

West Virginia Stream and Wetland Valuation Metric v2.0

(February 2011)

The SWVM is composed of six tabs including the following: Instructions, Stream Parts I-II, Stream Parts III-VI, Multiple Site Unit Comparison, Wetland Parts I-III and Wetland Parts IV-V. The SWVM has been designed to indicate where data entry is required. All cells or fields highlighted in red shall be populated by the applicant, consultant or practitioner. Below are descriptions of the information or data being requested:

Stream Valuation Metric:

Stream Parts I-II

Cell B1 [USACE File No./Project Name] -Enter USACE File Number as well as the overall project name. Mining-related projects should also include the SMCRA Permit No in this field.

Cell L1 [Impact Site Lat.] – Enter latitude coordinate in NAD 83 Decimal Degrees

Cell N1 [Impact Site Long.] – Enter longitude coordinate in NAD 83 Decimal Degrees

Cell R1 [Weather] – Enter the weather conditions on the date the assessment was performed. Ex. Cloudy, 40 degrees.

Cell X1 [Date] – Enter date of the assessment being performed

Cell B2 [Stream Classification] – Enter the classification of stream being assessed. Choices are provided from the drop-down list (i.e. ephemeral, intermittent or perennial)



Cell L2 [Impact Stream/Site ID and Site Description] – Enter the stream name, stream segment identifier (which may correlate to a drawing), % streambed slope, watershed acreage and riparian condition (i.e. mature tree stratum)

Cell W2 [Mitigation Stream Class/ Site ID Description] - Enter stream classification for stream that mitigation will be performed on and stream segment identifier (which may correlate to a drawing), % streambed slope, watershed acreage and riparian condition (i.e. mature tree stratum)

Cell B3 [Stream Impact Length] – Enter the length of the impact (in linear feet)

*Note: when using this metric to only assess mitigation (i.e. preservation) no impact length should be entered and no data is necessary in Column No. 1-Impact Existing Condition (Debit)

Cell F3 [Form of Mitigation] – Enter the form of mitigation. Choices are provided from the drop-down list

Cell L3 [Mitigation Site Lat.] – Enter the mitigation site latitude coordinate in NAD 83 Decimal Degrees

Cell N3 [Mitigation Site Long.] – Enter the mitigation longitude coordinate in NAD 83 Decimal Degrees

Cell R3 [Precipitation Past 48 Hrs] – Enter the past 48 hrs precipitation for the impact site being assessed

Cell X3 [Mitigation Length] – Enter the linear feet of the compensatory mitigation proposed

COLUMN No. 1 – Impact Existing Condition (Debit) – This column establishes the baseline conditions of the proposed impact site. All projects proposing an impact (debit) to waters of the U.S. shall enter data in this column, as follows:

Part I – Physical, Chemical and Biological Indicators

Cells B6 – B8 [HGM] – Input Hydrology, Biogeochemical Cycling and Habitat Functional Capacity Index (FCI) scores generated by completing the HGM assessment, when applicable. HGM data forms should accompany the submittal of SWVM assessments. An average is taken between the three HGM FCI scores. This is then averaged with the overall SWVM score to indicate a final index score.

Cells D13 – D22 [Physical Indicator] - Indicate the physical condition of the stream by applying the USEPA RBP. The Physical descriptor for streams relies upon the data collected for the USEPA RBP Stream Data Sheet. This part of the metric allows the user to choose the High Gradient or Low Gradient Stream Data Sheet, as applicable. This portion of the Part I is required for all stream classifications. When completing impact and mitigation site assessments on high-gradient Ephemeral streams, practitioners should insert “0”s in fields 1, 3, 5 and 7 of the USEPA RBPs.

Cells D28, D31 and D34 [Chemical Indicator] - Indicate the chemical condition or water quality of the stream by inputting the data, which is based upon key parameters historically utilized by the WVDEP. This portion of Part I shall be completed for wadeable perennial, intermittent and ephemeral stream classifications (where applicable). Ephemeral stream water quality data shall be obtained during (or a short period after) a precipitation event within the reach being assessed or immediately downstream. When the immediate downstream method is necessary this shall be noted in Cell L2 or at the bottom of the assessment sheet. In the event data for these fields are not provided, good water quality will be assumed.

Cell D39 [Biological Indicator] - Indicate the biological condition of the stream by inputting the data based upon the West Virginia Stream Condition Index (WVSCI) of the WVDEP Save Our Stream Protocol. It is recommended this portion of Part I be completed for perennial and intermittent stream classifications. In the event this data cannot be obtained (i.e. ephemeral stream), the metric will generate an index score based upon the Physical and Chemical Indicators.

COLUMN No. 2 – Mitigation Existing Condition (Credit) - All projects proposing compensatory mitigation (credit) to waters of the U.S. shall enter data in Column No. 2. This column is utilized to establish the baseline conditions for the mitigation site. In cases where an impact and mitigation will occur at the exact same site (i.e. sediment pond construction and restoration), this column should reflect baseline mitigation conditions as “0”[1].

Part I – Physical, Chemical and Biological Indicators

*Reference Part I above.

COLUMN No. 3 – Mitigation Projected at Five Years Post Completion (Credit) - All projects proposing compensatory mitigation (credit) to waters of the U.S. shall enter data in Column No. 3. This column is utilized to establish the projected condition of the site after five years of completion. Generally, there should not be a dramatic or substantial increase in functional unit scores between year 5 and 10 projected assessments (i.e. the duration of total stream buffer revegetation will typically be the last element to reach maturity for optimal functional input). The five year post-completion benchmark is also utilized to clearly identify performance standards and success criteria, which will be incorporated into Department of the Army Permits as special conditions (when it is determined five years of monitoring is appropriate by USACE).

For example purposes, a sediment pond restoration site (mitigation site) which formerly required total elimination of the riparian vegetative buffer and received a full re-vegetation application of native tree, shrub and grass stratum species would be expected to score within the following USEPA RBP individual parameter ranges (High Gradient Data Sheet) after five years of restoration.

USEPA RBP									
Epifaunal Substrate	Embeddedness	Velocity Depth Regime	Sediment Deposition	Channel Flow Status	Channel Alteration	Frequency of Riffles	Bank Stability (LB&RB)	Vetetative Protection (LB&RB)	Riparian Vegetative Zone (LB&RB)
8-12	8-12	6-10	8-13	0-20	11-15	11-18	12-16	8-12	0-20

Part I – Physical, Chemical and Biological Indicators

*Reference Part I above.

COLUMN No. 4 – Mitigation Projected at Ten Years Post Completion (Credit) - All projects proposing compensatory mitigation (credit) to waters of the U.S. shall enter data in Column No. 4. This column is utilized to establish the projected condition of the site after ten years of completion. The ten year post-completion benchmark is also utilized to clearly identify performance standards and success criteria, which will be incorporated into Department of the Army Permits as special conditions. The ten year post-completion benchmark is also utilized to clearly identify performance standards and success criteria, which will be incorporated into Department of the Army Permits as special conditions (when it is determined ten years of monitoring is appropriate by USACE).

Part I – Physical, Chemical and Biological Indicators

*Reference Part I above.

COLUMN No. 5– Mitigation Projected Upon Maturity (Credit)

All projects proposing compensatory mitigation (credit) to waters of the U.S. shall enter data in Column No. 5. This column is utilized to establish the projected condition of the site at maturity. The full restoration of a riparian buffer zone may require 40 or more years of sustained growth to contribute detritus and large woody debris, and provide light and temperature regulation.

Part I – Physical, Chemical and Biological Indicators

*Reference Part I above.

PART II – Index and Unit Score - No data entry is required in Part II, the Index Score is multiplied by the linear feet of impact (debit) to generate a raw Unit Score.

Stream Parts III-VI

Part III- Impact Factors

Cell C8 [Temporal Loss-Construction] - Enter the number of years reflecting the duration of aquatic functional loss between the time of impact (debit) and completion of compensatory mitigation (credit). For example, if Permittee-Responsible On-site mitigation is proposed and it will be five (5) years before the mitigation will be completed then enter a “5”.

DEFAULT VALUES: The default value for ILF is 4 years and Mitigation Banking (provided Mitigation Bank credits have been approved and are available) is 0 years.

Cell C19 [Temporal Loss-Maturity] - Enter the number of years representing the period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function (i.e. the full restoration of a riparian buffer zone may require 40 or more years of sustained growth to contribute detritus and large woody debris and provide light and temperature regulation).



Cell H7 [Long-term Protection] - Enter the number of years representing the period of protection proposed for the mitigation site. Long-term protection is obtained via conservation easements or deed restrictions to ensure sustainable gains in values. Perpetual protection should be entered as “101” or “Perpetual”.

DEFAULT VALUES: The default value for Mitigation Banking and/or ILF is “Perpetual” since these projects are required by the IRT to obtain perpetual protection.

Part IV- Comparison of Unit Scores and Projected Balance - No data entry is required. This part depicts the “Final Unit Score (debit)” in comparison with the Mitigation Existing Condition (credit), Mitigation Projected Upon Completion (credit) and the Mitigation Projected at Maturity (credit). The balance of the “Mitigation Projected at Maturity” shall be equal to or greater than the “Final Unit Score (debit)” to adequately offset the proposed impacts and be compliant with the national policy of “no net loss”.

Part IV- Index to Unit Score Conversion - No data entry is required. This section displays the final index score, which is utilized to generate a final debit unit score. For your convenience, this section also indicates the ILF amount that would be required to offset the final debit units.

*Note: All forms of compensatory mitigation now focus upon offsetting the final (debit) units rather than the linear feet except where the SWVM is not applicable (i.e. non-wadeable stream impacts).

Part V – Comparison of Unit Scores and Projected Balance - No data entry is required. This part depicts the “Final Unit Score (debit)” in comparison with the Mitigation Existing Condition-Baseline (credit), Mitigation Projected at Five Years (credit), Mitigation Projected at Ten Years (credit), and Mitigation Projected at Maturity (credit). Functional lift is defined as the balance between the “Mitigation Existing Condition-Baseline” and “Mitigation Projected at Maturity”. The balance of the “Mitigation Projected at Maturity” shall be equal to or greater than the “Final Unit Score (debit)” to adequately offset the proposed impacts and be compliant with the national policy of “no net loss”.

*Note: The yellow highlighted cells (Cells A43, C43 and D43) may be cut and copied to the next tab “Multiple Site Unit Comparison” for compiling data on multiple streams or stream segments. For submittal purposes, the Multiple Site Unit Comparison should be accompanied by individual Stream Valuation Metric spreadsheets for each stream or stream segment.

Part VI - Mitigation Considerations

Extent of Stream Restoration

Cells D32-D34 – Reference the IRT defined levels of Restoration and place an “x” in the appropriate Stream Restoration Level.

Extended Upland Buffer Zone

Cells F34-F37 – Insert the width of the buffer zone up to 150 feet from each stream channel side.

Cells H34-H35 and H37-H38 – Select from pull down box the class of buffer preservation and/or revegetation being performed.

Multiple Site Unit Comparison

When assessing multiple reaches or streams Cell Nos. A43-C43 should be copied and pasted into this table, which keeps a running tally of the debits and credits. When pasting choose "Paste Special" and then select "values and number format".

Wetland Valuation Metric:

Wetland Parts I-III

Cell B1 [USACE File No./Project Name] -Enter USACE File Number as well as the overall project name. Mining-related projects should also include the SMCRA Permit No in this field.

Cell L1 [Lat.] – Enter latitude coordinate in NAD 83 Decimal Degrees

Cell N1 [Long.] – Enter longitude coordinate in NAD 83 Decimal Degrees

Cell G2 [Stream/Site ID and Site Description] – Enter the wetland name, wetland identifier (which may correlate to a drawing), watershed acreage and riparian condition (i.e. mature tree stratum)

Cell B3 [Wetland Impact Acreage] – Enter the acreage of the impact

Cell F3 [Form of Mitigation] – Enter the form of mitigation. Choices are provided from the drop-down list

Cell M3 [Mitigation Acreage] – Enter the acreage of the compensatory mitigation proposed

Cell B4 [Date] – Enter date of the assessment being performed

Cell G3 [Weather Conditions] – Enter the weather conditions from the site during the assessment

Cell M4 [Precipitation Past 48 Hrs] – Enter the past 48 hrs precipitation for the site being assessed

Part I- Wetland Indicators

Cells A7 – A18 [Wetland ID] - Enter the wetland identification for each wetland impact (which may correspond to a drawing)

Cells B7 – B18 [Existing Classification] – Enter the wetland classification being assessed. Choices are provided from the drop-down list.

Cells D7 – D18 [Impacts] – Enter the amount of impacts (in acres) for each wetland.

Cells F7 –F18 [Mitigation Classification] – Enter the wetland classification being mitigated. Choices are provided from the drop-down list.

Part II- Unit Scores - No data entry is required. This part indicates the total Unit Scores or Replacement Units for each individual classification of wetlands.

Part III- Advanced Mitigation - Enter a “Yes” or “No” to indicate compensatory mitigation has been completed and determined sustainable in advance of any proposed impacts.

DEFAULT VALUES: Approved forms of advanced mitigation determined to be sustainable may be provided to offset impacts on a 1:1 ratio, within the same wetland classification.

Estimated In-Lieu Fee Costs – A comparison of the In-Lieu Fee costs associated with the proposed impacts is provided for reference purposes.

Wetland Parts IV-V

Part IV- Factors

Cell C6 [Temporal Loss-Construction] - Enter the number of years reflecting the duration of aquatic functional loss between the time of impact (debit) and completion of compensatory mitigation (credit). For example, if Permittee-Responsible On-site mitigation is proposed and it will be five (5) years before the mitigation will be completed then enter a “5”.

DEFAULT VALUES: The default value for ILF is 4 years and Mitigation Banking (providing Mitigation Bank credits have been approved and are available) is 0 years.

Cell C17 [Temporal Loss-Maturity] - Enter the number of years representing the period between completion of compensatory mitigation measures and the time required for maturity, as it relates to function.

Cell H5 [Long-term Protection] - Enter the number of years representing the period of protection proposed for the mitigation site. Long-term protection is obtained via conservation easements or deed restrictions to ensure sustainable gains in values. Perpetual protection should be entered as “101” or “Perpetual”.

DEFAULT VALUES: The default value for Mitigation Banking and/or ILF is “Perpetual” since these projects are required to obtain perpetual protection.

Part V- Final Unit Score - This part is utilized as a reference for obtaining the Replacement Index (debit), Final Unit Score to Offset (credit) and the balance. The Final Unit Score has been adjusted to compensate for the factors input in Part IV and is the final figure necessary to be entirely offset by mitigation (credit).

Cell D25 [Form of Mitigation] – Enter the form of mitigation from the drop-down list.

Cells H25 – H28 [Applicant Input Mitigation (acres)] - Enter the acreage for each classification of wetland mitigation being proposed. The balance should be equal to or greater than the “Final Unit Score to Offset (credit)” to provide an adequate level of compensatory mitigation for offsetting the proposed impacts and be compliant with the national policy of “no net loss”.