RBP Score	Suboptimal	128	Total RBP Score	Poor	0		P Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.64	Sub-Total		0	Sub-Tot	al		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strear	ms)	СНЕМІС	AL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitte	tent and Perennial Stream	ıms)
WVDEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (General)			WVDEF	Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Genera	ral)	
Specific Conductivity			Specific Conductivity			Specific	Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	55		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nH		
pii	0-1	0.04	pii	0-1		ρπ		0-1		511	0-1		pii	0-1	
8.1-9.0 = 45 points	0-80	8.64		5-90				5-90			5-90			5-90	
DO	_		DO			DO				DO			DO		
	10-30	10.67		10-30				10-30			10-30			10-30	
Sub-Total	<u> </u>	0.825	Sub-Total		0	Sub-Tot	al	l l	0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)	BIOLOG	ICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial \$	Streams)
WV Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Str	am Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Grey Zone	0-100 0-1	64.53		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	1	0.6453	Sub-Total		0	Sub-Tot	al .		0	Sub-Total		0	Sub-Total		0
odo Total		0.0700	Cab Total		U	Sub-101	AI		· ·	Cub-10tai		V	Odb-10tal		<u> </u>
PART II - Index and U	Jnit Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Ui	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet U	Jnit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score
0.798383333	350	279.434167	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT2 of UT10 of LFHC, Intermittent (2 of 2)

	(See instruction	PART III - Impact F page to insert default values f
Temporal Loss-Construction		
Note: Reflects duration of aquatic functional loss between the time of an impac	t (debit) and completion of compensatory	
mitigation (credit).		
Years	15	
Sub-Total	0.3592725	
Temporal Loss-Maturity		
Note: Period between completion of compensatory mitigation measures and the	ne time required for maturity, as it relates	
to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer	
corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
70 / Add. Willigation	remporal Loss-Maturity (Tears)	
30%	25	
ub-Total	0,281373333	
20 TOTAL	0120101000	l

ert default values for MITIGATI	fault values for MITIGATION BANKING and ILF)						
	Long-term Protection						
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)					
	0 + 5/10 Year Monitoring	101					
	Sub-Total	0					

PART IV - Index to Unit Score Conversion							
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)				
1.439029167	350	503.6602083	\$402,928.17				

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	503.6602083	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Considerations (Incen	tives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT2 of UT10 of LFHC, Intermittent	503.6602083	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width		Right Bank					
	0-50						
	51-150						
Average Buffer	0						
Width/Side	J						

West Virginia Stream and Wetland Valuation Metric UT2 of UT10 of LFHC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:		uffalo Mt. Surface Mine Permit No. S-5018-07	IMPACT COORDINA (in Decimal Degrees		37° 42' 19.77"	Lon.	82° 13' 2.54"	WEATHER:	65 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	Ephemeral		D AND SITE DESCRIPTION {acreage}, unaltered or impairments		UT2-UT10 of Left Fork of % Streambed Slope, Ac			MITIGATION STREAM CLASS./SITE II (% stream slope, watershed size {acreage			
STREAM IMPACT LENGTH:	10 FORM OF MITIGATION	ı:	MIT COORDINATE (in Decimal Degrees	-		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0
Column No. 1- Impact Existing C	Condition (Debit)	Column No. 2- Mitigation Existing	Condition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		s	Column No. 4- Mitigation Projected Post Completion (Cred		Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Averag	е	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.75	Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0.97 0.87	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat	0.89	Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and Bi		PART I - Physical, Chemical a	nd Biological Indicators		PART I - Physical, Chemical an	nd Biological Indicate	ors	PART I - Physical, Chemical and Biol	ogical Indicators	PART I - Physical, Chemical and	nd Biological Indicators
	Points Range Site Score Scale		Points Range Site Scor	е		Points Range Scale	Site Score	Po Si	oints Range Site Score		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams of	lassifications)	PHYSICAL INDICATOR (Applies to all stre	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all streams class	sifications)	PHYSICAL INDICATOR (Applies to all stream	ams classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Shee)		USEPA RBP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)
	0-20	 Epifaunal Substrate/Available Cover 	0-20		Epifaunal Substrate/Available Cover	0-20			-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	-20	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	1-20	3. Velocity/ Depth Regime	0-20
4. Sediment Deposition	0-20	Sediment Deposition	0-20		Sediment Deposition	0-20		4. Sediment Deposition	-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20 0-1	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	-20	5. Channel Flow Status	0-20
6. Channel Alteration	0-20	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	I-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	1-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20 14	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	I-20	8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB)	0-20 16	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	1-20	9. Vegetative Protection (LB & RB)	0-20
10. Riparian Vegetative Zone Width (LB & RB)	0-20 18	Riparian Vegetative Zone Width (LB & RB			10. Riparian Vegetative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & RB)	1-20	10. Riparian Vegetative Zone Width (LB & RB)	
Total RBP Score	Marginal 97	Total RBP Score	Poor 0		Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total	0.485	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Interm	ttent and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial Strea	ams)	CHEMICAL INDICATOR (Applies to Intermittent and	d Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity		Specific Conductivity	0		Specific Conductivity			Specific Conductivity		Specific Conductivity	
	0-90		0-90			0-90		o d	1-90		0-90
100-199 - 85 points								-11			
рп	0-1	рн	0-1		рп	0-1		рн	0-1	рп	0-1
5.6-6.0 = 45 points	0-80		5-90			5-90		5	-90		5-90
DO		DO			DO	'		DO		DO	
	10-30		10-30			10-30		40	0-30		10-30
	10-30		10-30			10-30			3-30		10-30
Sub-Total		Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermitter	nt and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	mittent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial	l Streams)	BIOLOGICAL INDICATOR (Applies to Intermitten	t and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0	0-100 0-1		0-100 0-1			0-100 0-1		0-	100 0-1		0-100 0-1
Sub-Total	0	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
Oub-Total	V	Oub-10tai			Oub-10tal	L	· ·	Oub-rotal		Oub-Total	
PART II - Index and Uni	t Score	PART II - Index and	Unit Score		PART II - Index and	I Unit Score		PART II - Index and Unit S	Score	PART II - Index and	I Unit Score
Index	Linear Feet Unit Score	Index	Linear Feet Unit Sco	re	Index	Linear Feet	Unit Score	Index	inear Feet Unit Score	Index	Linear Feet Unit Score
0.71875	10 7.1875	0	0 0		0	0	0	0	0 0	0	0 0
0.71073	1.1073	· ·	0 0			U	Ů	U	0	· ·	

West Virginia Stream and Wetland Valuation Metric UT2 of UT10 of LFHC, Ephemeral (2 of 2)

PART III - Impact Factors

	(See instruction
Temporal Loss-Construct	
Note: Reflects duration of aquatic functional loss between the time of an i mitigation (credit).	impact (debit) and completion of compensatory
Years	15
Sub-Total	0.3234375
=	
Temporal Loss-Maturity *Note: Period between completion of compensatory mitigation measures to function (i.e. maturity of tree stratum to provide organic matter and de corridor).	and the time required for maturity, as it relates
*Note: Period between completion of compensatory mitigation measures to function (i.e. maturity of tree stratum to provide organic matter and de	and the time required for maturity, as it relates
*Note: Period between completion of compensatory mitigation measures to function (i.e. maturity of tree stratum to provide organic matter and de corridor).	and the time required for maturity, as it relates etritus within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures to function (i.e. maturity of tree stratum to provide organic matter and de corridor).	and the time required for maturity, as it relates etritus within riparian stream or wetland buffer

e to insert default values for MITIGATION BANKING and ILF)						
	Loi	ng-term Protection				
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)				
		404				
	0 + 5/10 Year Monitoring	101				
	Sub-Total	0				

PART IV - Index to Unit Score Conversion						
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)			
1.2691875	10	12.691875	\$10,153.50			

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	12.691875	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT2 of UT10 of LFHC, Ephemeral	12.691875	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank					
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						

West Virginia Stream and Wetland Valuation Metric UT11 of LFHC, Perennial (1 of 2)

USACE FILE NO./Project Name:		lo Mt. Surface Mine ermit No. S-5018-07	(in Decimal Degrees)	_	37° 42' 40.76"	Lon.	82° 13' 22.77"	WEATHER:	65 Sunny	DATE:	20-May-10
STREAM CLASSIFICATION:	Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			UT11 of Left Fork of Hell C % Streambed Slope, Acre W			MITIGATION STREAM CLASS./SITE ID (% stream slope, watershed size {acreage},			
STREAM IMPACT LENGTH: 250	FORM OF MITIGATION:		MIT COORDINATES (in Decimal Degrees)			Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	
Column No. 1- Impact Existing Conditio	on (Debit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Project Post Completion (Cr		s	Column No. 4- Mitigation Projected Post Completion (Credi		Column No. 5- Mitigation Projec	ted At Maturity (Credit)
HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology		Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat		Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and Biologica	al Indicators	PART I - Physical, Chemical and E	Biological Indicators		PART I - Physical, Chemical and B	liological Indicat	tors	PART I - Physical, Chemical and Biolo	gical Indicators	PART I - Physical, Chemical and	d Biological Indicators
Points Scale	Range Site Score		Points Range Site Score			Points Range Scale	Site Score	Poi Sca	nts Range Site Score		Points Range Site Score
PHYSICAL INDICATOR (Applies to all streams classification	ions)	PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams class	sifications)	PHYSICAL INDICATOR (Applies to all stream	ns classifications)
USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover 0-20	7	Epifaunal Substrate/Available Cover	0-20		` ` `	0-20			20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness 0-20	6	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness 0-2	20	2. Embeddedness	0-20
3. Velocity/ Depth Regime 0-20	4	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime 0-2		Velocity/ Depth Regime	0-20
4. Sediment Deposition 0-20	13	Sediment Deposition	0-20		Sediment Deposition	0-20		4. Sediment Deposition 0-2		Sediment Deposition	0-20
5. Channel Flow Status 0-20	0-1	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status 0-2	0-1	5. Channel Flow Status	0-20 0-1
6. Channel Alteration 0-20	16	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration 0-2		6. Channel Alteration	0-20
7. Frequency of Riffles (or bends) 0-20	9	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends) 0-2		7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB) 0-20	10	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB) 0-2		8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB) 0-20 10. Riparian Vegetative Zone Width (LB & RB) 0-20	12 16	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20 0-20		9. Vegetative Protection (LB & RB) 0-2 10. Riparian Vegetative Zone Width (LB & RB) 0-2		9. Vegetative Protection (LB & RB)	0-20 0-20
10. Riparian Vegetative Zone Width (LB & RB) 0-20 Total RBP Score Margi		Total RBP Score	Poor 0		10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	Poor	0	. ,	Poor 0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	Poor 0
Sub-Total	0.525	Sub-Total	0		Sub-Total	1 001	0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermittent and Perer	nnial Streams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Stre	ams)	CHEMICAL INDICATOR (Applies to Intermittent and	Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)
WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	ni)
Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	,
0-90	46		0-90			0-90		0-5	90		0-90
<=99 - 90 points		-11			-11					-11	
pn	0-1	рн	0-1		рп	0-1		рн	0-1	рн	0-1
>9.1 = 10 points	10.07		5-90			5-90		5-6	90		5-90
DO		DO			DO			DO		DO	
10-30	10.48		10-30			10-30		10-	-30		10-30
Sub-Total	0.65	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermittent and Pe		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennia		BIOLOGICAL INDICATOR (Applies to Intermittent		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Streams)
WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0-100	0-1 66.73		0-100 0-1			0-100 0-1		0-1	00 0-1		0-100 0-1
Grey Zone											
Sub-Total	0.6673	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
PART II - Index and Unit Score		PART II - Index and Un	it Score		PART II - Index and Uni	it Score		PART II - Index and Unit So	core	PART II - Index and	Unit Score
Index Linear	Feet Unit Score	Index	Linear Feet Unit Score	9	Index	Linear Feet	Unit Score	Index Lir	near Feet Unit Score	Index	Linear Feet Unit Score
Linear	5 50010	- Indox	Sinc Scott		uox	2021 1 001	2 55516		C.III. GOOTG	ШМОЛ	2
0.6141 250	0 153.525	0	0 0		0	0	0	0	0 0	0	0 0
				_		l l					

West Virginia Stream and Wetland Valuation Metric UT11 of LFHC, Perennial (2 of 2)

	(See instruction	PART III - Impact Factors insert default values for MITIGATION BANKING a	nd ILF)					
Temporal Loss-Construction	· ·		Long-term Protection					
*Note: Reflects duration of aquatic functional loss between the time of an imp mitigation (credit).	eflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensa	% Add. Mitiga	tion and Monitoring Period	Lon	g-Term Protection (Years)			
Years								
Sub-Total	0.276345							
Temporal Loss-Maturity		0++	5/10 Year Monitoring	101				
*Note: Period between completion of compensatory mitigation measures and		Sub-Total	<u> </u>		0			
· · · · · · · · · · · · · · · · · · ·	is within nparian stream or wetland buller		PART IV - In	dex to Unit Score Co	onversion			
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Un			
70 / Idd. Ivilligation	Temporal 2003 Maturity (Tears)	1.136085	250	284.02125	\$227,217.00			
30%	25							
Sub-Total	0.24564							

PART V- Comparison of Unit Scores and Projected Balance									
[No Net Loss Value] 284.02125 Condition -		Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your *Note2: Place an "X" in the appropriate category (only select one).	project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT11 of LFHC, Perennial	284.02125	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank						
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer	0							
Width/Side	0							

West Virginia Stream and Wetland Valuation Metric UT11 of LFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	DRDINATES: La I Degrees)	at.	37° 42' 40.38"	Lon.	82° 13' 27.91"	WEATHER:	6	65 Sunny	DATE:	20-May-	-10
STREAM CLASSIFICATION:	I	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT11 of Left Fork of Hel % Streambed Slope, Acr			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	745	FORM OF MITIGATION:		MIT COOR (in Decima	-	at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cred	adit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolo	gy			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.88666667	Biogeochemical Cycling		0		themical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.94		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	eators	PART I - Physical, Chemical and E	Biological Indicate	ors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	nd Biological Indicato	ors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	AL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	9	Epifaunal Substrate/Available Cover	0-20		1. Epifa	ınal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	9	Embeddedness	0-20			ddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
Velocity/ Depth Regime	0-20	9	Velocity/ Depth Regime	0-20			ty/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	12	4. Sediment Deposition	0-20			ent Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	9	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	<u>16</u> 5	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	12	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			ency of Riffles (or bends) Stability (LB & RB)	0-20		Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	_
8. Bank Stability (LB & RB)	0-20	12	Bank Stability (LB & RB) Vegetative Protection (LB & RB)	0-20			, , ,	0-20		,	0-20		8. Bank Stability (LB & RB)	0-20	_
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	14	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			ative Protection (LB & RB) ian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	_
Total RBP Score	Marginal	107	Total RBP Score	Poor	0		P Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.535	Sub-Total		0	Sub-Tot	al		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strea	ams)	CHEMIC	AL INDICATOR (Applies to Intermit	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitted	tent and Perennial Strear	ams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General))		WVDEP	Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	ral)	
Specific Conductivity			Specific Conductivity			Specific	Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	55		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nH		
pii	0-1	0.04	p11	0-1		pii		0-1		511	0-1		pii	0-1	
8.1-9.0 = 45 points	0-80	8.64		5-90				5-90			5-90			5-90	
DO			DO	_		DO				DO			DO		
	10-30	10.67		10-30				10-30			10-30			10-30	
Sub-Total		0.825	Sub-Total	1 1	0	Sub-Tot	al		0	Sub-Total	l l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	reams)	BIOLOG	ICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial	Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, ,		WV Stre	am Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Grey Zone	0-100 0-1	64.53		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Grey Zone Sub-Total		0.6453	Sub-Total	1	0	Sub-Tot			0	Sub-Total		0	Sub-Total		0
Oub-10tal		0.0433	Oub-10tal	l l	U	Oub-10t	21		v	Oub-1 otal		, v	Oub-10tal	I	
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
A =====		5-0-4-5	-				•								
0.77755	745	579.27475	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT11 of LFHC, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGAT	ION BANKING and	ILF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	t (debit) and completion of compensatory		% Add. Mitigation	n and Monitoring Period	Lor	ng-Term Pro
Years	15					
Sub-Total	0.3498975					
Temporal Loss-Maturity			0 + 5/10	10		
*Note: Period between completion of compensatory mitigation measures and the			Sub-Total			
to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer			PART IV - Inc	lex to Unit Score C	onversion
% Add. Mitigation	Temporal Loss-Maturity (Years)		Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	(0
			1.394820833	745	1039.141521	
30% Sub-Total	25 0.267373333					

	PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	1039.141521	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE				0		0		0		

	Part VI - Mitigation (
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	roject							
Level I Restoration								
Level II Restoration			Buffer V					
Level III Restoration								

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT11 of LFHC, Intermittent	1039.141521	#DIV/0!

Extended Upland Buffer Zone

Long-Term Protection (Years)

101

ILF Costs (Offsetting Debit Units)

\$831,313.22

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank										
	0-50											
	51-150											
Buffer Width		Right Bank										
	0-50											
	51-150											
Average Buffer Width/Side	0											

UT11 of LFHC, Ephemeral (1 of 1)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		OORDINATES: nal Degrees)	Lat.	37° 42' 39.27"	Lon.	82° 13' 35.07"	WEATHER:	6	55 Sunny	DATE:	20-May	-10
STREAM CLASSIFICATION:	E	phemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT11 of Left Fork of He % Streambed Slope, Acr			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea					
STREAM IMPACT LENGTH:	5	FORM OF MITIGATION:			RDINATES: nal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	,,_,,_,,,
Column No. 1- Impact Existing Co	ondition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baselin	e (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Projec Post Completion (Cr		irs	Column No. 5- Mitigation Project	cted At Maturity (Cre	adit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.85	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.92		Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and Bio	ological Indica	ators	PART I - Physical, Chemical and E	Siological Indica	ators		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and B	iological Indic	ators	PART I - Physical, Chemical an	d Biological Indicate	ors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams cla	assifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)			PHYSICAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	6	Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
	0-20	0	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
·	0-20	11	Sediment Deposition	0-20			Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
	0-20	16	6. Channel Alteration	0-20			6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
	0-20	0	7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
, , , , , , , , , , , , , , , , , , ,	0-20	12	8. Bank Stability (LB & RB)	0-20			8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
	0-20	12	9. Vegetative Protection (LB & RB)	0-20			9. Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
	0-20	16 73	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0		10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	
Sub-Total	Marginal	0.365	Sub-Total	P001	0		Sub-Total	Poor	0	Sub-Total	Poor	0	Sub-Total	Poor	0
CHEMICAL INDICATOR (Applies to Intermittent ar	nd Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	reams)		CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (General	ral)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		0		Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points								1							
pH	0-1		рн	0-1			рн	0-1		рн	0-1		рн	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO		()	DO	•	0		DO			DO			DO		
	10-30			10-30				10-30			10-30			10-30	
							0.1.7	.0 30			.5 00		0.1.7.4.1	.000	
Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent	t and Darannial C	************	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermitt	ant and Darannial I	Ctrooms)		Sub-Total BIOLOGICAL INDICATOR (Applies to Inte	umittant and Davan	U	Sub-Total BIOLOGICAL INDICATOR (Applies to Intermit	tant and Davann	0	Sub-Total BIOLOGICAL INDICATOR (Applies to Inter	mittent and Deveniel	U Streeme)
WV Stream Condition Index (WVSCI)	t and Ferenniai c	bireams)	WV Stream Condition Index (WVSCI)	ent and Fereninal	Siteams)		WV Stream Condition Index (WVSCI)	militent and Feren	mai Streams)	WV Stream Condition Index (WVSCI)	tent and Ferenin	al Streams)	WV Stream Condition Index (WVSCI)	mittent and Ferenman	Streams)
			WV Stream Condition index (WVSCI)	I I			WV Stream Condition index (WVSCI)			WV Stream Condition index (WVSCI)			WV Stream Condition index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	•	0	Sub-Total		0		Sub-Total	•	0	Sub-Total		0	Sub-Total		0
DADT II. In da	0		DADTH In the territory	'' O			DADTH /	H-'- 0		DADT II. In .	10		DADTH	Heli Ocean	
PART II - Index and Unit	ocore		PART II - Index and Ur	II SCORE			PART II - Index and	Unit Score		PART II - Index and Uni	t ocore		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.67875	5	3.39375	0	0	0		0	0	0	0	0	0	0	0	
5.51.515		5.000.0	<u> </u>				<u> </u>	<u> </u>		Ů		ŭ	<u> </u>		

West Virginia Stream and Wetland Valuation Metric UT11 of LFHC, Ephemeral (2 of 2)

		Impact Factors			
	(See instruction	values for MITIGATION BANKING	nd ILF)		
Temporal Loss-Cons	truction			Long-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit)		% Add. Mitig	ation and Monitoring Period	Lo	ng-Term Prote
Years Sub-Total	15 0.3054375				
Temporal Loss-Ma		0 -	5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation meas to function (i.e. maturity of tree stratum to provide organic matter a		Sub-Total			0
corridor).			PART IV - I	ndex to Unit Score C	onversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Sco (Debit)	re Linear Feet	Unit Score (Debit)	(Offs
		1.1871875	5	5.9359375	
30%	25				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	5.9359375	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	_		
FINAL PROJECTED NET BALANCE				0		0		0			

	Part VI - Mitigation C							
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ır project							
Level I Restoration								
Level II Restoration			Buffer V					
Level III Restoration								

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT11 of LFHC, Ephemeral	5.9359375	#DIV/0!

Extended Upland Buffer Zone

Long-Term Protection (Years)

ILF Costs (Offsetting Debit Units)

\$4,748.75

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank										
	0-50											
	51-150											
Buffer Width	Right Bank											
	0-50											
	51-150											
Average Buffer	0											
Width/Side	J											

West Virginia Stream and Wetland Valuation Metric UT12 of LFHC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: La Degrees)	Lat.	37° 42'31.07"	Lon.	82° 13' 24.49"	WEATHER:	e	65 Sunny	DATE:	20-May	y-10
STREAM CLASSIFICATION:		ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UT12 of Left Fork of Hel % Streambed Slope, Acre			MITIGATION STREAM CLASS./SITI (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	167	FORM OF MITIGATION:			RDINATES: La Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Project Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cre	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGN	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydr	ology			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.88666667	Biogeochemical Cycling		0		eochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.94		Habitat			Habit	at			Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	eators	PART I - Physical, Chemical and E	Biological Indicat	tors		PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and B	Biological Indica	ators	PART I - Physical, Chemical an	nd Biological Indicat	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHY	SICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USE	PA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	9	Epifaunal Substrate/Available Cover	0-20		1. Ep	ifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
Embeddedness	0-20	5	Embeddedness	0-20			nbeddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
Velocity/ Depth Regime	0-20	3	Velocity/ Depth Regime	0-20			locity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	14	4. Sediment Deposition	0-20			diment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	5	5. Channel Flow Status	0-20 0-1			annel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	3	6. Channel Alteration	0-20			annel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	8	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			equency of Riffles (or bends) nk Stability (LB & RB)	0-20		Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	10	Bank Stability (LB & RB) Vegetative Protection (LB & RB)	0-20				0-20		,	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	8	Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			getative Protection (LB & RB) iparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) RB, Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	66	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.33	Sub-Total	•	0	Sub-	Fotal	•	0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stre	ams)	CHE	MICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stream	ams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General))		WVD	EP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gener	ral)	
Specific Conductivity			Specific Conductivity			Spec	ific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	55		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nН				nH			nH		
pii	0-1	0.04	pii	0-1		Pii		0-1		jii	0-1		pii	0-1	
8.1-9.0 = 45 points	0-80	8.64		5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30	10.67		10-30				10-30			10-30			10-30	
Sub-Total		0.825	Sub-Total	1	0	Sub-	Total		0	Sub-Total	l .	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)		OGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, , ,		wvs	Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)	ı		WV Stream Condition Index (WVSCI)		
Grey Zone	0-100 0-1	64.53		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Grey Zorie Sub-Total		0.6453	Sub-Total	1	0	Sub-	Fotal		0	Sub-Total	l	0	Sub-Total		0
Sub-Total		0.0433	Sub-Total		U	Sub-	iotai		U	Sub-Total		U	Sub-Total		
PART II - Index and U	Init Score		PART II - Index and Ur	it Score			PART II - Index and I	Jnit Score		PART II - Index and Uni	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.74000000	40-	101 1450/-	_				•						_		
0.743383333	167	124.145017	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UT12 of LFHC, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING and IL	.F)		
Temporal Loss-C	onstruction		L	ong-term Protection	
Note: Reflects duration of aquatic functional loss between the ti		% Add. Mitigation	and Monitoring Period	Long	g-Term Protection (
mitigation (ci	redit).				
Years	15				
Sub-Total	0.3345225				
Temporal Loss	-Maturity	0 + 5/10 Y	ear Monitoring		101
lote: Period between completion of compensatory mitigation r		Sub-Total Sub-Total			0
o function (i.e. maturity of tree stratum to provide organic mat	· · · · · · · · · · · · · · · · · · ·				
corridor)).		PART IV - In	dex to Unit Score Co	nversion
		Final Index Score	Linear Feet	Unit Score	ILF (
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting
		1.317945833	167	220.0969542	\$176,
					. ,
30%	25				
p-Total	0.24004				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value] 220.0969542 Mitigation Existing Condition - Baseline (Credit)				Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE					0		0		0		

	Part VI - Mitigation Consid	erations (Incentives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels *Note2: Place an "X" in the appropriate category (only select one)		
Level I Restoration		
Level II Restoration		Buffer V
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT12 of LFHC, Intermittent	220.0969542	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						
Width/Side	O .						

West Virginia Stream and Wetland Valuation Metric UT12 of LFHC, Ephemeral (1 of 2)

Column 1s. 1-imped Testing Condens (Dally Column 1s. 1-imped T	USACE FILE NO./Project Name:		o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 42' 29.08"	Lon.	82° 13' 27.29"	WEATHER:	65 Sunny	DATE:	20-May-10
Column No. 1 Impact Entire Control Coulom No. 2 Mission Desired Condition Desired Control No. 2 Mission Desired Contro	STREAM CLASSIFICATION:	Ephemeral					•					
March Proceedings Proceeding Proceeding Proceeding Proceeding Proceeding Proceeding Proceeding Proceeding Proceeding Proceding Proceding Proceding Proceeding roceding Proceeding roceding Proceeding Proceeding Proceding Proceding Proceding Proceeding Proceeding Proceding Proceding Proceding Proceeding Proceding Proceding Proceding Proceding Proceeding Proceding EAM IMPACT LENGTH:				Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0	
Marting September Septem	Column No. 1- Impact Existing (Condition (Debit)	Column No. 2- Mitigation Existing Con-	dition - Baseline (Credit)				rs			Column No. 5- Mitigation Proje	cted At Maturity (Credit)
Department of Cycling	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):	-	Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
### PART - Physics, Chemical and Biological indicators PART - Physics, Chemical and Biological indicators	Hydrology	0.75	Hydrology			Hydrology			Hydrology		Hydrology	
## PART 1- Physical, Chemical and Biological Indicators: ## PART 1- Physi	Biogeochemical Cycling	0.97 0.87	Biogeochemical Cycling	0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
## MINICAL MIDICATOR (pycies to at the second continuous) ## MINICAL MIDICATOR (pycies to at the s	Habitat	0.89	Habitat			Habitat			Habitat			
Seal	PART I - Physical, Chemical and B	Biological Indicators	PART I - Physical, Chemical and B	iological Indicators		PART I - Physical, Chemical and E	Biological Indica	ators	PART I - Physical, Chemical and B	iological Indicators	PART I - Physical, Chemical at	d Biological Indicators
SEP ASP Play Confirm Class Blank)				Points Range Site Score				Site Score				Points Range Site Score Scale
Column Superior Available Cover 22	PHYSICAL INDICATOR (Applies to all streams of	classifications)	PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams of	classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)
Explanal Solitorian Population Covers 2.52 3.2 5.2	USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet	
Velocity Dept Regree		0-20		0-20			0-20			0-20		
## Activated Deposition 0.00	2. Embeddedness	0-20	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20
Channel Few Status			3. Velocity/ Depth Regime			3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20
## Charment Abstraction							1		· · · · · · · · · · · · · · · · · · ·			
A Froquency of Milles for bends)		0-1		0-20 0-1			0-1			0-20 0-1		0-20 0-1
B. Bank Statistivy (LB A RB)							1		1			
		· - ·										
To Right Negrative Vigentities 2 and With (Lift A RD) 2.0 Total RBP Score Poor 4.0 Sub-Total 1.0 Repriate Vigentities 2 and Vigentities 3 and	, , , , , , , , , , , , , , , , , , ,	· - ·				, ,			· · · · · · · · · · · · · · · · ·		, , , , , , , , , , , , , , , , , , ,	
Total REP Score												
Sub-Total 0.2 CHEMICAL INDICATOR (Applies to Intermittent and Percental Streams) CHEMICAL INDICATOR (Applies to Intermittent and Percental Streams) WVDEP Water Quality Indicators (General) Specific Conductivity Specific Conductivity Specific Conductivity Specific Conductivity Sub-Total O CHEMICAL INDICATOR (Applies to Intermittent and Percental Streams) WVDEP Water Quality Indicators (General) Specific Conductivity Specific Co								0				
CHEMICAL NDICATOR (Applies to Intermittent and Percential Streams) WVDEP Water Quality Indicators (General) Specific Conductivity 100-190 -85 points PART II - Index and Unit Score PART							1 001	0				0
Specific Conductivity 100-199-85 points 0-40 PH 5-6-6.0 = 45 points 0-80 10-30 10-30 Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) 0 0 10-100 Du WV Stream Condition Index (WVSCI) 0 0 10-100 Du PART II - Index and Unit Score				and Perennial Streams)			nt and Perennial Str	reams)		and Perennial Streams)		tent and Perennial Streams)
100-190-85 points	WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)
pH	Specific Conductivity		Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
PH	100-199 - 85 points	0-90		0-90			0-90			0-90		0-90
DO Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total Sub-Total Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total Sub-Total Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total PART II - Index and Unit Score	pH		рН			pH			pH		рН	
DO Sub-Total Sub-Total Sub-Total BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) WV Stream Condition Index (WVSCI) Sub-Total Sub-Total O BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total Sub-Total O BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) Sub-Total O Sub-Total O Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO Sub-Total Sub-Total DO DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO Sub-Total DO DO Sub-Total DO Sub-		0-80		5-90 0-1			5-90 0-1			5-90		5-90 0-1
Sub-Total O-100 0-1 Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total O-100 0-1 Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total O-100 0-1 Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total O-100 0-1 Sub-Total	5.6-6.0 = 45 points		DO			DQ			DQ		DO.	
Sub-Total O -100 0-1 Sub-Total Sub-Total O -100 0-1 Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total O -100 0-1 Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total Sub-Total O -100 0-1 Sub-Total Sub-Tot	DO T		DO			<u> </u>			DO T		БО	
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) WV Stream Condition Index (WVSCI) O 0-100 0-1 Sub-Total		10-30		10-30			10-30			10-30		10-30
WV Stream Condition Index (WVSCI)				0				0				0
O O-100 O-100 O-10		nt and Perennial Streams)		ent and Perennial Streams)			ittent and Perenn	ial Streams)		tent and Perennial Streams)		mittent and Perennial Streams)
Sub-Total O Sub-Total O Sub-Total O Sub-Total O Sub-Total O Sub-Total O PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score	WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	T T		WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score	0	0-100 0-1		0-100 0-1			0-100 0-1			0-100 0-1		0-100 0-1
	Sub-Total	0	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
Index Linear Feet Unit Score Index Linear Feet Unit Score Unit Score Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score Index Inde	PART II - Index and Uni	it Score	PART II - Index and Un	it Score		PART II - Index and Ur	nit Score		PART II - Index and Uni	it Score	PART II - Index and	Unit Score
Index Linear Feet Unit Score Index I												
	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.6525 138 90.045 0 0 0 0 0 0 0 0 0 0	0.6525	138 90.045	0	0 0		0	0	0	0	0 0	0	0 0

West Virginia Stream and Wetland Valuation Metric UT12 of LFHC, Ephemeral (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGAT	ION BANKING and	ILF)		
Temporal Loss-Construction				Lo	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impa	ct (debit) and completion of compensatory		% Add. Mitigation	n and Monitoring Period	Lor	ng-Term Protection (Years)
mitigation (credit).			-	-		
Years	15					
Sub-Total	0.293625					
Temporal Loss-Maturity			0 + 5/10	Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and			Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus	s within riparian stream or wetland buffer					
corridor).				PART IV - Ind	lex to Unit Score Co	onversion
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.120125	138	154.57725	\$123,661.80
30%	25					
Sub-Total Sub-Total	0.174					
	· · · · · · · · · · · · · · · · · · ·					
	PART	V- Comparison of Unit Scores and Project	ted Balance			

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	154.57725	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE	FINAL PROJECTED NET BALANCE						0		0

	Part VI - Mitigation					
*Note1: Reference the Instructional handout to determin	am Restoration se the correct Restoration Levels (below) for your project spriate category (only select one).		*Note ¹ :			
Level I Restoration						
Level II Restoration		В	uffer Width			
Level III Restoration						

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT12 of LFHC, Ephemeral	154.57725	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Left Bank

	0	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer Width/Side	0	

UTPC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDII		37° 44' 11.45" N	Lon.	2° 12' 19.23" W	WEATHER:	6	5 Cloudy	DATE:	May 19,	, 2010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			UTPC - Unnamed Tributary of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree		MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)		Same (Mitigation is restoration of temporary impacts)				
STREAM IMPACT LENGTH:	552	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINA (in Decimal Degr		37° 44' 11.45" N	Lon. 8	2° 12' 19.23" W	PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	552	2
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Cred	lit)	Column No. 3- Mitigation Pr Post Completion		s	Column No. 4- Mitigation Pro Post Completion		ırs	Column No. 5- Mitigation Project	ted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Ave	rage	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.72		Hydrology			Hydrology	0.69		Hydrology	0.73		Hydrology	0.78	
Biogeochemical Cycling	0.98	0.88666667	Biogeochemical Cycling	()	Biogeochemical Cycling	0.57	0.63	Biogeochemical Cycling	0.8	0.73666667	Biogeochemical Cycling	0.9	0.8566667
Habitat	0.96		Habitat			Habitat	0.63		Habitat	0.68		Habitat	0.89	
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Siological Indicators		PART I - Physical, Chemical ar	nd Biological Indica	tors	PART I - Physical, Chemical an	d Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Site S Scale	Score		Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all street	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)	1		USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	8	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness	0-20	7	2. Embeddedness	0-20		2. Embeddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15
3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13
4. Sediment Deposition	0-20	7	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20	13	Sediment Deposition	0-20	15
5. Channel Flow Status	0-20	10	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	10	5. Channel Flow Status	0-20	10	5. Channel Flow Status	0-20	10
6. Channel Alteration	0-20	13	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20	13	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15	Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20	11	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18
9. Vegetative Protection (LB & RB)	0-20	12	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	11	9. Vegetative Protection (LB & RB)	0-20	16
10. Riparian Vegetative Zone Width (LB & RB)	0-20	14	Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB	3) 0-20	6	Riparian Vegetative Zone Width (LB & RB)	0-20	11	10. Riparian Vegetative Zone Width (LB & RB)	0-20	16
Total RBP Score	Marginal	105	Total RBP Score	Poor (0	Total RBP Score	Suboptimal	118	Total RBP Score	Suboptimal	134	Total RBP Score	Suboptimal	150
Sub-Total		0.525	Sub-Total	()	Sub-Total		0.59	Sub-Total		0.67	Sub-Total		0.75
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Streams)		CHEMICAL INDICATOR (Applies to Interm	nittent and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermit	ttent and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General	ıl)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Gener	ral)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	44		0-90			0-90	500		0-90	500		0-90	500
<=99 - 90 points						500-599 - 50 points			500-599 - 50 points			500-599 - 50 points		
рн	0-1		рн	0-1		рн	0-1		рн	0-1		рн	0-1	
6.0-8.0 = 80 points	0-80	6.66		5-90		6.0-8.0 = 80 points	5-90	6.66	6.0-8.0 = 80 points	5-90	6.66	6.0-8.0 = 80 points	5-90	6.66
DO DO		(1) (1) (1) (1) (1)	DO	•		DO			DO	•		DO		
	10-30	10.28		10-30			10-30	10.28		10-30	10.28		10-30	10.28
Sub-Total	10 00	10.20	Sub-Total	1.000		>5.0 = 30 points Sub-Total	10 00	0.55	>5.0 = 30 points Sub-Total	10 00	0.8	>5.0 = 30 points Sub-Total	10 00	0.8
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Int	termittent and Perennia		BIOLOGICAL INDICATOR (Applies to Intel	rmittent and Perenni		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	
WV Stream Condition Index (WVSCI)		,	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		•	WV Stream Condition Index (WVSCI)		•	WV Stream Condition Index (WVSCI)		
, , , , , , , , , , , , , , , , , , , ,	0-100 0-1	82.72		0-100 0-1			0-100 0-1	68		0-100 0-1	68		0-100 0-1	68
Very Good	0-100			0-100		Good	0-100		Good	0-100 0-1		Good	0-100 0-1	
Sub-Total		0.8272	Sub-Total		0	Sub-Total		0.68	Sub-Total		0.68	Sub-Total		0.68
PART II - Index and U	Jnit Score		PART II - Index and Un	it Score		PART II - Index and	d Unit Score		PART II - Index and	Unit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit S	Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.835366667	552	461.1224	0	552 (,	0.618333333	552	341.32	0.726666667	552	401.12	0.8	552	441.6
0.033300007	332	401.1224		332	,	0.01033333	332	J+1.JZ	0.72000007	332	4 01.12	0.0	332	441.0

UTPC, Temporary Intermittent (2 of 2)

PART III - Impact Factors

	(See instruction
Temporal Loss-Construction	· · · · · · · · · · · · · · · · · · ·
Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	ct (debit) and completion of compensator
Years	15
Sub-Total Sub-Total	0.375915
Temporal Loss-Maturity	
Note: Period between completion of compensatory mitigation measures and to to function (i.e. maturity of tree stratum to provide organic matter and detritus	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	

page to insert default values for MITIGATION BANKING and ILF)								
	Loi	ng-term Protection						
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)						
	0 + 5/10 Year Monitoring	101						
	Sub-Total	0						

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.524908333	552	841.7494	\$673,399.52						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)	341.32	Mitigation Projected at Ten Years Post Completion (Credit)	401.12	Mitigation Projected At Maturity (Credit)	441.6				
FINAL PROJECTED NET BALANCE					341.32		401.12		441.6	

	Part VI - Mitigation	n Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pr *Note2: Place an "X" in the appropriate category (only select one).	oject		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UTPC, Temporary Intermittent	841.7494	596.16

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

*Note³: Select the appropriate mitigation type

 Buffer Width
 Left Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Buffer Width
 Right Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Average Buffer Width/Side
 50

UTPC, Permanent Intermittent (1 of 2)

USACE FILE NO./Project Name:			p Permit No, S-5018-07 IMPACT COORDINATES: (in Decimal Degrees)			.at.	37° 44' 12.62"	Lon.	82° 12' 21.22"	WEATHER:	6	65 Cloudy	DATE: May 1		, 2010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				UTPC - Unnamed Trib % Streambed Slope, Acr			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre			Same (Mitigation is restoration of temporary imp		pacts)
STREAM IMPACT LENGTH:	883	FORM OF MITIGATION:		MIT COOR (in Decima		.at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cre	edit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.72		Hydrology			Hydrol	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	0.98	0.88666667	Biogeochemical Cycling		0	Biogeo	chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.96		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicate	ors		PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and É	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicat	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	CAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	7	Epifaunal Substrate/Available Cover	0-20		 Epifa 	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	7	2. Embeddedness	0-20			eddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	$\overline{}$
3. Velocity/ Depth Regime	0-20	9	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	-
4. Sediment Deposition	0-20	7 10	4. Sediment Deposition	0-20			ment Deposition nnel Flow Status	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	-
Channel Flow Status Channel Alteration	0-20 0-1	14	Channel Flow Status Channel Alteration	0-20 0-1			nnel Alteration	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1	
7. Frequency of Riffles (or bends)	0-20	12	7. Frequency of Riffles (or bends)	0-20			uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	13	8. Bank Stability (LB & RB)	0-20			: Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20			etative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	16	10. Riparian Vegetative Zone Width (LB & RB)	0-20			arian Vegetative Zone Width (LB & RB)			Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score	Marginal	109	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.545	Sub-Total		0	Sub-To	tal		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Strea	ams)	СНЕМІ	CAL INDICATOR (Applies to Intermit	tent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Strea	ams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General))		WVDE	Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		0	Specifi	c Conductivity			Specific Conductivity			Specific Conductivity		
00 00	0-90	45		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			nH				nH			nH		
p.1	0-1	C 50	p	0-1		PII		5-90 0-1		pii	5-90 0-1		p	5-90 0-1	
6.0-8.0 = 80 points	0-80	6.59		5-90				5-90			5-90			5-90	
DO			DO	_		DO				DO			DO		
	10-30	10.45		10-30				10-30			10-30			10-30	
Sub-Total	1 1	1	Sub-Total	1	0	Sub-To	tal	1 1	0	Sub-Total	ı I	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial St	reams)	BIOLO	GICAL INDICATOR (Applies to Inte	mittent and Perenr	ial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Str	eam Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)		
Very Good	0-100 0-1	79.67		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Very Good Sub-Total	<u> </u>	0.7967	Sub-Total	 	0	Sub-To	tal		0	Sub-Total		0	Sub-Total		0
oub Total		0.1001	oub rotal	l l		oub 10	tai		· ·	our rotal		v	oub rotal		
PART II - Index and U	Init Score		PART II - Index and Ur	nit Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
													•		
0.833616667	883	736.083517	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UTPC, Permanent Intermittent (2 of 2)

	(See instruction	actors or MITIGATION BANKING an	d ILF)			
Temporal Loss-Con	struction		L	ong-term Protection		
*Note: Reflects duration of aquatic functional loss between the time mitigation (cred		% Add. Mitigat	ion and Monitoring Period	Long-Term Protection (Years)		
Years Sub-Total	15 0.3751275					
Temporal Loss-N	laturity	0 + 5	/10 Year Monitoring	101		
*Note: Period between completion of compensatory mitigation me	asures and the time required for maturity, as it relates	Sub-Total	, and the second	0		
to function (i.e. maturity of tree stratum to provide organic matter corridor).	and detritus within riparian stream or wetland buffer		PART IV - Index to Unit Score Conversion			
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)	
		1.520970833	883	1343.017246	\$1,074,413.80	
		<u> </u>	•			
9994	25					
30% Sub-Total	0.312226667					

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)					
FINAL PROJECTED NET BALANCE		0		0		0				

	Part VI - Mitigation Considerations (Incentiv	ves)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration I *Note2: Place an "X" in the appropriate category (only select		
Level I Restoration		
Level II Restoration	В	Buffer \
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UTPC, Permanent Intermittent	1343.017246	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank							
	0-50								
	51-150								
Buffer Width	Right Bank								
	0-50								
	51-150								
Average Buffer Width/Side	0								

UTPC, Ephemeral (1 of 2)

•			Buffalo Mt. Surface Mine IMPACT COORDINATES: Lat (in Decimal Degrees)			t.	37° 44' 0.70"	Lon.	82° 12' 10.32"	WEATHER:	60 Cloudy		DATE:	May 19, 2010	110
STREAM CLASSIFICATION:	I	Ephemeral	IMPACT STREAM/SITE ID AND SITE DESCI (% stream slope, watershed size (acreage), unaltered or in				UTPC - Unnamed Tributary of Pig % Streambed Slope, Acre Watershe			MITIGATION STREAM CLASS./SITE ID AND SITE DES (% stream slope, watershed size {acreage}, unaltered or impaire					
STREAM IMPACT LENGTH:	447	FORM OF MITIGATION:		MIT COORD (in Decimal		t.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	ndition - Baseline (0	Credit)		Column No. 3- Mitigation Propertion		ars	Column No. 4- Mitigation Proje Post Completion (0		ars	Column No. 5- Mitigation Project	cted At Maturity (Credit)	it)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Sco	re (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	А	Average
Hydrology	0.67		Hydrology			Hydrology				Hydrology			Hydrology		
Biogeochemical Cycling	0.86	0.80333333	Biogeochemical Cycling		0		mical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.88		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and	Biological Indicator	rs	P	ART I - Physical, Chemical ar	nd Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indica	ators	PART I - Physical, Chemical an	d Biological Indicators	s
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Si Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL	INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RE	P (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		 Epifauna 	Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	9	2. Embeddedness	0-20		Embedde		0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20			Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	9	4. Sediment Deposition	0-20			t Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
Channel Flow Status Channel Alteration	0-20 0-1	16	Channel Flow Status Channel Alteration	0-20 0-1		6. Channel	Flow Status	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1		Channel Flow Status Channel Alteration	0-20 0-1	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			cy of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	9	8. Bank Stability (LB & RB)	0-20			bility (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	10	9. Vegetative Protection (LB & RB)	0-20			re Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20			Vegetative Zone Width (LB & RB)			Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)		
Total RBP Score	Marginal	71	Total RBP Score	Poor	0	Total RBP		Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.355	Sub-Total		0	Sub-Total			0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stream	ns)	CHEMICAL	. INDICATOR (Applies to Intermi	ttent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitt	tent and Perennial Streams)	s)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)		WVDEP W	ater Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		0	Specific Co	onductivity			Specific Conductivity			Specific Conductivity		
400 400 . 05	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points	1		nH			nH				nH			nH		
· ·	0-80		···	5-90 0-1		P. .		5-90 0-1		•••	5-90 0-1		5	5-90 0-1	
5.6-6.0 = 45 points	0-00			3-30				3-90			3-30			3-90	
DO			DO	_		DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	1		Sub-Total		0	Sub-Total			0	Sub-Total	l l	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitt	tent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	eams)	BIOLOGIC	AL INDICATOR (Applies to Inte	ermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial Stre	treams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream	Condition Index (WVSCI)	T T		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Very Good	0-100 0-1	80		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	1	0.8	Sub-Total		0	Sub-Total			0	Sub-Total		0	Sub-Total		0
eab rotal		0.0	loas total	·		oub rota.			,	out rotal			out rotal		
PART II - Index and U	nit Score		PART II - Index and U	nit Score			PART II - Index and	Unit Score		PART II - Index and U	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet U	Jnit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Un	Jnit Score
		2442475						_		_			_		
0.7025	447	314.0175	0	0	0		0	0	0	0	0	0	0	0	0

West Virginia Stream and Wetland Valuation Metric UTPC, Ephemeral (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGATION BA	BANKING and I	LF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impact	ct (debit) and completion of compensatory	%	% Add. Mitigation and Monitoring Period			ng-Term Protection (Years)
mitigation (credit).						
Years Out Table	15					
Sub-Total	0.316125					
- II II		0 = 140			101	
Temporal Loss-Maturity *Note: Period between completion of compensatory mitigation measures and t	Cub Tata	0 + 5/10 Year Monitoring Sub-Total			101	
to function (i.e. maturity of tree stratum to provide organic matter and detritus	Sub-10ta	Jiai			<u> </u>	
corridor).	within riparian stream of wettand buner			DADT IV Ind	ex to Unit Score C	`anyarajan
0/ 4 11 189	1 =		I Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
		1.25	259291667	447	562.903375	\$450,322.70
30%	25					
Sub-Total	0.24066667					
	PART	V- Comparison of Unit Scores and Projected Ba	Ralance			

	PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)						
FINAL PROJECTED NET BALANCE	FINAL PROJECTED NET BALANCE				0		0		0		

	Part VI - Mitigation Co	onsiderations (Incentives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) to the appropriate category (only select one).	for your project	
Level I Restoration		
Level II Restoration		Buffer \
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UTPC, Ephemeral	562.903375	#DIV/0!

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer	0	
Width/Side	· ·	

UT6 of UTPC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			Mt. Surface Mine nit No, S-5018-07	IMPACT COORDINATES: La (in Decimal Degrees)	at. 37° 44' 10.89" N	Lon.	82° 12' 28.82" W	WEATHER:	60 Cloudy	DATE:	May 19, 20	.010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acrd			UT6 of UTPC - 6th Unnamed Tributary of UNT of Pigeon Creek % Streambed Slope, Acre Watershed, Mature Tree			E ID AND SITE DESCRIPTION: aage), unaltered or impairments)	Same (Mitigation is restoration	n of temporary impac	acts)
STREAM IMPACT LENGTH:	55	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES: La (in Decimal Degrees)	at. 37° 44' 10.89" N	Lon.	82° 12' 28.82" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	55	
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con-	dition - Baseline (Credit)	Column No. 3- Mitigatio Post Compl	on Projected at Fiv letion (Credit)	e Years	Column No. 4- Mitigation Proje Post Completion (C		Column No. 5- Mitigation Proje	ected At Maturity (Credi	dit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	-	Average
Hydrology Biogeochemical Cycling Habitat	0.67 0.97 0.9	0.84666667	Hydrology Biogeochemical Cycling Habitat	0	Hydrology Biogeochemical Cycling Habitat	0.68 0.57 0.63	0.626666667	Hydrology Biogeochemical Cycling Habitat	0.74 0.8 0.71	Hydrology Biogeochemical Cycling Habitat	0.81 0.91 0.95	0.89
PART I - Physical, Chemical and			PART I - Physical, Chemical and B	Points Range Site Score	PART I - Physical, Chemic			PART I - Physical, Chemical and E		PART I - Physical, Chemical a		Site Score
	Points Range Scale	Site Score		Scale		Points Scale Rar			Points Scale Site Score		Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)	PHYSICAL INDICATOR (Applies to all str	reams classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)	PHYSICAL INDICATOR (Applies to all stream	ams classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data She			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet	:)	
Epifaunal Substrate/Available Cover Embeddedness Velocity/ Depth Regime	0-20 0-20 0-20	2 2 3	Epifaunal Substrate/Available Cover Embeddedness Velocity/ Depth Regime	0-20 0-20 0-20	Epifaunal Substrate/Available Cover Embeddedness Velocity/ Depth Regime	0-20 0-20 0-20	11 11 10	Epifaunal Substrate/Available Cover Embeddedness Velocity/ Depth Regime	0-20 13 13 0-20 10 10 10	Epifaunal Substrate/Available Cover Embeddedness Velocity/ Depth Regime	0-20 0-20 0-20	15 15 10
Sediment Deposition Channel Flow Status	0-20	3 5	Sediment Deposition Channel Flow Status	0-20	Volcony, Bepart Regime Sediment Deposition Channel Flow Status	0-20	10 5	Sediment Deposition Channel Flow Status	0-20 10 5	Sediment Deposition Channel Flow Status	0-20	10
Channel Alteration Frequency of Riffles (or bends)	0-1 0-20 0-20	14	Channel Alteration Frequency of Riffles (or bends)	0-20 0-20	Channel Alteration Frequency of Riffles (or bends)	0-20 0-20	15 13	Channel Alteration Frequency of Riffles (or bends)	0-20	Channel Alteration Frequency of Riffles (or bends)	0-20 0-20	15 13
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20	18
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 0-20 Marginal	18 87	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 0-20 Poor 0	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & R Total RBP Score	0-20 (B) 0-20 Marginal	6 105	Vegetative Protection (LB & RB) Reparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 11 1	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB) Total RBP Score		16 133
Sub-Total	Iviaigiliai	0.435	Sub-Total	0	Sub-Total	Iviaigiliai	0.525	Sub-Total	0.595	Sub-Total		0.665
CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Inter	mittent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Interm	ittent and Perennial Streams	ns)
WVDEP Water Quality Indicators (General) Specific Conductivity			WVDEP Water Quality Indicators (General) Specific Conductivity		WVDEP Water Quality Indicators (Ger Specific Conductivity			WVDEP Water Quality Indicators (General) Specific Conductivity		WVDEP Water Quality Indicators (Gene Specific Conductivity		
<=99 - 90 points pH	0-90	45	рН	0-90	500-599 - 50 points pH	0-90	500	500-599 - 50 points pH	0-90 500	500-599 - 50 points pH	0-90	500
6.0-8.0 = 80 points	0-80	6.59	DO	5-90	6.0-8.0 = 80 points	5-90	6.59	6.0-8.0 = 80 points	5-90 6.59	6.0-8.0 = 80 points	5-90	6.59
Sub-Total	10-30	10.45	Sub-Total	10-30	>5.0 = 30 points	10-30	10.45 0.55	>5.0 = 30 points	10-30 10.45	>5.0 = 30 points Sub-Total	10-30	10.45 0.8
BIOLOGICAL INDICATOR (Applies to Intermitt	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Ir	ntermittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial St	Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
Very Good	0-100 0-1	79.67		0-100 0-1	Good	0-100 0-		Good	0-100 0-1 68	Good	0-100 0-1	68
Sub-Total		0.7967	Sub-Total	0	Sub-Total		0.68	Sub-Total	0.68	Sub-Total		0.68
PART II - Index and Ui	Init Score		PART II - Index and Un	it Score	PART II - Index	and Unit Score		PART II - Index and Ur	it Score	PART II - Index and	d Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Fee	unit Score	Index	Linear Feet Unit Score	Index	Linear Feet U	Unit Score
0.795283333	55	43.7405833	0	55 0	0.605833333	55	33.32083333	0.720833333	55 39.6458333	0.8025	55	44.1375

UT6 of UTPC, Temporary Intermittent (2 of 2)

PART III - Impact Factors

	(See instruction
Temporal Loss-Construction	•
Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	ct (debit) and completion of compensatory
Years	15
Sub-Total	0.3578775
Temporal Loss-Maturity	
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and to to function (i.e. maturity of tree stratum to provide organic matter and detritus	· · · · · · · · · · · · · · · · · · ·
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer

page to insert default values for MITIGAT	age to insert default values for MITIGATION BANKING and ILF)										
	Loi	ng-term Protection									
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)									
	0 + 5/10 Year Monitoring	101									
	Sub-Total	0									

PART IV - Index to Unit Score Conversion										
Final Index Score (Debit)										
1.450720833	55	79.78964583	\$63,831.72							

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	79.78964583	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	33.32083333	Mitigation Projected at Ten Years Post Completion (Credit)	39.64583333	Mitigation Projected At Maturity (Credit)	44.1375		
FINAL PROJECTED NET BALANCE					33.32083333		39.64583333		44.1375		

· ·	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your proj *Note2: Place an "X" in the appropriate category (only select one).			
Level I Restoration			
Level II Restoration			Buffer
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT6 UTPC, Temporary Intermittent	79.78964583	59.585625

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

*Note³: Select the appropriate mitigation type

 Buffer Width
 Left Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Buffer Width
 Right Bank

 0-50
 Preservation and Re-vegetation

 50
 51-150

 Average Buffer Width/Side
 50

UT6 of UTPC, Temporary Ephemeral (1 of 2)

Part Part	USACE FILE NO./Project Name:			alo Mt. Surface Mine ermit No. S-5018-07	IMPACT COORDINATES: (in Decimal Degrees)	Lat.	37° 44' 10.89" N Lon.		82° 12' 28.82" W	WEATHER:		60 Cloudy	DATE:	May 19	9, 2010
Columb 1. No Columb Co	STREAM CLASSIFICATION:		Ephemeral										Same (Mitigation is restoration	n of temporary ir	npacts)
Column 10 Section 10 Secti	STREAM IMPACT LENGTH:	40		Permittee Responsible-Onsite		Lat.	37° 44' 10.89" N Lon.	-	82° 12' 28.82" W	PRECIPITATION PAST 48 HRS:		0	Mitigation Length:	4	0
Part Physics Commission of Section Commission Commission of Section Commission of Section Commission Commission of Section Commission		ng Condition (D	ebit)	Column No. 2- Mitigation Existing C	ondition - Baseline (Credit)				ears			ears	Column No. 5- Mitigation Proj	ected At Maturity (0	Credit)
Progression Cycling	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
PART - Pryspen Column and Broady Market Part - Pryspen Column an	Hydrology							-							
## PART I - Physics, Chemical and Biological Indicators PART I - Physics, Chemical and Biological Indicators PART I - Physics, Chemical and Biological Indicators	Biogeochemical Cycling		0.80333333		0				0.603333333	, ,		0.73666667			0.8333333
The control The control	PART I - Physical, Chemical and	0.00	licators		d Biological Indicators				icators			cators			ators
## WYSICAL NDCATOR (syste to all arous sour locations) ## WYSICAL		Points Rang	ge Site Score						Site Score		Points Range	e Site Score			Site Score
	PHYSICAL INDICATOR (Applies to all stream			PHYSICAL INDICATOR (Applies to all stream	Goale					PHYSICAL INDICATOR (Applies to all streams			PHYSICAL INDICATOR (Applies to all stre	2000	
	USEDA DDD (High Condition) Date Co.			HEEDA DDD (High Condition) Date Charles			HEEDA DDD (High Conditions Date Of cont)			HEEDA DDD (High Conditions Date Co.			USERA RRR (High Conditions Res	`	
Control Cont			0					20	0		0-20	0		,	0
Valuation plane Section Sectio				-			•								
Section Compared Procession Section Compared Procession Section Compared Procession Section Compared Procession Section Compared Procession Section Compared Procession Section Se			0						0						0
Charact Alteriories			11				4. Sediment Deposition 0-2	20	13	Sediment Deposition	0-20	13	Sediment Deposition		13
Charred Alteration	5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20		5. Channel Flow Status 0-2	20	0	5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20	0
Sept Sept	6. Channel Alteration	0-20	16	6. Channel Alteration	0-20		6. Channel Alteration 0-2	20	16	6. Channel Alteration	0-20	16	6. Channel Alteration	0-20	16
Vegetable Procession (LB & RB)	7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends) 0-2	20	0	7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20	0
	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)			8. Bank Stability (LB & RB) 0-2	20	18		0-20	18	8. Bank Stability (LB & RB)	0-20	18
Tatal RRP Scores Marginal 83 Marginal 83 Marginal 84 Marginal 70 Marginal	9. Vegetative Protection (LB & RB)								6						
Sub-Total O.415 Sub-									6						
HEMICAL INDICATOR (Applies to Intermittent and Patemental Streams) CHEMICAL INDICATOR (Applies to Intermittent and Patemental Streams) WYDEP Water Quality Indicators (General) Specific Conductivity WYDEP Water Quality Indicators (General) Specific Conductivity PH H BH BIOLOGICAL INDICATOR (Applies to Intermittent and Patemental Streams) No Stream Condition Index (WYSCI) WYStream Condition Index (WYSCI) WYStream Condition Index (WYSCI) WYStream Condition Index (WYSCI) WYStream Condition Index (WYSCI) PART II - Index and Unit Score Index Ind		iviarginai						/larginai			iviarginai			iviarginai	
Specific Conductivity		tent and Perennial			_			Perennial Stre			t and Perennial S			ittent and Perennial St	
Specific Conductivity			,		•		· · · · · · · · · · · · · · · · · · ·		,	· · · ·			· · · ·		,
100-190-85 points	Specific Conductivity													,	
100-190-85 points		0-90			0-90		0-9	90			0-90			0-90	
5.6-6.0 = 45 points 9-00 DO	100-199 - 85 points			w11			all			-11			-11		
Signature of the state of the s	рп	0-1		рн	0-1		рп	0-1		рн	0-1		рп	0-1	
Sub-Total Sub-To	5.6-6.0 = 45 points	0-80			5-90		5-9	90			5-90			5-90	
Sub-Total Sub-To	DO			DO			DO			DO			DO		
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) NV Stream Condition Index (WVSCI) O 0 10 0 0 1		10-30			10-30		10-3	30			10-30			10-30	
BIOLOGICAL INDICATOR (Applies to Intermittent and Perennial Streams) NV Stream Condition Index (WVSCI) O 0 10 0 0 1	Sub-Total			Sub-Total	0		Sub-Total		0	Sub-Total		0	Sub-Total		0
O 0-100 0-1 O 0-100 0-100 0-1 O 0-100 0-10		nittent and Perennia	al Streams)		nittent and Perennial Streams)			and Perenni	al Streams)		ittent and Peren	nial Streams)		ermittent and Perenn	ial Streams)
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score Index Linear Feet Unit Score	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score PART II - Index and Unit Score Index Index Linear Feet Unit Score Index Linear Feet Unit Score Unit Score Unit Score Index Unit Score Index Unit Score Index Unit Score Index Unit Score Index Ind	0	0-100 0-1			0-100 0-1		0-10	00 0-1			0-100 0-1			0-100 0-1	
Index Linear Feet Unit Score Index Linear Feet Unit Score Index Linear Feet Unit Score U	Sub-Total		0	Sub-Total	0		Sub-Total	I .	0	Sub-Total	•	0	Sub-Total	.	0
	PART II - Index and	Unit Score		PART II - Index and	Unit Score		PART II - Index and Unit S	Score		PART II - Index and U	nit Score		PART II - Index an	d Unit Score	
												1 11 11 0			1
0.667916667 40 26.7166667 0 40 0 0.389166667 40 15.56666667 0.470833333 40 18.8333333 0.534166667 40 21.36664	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score		Index Lin	near Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
	0.667916667	40	26.7166667	0	40 0		0.389166667	40	15.56666667	0.470833333	40	18.8333333	0.534166667	40	21.366667

West Virginia Stream and Wetland Valuation Metric UT6 of UTPC, Temporary Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING and ILF
Temporal Loss-Const		OV A LL MISS. CO
Note: Reflects duration of aquatic functional loss between the time o mitigation (credit).		% Add. Mitigation ar
Years	15	
Sub-Total	0.3005625	
Temporal Loss-Mai	turity	0 + 5/10 Yea
*Note: Period between completion of compensatory mitigation meas to function (i.e. maturity of tree stratum to provide organic matter ar corridor).		Sub-Total
,		
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)
% Add. Mitigation	Temporal Loss-Maturity (Years)	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)
% Add. Mitigation	Temporal Loss-Maturity (Years) 25 0.213	(Debit)

Long-term Protection								
Long-Term Protection (Years)								
101								
0								

PART IV - Index to Unit Score Conversion							
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)				
1.181479167	40	47.25916667	\$37,807.33				

PART V- Comparison of Unit Scores and Projected Balance										
	Final Unit Score (Debit) 47.25916667 Condition - Baseline 0		Mitigation Projected at Five Years Post Completion (Credit)	15.56666667	Mitigation Projected at Ten Years Post Completion (Credit)	18.83333333	Mitigation Projected At Maturity (Credit)	21.36666667		
	FINAL PROJECTED NET BALANCE		15.56666667		18.83333333		21.36666667			

	Part VI - Mitigation	n Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).			
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT6 UTPC, Temporary Ephemeral	47.25916667	28.845

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Buffer Width	Right Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Average Buffer Width/Side	50							

West Virginia Stream and Wetland Valuation Metric PRC, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COOF	RDINATES: Lat Degrees)	i.	37° 42' 50.26" N	Lon.	82° 12' 37.08" W	WEATHER:	65 Sunny	DATE:	May 19, 2010
STREAM CLASSIFICATION:		Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				Pigeonroost Cree % Streambed Slope, Acro			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acre.		Same (Mitigation is restoration	of temporary impacts)
STREAM IMPACT LENGTH:	858	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORD (in Decimal I	-	t.	37° 42' 50.26" N	Lon.	82° 12' 37.08" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	858
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (C	Credit)		Column No. 3- Mitigation Pro Post Completion		Years	Column No. 4- Mitigation Project Post Completion (Ci		Column No. 5- Mitigation Project	ted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):	,	Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Averag
Hydrology			Hydrology			Hydrolo	gy			Hydrology		Hydrology	
Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeod	hemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat			Habitat			Habitat				Habitat		Habitat	
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Siological Indicator	rs		PART I - Physical, Chemical and	l Biological In	dicators	PART I - Physical, Chemical and B	iological Indicators	PART I - Physical, Chemical an	d Biological Indicators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Ra Scale	nge Site Score		Points Range Site Score		Points Range Site Scor Scale
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	AL INDICATOR (Applies to all stream	ns classifications)	PHYSICAL INDICATOR (Applies to all streams of	classifications)	PHYSICAL INDICATOR (Applies to all stream	ns classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20	7	Epifaunal Substrate/Available Cover	0-20			inal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15
2. Embeddedness	0-20	16	2. Embeddedness	0-20		2. Embe	ddedness	0-20	11	2. Embeddedness	0-20 13	2. Embeddedness	0-20 15
3. Velocity/ Depth Regime	0-20	7	3. Velocity/ Depth Regime	0-20			ty/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20 13	Velocity/ Depth Regime	0-20 13
4. Sediment Deposition	0-20	15	4. Sediment Deposition	0-20			ent Deposition	0-20	11	4. Sediment Deposition	0-20 13	4. Sediment Deposition	0-20
5. Channel Flow Status	0-20 0-1	15	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20	15	5. Channel Flow Status	0-20 0-1 15	5. Channel Flow Status	0-20 0-1 15
6. Channel Alteration	0-20	<u>16</u>	6. Channel Alteration	0-20			nel Alteration	0-20	17	6. Channel Alteration	0-20 17 0-20 15	6. Channel Alteration	0-20 17 0-20 15
7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20	18	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			ency of Riffles (or bends) Stability (LB & RB)	0-20 0-20	18	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20 15 0-20 18	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20 15 0-20 18
9. Vegetative Protection (LB & RB)	0-20	16	9. Vegetative Protection (LB & RB)	0-20			ative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20 10	9. Vegetative Protection (LB & RB)	0-20 16
Vegetative Protection (LB & RB) Registrative Zone Width (LB & RB)	0-20	18	Vegetative Protection (LB & RB) Registrative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20			ian Vegetative Zone Width (LB & RB)	0-20	6	10. Riparian Vegetative Zone Width (LB & RB)	0-20 11	Vegetative Protection (LB & RB) Reparian Vegetative Zone Width (LB & RB)	0-20 16
Total RBP Score	Suboptimal	134	Total RBP Score	Poor	0		P Score	Suboptim	al 123	Total RBP Score	Suboptimal 139	Total RBP Score	Suboptimal 155
Sub-Total		0.67	Sub-Total		0	Sub-Tota	al		0.615	Sub-Total	0.695	Sub-Total	0.775
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	ns)	СНЕМІС	AL INDICATOR (Applies to Intermitt	ent and Perennia	l Streams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	ent and Perennial Streams)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General)				Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gener	al)
Specific Conductivity			Specific Conductivity			Specific	Conductivity			Specific Conductivity		Specific Conductivity	
<=99 - 90 points	0-90	38	nU	0-90		nH	500-599 - 50 points	0-90	500	500-599 - 50 points	0-90 500	500-599 - 50 points	0-90 500
p.,	0-80	6.53		5-90 0-1		ρi1		5-90	-1		5-90 0-1 6.53	pat .	5-90 0-1 6.53
6.0-8.0 = 80 points	0-80	6.53	DO	5-90		DO	6.0-8.0 = 80 points	5-90	6.53	6.0-8.0 = 80 points	5-90 6.53	6.0-8.0 = 80 points	5-90 6.53
	10-30	10.81		10-30			F.O. 00 ". ' :	10-30	10.81	50.00.11	10-30 10.81	50.00	10-30 10.81
Sub-Total	<u> </u>	1	Sub-Total	<u> </u>	0	Sub-Tota	>5.0 = 30 points		0.55	>5.0 = 30 points Sub-Total	0.8	>5.0 = 30 points Sub-Total	0.8
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)	BIOLOG	ICAL INDICATOR (Applies to Inter	mittent and Per	ennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Streams)
WV Stream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)			WV Stre	am Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Very Good	0-100 0-1	78.58		0-100 0-1			Good	0-100	-1 68	Good	0-100 0-1 68	Good	0-100 0-1 68
Sub-Total	•	0.7858	Sub-Total		0	Sub-Tota	al	'	0.68	Sub-Total	0.68	Sub-Total	0.68
PART II - Index and U	Jnit Score		PART II - Index and Un	it Score			PART II - Index and I	Jnit Score		PART II - Index and Uni	it Score	PART II - Index and	Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet U	Init Score		Index	Linear Fe	et Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Sco
0.8186	858	702.3588	0	858	0		0.615	858	527.67	0.725	858 622.05	0.751666667	858 644.93
	1		L			Ь							

PRC, Temporary Perennial (2 of 2)

PART III - Impact Factors

(See instruction page to insert default values for MITIGATION BANKING and ILF) **Temporal Loss-Construction** *Note: Reflects duration of aquatic functional loss between the time of an impact (debit) and completion of compensatory mitigation (credit). Years 0.36837 Sub-Total Temporal Loss-Maturity *Note: Period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. maturity of tree stratum to provide organic matter and detritus within riparian stream or wetland buffer corridor). Temporal Loss-Maturity (Years) % Add. Mitigation 0.32744 Sub-Total

ION BANKING and ILF)							
Long-term Protection							
% Add. M	itigation and Monitoring Period	Long-Term Protection (Years)					
	0 + 5/10 Year Monitoring	101					
Sub-Total		0					

PART IV - Index to Unit Score Conversion							
Final Index Score	Linear Feet	Unit Score	ILF Costs				
(Debit)		(Debit)	(Offsetting Debit Units)				
1.51441	858	1299.36378	\$1,039,491.02				

		PART	V- Comparison of	Unit Scores and Project	ted Balance				
Final Unit Score (Debit) 1299.36378 Condition - Baseline 0		Mitigation Projected at Five Years Post Completion (Credit)	527.67	Mitigation Projected at Ten Years Post Completion (Credit)	622.05	Mitigation Projected At Maturity (Credit)	644.93		
FINAL PROJECTED NET BALANCE		527.67		622.05		644.93			

	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your proj *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
PRC, Temporary Perennial	1299.36378	870.6555

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Buffer Width	Left Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Buffer Width	Right Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Average Buffer Width/Side	50							

PRC, Permanent Perennial (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07		OORDINATES: mal Degrees)	Lat.	37° 42' 55.14"	Lon.	82° 12' 36.15"	WEATHER:	65 Sunny	DATE:	May 19, 2010	
STREAM CLASSIFICATION:		Perennial	IMPACT STREAM/SITE ID (% stream slope, watershed size (ad				Pigeonroost Cree % Streambed Slope, Acre			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acreage}		Same (Mitigation is restoration	Same (Mitigation is restoration of temporary impacts)	
STREAM IMPACT LENGTH:	241	FORM OF MITIGATION:			DRDINATES: mal Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:		
Column No. 1- Impact Existing (Condition (Deb	it)	Column No. 2- Mitigation Existing Co	ndition - Baselir	ne (Credit)		Column No. 3- Mitigation Pro Post Completion		ears ears	Column No. 4- Mitigation Projector Post Completion (Cre		Column No. 5- Mitigation Proje	cted At Maturity (Credit)	
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Averaç	
Hydrology			Hydrology				Hydrology			Hydrology		Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0	
Habitat			Habitat				Habitat			Habitat		Habitat		
PART I - Physical, Chemical and B	Biological Indic	ators	PART I - Physical, Chemical and	Biological Indic	ators		PART I - Physical, Chemical and	l Biological Inc	licators	PART I - Physical, Chemical and Bio	ological Indicators	PART I - Physical, Chemical ar	id Biological Indicators	
	Points Range Scale	Site Score		Points Range Scale	e Site Score			Points Rai	nge Site Score		Points Range Site Score Scale		Points Range Site Sco	
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)			PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams cla	assifications)	PHYSICAL INDICATOR (Applies to all strea	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	9	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20			0-20	Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	2. Embeddedness	0-20			2. Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	7	3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime	0-20			0-20	Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	14	4. Sediment Deposition	0-20			Sediment Deposition	0-20		<u> </u>	0-20	Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	13	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20	-1		0-20 0-1	5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20			6. Channel Alteration	0-20			0-20	Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends)	0-20			0-20	7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	17	8. Bank Stability (LB & RB)	0-20			8. Bank Stability (LB & RB)	0-20			0-20	8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20			9. Vegetative Protection (LB & RB)	0-20			0-20	9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Suboptimal	18 131	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0		10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor 0	
Sub-Total	Suboptimai	0.655	Sub-Total	Poor	0		Sub-Total	Poor	0	Sub-Total	0	Sub-Total	0	
CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St			CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial		CHEMICAL INDICATOR (Applies to Intermittent and		CHEMICAL INDICATOR (Applies to Intermit		
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Genera	I)			WVDEP Water Quality Indicators (Gener	al\		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (General	·al\	
Specific Conductivity			Specific Conductivity	ı <u>)</u>			Specific Conductivity	ai)		Specific Conductivity		Specific Conductivity	ai)	
	0-90	20	opeoine contactivity	0-90				0-90			0-90	opposition of the day of the same of the s	0-90	
<=99 - 90 points	0-90	38		0-90				0-90			0-90		0-90	
pH		60	рН		(1)		pH			pH		рН		
6.0-8.0 = 80 points	0-80	6.53		5-90				5-90	-1		5-90		5-90 0-1	
0.0-0.0 = 80 points			DO	1			DO			DO		DO		
Ī	10.00	40.04		40.00				40.00		T	40.00		40.00	
	10-30	10.81		10-30				10-30			10-30		10-30	
Sub-Total		1	Sub-Total		0		Sub-Total		0	Sub-Total	0	Sub-Total	0	
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	mittent and Pere	ennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial Streams)	
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
Very Good	0-100 0-1	78.58		0-100 0-1				0-100 0	-1		0-100 0-1		0-100 0-1	
Sub-Total		0.7858	Sub-Total		0		Sub-Total		0	Sub-Total	0	Sub-Total	0	
	'								•		'	•	•	
PART II - Index and Un	nit Score		PART II - Index and U	nit Score			PART II - Index and	Jnit Score		PART II - Index and Unit	Score	PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fe	et Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Sco	
			Huox		J 50010		Muox	21001 7 61	2 23010		Zii Colii Coole	IIIdox	2	
0.8136	241	196.0776	0	0	0		0	0	0	0	0 0	0	0 0	
			IL	I						1				

PRC, Permanent Perennial (2 of 2)

PART III - Impact Factors

	(See instructio
Temporal Loss-Construction	
Note: Reflects duration of aquatic functional loss between the time of an impac	et (debit) and completion of compensator
mitigation (credit).	
Versus	45
Years Sub Total	0.36612
Sub-Total Sub-Total	0.30012
Temporal Loss-Maturity	
Temporal Loss-Maturity *Note: Period between completion of compensatory mitiration measures and t	he time required for maturity, as it relates
*Note: Period between completion of compensatory mitigation measures and t	•
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus	•
*Note: Period between completion of compensatory mitigation measures and t	•
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus	•
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and t to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within riparian stream or wetland buffer

page to insert default values for MITIGATION BANKING and ILF)									
	Long-term Protection								
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)							
		404							
	0 + 5/10 Year Monitoring	101							
	Sub-Total	0							

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.50516	241	362.74356	\$290,194.85						

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	362.74356	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Considerations (Incen	tives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
PRC, Permanent Perennial	362.74356	#DIV/0!

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank					
	0-50					
	51-150					
Buffer Width	Right Bank					
	0-50					
	51-150					
Average Buffer Width/Side	0					

West Virginia Stream and Wetland Valuation Metric PRC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COORDI (in Decimal Dec	_	37° 42' 37.14"	Lon.	82° 12' 35.53"	WEATHER:	65 Sunny	DATE:	May 19, 2010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			Pigeonroost Cr % Streambed Slope, A	reek of Pigeon Cree Acre Watershed, Ma		MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea			
STREAM IMPACT LENGTH:	1855	FORM OF MITIGATION:		MIT COORDINA (in Decimal Dec	-		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	0
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Cred	dit)	Column No. 3- Mitigation F Post Completic		s	Column No. 4- Mitigation Projec Post Completion (Cr		Column No. 5- Mitigation Projec	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Ave	erage	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.75		Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling	0.99	0.9	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat	0.96		Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicators		PART I - Physical, Chemical a	and Biological Indica	tors	PART I - Physical, Chemical and B	iological Indicators	PART I - Physical, Chemical an	nd Biological Indicators
	Points Range Scale	Site Score		Points Range Site	Score		Points Range Scale	Site Score		Points Range Site Score		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all str	reams classifications)		PHYSICAL INDICATOR (Applies to all streams of	elassifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data She	et)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20		1. Epifaunal Substrate/Available Cover	0-20			0-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	11	2. Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	5	3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	3. Velocity/ Depth Regime	0-20
Sediment Deposition	0-20	11	Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20	7	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	5. Channel Flow Status	0-20
6. Channel Alteration	0-20	19	6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	6	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20	11	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20
9. Vegetative Protection (LB & RB)	0-20	16	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20
10. Riparian Vegetative Zone Width (LB & RB)	0-20	19	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & R	(B) 0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	10. Riparian Vegetative Zone Width (LB & RB)	0-20
Total RBP Score	Suboptimal	116	Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total		0.58	Sub-Total		0	Sub-Total		0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intern	mittent and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)
WVDEP Water Quality Indicators (General	ıl)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Ger	neral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gener	ral)
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
	0-90	39		0-90			0-90			0-90		0-90
<=99 - 90 points												
рн	0-1		рн	0-1		рн	0-1		рн	0-1	рн	0-1
8.1-9.0 = 45 points	0-80	8.81		5-90			5-90			5-90		5-90
DO		(1)	DO			DO	•		DO		DO	
	10-30	13.68		10-30			10-30			10-30		10-30
	10-30			10-30			10-30					10-30
Sub-Total		0.825	Sub-Total		0	Sub-Total		0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams	s)	BIOLOGICAL INDICATOR (Applies to In	ntermittent and Perennia	al Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	tent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial Streams)
WV Stream Condition Index (WVSCI)	T T		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Good	0-100 0-1	75.82		0-100 0-1			0-100 0-1			0-100 0-1		0-100 0-1
Sub-Total	I I	0.7582	Sub-Total	1	0	Sub-Total	1 1	0	Sub-Total	0	Sub-Total	0
				<u> </u>				-	1			<u> </u>
PART II - Index and U	Jnit Score		PART II - Index and Un	nit Score		PART II - Index an	nd Unit Score		PART II - Index and Uni	t Score	PART II - Index and	Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Unit	Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.810533333	1855	1503.53933	0	0	n II	0	0	Λ I	0	0 0	0	0 0

West Virginia Stream and Wetland Valuation Metric PRC, Intermittent (2 of 2)

		PART III - Impact Factors			
	(See instruction	page to insert default values for MITIGATION BANKING a	nd ILF)		
Temporal Loss-Constructio	n		L	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an im	pact (debit) and completion of compensatory	% Add. Mitiga	tion and Monitoring Period	Lor	ng-Term Protection (Years)
mitigation (credit).					
Years Sub-Total	15 0.36474				
Temporal Loss-Maturity		0++	5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures ar		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detri	itus within riparian stream or wetland buffer				
corridor).			PART IV - Inc	dex to Unit Score C	onversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit
70 / Idai / Illingano / I	remperal 2000 matarity (10are)	1.4637	1855	2715.1635	\$2,172,130.8
30%	25				
Sub-Total Sub-Total	0.288426667				

	PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value] 2715.1635 Mitigation Existing Condition - Baseline (Credit) Mitigation Projected at Five Years Post Completion (Credit) Mitigation Projected at Five Years Post Completion (Credit) Mitigation Projected at Five Years Post Completion (Credit)										
FINAL PROJECTED NET BALANCE					0		0		0	

THAL I NOOLOTED HET DALANGE		0		0	
	Part VI - Mitigation	n Considerations (Incer	itives)		
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restora *Note2: Place an "X" in the appropriate category (only	. , , , ,		*Note ¹ : Refe	rence Instructional handout for the *Note ² : Enter the buffer width	for each channel sid
Level I Restoration				*Note*: Selec	t the appropriate m
Level II Restoration			Buffer Width		Lef
Level III Restoration				0-50	
		_		51-150	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
PRC, Intermittent	2715.1635	#DIV/0!

uffer Zone

e Buffer Zone Mitigation Extents and Types (below) I side (Left Bank and Right Bank)

e mitigation type

Buffer Width		Left Bank
	0-50	
	51-150	
Buffer Width		Right Bank
	0-50	
	51-150	
Average Buffer	0	
Width/Side	J	

PRC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			lo Mt. Surface Mine ermit No. S-5018-07		ORDINATES: L al Degrees)	Lat.	37° 42' 25.59"	Lon.	82° 12' 39.26"	WEATHER:	6	5 Sunny	DATE:	May 19,	, 2010
STREAM CLASSIFICATION:	1	Ephemeral	IMPACT STREAM/SITE ID (% stream slope, watershed size {a				Pigeonroost Creek % Streambed Slope, Acre			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	35	FORM OF MITIGATION:			RDINATES: L	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Co	ondition - Baselin	e (Credit)		Column No. 3- Mitigation Proj Post Completion (ears ears	Column No. 4- Mitigation Proje Post Completion (C		rs	Column No. 5- Mitigation Projec	ted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	H	GM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Ну	drology			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.83	Biogeochemical Cycling		0	Bi	ogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat			Ha	bitat			Habitat			Habitat		
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and	Biological Indica	itors		PART I - Physical, Chemical and	Biological Inc	licators	PART I - Physical, Chemical and É	Biological Indica	ators	PART I - Physical, Chemical and	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rai	nge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PH	HYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			US	SEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1.	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	18	2. Embeddedness	0-20		2.	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	14	Sediment Deposition	0-20			Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20		5.	Channel Flow Status	0-20	-1	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20		6.	Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20			Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB)	0-20	16	Vegetative Protection (LB & RB)	0-20			Vegetative Protection (LB & RB)	0-20		Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	20	10. Riparian Vegetative Zone Width (LB & RB)	0-20			. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Marginal	103 0,515	Total RBP Score	Poor	0		tal RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St		Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Str	eams)		b-Total HEMICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	Sub-Total CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	Sub-Total CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	
		- Carrier	· · · ·		odino)				ou ou may			oumo,	· · · ·		,ao,
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General	ıl)			VDEP Water Quality Indicators (Genera	ıl)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity	_		Specific Conductivity		(1)	Sp	ecific Conductivity			Specific Conductivity			Specific Conductivity		
100-199 - 85 points	0-90			0-90				0-90			0-90			0-90	
pH		433	На		0	рŀ				На			На		
	0-80			5-90 0-1				5-90	-1		5-90 0-1			5-90 0-1	
5.6-6.0 = 45 points						L									
DO			DO			DC				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	11		Sub-Total		0	Su	b-Total		0	Sub-Total	L	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perennial	Streams)		OLOGICAL INDICATOR (Applies to Interr	mittent and Pere	ennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenni	al Streams)	BIOLOGICAL INDICATOR (Applies to Interi	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			w	V Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100 0	-1		0-100 0-1			0-100 0-1	/
0		_			_	_			_			_			
Sub-Total		0	Sub-Total		0	Su	ıb-Total		0	Sub-Total		0	Sub-Total		0
PART II - Index and U	Unit Score		PART II - Index and U	Init Score			PART II - Index and U	Init Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fe	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.70625	35	24 7197F	0	0			0	0		0	0	0	0	0	0
0.70023	1 33	24.71875	l v	ı			U			ıı U İ	U	U	ı	ı U	

West Virginia Stream and Wetland Valuation Metric PRC, Ephemeral (2 of 2)

		(See instruction	PART III - Im page to insert default va	npact Factors alues for MITIGATIO	ON BANKING and	I ILF)				
Temp	oral Loss-Construction					Lor	ng-term Protection			
*Note: Reflects duration of aquatic functional loss	between the time of an impac	ct (debit) and completion of compensatory			% Add. Mitigation	on and Monitoring Period		Long-Term Protection (Years)		
	mitigation (credit).				<u> </u>			``		
Years		15								
Sub-Total		0.3178125								
	nporal Loss-Maturity					0 Year Monitoring		101		
*Note: Period between completion of compensato					Sub-Total			0		
to function (i.e. maturity of tree stratum to provid	witnin riparian stream or wetiand buπer		ī		DARTIN/ L. L.		No. 10.11.			
					PART IV - Inde	ex to Unit Score (
% Add. Mitigation			Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit U	nits)			
					1.2570625	35	43.9971875	\$35,197.75		
				•						
30%		25								
Sub-Total		0.233								
		PART	V- Comparison of Unit	Scores and Project	ted Balance					
Final Unit Score (Debit) [No Net Loss Value]	43.9971875	Mitigation Existing Condition - Baseline (Credit)		gation Projected at Five Years Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE					0		0		0	
			Part VI - Mitigation Con	siderations (Incent	tives)					
	Extent of Stream Re	storation				Fytendo	ed Upland Buffer Z	one		
*Note1: Reference the Instruction		orrect Restoration Levels (below) for your pro	piect		*Note1: Refer			Zone Mitigation Extents and Types	(below)	
	Place an "X" in the appropriate of		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			*Note ² : Enter the buffer width			(201011)	
Loyal I Postoration						*Note ³ : Selec	t the appropriate mitiga	tion type		
Level I Restoration Level II Restoration				-	Buffer Width		Left B	ank		
Level III Restoration					Sanor Water	0-50	LOIT D			
						51-150				
					Buffer Width		Right E	Bank		
						0-50				
						51-150				
					Average Buffer Width/Side	0				

Mitigation Unit

Yield (Credit)

#DIV/0!

Impact

Unit Yield (Debit)

43.9971875

Site

PRC, Ephemeral

West Virginia Stream and Wetland Valuation Metric LFPRC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: I Il Degrees)	Lat.	37° 42' 34.78"	Lon.	82° 12' 33.04"	WEATHER:	(65 Sunny	DATE:	May 19,	2010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				Left Fork of Pigeonroos % Streambed Slope, Acr			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	30	FORM OF MITIGATION:			DINATES: I Il Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0	
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Projection (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cre	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HC	M Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Ну	irology			Hydrology			Hydrology		
Biogeochemical Cycling	0.99	0.9	Biogeochemical Cycling		0		geochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.96		Habitat			На	oitat			Habitat			Habitat		
PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicat	ors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicat	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		РН	YSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			us	EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20		1.	pifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	Embeddedness	0-20			mbeddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	7	3. Velocity/ Depth Regime	0-20			/elocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	4. Sediment Deposition	0-20			Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
Channel Flow Status Channel Alteration	0-20 0-1	6 16	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
Channel Alteration Frequency of Riffles (or bends)	0-20	6	Channel Alteration Frequency of Riffles (or bends)	0-20			Channel Alteration Trequency of Riffles (or bends)	0-20		Channel Alteration Frequency of Riffles (or bends)	0-20		Channel Alteration Frequency of Riffles (or bends)	0-20	-
8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 0-20			Bank Stability (LB & RB)	0-20 0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	18	9. Vegetative Protection (LB & RB)	0-20			regetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
10. Riparian Vegetative Zone Width (LB & RB)	0-20	20	10. Riparian Vegetative Zone Width (LB & RB)	0-20			Riparian Vegetative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Suboptimal	134	Total RBP Score	Poor	0		al RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.67	Sub-Total		0	Su	-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Stre	ams)	СН	EMICAL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Strea	ams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)		w	DEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Sp	ecific Conductivity			Specific Conductivity			Specific Conductivity		
<=99 - 90 points	0-90	39		0-90				0-90			0-90			0-90	
<=99 - 90 points		43	рН			рН				ρΗ			рН		
	0-80	8.81		5-90 0-1				5-90 0-1			5-90 0-1			5-90 0-1	
8.1-9.0 = 45 points	L 3 3 3	0.01				L									
DO .			טט	-		DC				JU T			DU		
	10-30	13.68		10-30				10-30			10-30			10-30	
Sub-Total		0.825	Sub-Total		0	Su	-Total		0	Sub-Total	· · · · · · · · · · · · · · · · · · ·	0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial S	treams)	віс	LOGICAL INDICATOR (Applies to Inter	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial	ıl Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			w	Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	75.82		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	1	0.7582	Sub-Total	1	0	Su	-Total		0	Sub-Total		0	Sub-Total	1	0
			•	<u>'</u>										<u>, </u>	
PART II - Index and Ur	nit Score		PART II - Index and Ui	nit Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.82552222	30	24.766	0	0	0		0	0		0	0	0	0	0	
0.825533333	30	24.766	U	U	U	L	<u> </u>	U	U	U	U	U		U	

West Virginia Stream and Wetland Valuation Metric LFPRC, Intermittent (2 of 2)

			PART III - Impact Factors						
		(See instruction	to insert default values for MITIGA	TION BANKING and	d ILF)				
Temp	oral Loss-Construction					ong-term Protection			
*Note: Reflects duration of aquatic functional loss		t (debit) and completion of compensatory		% Add. Mitigati	on and Monitoring Period	Lo	ong-Term Protection (Years)		
	mitigation (credit).								
Voore		15							
Years Sub-Total		0.37149							
Sub-10tal		0.37 143							
Tei	mporal Loss-Maturity			0 + 5/	10 Year Monitoring		101		
*Note: Period between completion of compensate		ne time required for maturity, as it relates		Sub-Total			0		
to function (i.e. maturity of tree stratum to provid	=	within riparian stream or wetland buffer							
	corridor).				PART IV - Inde	ex to Unit Score	Conversion		
				Final Index Score	Linear Feet	Unit Score	ILF Costs		
% Add. Mitigation		Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit U	nits)	
				1.49745	30	44.9235	\$35,938.80		
30%		25							
Sub-Total		0.300426667							
		PART	omparison of Unit Scores and Proje	ected Balance					
		TANT	- Comparison of the cooles and From	oted Balarioe					
Final Unit Score (Debit) [No Net Loss Value]	44.9235	Mitigation Existing Condition - Baseline (Credit)	Mitigation Projected a Five Years Post Completion (Credi		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)		
FINAL PROJECTED NET BALANCE				0		0		0	
			•	•					
			VI - Mitigation Considerations (Ince	entives)					
	Extent of Stream Res nal handout to determine the co Place an "X" in the appropriate o	prrect Restoration Levels (below) for your pro		*Note ¹ : Refe	rence Instructional handout for the *Note ² : Enter the buffer width		r Zone Mitigation Extents and Types Left Bank and Right Bank)	(below)	
Level II Restoration				Buffer Width		Left B	ank		
Level III Restoration	<u> </u>				0-50				
					51-150				
				Buffer Width	0.50	Right	Bank		
					0-50				
				Avorage Buffer	51-150				
				Average Buffer Width/Side	0				

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFPRC, Intermittent	44.9235	#DIV/0!

West Virginia Stream and Wetland Valuation Metric LFPRC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	ORDINATES: L I Degrees)	_at.	37° 42' 39.50"	Lon.	82° 11' 57.86"	WEATHER:	6	65 Sunny	DATE:	May 19, 20	010
STREAM CLASSIFICATION:	E	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				Left Fork of Pigeonroos % Streambed Slope, Acr			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	110	FORM OF MITIGATION:		MIT COOR (in Decima		_at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0	
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Projection (C		ars	Column No. 5- Mitigation Project	ted At Maturity (Cred	dit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydro	logy			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.83	Biogeochemical Cycling		0		ochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat			Habita				Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicate	ors		PART I - Physical, Chemical and	d Biological Indi	cators	PART I - Physical, Chemical and É	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicator	rs
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYS	CAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epif	aunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	18	2. Embeddedness	0-20			peddedness	0-20		2. Embeddedness	0-20		Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	16	Sediment Deposition	0-20			iment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			nnel Flow Status	0-20 0-1		5. Channel Flow Status	0-20		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			nnel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			quency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20			k Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	18 20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			etative Protection (LB & RB) arian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Marginal	106	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	, marginar	0.53	Sub-Total	1 00.	0	Sub-T		1 001	0	Sub-Total	1 001	0	Sub-Total	, , , , ,	0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	CHEM	ICAL INDICATOR (Applies to Intermit	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ns)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)		WVDE	P Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity	•		Specific Conductivity			Speci	ic Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 11	0-90			0-90				0-90			0-90			0-90	
100-199 - 85 points			nH			nН				nH			nH		
pi i	0-1		pii	0-1		PII		0-1		β11	0-1		5 11	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO	_	
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	l l		Sub-Total	1 1	0	Sub-T	otal		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial St	reams)	BIOLO	GICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial S	Streams)
WV Stream Condition Index (WVSCI)	ı		WV Stream Condition Index (WVSCI)	, ,		WV S	ream Condition Index (WVSCI)	1		WV Stream Condition Index (WVSCI)	•		WV Stream Condition Index (WVSCI)		
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	l l	0	Sub-Total	1 1	0	Sub-T	ntal .		0	Sub-Total		0	Sub-Total		0
Sub-Total		· ·	Sub-1 otal	<u> </u>	U	Sub-1	otai		U	Sub-Total		U	Sub-10tai		U
PART II - Index and Ur	nit Score		PART II - Index and Ui	it Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score
0.74	140	79.1	0	0	0		0	0		0	0	0	0	0	
0.71	110	78.1	<u></u>	0	U		<u> </u>	U	U	U	U	U	U	U	U

LFPRC, Ephemeral (2 of2)

	(See instruction	PART III - Impact Factors page to insert default values for MITI
*Note: Reflects duration of aquatic functional loss between the time of an impacting mitigation (credit).	et (debit) and completion of compensatory	
Years Sub-Total	15 0.3195	
*Note: Period between completion of compensatory mitigation measures and the to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
	0.5	
30% Sub-Total	25 0.236	

for MITIGATI	ON BANKING and ILF)	
	Loi	ng-term Protection
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)
	0 + 5/10 Year Monitoring	101
	Sub-Total	0

PART IV - Index to Unit Score Conversion								
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)					
1.2655	110	139.205	\$111,364.00					

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	139.205	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE		0		0		0			

	Part VI - Mitigatior	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration		Buffer V	
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
LFPRC, Ephemeral	139.205	#DIV/0!

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						

UT1 of UT1 of PRC, Temporary Ephemeral (1 of 2)

USACE FILE NO./Project Name:			Mt. Surface Mine nit No. S-5018-07	IMPACT COORDINAT (in Decimal Degrees		37° 43′ 5.35″ N	Lon.	82° 12' 43.58" W	WEATHER:	65 Sunny	DATE:	May 19, 2010
STREAM CLASSIFICATION: Ephemeral IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)				UT1 of UT1 of Pigeonro % Streambed Slope, Ac			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre		Same (Mitigation is restoration of temporary impacts)			
STREAM IMPACT LENGTH:	55	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES (in Decimal Degrees		37° 43' 5.35" N	Lon.	82° 12' 43.58" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	55
Column No. 1- Impact Existing	g Condition (Del	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Pr Post Completion		Years	Column No. 4- Mitigation Project Post Completion (C		Column No. 5- Mitigation Project	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	e	HGM Score (attach data forms):	<u> </u>	Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.75		Hydrology			Hydrology	0.58		Hydrology	0.64	Hydrology	0.71
Biogeochemical Cycling	0.88	0.83	Biogeochemical Cycling	0		Biogeochemical Cycling	0.51	0.51	Biogeochemical Cycling	0.71 0.64	Biogeochemical Cycling	0.81 0.78
PART I - Physical, Chemical and	0.86 d Biological Indic	ators	PART I - Physical, Chemical and E	iological Indicators		PART I - Physical, Chemical at	0.44 nd Biological In	dicators	Habitat PART I - Physical, Chemical and E	0.57 Biological Indicators	PART I - Physical, Chemical an	0.82 nd Biological Indicators
	Points Range Scale	Site Score		Points Range Site Score	e		Scale	ange Site Score		Points Range Site Score Scale		Points Scale Site Score
PHYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all street	ams classifications	5)	PHYSICAL INDICATOR (Applies to all streams	classifications)	PHYSICAL INDICATOR (Applies to all stream	ms classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	,		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20 0	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	13	2. Embeddedness	0-20		2. Embeddedness	0-20	0	2. Embeddedness	0-20	2. Embeddedness	0-20 15
Velocity/ Depth Regime Sediment Deposition	0-20 0-20	12	Velocity/ Depth Regime Sediment Deposition	0-20 0-20		Velocity/ Depth Regime Sediment Deposition	0-20 0-20	11	Velocity/ Depth Regime Sediment Deposition	0-20 0 0-20 13	Velocity/ Depth Regime Sediment Deposition	0-20 0 0-20 15
5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20		5. Channel Flow Status	0-20	0	5. Channel Flow Status	0-20 0	5. Channel Flow Status	0-20 0
6. Channel Alteration	0-20	12	6. Channel Alteration	0-20 0-1		6. Channel Alteration	0-20	0-1	6. Channel Alteration	0-20 0-1 17	6. Channel Alteration	0-20 0-1 17
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20	7. Frequency of Riffles (or bends)	0-20 0
8. Bank Stability (LB & RB)	0-20	8	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	8. Bank Stability (LB & RB)	0-20 18
9. Vegetative Protection (LB & RB)	0-20	16	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20 16
10. Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Riparian Vegetative Zone Width (LB & RB		6	10. Riparian Vegetative Zone Width (LB & RB)	0-20 11	10. Riparian Vegetative Zone Width (LB & RB)	
Total RBP Score Sub-Total	Marginal	79 0,395	Total RBP Score Sub-Total	Poor 0		Total RBP Score Sub-Total	Margina	0.345	Total RBP Score Sub-Total	Marginal 83 0.415	Total RBP Score Sub-Total	Marginal 97 0.485
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St		CHEMICAL INDICATOR (Applies to Intermitten			CHEMICAL INDICATOR (Applies to Interm	ittent and Perenni		CHEMICAL INDICATOR (Applies to Intermittent		CHEMICAL INDICATOR (Applies to Intermitt	
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Generation	ral)
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
100-199 - 85 points	0-90			0-90			0-90			0-90		0-90
pH		43	рН			pH			рН		рН	
5.6-6.0 = 45 points	0-80			5-90 0-1			5-90	0-1		5-90		5-90
DO		0	DO	0		DO			DO		DO	
	10-30			10-30			10-30			10-30		10-30
Sub-Total			Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	
BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Int	ermittent and Pe	rennial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit		BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
0	0-100 0-1			0-100 0-1			0-100	0-1		0-100 0-1		0-100 0-1
Sub-Total		0	Sub-Total	0		Sub-Total		0	Sub-Total	0	Sub-Total	0
PART II - Index and U	Unit Score		PART II - Index and Un	it Score		PART II - Index and	I Unit Score		PART II - Index and Un	it Score	PART II - Index and	Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Sco	re	Index	Linear Fe	eet Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
	55	37.19375	0	55 0		0.34125	55	18.76875	0.42375	55 23.30625	0.51125	55 28.11875
0.67625												

West Virginia Stream and Wetland Valuation Metric UT1 of UT1 of PRC, Temporary Ephemeral (2 of 2)

	(See instruction	PART III - Impact Fact page to insert default values for I
Temporal Loss-Construction		
Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	ct (debit) and completion of compensatory	
Years	15	
Sub-Total	0.3043125	
Temporal Loss-Maturity		
Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
30% ub-Total	25 0.209	
up-10tal	0.209	

default values for MITIGATION BANKING and ILF)								
	Long-term Protection							
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)						
	0 + 5/10 Year Monitoring	101						
	Sub-Total	0						

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)						
1.1895625	55	65.4259375	\$52,340.75						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	65.4259375	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	18.76875	Mitigation Projected at Ten Years Post Completion (Credit)	23.30625	Mitigation Projected At Maturity (Credit)	28.11875	
FINAL PROJECTED NET BALANCE		18.76875		23.30625		28.11875				

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).			
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT1 of UT1 of PRC, Temporary Ephemeral	65.4259375	37.9603125

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Buffer Width	Right Bank							
	0-50	Preservation and Re-vegetation						
50	51-150							
Average Buffer Width/Side	50							

UT2 of PRC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07	IMPACT COORDINAT		37° 42' 51.95" N	Lon.	82° 12' 37.06" W	WEATHER:	65 Sunny	DATE:	May 19, 2010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr			UT2 of Pigeonroost (% Streambed Slope, Act			MITIGATION STREAM CLASS./S (% stream slope, watershed size {a	ITE ID AND SITE DESCRIPTION (Creage), unaltered or impairments)	ON: Same (Mitigation is restoration	on of temporary impacts)
STREAM IMPACT LENGTH:	159	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORDINATES (in Decimal Degrees		37° 42' 51.95" N	Lon.	82° 12' 37.06" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	159
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Pro Post Completion		Column No. 5- Mitigation Proje	ected At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	,	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.72		Hydrology			Hydrology	0.58		Hydrology	0.64	Hydrology	0.71
Biogeochemical Cycling	0.96	0.81666667	Biogeochemical Cycling	0		Biogeochemical Cycling	0.51	0.51	Biogeochemical Cycling	0.71 0.64	Biogeochemical Cycling	0.81 0.78
Habitat	0.77		Habitat			Habitat	0.44		Habitat	0.57	Habitat	0.82
PART I - Physical, Chemical and	l Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicators		PART I - Physical, Chemical an	nd Biological Indic	ators	PART I - Physical, Chemical and	d Biological Indicators	PART I - Physical, Chemical a	nd Biological Indicators
	Points Range Scale	Site Score		Points Range Site Score	•		Points Range Scale	e Site Score		Points Range Site Score		Points Range Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	PHYSICAL INDICATOR (Applies to all stream	ams classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	:)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet	t)
Epifaunal Substrate/Available Cover	0-20	16	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	 Epifaunal Substrate/Available Cover 	0-20 15
2. Embeddedness	0-20	16	2. Embeddedness	0-20		2. Embeddedness	0-20	11	Embeddedness	0-20	2. Embeddedness	0-20 15
3. Velocity/ Depth Regime	0-20	10	Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	Velocity/ Depth Regime	0-20 13
4. Sediment Deposition	0-20	16	Sediment Deposition	0-20		Sediment Deposition	0-20	11	Sediment Deposition	0-20 13	Sediment Deposition	0-20 15
5. Channel Flow Status	0-20 0-1	8	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	8	5. Channel Flow Status	0-20 10	5. Channel Flow Status	0-20 0-1 10
6. Channel Alteration	0-20	14	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	6	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15	7. Frequency of Riffles (or bends)	0-20 15
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20 18	Bank Stability (LB & RB)	0-20 18
9. Vegetative Protection (LB & RB)	0-20	18	9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	9. Vegetative Protection (LB & RB)	0-20 16
Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Suboptimal	18 138	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 0		 Riparian Vegetative Zone Width (LB & RB) Total RBP Score 	0-20 Suboptimal	6 116	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 11 Suboptimal 134	 Riparian Vegetative Zone Width (LB & RB) Total RBP Score 	
Sub-Total	Suboptimal	0.69	Sub-Total	0		Sub-Total	Suboptimal	0.58	Sub-Total	0.67	Sub-Total	Suboptimal 150 0.75
CHEMICAL INDICATOR (Applies to Intermitted	ent and Perennial Str		CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Streams)		CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial S		CHEMICAL INDICATOR (Applies to Intermitte		CHEMICAL INDICATOR (Applies to Intermi	
WVDEP Water Quality Indicators (General	i)		WVDEP Water Quality Indicators (General)	·		WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General	al)	WVDEP Water Quality Indicators (Gene	eral)
Specific Conductivity	,		Specific Conductivity	0		Specific Conductivity	,		Specific Conductivity		Specific Conductivity	,
-	0-90	39		0-90			0-90	500		0-90 500		0-90 500
<=99 - 90 points	0.00	- 55		0 00		500-599 - 50 points		300	500-599 - 50 points	300	500-599 - 50 points	300
рН	0.1		рН	0.1		рН	0.1		рН	0.1	рН	0.1
8.1-9.0 = 45 points	0-80	8.81		5-90		8.1-9.0 = 45 points	5-90	8.81	8.1-9.0 = 45 points	5-90 8.81	8.1-9.0 = 45 points	5-90 8.81
DO .		(0.0)	DO	0		DO			DO		DO	
	10-30	13.68		10-30			10-30	13.68		10-30 13.68		10-30 13.68
Sub-Total		0.825	Sub-Total	0		>5.0 = 30 points Sub-Total		0.375	>5.0 = 30 points Sub-Total	0.625	>5.0 = 30 points Sub-Total	0.625
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams)		BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Pereni	_	BIOLOGICAL INDICATOR (Applies to Inter		BIOLOGICAL INDICATOR (Applies to Inte	,
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
	0-100 0-1	75.82		0-100 0-1			0-100 0-1	68		0-100 0-1 68		0-100 0-1 68
Good Sub-Total		0.7582	Sub-Total	0		Good Sub-Total		0.68	Good Sub-Total	0.68	Good Sub-Total	0.68
Sub-Total		0.7302	Sub-10tal			Sub-Total		0.00	Sub-10tai	0.00	Sub-Total	0.00
PART II - Index and U	Jnit Score		PART II - Index and Ur	it Score		PART II - Index and	Unit Score		PART II - Index and	Unit Score	PART II - Index and	d Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet Unit Sco	re	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.7872	159	125.1648	0	159 0	il .	0.5275	159	83.8725	0.649166667	159 103.2175	0.7325	159 116.4675

West Virginia Stream and Wetland Valuation Metric UT2 of PRC, Temporary Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING	and ILF)		
Temporal Loss-Constru	ıction		L	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of mitigation (credit).		% Add. M	tigation and Monitoring Period		ng
Years	15				
Sub-Total	0.35424				
Temporal Loss-Matu	rity		0 + 5/10 Year Monitoring		
*Note: Period between completion of compensatory mitigation measur to function (i.e. maturity of tree stratum to provide organic matter and		Sub-Total			
corridor).			PART IV - In	dex to Unit Score (Cor
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index S (Debit)	core Linear Feet	Unit Score (Debit)	
		1.44453333	3 159	229.6808	
30%	25				
Sub-Total	0.303093333				

0 + 5/1	0 Year Monitoring	101						
Sub-Total		0			0			
PART IV - Index to Unit Score Conversion								
Final Index Score	Linear Feet	Unit Score	ILF Costs					
(Debit)		(Debit)	(Offsetting Debit Units)					

Long-Term Protection (Years)

\$183,744.64

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	229.6808	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	83.8725	Mitigation Projected at Ten Years Post Completion (Credit)	103.2175	Mitigation Projected At Maturity (Credit)	116.4675	
FINAL PROJECTED NET BALANCE		83.8725		103.2175		116.4675				

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your p *Note2: Place an "X" in the appropriate category (only select one).	roject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT2 of PRC, Temporary Intermittent	229.6808	157.231125

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Left Bank								
0-50	Preservation and Re-vegetation							
51-150								
Right Bank								
0-50	Preservation and Re-vegetation							
51-150								
50								
	51-150 0-50 51-150							

UT3 of PRC, Temporary Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: Lal Degrees)	at.	37° 42' 48.56"	Lon.	82° 12' 38.18"	WEATHER:	65	5 Sunny	DATE:	May 19), 2010
STREAM CLASSIFICATION:	II	ntermittent	IMPACT STREAM/SITE ID. (% stream slope, watershed size {ac				UT3 of Pigeonroost (% Streambed Slope, Acr			MITIGATION STREAM CLASS./S (% stream slope, watershed size {a			Same (Mitigation is restoration	of temporary im	npacts)
STREAM IMPACT LENGTH:	117	FORM OF MITIGATION:			RDINATES: Lal Degrees)	at.	37° 42' 47.92" N	Lon.	82° 12' 37.44" W	PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	11	17
Column No. 1- Impact Exist	ting Condition (Dek	pit)	Column No. 2- Mitigation Existing Co	ndition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		'ears	Column No. 4- Mitigation Pro Post Completion		s	Column No. 5- Mitigation Project	cted At Maturity (C	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrolo	gv	0.6		Hydrology	0.63		Hydrology	0.69	
Biogeochemical Cycling	0.88	0.83	Biogeochemical Cycling		0		hemical Cycling	0.51	0.52	Biogeochemical Cycling	0.71	0.63666667	Biogeochemical Cycling	0.81	0.77
Habitat	0.86		Habitat			Habitat		0.45		Habitat	0.57		Habitat	0.81	
PART I - Physical, Chemical a	nd Biological Indic	ators	PART I - Physical, Chemical and	Biological Indicat	tors		PART I - Physical, Chemical an	d Biological Inc	licators	PART I - Physical, Chemical and	d Biological Indica	tors	PART I - Physical, Chemical an	d Biological Indica	ators
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rar Scale	nge Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)		PHYSIC	AL INDICATOR (Applies to all strea	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet	:)		USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet))		USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20		1. Epifau	nal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness	0-20	19	2. Embeddedness	0-20		2. Embe	ddedness	0-20	11	2. Embeddedness	0-20	13	2. Embeddedness	0-20	15
3. Velocity/ Depth Regime	0-20	2	3. Velocity/ Depth Regime	0-20			ty/ Depth Regime	0-20	13	3. Velocity/ Depth Regime	0-20	13	Velocity/ Depth Regime	0-20	13
4. Sediment Deposition	0-20	16	Sediment Deposition	0-20			ent Deposition	0-20	11	Sediment Deposition	0-20	13	Sediment Deposition	0-20	15
5. Channel Flow Status	0-20	2	5. Channel Flow Status	0-20		Chann	nel Flow Status	0-20	.1	5. Channel Flow Status	0-20	10	5. Channel Flow Status	0-20	10
6. Channel Alteration	0-20	19	6. Channel Alteration	0-20		Chann	nel Alteration	0-20	17	6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20	2	7. Frequency of Riffles (or bends)	0-20		7. Freque	ency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20	12	8. Bank Stability (LB & RB)	0-20		8. Bank	Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	18
9. Vegetative Protection (LB & RB)	0-20	16	9. Vegetative Protection (LB & RB)	0-20		9. Vegeta	ative Protection (LB & RB)	0-20	6	9. Vegetative Protection (LB & RB)	0-20	11	9. Vegetative Protection (LB & RB)	0-20	16
10. Riparian Vegetative Zone Width (LB & RB)) 0-20	2	10. Riparian Vegetative Zone Width (LB & RB)	0-20		10. Ripar	ian Vegetative Zone Width (LB & RB)	0-20	6	Riparian Vegetative Zone Width (LB & RB)	0-20	11	Riparian Vegetative Zone Width (LB & RB)	0-20	16
Total RBP Score	Marginal	101	Total RBP Score	Poor	0	Total RB	P Score	Suboptima		Total RBP Score	Suboptimal	134	Total RBP Score	Suboptimal	150
Sub-Total		0.505	Sub-Total		0	Sub-Tota			0.58	Sub-Total		0.67	Sub-Total		0.75
CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial Stre	eams)	CHEMIC	AL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Stre	ams)	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial Stre	eams)
WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	I)		WVDEP	Water Quality Indicators (Gene	ral)		WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(1)	Specific	Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	39		0-90				0-90	500		0-90	500		0-90	500
<=99 - 90 points							500-599 - 50 points			500-599 - 50 points			500-599 - 50 points		
рн	0-1		рн	0-1	11	рн		0.	.1	рн	0-1		рн	0-1	
8.1-9.0 = 45 points	0-80	8.81		5-90			8.1-9.0 = 45 points	5-90	8.81	8.1-9.0 = 45 points	5-90	8.81	8.1-9.0 = 45 points	5-90	8.81
DO		831	DO	1	10	DO	in the second			DO			DO		
	10-30	13.68		10-30				10-30	13.68		10-30	13.68		10-30	13.68
	10-30			10-30	_		>5.0 = 30 points	10-30		>5.0 = 30 points	10-30		>5.0 = 30 points	10-30	
Sub-Total		0.825	Sub-Total		0	Sub-Tota			0.375	Sub-Total		0.625	Sub-Total		0.625
BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial S	treams)		ICAL INDICATOR (Applies to Inte	ermittent and Pere	nnial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	ll Streams)	BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Perennia	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stre	am Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Good	0-100 0-1	75.82		0-100 0-1			Good	0-100 0-	1 68	Good	0-100 0-1	68	Good	0-100 0-1	68
Sub-Total		0.7582	Sub-Total	1	0	Sub-Tota			0.68	Sub-Total	1	0.68	Sub-Total		0.68
		·													
PART II - Index and	d Unit Score		PART II - Index and U	nit Score			PART II - Index and	Unit Score		PART II - Index and I	Unit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Fee	et Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.70000000	447	20.2740		447			0.5205	44-	62 2025	0.0475	447	75 7575	0.7075	447	05.4475
0.763033333	117	89.2749	0	117	0		0.5325	117	62.3025	0.6475	117	75.7575	0.7275	117	85.1175

West Virginia Stream and Wetland Valuation Metric UT3 of PRC, Temporary Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors ge to insert default values for MITIGATION BANKING an	d ILF)				
Temporal Loss-Construction			Lo	Long-term Protection			
*Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	t (debit) and completion of compensatory	% Add. Mitigat	on and Monitoring Period	Lo	ong-Term Prote		
Years	15						
Sub-Total	0.343365						
Temporal Loss-Maturity		0 + 5/	10 Year Monitoring	101			
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).		Sub-Total Sub-Total	PART IV - Ind	ex to Unit Score (Conversion		
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	(Offs		
		1.384825	117	162.024525			
30%	25						
Sub-Total	0.278426667						

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	162.024525	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	62.3025	Mitigation Projected at Ten Years Post Completion (Credit)	75.7575	Mitigation Projected At Maturity (Credit)	85.1175		
FINAL PROJECTED NET BALANCE			62.3025		75.7575		85.1175				

	Part VI - Mitigation Considerations (Incentiv	ves)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration I *Note2: Place an "X" in the appropriate category (only select		
Level I Restoration		
Level II Restoration	В	Buffer \
Level III Restoration		

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT3 of PRC, Temporary Intermittent	162.024525	114.908625

Extended Upland Buffer Zone

Long-Term Protection (Years)

ILF Costs

(Offsetting Debit Units)

\$129,619.62

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank								
	0-50	Preservation and Re-vegetation							
50	51-150								
Buffer Width	Right Bank								
	0-50	Preservation and Re-vegetation							
50	51-150								
Average Buffer Width/Side	50								

UT5 of PRC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No, S-5018-07	IMPACT COO	DRDINATES: La Degrees)	at.	37° 42' 34.78"	Lon.	82° 12' 33.04"	WEATHER:	6	55 Sunny	DATE:	May 19, 20 ⁻)10
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				UT5 of Pigeonroost 0 % Streambed Slope, Acr	•		MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acre					
STREAM IMPACT LENGTH:	1800	FORM OF MITIGATION:		MIT COORI	_	at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline ((Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		nrs	Column No. 5- Mitigation Project	ted At Maturity (Credit	it)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM S	core (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	А	Average
Hydrology	0.72		Hydrology			Hydrol	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	0.96	0.81666667	Biogeochemical Cycling		0	Biogeo	chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.77		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicato	ors		PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and É	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicators	s
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range S Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSIC	CAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	12	Epifaunal Substrate/Available Cover	0-20		1. Epifa	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	Embeddedness	0-20		2. Embe	eddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	9	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	16	4. Sediment Deposition	0-20			nent Deposition	0-20		Sediment Deposition	0-20		4. Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	12	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	17	6. Channel Alteration	0-20			nel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20			uency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	15	8. Bank Stability (LB & RB)	0-20			Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	15 19	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			tative Protection (LB & RB) rian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	138	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	Casoptima	0.69	Sub-Total	1 00.	0	Sub-To		1 001	0	Sub-Total	1 001	0	Sub-Total	1 00.	0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	СНЕМІ	CAL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Streams	s)
WVDEP Water Quality Indicators (General	1)		WVDEP Water Quality Indicators (General)		WVDE	Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity		(1)	Specifi	Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	39		0-90				0-90			0-90			0-90	
<=99 - 90 points			nU			nU				mLi			n L		
рп	0-1		pri	0-1		рп		0-1		pri	0-1		ριι	0-1	
8.1-9.0 = 45 points	0-80	8.81		5-90				5-90			5-90			5-90	
DO			DO	_	(1)	DO				DO			DO		
	10-30	13.68		10-30				10-30			10-30			10-30	
Sub-Total	1	0.825	Sub-Total	1	0	Sub-To	al		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial		BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Str	reams)		GICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial Str	treams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Str	eam Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	75.82		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Good Sub-Total		0.7582	Sub-Total		0	Sub-To			0	Sub-Total		0	Sub Total		
Sub-Total		0.7362	Sub-Total		U	Sub-10	aı		U	Sub-Total		0	Sub-Total		U
PART II - Index and U	Init Score		PART II - Index and Ui	nit Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Ur	Jnit Score
0.7070	4000	1416.06					0	_						0	
0.7872	1800	1416.96	0	0	U		0	0	U	0	0	0	0	0	U

West Virginia Stream and Wetland Valuation Metric UT5 of PRC, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING and	ILF)		
Temporal Loss-Cons	struction		L	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time mitigation (credi		% Add. Mitigation	n and Monitoring Period	Lo	ng-Term Protection (Years)
Years	15				
Sub-Total	0.35424				
Temporal Loss-M	aturity	0 + 5/1	0 Year Monitoring		101
*Note: Period between completion of compensatory mitigation mea	sures and the time required for maturity, as it relates	Sub-Total	-		0
to function (i.e. maturity of tree stratum to provide organic matter corridor).	and detritus within riparian stream or wetland buffer		PART IV - Inc	dex to Unit Score C	Conversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Un
		1.444533333	1800	2600.16	\$2,080,128.00
30%	25				
Sub-Total	0.303093333				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	2600.16	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)			
FINAL PROJECTED NET BALANCE			0		0		0				

	Part VI - Mitigation	Considerations (Incen	tives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).	ject		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of PRC, Intermittent	2600.16	#DIV/0!

Extended Upland Buffer Zone

ILF Costs (Offsetting Debit Units) \$2,080,128.00

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank								
	0-50								
	51-150								
Buffer Width	Right Bank								
	0-50								
	51-150								
Average Buffer	0								
Width/Side	· ·								

UT5 of PRC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	DRDINATES: L I Degrees)	_at.	37° 42' 25.59"	Lon.	82° 12' 25.57"	WEATHER:	(65 Sunny	DATE:	May 19,	2010
STREAM CLASSIFICATION:	Ephemeral IMPACT STREAM/SITE ID AND SITE DESC (% stream slope, watershed size {acreage}, unaltered or in							MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acro							
STREAM IMPACT LENGTH:	100	FORM OF MITIGATION:		MIT COOR (in Decima		_at.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:		
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cr	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydro	logy			Hydrology			Hydrology		
Biogeochemical Cycling	0.88	0.83	Biogeochemical Cycling		0		ochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat			Habita				Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicate	ors		PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indica	itors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSI	CAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP	A RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		1. Epif	aunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	16	2. Embeddedness	0-20		2. Emb	peddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	0	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	18	Sediment Deposition	0-20			iment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1			nnel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	16	6. Channel Alteration	0-20			nnel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	0	7. Frequency of Riffles (or bends)	0-20			quency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20			k Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	14 20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			etative Protection (LB & RB) arian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Marginal	102	Total RBP Score	Poor	0		RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	, marginar	0.51	Sub-Total	1 00.	0	Sub-To		1 001	0	Sub-Total	1 001	0	Sub-Total	1 00.	0
CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	СНЕМ	ICAL INDICATOR (Applies to Intermit	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	eams)
WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (General)		WVDE	P Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity	•		Specific Conductivity			Specif	ic Conductivity			Specific Conductivity			Specific Conductivity		
400 400 05 14	0-90			0-90				0-90			0-90			0-90	1
100-199 - 85 points			nH			nН				nH			nH		
pi i	0-1		pii	0-1		pii		0-1		pri	0-1		511	0-1	
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO		
	10-30			10-30				10-30			10-30			10-30	
Sub-Total	I		Sub-Total	1	0	Sub-To	otal		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial St	reams)	BIOLO	GICAL INDICATOR (Applies to Inter	mittent and Pereni	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennia	al Streams)
WV Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)	, , .		WV St	ream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	, ,	
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
0 Sub-Total		0	Sub-Total	1	0	Sub-To	atal .		0	Sub-Total		0	Sub Total		
Sub-Total		U	Sub-1 otal	<u> </u>	U	Sub-10	otal		U	Sub-10tal		0	Sub-Total		0
PART II - Index and Un	nit Score		PART II - Index and Ui	nit Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.705	100	70.5	•	0	0		0	_		0	0		•	0	
0.705	100	70.5	0	0	U	L	U	0	U	<u> </u>	U	0	0	U	<u>_</u>

UT5 of PRC, Ephemeral (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANK	ING and ILF)				
Temporal Loss-Construction	1		L	ong-term Protection			
*Note: Reflects duration of aquatic functional loss between the time of an imp	pact (debit) and completion of compensatory	% Add	I. Mitigation and Monitoring Period	Lon	Long-Term Protection (Years)		
mitigation (credit).							
Years Sub-Total	15 0.31725						
Temporal Loss-Maturity			0 + 5/10 Year Monitoring	101			
*Note: Period between completion of compensatory mitigation measures and	d the time required for maturity, as it relates	Sub-Total			0		
to function (i.e. maturity of tree stratum to provide organic matter and detrit	us within riparian stream or wetland buffer						
corridor).			PART IV - In	dex to Unit Score Co	to Unit Score Conversion		
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Inde		Unit Score	ILF Costs		
% Add. Willigation	remporal Loss-Maturity (Years)	(Deb	OIT)	(Debit)	(Offsetting Debit Units)		
		1.254	125 100	125.425	\$100,340.00		
30% Sub-Total	25 0.232		'				

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)						
FINAL PROJECTED NET BALANCE				0		0		0			

	n Considerations (Incen	itives)	
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ır project		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration]	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of PRC, Ephemeral	125.425	#DIV/0!

Extended U	pland	d Buff	er Zon
------------	-------	--------	--------

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank										
	0-50										
	51-150										
Buffer Width		Right Bank									
	0-50										
	51-150										
Average Buffer	0										
Width/Side	O										

UTSB, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC (in Decima	ORDINATES: I I Degrees)	Lat.	37° 42' 27.70"	Lon.	82° 11' 53.66"	WEATHER:	6	60 Cloudy	DATE:	May 19, 2	2010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)						MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)						
STREAM IMPACT LENGTH:	100	FORM OF MITIGATION:		MIT COOR (in Decima		Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0)	Mitigation Length:	0	
Column No. 1- Impact Existing	Condition (Deb	pit)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Projection (C		ars	Column No. 5- Mitigation Project	ted At Maturity (Cre	edit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	H	SM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.66		Hydrology			Ну	drology			Hydrology			Hydrology		
Biogeochemical Cycling	0.94	0.82	Biogeochemical Cycling		0		ogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.86		Habitat			Ha	bitat			Habitat			Habitat		
PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicate	ors		PART I - Physical, Chemical and	l Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicato	ors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PH	IYSICAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			US	EPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	5	Epifaunal Substrate/Available Cover	0-20		1.	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	13	2. Embeddedness	0-20		2.	Embeddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	6	3. Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
Sediment Deposition	0-20	16	Sediment Deposition	0-20			Sediment Deposition	0-20		Sediment Deposition	0-20		Sediment Deposition	0-20	
5. Channel Flow Status	0-20 0-1	1	5. Channel Flow Status	0-20 0-1			Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
6. Channel Alteration	0-20	18	6. Channel Alteration	0-20			Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
7. Frequency of Riffles (or bends)	0-20	11	7. Frequency of Riffles (or bends)	0-20			Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20	
8. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20			Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	18 18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	
Total RBP Score	Suboptimal	124	Total RBP Score	Poor	0		tal RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total	Guboptiiriui	0.62	Sub-Total	1 00.	0		b-Total	1 00.	0	Sub-Total	1 001	0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	CH	HEMICAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Strear	ams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	1		w	VDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General)	1		WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		(0)		ecific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	31		0-90				0-90			0-90			0-90	
<=99 - 90 points			5 4			n L				all			n Ll		
pri	0-1		pri	0-1		ы		0-1		pri	0-1		рп	0-1	
6.0-8.0 = 80 points	0-80	6.89		5-90				5-90			5-90			5-90	
DO			DO			DC)			DO			DO		
	10-30	10.2		10-30				10-30			10-30			10-30	
Sub-Total		1	Sub-Total	1 1	0	Su	b-Total		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial St	reams)		OLOGICAL INDICATOR (Applies to Inter	mittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial	Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			w	V Stream Condition Index (WVSCI)	, ,		WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
	0-100 0-1	24.5		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Poor Sub-Total		0.145	Sub-Total	1	0	911	b-Total	<u> </u>	0	Sub-Total		0	Sub Total		
Sup-Total		0.145	Sub-1 otal	<u> </u>	U	Su	D-TOtal		U	Sub-Total		0	Sub-Total		<u> </u>
PART II - Index and Un	nit Score		PART II - Index and Ur	it Score			PART II - Index and	Unit Score		PART II - Index and Un	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.704165667	100	70.4166667		0			0	_		0	0	0	^	0	
0.704166667	100	70.4166667	0	0	U		<u> </u>	0	U	U	U	0	0	U	<u> </u>

West Virginia Stream and Wetland Valuation Metric UTSB, Intermittent (2 of 2)

	(See instruction	PART III - Impact Factors page to insert default values for MITIGATION BANKING a	nd ILF)			
Temporal Loss-Construction			Lo	ong-term Protection		
*Note: Reflects duration of aquatic functional loss between the time of an important	act (debit) and completion of compensatory	% Add. Mitiga	ation and Monitoring Period	Lor	ng-Term Protection (Years)	
mitigation (credit).						
Years Sub-Total	15 0.316875					
Temporal Loss-Maturity		0+	5/10 Year Monitoring		101	
*Note: Period between completion of compensatory mitigation measures and	the time required for maturity, as it relates	Sub-Total			0	
to function (i.e. maturity of tree stratum to provide organic matter and detritu	s within riparian stream or wetland buffer	<u></u>		•		
corridor).			PART IV - Index to Unit Score Conversion			
		Final Index Scor	e Linear Feet	Unit Score	ILF Costs	
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)	
		1.256375	100	125.6375	\$100,510.00	
30% Sub-Total	25 0.235333333					

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)						
FINAL PROJECTED NET BALANCE				0		0		0			

THAL TROOLOTED HET BALANGE			0		
	Part VI - Mitigatio	n Considerations (Incen	itives)		
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Leve *Note2: Place an "X" in the appropriate category (only select o		*Note ¹ : Refe	Exte rence Instructional handout for t *Note ² : Enter the buffer wic		
_evel I Restoration			Buffer Width	*Note ³ : Se	elect the a
Level III Restoration			Buller Width	0-50	
				51-150	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UTSB, Intermittent	125.6375	#DIV/0!

Upland Buffer Zone

initions of the Buffer Zone Mitigation Extents and Types (below) each channel side (Left Bank and Right Bank)

appropriate mitigation type

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						

UT4 of MC, Intermittent (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COC	DRDINATES: L. Degrees)	.at.	37° 44' 39.19"	Lon.	82° 15' 00.97"	WEATHER:	6	0 Cloudy	DATE:	May 19, 20	010
STREAM CLASSIFICATION:	lı	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {aci				4th Unnamed Tribu % Streambed Slope, Acro			MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr					
STREAM IMPACT LENGTH:	72	FORM OF MITIGATION:		MIT COOR (in Decimal		.at.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing	g Condition (Deb	it)	Column No. 2- Mitigation Existing Cor	dition - Baseline	(Credit)		Column No. 3- Mitigation Pro Post Completion		ars	Column No. 4- Mitigation Proje Post Completion (C		nrs	Column No. 5- Mitigation Project	ted At Maturity (Cred	lit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM :	Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology	0.75		Hydrology			Hydrol	ogy			Hydrology			Hydrology		
Biogeochemical Cycling	0.97	0.86333333	Biogeochemical Cycling		0	Biogeo	chemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat	0.87		Habitat			Habitat				Habitat			Habitat		
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and I	Biological Indicate	ors		PART I - Physical, Chemical and	l Biological Indic	cators	PART I - Physical, Chemical and I	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicator	rs
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Range Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSI	CAL INDICATOR (Applies to all stream	ns classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEP#	RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20		1. Epifa	unal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
2. Embeddedness	0-20	15	Embeddedness	0-20			eddedness	0-20		2. Embeddedness	0-20		2. Embeddedness	0-20	
3. Velocity/ Depth Regime	0-20	9	3. Velocity/ Depth Regime	0-20			city/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20	
4. Sediment Deposition	0-20	15 13	4. Sediment Deposition	0-20			ment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
Channel Flow Status Channel Alteration	0-20 0-1	15	5. Channel Flow Status	0-20 0-1			nel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	_
Channel Alteration Frequency of Riffles (or bends)	0-20	5	Channel Alteration Frequency of Riffles (or bends)	0-20			nel Alteration uency of Riffles (or bends)	0-20		Channel Alteration Frequency of Riffles (or bends)	0-20		Channel Alteration Frequency of Riffles (or bends)	0-20	_
8. Bank Stability (LB & RB)	0-20 0-20	16	8. Bank Stability (LB & RB)	0-20			Stability (LB & RB)	0-20 0-20		8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20	
9. Vegetative Protection (LB & RB)	0-20	14	9. Vegetative Protection (LB & RB)	0-20			tative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20	
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	18	10. Riparian Vegetative Zone Width (LB & RB)	0-20			arian Vegetative Zone Width (LB & RB)	0-20		Vegetative Flotection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) 10. Riparian Vegetative Zone Width (LB & RB)	0-20	
Total RBP Score	Suboptimal	131	Total RBP Score	Poor	0		BP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.655	Sub-Total		0	Sub-To	tal		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitter	t and Perennial Strea	ams)	СНЕМІ	CAL INDICATOR (Applies to Intermitt	ent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ns)
WVDEP Water Quality Indicators (General	I)		WVDEP Water Quality Indicators (General)		WVDE	Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General))		WVDEP Water Quality Indicators (Gener	al)	
Specific Conductivity			Specific Conductivity			Specifi	c Conductivity			Specific Conductivity			Specific Conductivity		
	0-90	31		0-90				0-90			0-90			0-90	
<=99 - 90 points			nH			пH				nH			nH		
p. 1	0-1	C 00	p	0-1		pii		5.00 0-1		p.11	0-1		511	0-1	
6.0-8.0 = 80 points	0-80	6.89		5-90				5-90			5-90			5-90	
DO			DO			DO				DO			DO	_	
	10-30	10.2		10-30				10-30			10-30			10-30	
Sub-Total	1 1	1	Sub-Total	1	0	Sub-To	tal		0	Sub-Total		0	Sub-Total		0
BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ent and Perennial Str	reams)	BIOLO	GICAL INDICATOR (Applies to Inter	mittent and Pereni	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial S	Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)			WV Str	eam Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)	ı		WV Stream Condition Index (WVSCI)		
Poor	0-100 0-1	24.5		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	1	0.145	Sub-Total	' 	0	Sub-To	tal	<u> </u>	0	Sub-Total		0	Sub-Total		0
			The same of the sa	l e		1222.10	***		-	1		-			
PART II - Index and U	Init Score		PART II - Index and Ur	nit Score			PART II - Index and	Jnit Score		PART II - Index and Ur	nit Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet U	Unit Score
0.72400007	70	52.69					0	_							
0.731666667	72	52.68	0	0	U		0	0	U	0	0	0	0	0	U

West Virginia Stream and Wetland Valuation Metric UT4 of MC, Intermittent (2 of 2)

	(See instruction	
Temporal Loss-Con	struction	
ote: Reflects duration of aquatic functional loss between the time mitigation (cred		
Years	15	
Sub-Total	0.32925	
	Temporal Loss-Maturity	
ote: Period between completion of compensatory mitigation mea		
o function (i.e. maturity of tree stratum to provide organic matter corridor).	r and detritus within riparian stream or wetland buffer	
% Add. Mitigation	Temporal Loss-Maturity (Years)	
30%	25	
-Total	0.24	

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	93.666	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE				0		0		0	

FINAL PROJECTED NET BALANCE			0		0
Part	t VI - Mitigation C	Considerations (Incen	tives)		
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one).			*Note ¹ : Refer	ence Instructional handout for the *Note ² : Enter the buffer width	for each channel sid
Level I Restoration				*Note ³ : Selec	t the appropriate mit
Level II Restoration			Buffer Width		Left
Level III Restoration				0-50	
				51-150	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT4 of MC, Intermittent	93.666	#DIV/0!

Buffer Zone Mitigation Extents and Types (below) side (Left Bank and Right Bank)

mitigation type

Buffer Width	Left Bank							
	0-50							
	51-150							
Buffer Width	Right Bank							
	0-50							
	51-150							
Average Buffer	0							
Width/Side	J							

UT4 of MC, Ephemeral (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine mit No. S-5018-07	IMPACT COOF	RDINATES: La Degrees)		14' 39.44"	Lon.	82° 14' 59.41"	WEATHER:		60 Cloudy	DATE:	May 19, 2010
STREAM CLASSIFICATION:	I	Ephemeral	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				4th Unnamed Trib eambed Slope, Ac			MITIGATION STREAM CLA (% stream slope, watershed				
STREAM IMPACT LENGTH:	60	FORM OF MITIGATION:		MIT COORD (in Decimal I				Lon.		PRECIPITATION PAST 48 HF	RS:	0	Mitigation Length:	0
Column No. 1- Impact Existing	g Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline (C	Credit)		No. 3- Mitigation Pro Post Completion		ars		letion (Credit)	ears	Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	1	Average	HGM Score (attac	h data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Averag
Hydrology	0.75		Hydrology			Hydrology				Hydrology			Hydrology	
Biogeochemical Cycling	0.97	0.86333333	Biogeochemical Cycling		0	Biogeochemical Cy	cling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0
Habitat	0.87		Habitat			Habitat				Habitat			Habitat	
PART I - Physical, Chemical and	Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicator	s	PART I - P	hysical, Chemical ar	nd Biological Indi	ators	PART I - Physical, Chemic	al and Biological Indi	cators	PART I - Physical, Chemical a	nd Biological Indicators
	Points Range Scale	Site Score		Points Range S	Site Score			Points Rang Scale	e Site Score		Points Range Scale	e Site Score		Points Range Site Scol
PHYSICAL INDICATOR (Applies to all streams	s classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICA	FOR (Applies to all stream	eams classifications)		PHYSICAL INDICATOR (Applies to all	streams classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High	Gradient Data Sheet	et)		USEPA RBP (High Gradient Data S	heet)		USEPA RBP (High Gradient Data Sheet)
Epifaunal Substrate/Available Cover	0-20	0	Epifaunal Substrate/Available Cover	0-20		 Epifaunal Substra 	te/Available Cover	0-20		 Epifaunal Substrate/Available Cove 			Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	13	Embeddedness	0-20		Embeddedness		0-20		Embeddedness	0-20		2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	0	Velocity/ Depth Regime	0-20		Velocity/ Depth Re		0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20
4. Sediment Deposition	0-20	18	4. Sediment Deposition	0-20		4. Sediment Deposit		0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20
5. Channel Flow Status	0-20 0-1	0	5. Channel Flow Status	0-20 0-1		5. Channel Flow Sta		0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1
6. Channel Alteration	0-20	18	6. Channel Alteration	0-20		6. Channel Alteration		0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	0 18	7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffl	. ,	0-20		7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20	16	8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB		0-20		8. Bank Stability (LB & RB)	0-20 0-20		8. Bank Stability (LB & RB)	0-20
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	18	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20		Vegetative Protect Riparian Vegetative	e Zone Width (LB & RB)	0-20 3) 0-20		 Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & 			Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20
Total RBP Score	Marginal	101	Total RBP Score	Poor	0	Total RBP Score	7 2010 THAIN (25 ATE)	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor 0
Sub-Total	<u> </u>	0.505	Sub-Total		0	Sub-Total			0	Sub-Total		0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	ns)	CHEMICAL INDICA	TOR (Applies to Intermi	nittent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to In	termittent and Perennial S	Streams)	CHEMICAL INDICATOR (Applies to Interm	ttent and Perennial Streams)
WVDEP Water Quality Indicators (General)	I)		WVDEP Water Quality Indicators (General)			WVDEP Water Qua	lity Indicators (Gene	eral)		WVDEP Water Quality Indicators (0	General)		WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity			Specific Conductivity			Specific Conductiv	ity			Specific Conductivity			Specific Conductivity	
400 400 05 11	0-90			0-90				0-90			0-90			0-90
100-199 - 85 points			nH			nH				nH			nH	
pi i	0-1		pii	0-1		pri		0-1		pri	0-1		511	0-1
5.6-6.0 = 45 points	0-80			5-90				5-90			5-90			5-90
DO			DO			DO				DO			DO	
	10-30			10-30				10-30			10-30			10-30
Sub-Total	<u> </u>		Sub-Total		0	Sub-Total		I	0	Sub-Total	l l	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermitt	ttent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stream	ams)	BIOLOGICAL INDIC	CATOR (Applies to Inte	termittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to	o Intermittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Conditi	on Index (WVSCI)			WV Stream Condition Index (WVSC	CI)		WV Stream Condition Index (WVSCI)	1 1 1
0	0-100 0-1			0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1
Sub-Total	L L	0	Sub-Total		0	Sub-Total		l l	0	Sub-Total	I I	0	Sub-Total	0
			12-2-7-500		<u> </u>				·	11- 20 · Occ.				
PART II - Index and U	Init Score		PART II - Index and Un	it Score			PART II - Index and	d Unit Score		PART II - Index	and Unit Score		PART II - Index and	I Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet U	nit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Sco
0.720416667	60	43.225	0	0	0		0	0	0	0	0	0	0	0 0

West Virginia Stream and Wetland Valuation Metric UT4 of MC, Ephemeral (2 of 2)

			PART III -	Impact Factors					
		(See instruction	page to insert defaul	t values for MITIGATI	ON BANKING and	I ILF)			
Temp	oral Loss-Construction						g-term Protection		
*Note: Reflects duration of aquatic functional loss		t (debit) and completion of compensatory			% Add. Mitigation	on and Monitoring Period	Long-Term Protection (Years)		
	mitigation (credit).								
Years		15							
Sub-Total		0.3241875							
	nporal Loss-Maturity				0 + 5/1	0 Year Monitoring		101	
*Note: Period between completion of compensato					Sub-Total			0	
to function (i.e. maturity of tree stratum to provid	e organic matter and detritus corridor).	within riparian stream or wetland buffer		ſ		5.5T.W. I. I.			
	comaor).					PART IV - Inde	x to Unit Score (
			Final Index Score	Linear Feet	Unit Score	ILF Costs			
% Add. Mitigation		Temporal Loss-Maturity (Years)			(Debit)		(Debit)	(Offsetting Debit U	nits)
					1.275604167	60	76.53625	\$61,229.00	
				•					
		05							
30% Sub-Total		25 0.231							
Sub-Total		0.231							
		PART	V- Comparison of Ur	nit Scores and Project	ted Balance				
Final Unit Score (Debit) [No Net Loss Value]	76.53625	Mitigation Existing Condition - Baseline (Credit)		Aitigation Projected at Five Years ost Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0
			Part VI - Mitigation C	considerations (Incent	tives)				
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project *Note2: Place an "X" in the appropriate category (only select one). Level I Restoration			oject		Extended Upland Buffer Zone *Note ¹ : Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note ² : Enter the buffer width for each channel side (Left Bank and Right Bank) *Note ³ : Select the appropriate mitigation type				(below)
Level II Restoration					Buffer Width		Left B	ank	
Level III Restoration						0-50			
					Duffer Middle	51-150	District	Dawle .	
					Buffer Width	0-50	Right E	sank	
						51-150			
					Average Buffer Width/Side	0			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT4 of MC, Ephemeral	76.53625	#DIV/0!

UT5 of MC, Temporary Perennial (1 of 2)

USACE FILE NO./Project Name:			IMPACT COOF	RDINATES: Lat. Degrees)	37° 44' 20.36" N	Lon.	82° 14' 40.17" W	WEATHER:	60 Cloudy	DATE:	May 19, 2010	
STREAM CLASSIFICATION:	ı	Perennial	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr	5th Unnamed Tributary of Miller Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SI (% stream slope, watershed size {ac		Same (Mitigation is restoration of temporary impacts)			
STREAM IMPACT LENGTH:	495	FORM OF MITIGATION:	Permittee Responsible-Onsite	MIT COORD (in Decimal I	-	37° 44' 20.36" N	Lon. 8	82° 14' 40.17" W	PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	495
Column No. 1- Impact Existing C	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline (C	Credit)	Column No. 3- Mitigation Pro Post Completion		rs	Column No. 4- Mitigation Proj Post Completion (Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	1	Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology			Hydrology			Hydrology			Hydrology		Hydrology	
Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat			Habitat			Habitat			Habitat		Habitat	
PART I - Physical, Chemical and Bi	Biological Indica	ators	PART I - Physical, Chemical and E	Siological Indicator	's	PART I - Physical, Chemical an	nd Biological Indica	ators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical at	nd Biological Indicators
	Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score		Points Range Site Score		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ams classifications)		PHYSICAL INDICATOR (Applies to all stream	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ams classifications)
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	t)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)
	0-20	16	Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20 15
	0-20	11	2. Embeddedness	0-20		Embeddedness	0-20	11	2. Embeddedness	0-20 13	2. Embeddedness	0-20 15
	0-20	10	Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	13	Velocity/ Depth Regime	0-20 13	Velocity/ Depth Regime	0-20 13
·	0-20	9	4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	11	4. Sediment Deposition	0-20 13	4. Sediment Deposition	0-20 15
	0-20 0-1	11	5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	11	5. Channel Flow Status	0-20 0-1	5. Channel Flow Status	0-20 0-1 11
	0-20	13 6	6. Channel Alteration	0-20		6. Channel Alteration	0-20	17 15	6. Channel Alteration	0-20	6. Channel Alteration	0-20 17 0-20 15
	0-20	16	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		Frequency of Riffles (or bends) Bank Stability (LB & RB)	0-20	18	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20 15 0-20 18	Frequency of Riffles (or bends) Bank Stability (LB & RB)	
, ,	0-20	14	,	0-20		, , , , , , , , , , , , , , , , , , , ,	0-20	- 10	Bank Stability (LB & RB) Vegetative Protection (LB & RB)	0-20 18 0-20 11	,	
	0-20 0-20	18	Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20		Vegetative Protection (LB & RB) Regetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20	6	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	3.23
	Suboptimal	124	Total RBP Score	Poor	0	Total RBP Score	Suboptimal	119	Total RBP Score	Suboptimal 135	Total RBP Score	Suboptimal 151
Sub-Total	•	0.62	Sub-Total		0	Sub-Total		0.595	Sub-Total	0.675	Sub-Total	0.755
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stream	ns)	CHEMICAL INDICATOR (Applies to Intermi	ittent and Perennial Str	reams)	CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (Genera	ıl)	WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity			Specific Conductivity			Specific Conductivity			Specific Conductivity		Specific Conductivity	
00 00 late	0-90	34		0-90		500 500 50	0-90	500	500 500 50	0-90 500	500 500 . 50 mainte	0-90 500
<=99 - 90 points			nH			500-599 - 50 points			500-599 - 50 points		500-599 - 50 points	
j.,	0-80	C 20	p	5-90 0-1		p	5-90 0-1	C 00	ρ	5-90 0-1 6.89	511	5-90 0-1 6.89
6.0-8.0 = 80 points	0-80	6.29		5-90		6.0-8.0 = 80 points	5-90	6.89	6.0-8.0 = 80 points	5-90 6.89	6.0-8.0 = 80 points	5-90 6.89
DO		30	DO		(1)	DO			DO		DO	
	10-30	10.36		10-30		>5.0 = 30 points	10-30	10.36	>5.0 = 30 points	10-30 10.36	>5.0 = 30 points	10-30 10.36
Sub-Total		1	Sub-Total		0	Sub-Total	I	0.55	Sub-Total	0.8	Sub-Total	0.8
BIOLOGICAL INDICATOR (Applies to Intermitter	ent and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Stre	ams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Intern	nittent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Fair	0-100 0-1	45.46		0-100 0-1		Fair	0-100 0-1	45.46	Fair	0-100 0-1 45.46	Fair	0-100 0-1 45.46
Sub-Total	1	0.3546	Sub-Total		0	Sub-Total	I	0.3546	Sub-Total	0.3546	Sub-Total	0.3546
PART II - Index and Uni	it Score		PART II - Index and Un	it Score		PART II - Index and	I Unit Score		PART II - Index and U	Jnit Score	PART II - Index and	I Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet U	nit Score	Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.6582	495	325.809	0	495	0	0.499866667	495	247.434	0.609866667	495 301.884	0.636533333	495 315.084

West Virginia Stream and Wetland Valuation Metric UT5 of MC, Temporary Perennial (2 of 2)

		PART III - Impact Factors			
	(See instruction	age to insert default values for MITIGATION BANKING a	nd ILF)		
Temporal Loss-Construction	`		<u> </u>	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impac mitigation (credit).	t (debit) and completion of compensatory	% Add. Mitiga	tion and Monitoring Period		ng-Term Protection (Years)
Years	15				
Sub-Total	0.29619				
Temporal Loss-Maturity		0++	5/10 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and the		Sub-Total			0
to function (i.e. maturity of tree stratum to provide organic matter and detritus corridor).	within npanan stream or wetland buller		PART IV - Ind	ex to Unit Score Co	onversion
% Add. Mitigation	Temporal Loss-Maturity (Years)	Final Index Score (Debit)	e Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)
		1.21767	495	602.74665	\$482,197.32
30%	25				
Sub-Total Sub-Total	0.26328				
	DADT	Communication of Unit Communicated Delayer			

PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	602.74665	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	247.434	Mitigation Projected at Ten Years Post Completion (Credit)	301.884	Mitigation Projected At Maturity (Credit)	315.084		
FINAL PROJECTED NET BALANCE				247.434		301.884		315.084			

		271.707		301.007	313.007
Part VI - Mitigation	n Considerations (Incentive	es)			
Extent of Stream Restoration			Extend	ed Upland Buffer Zone	
*Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your project		*Note1: Refer	ence Instructional handout for the	definitions of the Buffer Zone Mitigation E	extents and Types (below)
*Note2: Place an "X" in the appropriate category (only select one).			*Note2: Enter the buffer width	for each channel side (Left Bank and Righ	nt Bank)
				t the appropriate mitigation type	ŕ
Level I Restoration					
Level II Restoration	But	ffer Width		Left Bank	
Level III Restoration			0-50	Preservation and	Re-vegetation
	-	50	51-150		
	But	ffer Width		Right Bank	
			0-50	Preservation and	Re-vegetation
		50	51-150		

Average Buffer Width/Side

50

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of MC, Temporary Perennial	602.74665	425.3634

West Virginia Stream and Wetland Valuation Metric UT5 of MC, Permanent Perennial (1 of 2)

			o Mt. Surface Mine mit No. S-5018-07		ORDINATES: al Degrees)	Lat.	37° 44' 24.42"	Lon.	82° 14' 27.51"	WEATHER:	6	60 Cloudy	DATE:	May 19,	2010
STREAM CLASSIFICATION:	-	Perennial	IMPACT STREAM/SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size (acreage), unaltered or impairments)				5th Unnamed Tributary of Miller Creek % Streambed Slope, Acre Watershed, Mature Tree			MITIGATION STREAM CLASS./SITE ID AND SITE DESCRIPTION: (% stream slope, watershed size {acreage}, unaltered or impairments)			Same (Mitigation is restoration of temporary impacts)		
STREAM IMPACT LENGTH:	1067	FORM OF MITIGATION:			RDINATES: al Degrees)	Lat.		Lon.		PRECIPITATION PAST 48 HRS:	0		Mitigation Length:	0	
Column No. 1- Impact Existing C	Condition (Deb	it)	Column No. 2- Mitigation Existing Con	dition - Baseline	e (Credit)		Column No. 3- Mitigation Pro		ars	Column No. 4- Mitigation Project Post Completion (C		ars	Column No. 5- Mitigation Project	cted At Maturity (Cro	redit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology			Hydrology				Hydrology			Hydrology			Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling		0	Biogeochemical Cycling		0
Habitat			Habitat				Habitat			Habitat			Habitat		
PART I - Physical, Chemical and Bi	iological Indica	ators	PART I - Physical, Chemical and E	iological Indica	tors		PART I - Physical, Chemical an	d Biological Indi	cators	PART I - Physical, Chemical and E	Biological Indic	ators	PART I - Physical, Chemical an	d Biological Indicat	tors
	Points Range Scale	Site Score		Points Range Scale	Site Score			Points Rang Scale	e Site Score		Points Range Scale	Site Score		Points Range Scale	Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)			PHYSICAL INDICATOR (Applies to all strea	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all stream	ns classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		
	0-20	15	Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20	
	0-20	8	Embeddedness	0-20			2. Embeddedness	0-20		Embeddedness	0-20		2. Embeddedness	0-20	
	0-20	11	Velocity/ Depth Regime	0-20			Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20		Velocity/ Depth Regime	0-20	
	0-20	11	4. Sediment Deposition	0-20			4. Sediment Deposition	0-20		4. Sediment Deposition	0-20		4. Sediment Deposition	0-20	
	0-20 0-1	11	5. Channel Flow Status	0-20 0-1			5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1	
1	0-20	13	6. Channel Alteration	0-20			6. Channel Alteration	0-20		6. Channel Alteration	0-20		6. Channel Alteration	0-20	
	0-20	7 13	7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20			7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends) 8. Bank Stability (LB & RB)	0-20		7. Frequency of Riffles (or bends)	0-20	
	0-20	13	,	0-20				0-20		,	0-20		8. Bank Stability (LB & RB)	0-20	-
	0-20 0-20	17	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20 0-20		Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	-
	Suboptimal	119	Total RBP Score	Poor	0		Total RBP Score	Poor	0	Total RBP Score	Poor	0	Total RBP Score	Poor	0
Sub-Total		0.595	Sub-Total		0		Sub-Total		0	Sub-Total		0	Sub-Total		0
CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Str	eams)	CHEMICAL INDICATOR (Applies to Intermitten	and Perennial Stre	eams)		CHEMICAL INDICATOR (Applies to Intermit	tent and Perennial S	treams)	CHEMICAL INDICATOR (Applies to Intermittent	and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitt	ent and Perennial Strea	ams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)				WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General	al)	
Specific Conductivity			Specific Conductivity		0		Specific Conductivity			Specific Conductivity			Specific Conductivity		
<=99 - 90 points	0-90	34		0-90				0-90			0-90			0-90	
NH <=99 - 90 points			nH				nH			nН			nH		
	0-80	6.20	· ·	5-90 0-1				5-90 0-1			5-90 0-1			5-90 0-1	
6.0-8.0 = 80 points	0-30	6.29		3-90			_	3-90			3-90			3-50	
DO			DO				DO			DO			DO		
	10-30	10.36		10-30				10-30			10-30			10-30	
Sub-Total	ı	1	Sub-Total		0		Sub-Total	I	0	Sub-Total	1	0	Sub-Total	1	0
BIOLOGICAL INDICATOR (Applies to Intermitter	nt and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial S	Streams)		BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Peren	nial Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ttent and Perenn	ial Streams)	BIOLOGICAL INDICATOR (Applies to Inter	mittent and Perennial	al Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)				WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		
Fair	0-100 0-1	45.46		0-100 0-1				0-100 0-1			0-100 0-1			0-100 0-1	
Sub-Total	l	0.3546	Sub-Total	1	0		Sub-Total	1	0	Sub-Total		0	Sub-Total		0
										U					
PART II - Index and Unit	it Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Un	it Score		PART II - Index and	Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score		Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.640966667	1067	602 407722	0	0	0		0	0	0	0	0	0	0	0	
0.649866667	1007	693.407733	<u> </u>	U	U		U	U	U	U	U .	U	U	U	

West Virginia Stream and Wetland Valuation Metric UT5 of MC, Permanent Perennial (2 of 2)

		PART III - Impact Factors				
	(See instruction	page to insert default values for MITIGAT	ION BANKING and	ILF)		
Temporal Loss-Construction				Lo	ng-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impact	t (debit) and completion of compensatory		% Add. Mitigation	and Monitoring Period	Lo	ong-Term Protection (Years)
mitigation (credit).						
Years Cub Tabel	15					
Sub-Total	0.29244					
Temporal Loss-Maturity			0 + 5/10	Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and the	he time required for maturity, as it relates		Sub-Total	real worlding		0
to function (i.e. maturity of tree stratum to provide organic matter and detritus						
corridor).				PART IV - Ind	ex to Unit Score C	Conversion
			Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)		(Debit)		(Debit)	(Offsetting Debit Units)
			1.202253333	1067	1282.804307	\$1,026,243.45
					L.	
30%	25					
Sub-Total Sub-Total	0.259946667					
	DART	V- Comparison of Unit Scores and Project	rted Balance			
	IAIN	V- Companson of onit ocoles and i rojet	otto Dalarice			

	PART V- Comparison of Unit Scores and Projected Balance											
Final Unit Score (Debit) [No Net Loss Value]	1282.804307	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)				
FINAL PROJECTED NET BALANCE					0		0		0			

-			
entives)	Considerations (Incer	Part VI - Mitigation	
*Note ¹ : Reference Instructional hand *Note ² : Enter the b		pject	Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your post post post post post post post post
*			el I Restoration
Buffer Width			el II Restoration
0-50			el III Restoration
51-150			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of MC, Permanent Perennial	1282.804307	#DIV/0!

Extended Upland Buffer Zone

andout for the definitions of the Buffer Zone Mitigation Extents and Types (below) e buffer width for each channel side (Left Bank and Right Bank) *Note³: Select the appropriate mitigation type

Left Bank **Buffer Width** Right Bank 0-50 51-150 Average Buffer 0

Width/Side

West Virginia Stream and Wetland Valuation Metric UT5 of MC, Intermittent (1 of 2)

			alo Mt. Surface Mine IMPACT COORDINATES: Lat (in Decimal Degrees)			t.	37° 44' 29.13"	Lon.	82° 14' 19.42"	WEATHER: 60 Cloudy		DATE:	May 19, 2010
STREAM CLASSIFICATION:	II	ntermittent	IMPACT STREAM/SITE ID A (% stream slope, watershed size {acr				5th Unnamed Trib % Streambed Slope, Ac			MITIGATION STREAM CLASS./SITE (% stream slope, watershed size {acrea			
STREAM IMPACT LENGTH:	888	FORM OF MITIGATION:		MIT COORD (in Decimal D		i.		Lon.		PRECIPITATION PAST 48 HRS:	0	Mitigation Length:	
Column No. 1- Impact Existing	g Condition (Deb	pit)	Column No. 2- Mitigation Existing Con	dition - Baseline (C	Credit)		Column No. 3- Mitigation Pro Post Completion		rs	Column No. 4- Mitigation Project Post Completion (Cro		Column No. 5- Mitigation Proje	cted At Maturity (Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	4	Average	HGM Sco	e (attach data forms):		Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):	Average
Hydrology	0.75		Hydrology			Hydrology				Hydrology		Hydrology	
Biogeochemical Cycling	0.97	0.86333333	Biogeochemical Cycling		0	Biogeoche	mical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling	0
Habitat PART I - Physical, Chemical and	0.87 I Biological Indic	ators	PART I - Physical, Chemical and E	Biological Indicators	's	Habitat PA	RT I - Physical, Chemical ar	nd Biological Indic	ators	Habitat PART I - Physical, Chemical and Bi	ological Indicators	Habitat PART I - Physical, Chemical a	nd Biological Indicators
	Points Range Scale	Site Score		Points Range S	Site Score			Points Range	Site Score		Points Range Site Score Scale		Points Range Site Score Scale
PHYSICAL INDICATOR (Applies to all streams	101		PHYSICAL INDICATOR (Applies to all streams			PHYSICAL	INDICATOR (Applies to all stream			PHYSICAL INDICATOR (Applies to all streams of		PHYSICAL INDICATOR (Applies to all stream	18888
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RB	P (High Gradient Data Sheet	3)		USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet	
Epifaunal Substrate/Available Cover	0-20	13	Epifaunal Substrate/Available Cover	0-20			Substrate/Available Cover	0-20		· · ·	0-20	Epifaunal Substrate/Available Cover	0-20
2. Embeddedness	0-20	14	2. Embeddedness	0-20		2. Embedde	dness	0-20		2. Embeddedness	0-20	2. Embeddedness	0-20
3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20			Depth Regime	0-20			0-20	3. Velocity/ Depth Regime	0-20
Sediment Deposition	0-20	16	Sediment Deposition	0-20			Deposition	0-20		· ·	0-20	Sediment Deposition	0-20
5. Channel Flow Status	0-20 0-1	11	5. Channel Flow Status	0-20 0-1			Flow Status	0-20 0-1			0-20 0-1	5. Channel Flow Status	0-20 0-1
6. Channel Alteration	0-20	14	6. Channel Alteration	0-20		6. Channel		0-20			0-20	6. Channel Alteration	0-20
7. Frequency of Riffles (or bends)	0-20	6	7. Frequency of Riffles (or bends)	0-20			y of Riffles (or bends)	0-20			0-20	7. Frequency of Riffles (or bends)	0-20
8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20			bility (LB & RB)	0-20		***	0-20	8. Bank Stability (LB & RB)	0-20
Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20	16 12	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20			e Protection (LB & RB) Vegetative Zone Width (LB & RB)	0-20			0-20 0-20	Vegetative Protection (LB & RB) Riparian Vegetative Zone Width (LB & RB)	0-20 0-20
Total RBP Score	Suboptimal	126	Total RBP Score	Poor	0	Total RBP		Poor	0	Total RBP Score	Poor 0	Total RBP Score	Poor 0
Sub-Total		0.63	Sub-Total		0	Sub-Total			0	Sub-Total	0	Sub-Total	0
CHEMICAL INDICATOR (Applies to Intermitte	ent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitten	t and Perennial Stream	ns)	CHEMICAL	INDICATOR (Applies to Interm	ittent and Perennial St	eams)	CHEMICAL INDICATOR (Applies to Intermittent a	and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermi	ttent and Perennial Streams)
WVDEP Water Quality Indicators (General	al)		WVDEP Water Quality Indicators (General)	ı			ter Quality Indicators (Gene	eral)		WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	ral)
Specific Conductivity			Specific Conductivity		(1)	Specific Co	nductivity			Specific Conductivity		Specific Conductivity	
<=99 - 90 points	0-90	31	nH	0-90		nH		0-90		nH	0-90	nH	0-90
	0-80	6.80		5-90 0-1		V 11		5-90 0-1			5-90 0-1	P**	5-90 0-1
6.0-8.0 = 80 points	0-00	6.89		5-90				5-90			3-30		5-90
DO			DO			DO				DO		DO	
	10-30	10.2		10-30				10-30			10-30		10-30
Sub-Total	L	1	Sub-Total		0	Sub-Total			0	Sub-Total	0	Sub-Total	0
BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermitt	ent and Perennial Strea	ams)	BIOLOGIC	AL INDICATOR (Applies to Inte	ermittent and Perenn	al Streams)	BIOLOGICAL INDICATOR (Applies to Intermitte	ent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	rmittent and Perennial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream	Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)	
Poor	0-100 0-1	24.5		0-100 0-1				0-100 0-1			0-100 0-1		0-100 0-1
Sub-Total		0.145	Sub-Total		0	Sub-Total			0	Sub-Total	0	Sub-Total	0
PART II - Index and U	Unit Score		PART II - Index and Un	it Score			PART II - Index and	Unit Score		PART II - Index and Unit	t Score	PART II - Index and	Unit Score
Index	Linear Feet	Unit Score	Index	Linear Feet U	Init Score		Index	Linear Feet	Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet Unit Score
0.7275	888	646.02			2		0	0	0				
			0	0 1	0 11	1				0	0 0	0	1 0 1 0

UT5 of MC, Intermittent (2 of 2)

		DADT III. Import Footors			
	(0	PART III - Impact Factors	=\		
	(See instruction	age to insert default values for MITIGATION BANKING and	I ILF)		
Temporal Loss-Construction			Lo	ong-term Protection	
*Note: Reflects duration of aquatic functional loss between the time of an impact	t (debit) and completion of compensatory	% Add. Mitigation	on and Monitoring Period	Lo	ong-Term Protection (Years)
mitigation (credit).					
	4-				
Years	15				
Sub-Total Sub-Total	0.327375				
T 11 11 11 11					404
Temporal Loss-Maturity	as time required for meturity, as it relates		0 Year Monitoring		101
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritus		Sub-Total			0
corridor).	within riparian stream of wettand burier		DADT IV. In a	dans ta Unit Caana (0
oomdor).			PART IV - Inc	dex to Unit Score C	Conversion
		Final Index Score	Linear Feet	Unit Score	ILF Costs
% Add. Mitigation	Temporal Loss-Maturity (Years)	(Debit)		(Debit)	(Offsetting Debit Units)
		1.291541667	888	1146.889	\$917,511.20
					12 /2 2
2004	25				
30% Sub-Total	0.23666667				
Sub-10tal	0.23000001				
	DADT	/- Comparison of Unit Scores and Projected Balance			
	FANI	7- Companson of Onit Scores and Projected Balance			

PART V- Comparison of Unit Scores and Projected Balance									
Final Unit Score (Debit) [No Net Loss Value]	1146.889	Mitigation Existing Condition - Baseline (Credit)		Mitigation Projected at Five Years Post Completion (Credit)		Mitigation Projected at Ten Years Post Completion (Credit)		Mitigation Projected At Maturity (Credit)	
FINAL PROJECTED NET BALANCE					0		0		0

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for you *Note2: Place an "X" in the appropriate category (only select one).	ır project		
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration]	

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
UT5 of MC, Intermittent	1146.889	#DIV/0!

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank						
	0-50						
	51-150						
Buffer Width	Right Bank						
	0-50						
	51-150						
Average Buffer Width/Side	0						

SWVM WORKSHEETS – PROPOSED OFF-SITE AND ON-SITE ESTABLISHMENT CHANNELS

Off-site Intermittent Establishment (1 of 2)

USACE FILE NO./Project Name:			llo Mt. Surface Mine ermit No. S-5018-07	IMPACT COOR (in Decimal D		Lat.	N/A		N/A	WEATHER:		N/A	DATE:	1-Ju	ın-10
STREAM CLASSIFICATION:	1	ntermittent	IMPACT STREAM/SITE ID / (% stream slope, watershed size {ac							MITIGATION STREAM CLASS./SIT			Tributaries of Pigeon >4% Streambed Slope, < 1 Acr		
STREAM IMPACT LENGTH:		FORM OF MITIGATION:	Permittee Responsible-Offsite	MIT COORDI (in Decimal D	-	Lat.	Lon.			PRECIPITATION PAST 48 HRS:	'	V/A	Mitigation Length:	16,	345
Column No. 1- Impact Existin	ng Condition (Deb	pit)	Column No. 2- Mitigation Existing Co.	ondition - Baseline (C	redit)		Column No. 3- Mitigation Projected Post Completion (Credi		ears	Column No. 4- Mitigation Proje Post Completion (ears	Column No. 5- Mitigation Proje	ected At Maturity (C	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):	Α	Average		HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average
Hydrology			Hydrology			l	Hydrology	0.5		Hydrology	0.6		Hydrology	0.61	
Biogeochemical Cycling		0	Biogeochemical Cycling		0			0.61	0.606666667	Biogeochemical Cycling	0.71	0.68	Biogeochemical Cycling	0.72	0.6866667
Habitat			Habitat				Habitat 0).71		Habitat	0.73		Habitat	0.73	
PART I - Physical, Chemical and	d Biological Indic	ators	PART I - Physical, Chemical and	Biological Indicators	s		PART I - Physical, Chemical and Biolo	ogical Ind	icators	PART I - Physical, Chemical and	Biological Ind	cators	PART I - Physical, Chemical a	nd Biological Indic	cators
	Points Range Scale	Site Score		Points Range S Scale	Site Score		Points Scale	s Range	Site Score		Points Rang Scale	e Site Score		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all stream	ms classifications)		PHYSICAL INDICATOR (Applies to all streams	ns classifications)			PHYSICAL INDICATOR (Applies to all streams classification)	cations)		PHYSICAL INDICATOR (Applies to all streams	classifications)		PHYSICAL INDICATOR (Applies to all street	ams classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)				JSEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet	:)	
Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover 0-20		10	Epifaunal Substrate/Available Cover	0-20	10	Epifaunal Substrate/Available Cover	0-20	10
2. Embeddedness	0-20		2. Embeddedness	0-20			2. Embeddedness 0-20		8	2. Embeddedness	0-20	10	2. Embeddedness	0-20	10
3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20			3. Velocity/ Depth Regime 0-20		8	3. Velocity/ Depth Regime	0-20	10	3. Velocity/ Depth Regime	0-20	10
4. Sediment Deposition	0-20		Sediment Deposition	0-20			4. Sediment Deposition 0-20		13	Sediment Deposition	0-20	13	Sediment Deposition	0-20	13
5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20			5. Channel Flow Status 0-20	0-1	8	5. Channel Flow Status	0-20	8	5. Channel Flow Status	0-20	8
6. Channel Alteration	0-20		6. Channel Alteration	0-20			6. Channel Alteration 0-20		17	6. Channel Alteration	0-20	17	6. Channel Alteration	0-20	17
7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20			7. Frequency of Riffles (or bends) 0-20		7	7. Frequency of Riffles (or bends)	0-20	7	7. Frequency of Riffles (or bends)	0-20	7
8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20			B. Bank Stability (LB & RB) 0-20		14	8. Bank Stability (LB & RB)	0-20	14	8. Bank Stability (LB & RB)	0-20	14
9. Vegetative Protection (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20			D. Vegetative Protection (LB & RB) 0-20		13	9. Vegetative Protection (LB & RB)	0-20	13	9. Vegetative Protection (LB & RB)	0-20	13
10. Riparian Vegetative Zone Width (LB & RB)			10. Riparian Vegetative Zone Width (LB & RB)	0-20			10. Riparian Vegetative Zone Width (LB & RB) 0-20		9	10. Riparian Vegetative Zone Width (LB & RB)	0-20	10	10. Riparian Vegetative Zone Width (LB & RB		10
Total RBP Score	Poor	0	Total RBP Score	Poor	0			arginal	107	Total RBP Score	Marginal	112	Total RBP Score	Marginal	112
Sub-Total	•	0	Sub-Total		0		Sub-Total	Ĭ	0.535	Sub-Total		0.56	Sub-Total		0.56
CHEMICAL INDICATOR (Applies to Intermitte	tent and Perennial St	reams)	CHEMICAL INDICATOR (Applies to Intermitter	ent and Perennial Streams	s)		CHEMICAL INDICATOR (Applies to Intermittent and Per	rennial Stre	ams)	CHEMICAL INDICATOR (Applies to Intermitter	nt and Perennial	Streams)	CHEMICAL INDICATOR (Applies to Interm	ittent and Perennial Str	reams)
WVDEP Water Quality Indicators (Genera	al)		WVDEP Water Quality Indicators (General	ıl)			WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (General)		WVDEP Water Quality Indicators (Gene	eral)	
Specific Conductivity			Specific Conductivity		()		Specific Conductivity			Specific Conductivity			Specific Conductivity		
	0-90			0-90			0-90		40.56		0-90	40.56		0-90	40.56
100-199 - 85 points							<=99 - 90 points	_		<=99 - 90 points			<=99 - 90 points		
рн	0.1	600	рн	0.1			OH	0-1		рн	0.1		рн	0.1	
5.6-6.0 = 45 points	0-80			5-90			6.0-8.0 = 80 points	0-1	7.44	6.0-8.0 = 80 points	5-90	7.44	6.0-8.0 = 80 points	5-90	7.44
DO		0	DO				0.0 0.0 = 00 points	-		DO			DO		
	10-30			10.00			1	,	40.20		40.00	40.20		40.00	40.22
	10-30			10-30			>5.0 = 30 points	<u> </u>	10.36	>5.0 = 30 points	10-30	10.36	>5.0 = 30 points	10-30	10.36
Sub-Total			Sub-Total		0		Sub-Total		0.55	Sub-Total		1	Sub-Total		1
BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial	Streams)	BIOLOGICAL INDICATOR (Applies to Intermit	ittent and Perennial Strea	ams)		BIOLOGICAL INDICATOR (Applies to Intermittent and	d Perennia	Streams)	BIOLOGICAL INDICATOR (Applies to Interm	ittent and Perer	nial Streams)	BIOLOGICAL INDICATOR (Applies to Int	ermittent and Perenn	ial Streams)
WV Stream Condition Index (WVSCI)	1 1		WV Stream Condition Index (WVSCI)				NV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)	<u> </u>	
0	0-100 0-1			0-100 0-1			Good 0-100	0-1	68	Good	0-100 0-1	68	Good	0-100 0-1	68
Sub-Total		0	Sub-Total		0		Sub-Total		0.68	Sub-Total	1	0.68	Sub-Total		0.68
			<u></u>			L			-						
PART II - Index and t	Unit Score		PART II - Index and U	Jnit Score			PART II - Index and Unit S	Score		PART II - Index and U	nit Score		PART II - Index and	d Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet Ur	nit Score		Index Lines	ar Feet	Unit Score	Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score
0.325	0	0	0	16345	0		0.5975 16	6345	9766.1375	0.713333333	16345	11659.4333	0.716666667	16345	11713.917
				1		IJ					l				1

West Virginia Stream and Wetland Valuation Metric Off-site Establishment Intermittent (2 of 2)

	(See instruction	PART III - Impact Fa
Temporal Loss-Construction		
Note: Reflects duration of aquatic functional loss between the time of an imp mitigation (credit).	act (debit) and completion of compensatory	
Years	15	
Sub-Total	0.14625	
Temporal Loss-Maturity Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detrite corridor).		
% Add. Mitigation	Temporal Loss-Maturity (Years)	
Č	, ,	
30%	25	
Sub-Total	0.13	

ues for MITIGATION BANKING and ILF)									
	Lor	ng-term Protection							
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)							
	0 + 5/10 Year Monitoring	101							
	Sub-Total	0							

PART IV - Index to Unit Score Conversion									
Final Index Score (Debit)	Linear Feet	Unit Score ILF Costs (Debit) (Offsetting Debit Units)							
0.60125	0	0	\$0.00						

PART V- Comparison of Unit Scores and Projected Balance										
Final Unit Score (Debit) [No Net Loss Value]	0	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	9766.1375	Mitigation Projected at Ten Years Post Completion (Credit)	11659.43333	Mitigation Projected At Maturity (Credit)	11713.91667	
FINAL PROJECTED NET BALANCE					9766.1375		11659.43333		11713.91667	

	Part VI - Mitigation	Considerations (Incen	itives)
Extent of Stream Restoration *Note1: Reference the Instructional handout to determine the correct Restoration Levels (below) for your pro *Note2: Place an "X" in the appropriate category (only select one).			
Level I Restoration			
Level II Restoration			Buffer \
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
Off-site Establishment Intermittent	0	12885.30833

Extended Upland Buffer Zone

*Note1: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below) *Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank			
	0-50	Preservation		
50	51-150			
Buffer Width		Right Bank		
	0-50	Preservation		
50	51-150			
Average Buffer Width/Side	50			

On-site Intermittent Establishment (1 of 2)

USACE FILE NO./Project Name:			o Mt. Surface Mine rmit No. S-5018-07		OORDINATES: nal Degrees)	Lat.	N/A	Lon.	N/A	WEATHER:	N/A	DATE:	1-Jun-	n-10
				· ·										
TREAM CLASSIFICATION:	lr	ntermittent	IMPACT STREAM/SITE ID / (% stream slope, watershed size {ac							MITIGATION STREAM CLASS./SIT (% stream slope, watershed size {acr		Tributaries of Pigeon (1.1% Streambed Slope, < 1 Acre		
STREAM IMPACT LENGTH:		FORM OF MITIGATION:	Permittee Responsible-Onsite		ORDINATES: mal Degrees)	Lat.	Varies	Lon.	Varies	PRECIPITATION PAST 48 HRS:	N/A	Mitigation Length:	29,07)79
Column No. 1- Impact Existing	Condition (Deb	it)	Column No. 2- Mitigation Existing Co	ndition - Baselir	ne (Credit)		Column No. 3- Mitigation Pro		Years	Column No. 4- Mitigation Proje		Column No. 5- Mitigation Proje	cted At Maturity (Cr	Credit)
HGM Score (attach data forms):		Average	HGM Score (attach data forms):		Average	Ī	HGM Score (attach data forms):	(Average	HGM Score (attach data forms):	Average	HGM Score (attach data forms):		Average
Hydrology			Hydrology			Ī	Hydrology			Hydrology		Hydrology		
Biogeochemical Cycling		0	Biogeochemical Cycling		0		Biogeochemical Cycling		0	Biogeochemical Cycling	0	Biogeochemical Cycling		0
Habitat			Habitat			ŀ	Habitat			Habitat		Habitat		
PART I - Physical, Chemical and B	iological Indica	ators	PART I - Physical, Chemical and	Biological Indic	ators		PART I - Physical, Chemical and	d Biological In	dicators	PART I - Physical, Chemical and	Biological Indicators	PART I - Physical, Chemical at	nd Biological Indicat	ators
	Points Range Scale	Site Score		Points Range Scale	e Site Score			Points R	inge Site Score		Points Range Site Score Scale		Points Range Scale	e Site Score
PHYSICAL INDICATOR (Applies to all streams of	classifications)		PHYSICAL INDICATOR (Applies to all stream:	s classifications)		F	PHYSICAL INDICATOR (Applies to all stream	ms classifications	s)	PHYSICAL INDICATOR (Applies to all streams	s classifications)	PHYSICAL INDICATOR (Applies to all stream	ıms classifications)	
USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)			Ī	USEPA RBP (High Gradient Data Sheet)			USEPA RBP (High Gradient Data Sheet)		USEPA RBP (High Gradient Data Sheet)	
Epifaunal Substrate/Available Cover	0-20		Epifaunal Substrate/Available Cover	0-20			Epifaunal Substrate/Available Cover	0-20	11	Epifaunal Substrate/Available Cover	0-20 13	Epifaunal Substrate/Available Cover	0-20	15
2. Embeddedness	0-20		2. Embeddedness	0-20		2	2. Embeddedness	0-20	8	Embeddedness	0-20	2. Embeddedness	0-20	11
3. Velocity/ Depth Regime	0-20		3. Velocity/ Depth Regime	0-20		3	3. Velocity/ Depth Regime	0-20	11	Velocity/ Depth Regime	0-20	Velocity/ Depth Regime	0-20	11
1. Sediment Deposition	0-20		Sediment Deposition	0-20		4	4. Sediment Deposition	0-20	8	Sediment Deposition	0-20	Sediment Deposition	0-20	10
5. Channel Flow Status	0-20 0-1		5. Channel Flow Status	0-20 0-1		5	5. Channel Flow Status	0-20	D-1 8	5. Channel Flow Status	0-20	5. Channel Flow Status	0-20 0-1	8
6. Channel Alteration	0-20		6. Channel Alteration	0-20		6	6. Channel Alteration	0-20	15	Channel Alteration	0-20	6. Channel Alteration	0-20	15
7. Frequency of Riffles (or bends)	0-20		7. Frequency of Riffles (or bends)	0-20		2	7. Frequency of Riffles (or bends)	0-20	15	7. Frequency of Riffles (or bends)	0-20 15	7. Frequency of Riffles (or bends)	0-20	15
8. Bank Stability (LB & RB)	0-20		8. Bank Stability (LB & RB)	0-20		8	B. Bank Stability (LB & RB)	0-20	18	8. Bank Stability (LB & RB)	0-20	8. Bank Stability (LB & RB)	0-20	18
Vegetative Protection (LB & RB) Regetative Zone Width (LB & RB)	0-20		9. Vegetative Protection (LB & RB)	0-20		9	9. Vegetative Protection (LB & RB)	0-20	6	Vegetative Protection (LB & RB) Region 10. Riparian Vegetative Zone Width (LB & RB)	0-20 11	9. Vegetative Protection (LB & RB)	0-20	16
Total RBP Score	0-20 Poor	0	Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Poor	0	F	10. Riparian Vegetative Zone Width (LB & RB) Total RBP Score	0-20 Margina	102	Total RBP Score	0-20 6 Suboptimal 118	 Riparian Vegetative Zone Width (LB & RB) Total RBP Score 	0-20 Suboptimal	127
Sub-Total	1 001	0	Sub-Total	1 001	0	9	Sub-Total	Warging	0.51	Sub-Total	0.59	Sub-Total	Ouboptimal	0.635
CHEMICAL INDICATOR (Applies to Intermittent	and Perennial Stre	eams)	CHEMICAL INDICATOR (Applies to Intermitte	nt and Perennial St	treams)	C	CHEMICAL INDICATOR (Applies to Intermit	tent and Perennia	al Streams)	CHEMICAL INDICATOR (Applies to Intermitten	nt and Perennial Streams)	CHEMICAL INDICATOR (Applies to Intermi	ttent and Perennial Stre	reams)
WVDEP Water Quality Indicators (General)			WVDEP Water Quality Indicators (Genera	n		,	WVDEP Water Quality Indicators (Gener	al)		WVDEP Water Quality Indicators (General	D	WVDEP Water Quality Indicators (Gene	eral)	
Specific Conductivity			Specific Conductivity	.,			Specific Conductivity			Specific Conductivity	,	Specific Conductivity		
·	0-90			0-90			-	0-90	40.56		0-90 40.56	-	0-90	40.56
100-199 - 85 points						L	<=99 - 90 points		10100	<=99 - 90 points	10.00	<=99 - 90 points		
рн	0-1	400	рн	0-1		Ŀ	OH)-1	рн	0-1	рн	0-1	
5.6-6.0 = 45 points	0-80			5-90			6.0-8.0 = 80 points	5-90	7.44	6.0-8.0 = 80 points	5-90 7.44	6.0-8.0 = 80 points	5-90	7.44
DO :		0	DO		0		DO .			DO		DO .		
	10-30			10-30			50 00 II	10-30	10.36	· · ·	10-30 10.36	50.00	10-30	10.36
			Sub-Total		0	9	>5.0 = 30 points Sub-Total		0.55	>5.0 = 30 points Sub-Total	1	>5.0 = 30 points Sub-Total		1
BIOLOGICAL INDICATOR (Applies to Intermitte	nt and Perennial S	Streams)	BIOLOGICAL INDICATOR (Applies to Intermi	ttent and Perennial	Streams)		BIOLOGICAL INDICATOR (Applies to Inter	rmittent and Pe		BIOLOGICAL INDICATOR (Applies to Interm	nittent and Perennial Streams)	BIOLOGICAL INDICATOR (Applies to Inte	ermittent and Perennia	ial Streams)
WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)			١	WV Stream Condition Index (WVSCI)			WV Stream Condition Index (WVSCI)		WV Stream Condition Index (WVSCI)		
	0-100 0-1			0-100 0-1				0-100	D-1 68		0-100 0-1 68		0-100 0-1	68
0 Sub-Total		0	Sub-Total		0	9	Good Sub-Total		0.68	Good Sub-Total	0.68	Good Sub-Total		0.68
042 1014.	ı		logo rota			Ľ	oub rotal		0.00	eur rota.	0.00	GG2 . 0(d).		1 0.00
PART II - Index and Un	it Score		PART II - Index and U	nit Score			PART II - Index and	Unit Score		PART II - Index and U	nit Score	PART II - Index and	I Unit Score	
Index	Linear Feet	Unit Score	Index	Linear Feet	Unit Score	ļ	Index	Linear Fo	et Unit Score	Index	Linear Feet Unit Score	Index	Linear Feet	Unit Scor
	1				1 1				1				1	

On-site Intermittent Establishment (2 of 2)

PART III - Impact Factors

	(See instruction
Temporal Loss-Construction	`
Note: Reflects duration of aquatic functional loss between the time of an imp	
mitigation (credit).	. , , , , , , , , , , , , , , , , , , ,
Years	15
Sub-Total	0.14625
Temporal Loss-Maturity	
*Note: Period between completion of compensatory mitigation measures and	•
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detrit	•
*Note: Period between completion of compensatory mitigation measures and	•
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detrit	•
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detrit	•
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detriti corridor).	is within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detriti corridor).	is within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritic corridor).	is within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritic corridor).	is within riparian stream or wetland buffer
*Note: Period between completion of compensatory mitigation measures and to function (i.e. maturity of tree stratum to provide organic matter and detritic corridor).	is within riparian stream or wetland buffer

page to insert default values for MITIGATION BANKING and ILF)						
	Long-term Protection					
	% Add. Mitigation and Monitoring Period	Long-Term Protection (Years)				
	2 7/2 / 14 //	404				
	0 + 5/10 Year Monitoring	101				
	Sub-Total	0				

PART IV - Index to Unit Score Conversion						
Final Index Score (Debit)	Linear Feet	Unit Score (Debit)	ILF Costs (Offsetting Debit Units)			
0.60125	0	0	\$0.00			

	PART V- Comparison of Unit Scores and Projected Balance								
Final Unit Score (Debit) [No Net Loss Value]	0	Mitigation Existing Condition - Baseline (Credit)	0	Mitigation Projected at Five Years Post Completion (Credit)	16865.82	Mitigation Projected at Ten Years Post Completion (Credit)	22003.11	Mitigation Projected At Maturity (Credit)	22439.295
INAL PROJECTED NET BALANCE					16865.82		22003.11		22439.295

	Part VI - Mitigation	n Considerations (Incen	itives)
Extent of Stream *Note1: Reference the Instructional handout to determine the structional handout to determine the structure of the structure	ne correct Restoration Levels (below) for your project		
Level I Restoration			
Level II Restoration			Buffer V
Level III Restoration			

Site	Impact Unit Yield (Debit)	Mitigation Unit Yield (Credit)
On-Site Establishment Intermittent	0	30293.04825

Extended Upland Buffer Zone

*Note¹: Reference Instructional handout for the definitions of the Buffer Zone Mitigation Extents and Types (below)

*Note²: Enter the buffer width for each channel side (Left Bank and Right Bank)

Buffer Width	Left Bank			
	0-50	Preservation and Re-vegetation		
50	51-150			
Buffer Width	Right Bank			
	0-50	Preservation and Re-vegetation		
50	51-150			
Average Buffer Width/Side	50			