

**WETLAND AND WATERWAY DELINEATION REPORT  
FOR THE I-495 AND I-270 MANAGED LANES STUDY  
COMPENSATORY STORMWATER QUALITY TREATMENT SITES**



## **Wetland and Waterway Delineation Report for the I-495 and I-270 Managed Lanes Study Compensatory Stormwater Quality Treatment Sites**

### **INTRODUCTION**

The I-495 & I-270 Managed Lanes Study (MLS) is required to comply with Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344); the State of Maryland Environment Article Title 5, Subtitles 5 and 9 of the Maryland Annotated Code; and COMAR Title 26 to protect wetlands and waterways. All impacts to wetlands and waterways that would result from the construction of the MLS are required to be included in the Final Environmental Impact Statement (FEIS) and impacts for Phase I South of the MLS are required to be included in the revised Joint Permit Application (JPA). The MLS stormwater quality treatment requirement cannot be met onsite and therefore stormwater facilities must be constructed offsite to meet the MLS stormwater quality treatment requirement. These compensatory stormwater quality treatment facilities have the potential to impact wetlands, their buffers, and waterways and therefore these resources were delineated within the potential compensatory stormwater quality treatment limits of disturbance (LODs) to determine this impact.

On behalf of the Maryland Department of Transportation State Highway Administration (MDOT SHA), the MLS Natural Resources Team conducted a review of 1,000+ potential compensatory stormwater quality treatment sites identified to meet the stormwater quality requirements of the MLS from October 2020 through October 2021. Based on the selection of the Preferred Alternative (Alternative 9 – Phase 1 South), further analysis and development of the on-site SWM, and efforts to meet stormwater quality treatment requirements closer to the Phase 1 South corridor while minimizing impacts to private properties and environmental resources, the number of compensatory stormwater quality treatment sites was reduced to 67 sites, all of which are stormwater quality treatment. The compensatory stormwater quality treatment sites selected are to support and inform the Joint Permit Application (JPA), the Final Environmental Impact Statement (FEIS), and Record of Decision (ROD). Delineation results from the selected 67 off-site compensatory stormwater quality treatment sites are presented in this appendix.

A total of 3 stream segments were delineated within the 67 compensatory stormwater quality treatment sites identified for the MDOT SHA Preferred Alternative, and are listed alphanumerically in **Attachment A**.

Supplemental information supporting the wetland and waterways delineation is included in **Attachments A through D**, as follows:

|               |                        |
|---------------|------------------------|
| Attachment A: | Waterway Feature Table |
| Attachment B: | Agency Correspondence  |
| Attachment C: | Field Datasheets       |
| Attachment D: | Photo Documentation    |

### **BACKGROUND INFORMATION**

The I-495 & I-270 MLS Natural Resources Team environmental scientists conducted a desktop investigation of mapped site topography; 100-year FEMA floodplain; vegetative cover; non-tidal and tidal wetlands and waterways; soil map unit boundaries; and hydric and highly erodible soils. Sources of these data included:

- The United States Geologic Survey (USGS) Geographic Information System (GIS) Quadrangle Mapping;

- The United States Department of Agriculture (USDA), NRCS *Web Soil Survey (WSS) for Montgomery, Anne Arundel, and Prince George's Counties, Maryland*;
- US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) GIS data;
- Maryland Department of Natural Resources (MDNR) Wetlands and Waters GIS data; and FEMA GIS floodplain mapping.

Desktop investigations served as the foundation for the wetland delineation. The potential stormwater quality treatment sites are located within the Piedmont Plateau and Atlantic Coastal Plain Physiographic Provinces. Note that no potential stormwater quality treatment sites are located within the FEMA 100-year floodplain or the Chesapeake Bay Critical Area and no potential compensatory stormwater quality treatment sites are within MDE Tier II catchments.

On December 13, 2021, a USFWS IPaC online database query indicated that the federally threatened Northern Long-Eared Bat (NLEB) (*Myotis septentrionalis*) and candidate species Monarch Butterfly (*Danaus plexippus*) may occur in the compensatory stormwater quality treatment LODs. The USFWS determination key for this species concluded that the construction of the compensatory stormwater quality treatment LODs may affect the NLEB; “however, any take that may occur as a result of the Action is not prohibited under the EFA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).” The verification letter produced from the determination key states that the answers provided in the key conclude the coordination under ESA Section 7(a)(2) with respect to the NLEB. Section 7 coordination is not required for the Monarch Butterfly. Requests for information on the presence of fisheries resources and RTE species were sent to the Maryland Department of Natural Resources Environmental Review Program (MDNR-ERP) and Wildlife and Heritage Section (MDNR-WH) on December 14, 2021. MDNR-ERP allows applicants to pre-screen projects using their new online Aquatic Resources Pre-Screening Tool. The pre-screening tool did not indicate the presence of any sensitive species project review areas, Tier II watersheds, or trout populations within the compensatory stormwater quality treatment LODs. A response from MDNR-WH was received on February 1, 2022, stating that there are no specific concerns or recommendations regarding potential impacts to state or federal listed, candidate, proposed, or rare plant or animal species within the 67 off-site compensatory stormwater quality treatment LODs provided. Agency correspondence documents can be found in **Attachment B**.

## FIELD ASSESSMENTS – WETLAND DELINEATION

### METHODS

The study area was split into 11 field sub-segments, Sub-segments 30-40, for the purposes of the off-site compensatory stormwater site wetlands and waterways field investigation, and field sub-segment numbers were incorporated into the naming convention of features within each sub-segment. Wetlands and waterways were delineated if identified within the potential stormwater quality treatment LODs and within a 25-foot buffer of each of the LODs to ensure that any wetland buffers were delineated within the LODs.

Wetland features were delineated in accordance with the following:

- U. S. Army Corps of Engineers. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region, Version 2.0*. Ed. J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, C.V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: US Army Engineer Research and Development Center;
- U. S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0*. Ed. J.F. Berkowitz, J.S.

Wakeley, R.W. Lichvar, C.V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: US Army Engineer Research and Development Center; and,

- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss. Technical Report Y-87-1.

These manuals employ a three-parameter approach to wetland identification using (1) hydrology, (2) hydrophytic vegetation, and (3) hydric soils. All three parameters must be present for an area to be considered a jurisdictional wetland under Section 404 of the Clean Water Act (CWA). Routine wetland determination methods with onsite inspection were used to determine the presence of wetlands in the study area.

Wetland scientists completed a functions and values assessment for all delineated wetlands using the USACE New England Method as presented in The Highway Methodology Workbook Supplement – Wetland Functions and Values; A Descriptive Approach (USACE, 1999). Along with the best professional judgment of an experienced wetland scientist, this method uses the presence of certain physical characteristics broadly understood to indicate the presence of related functions. The functions and values assessed include:

- |   |                                     |
|---|-------------------------------------|
| • Groundwater recharge/discharge,       | • Sediment/shoreline stabilization, |
| • Floodflow alteration,                 | • Wildlife habitat,                 |
| • Fish and shellfish habitat,           | • Recreation,                       |
| • Sediment/toxicant/pathogen retention, | • Educational/scientific value,     |
| • Nutrient                              | • Uniqueness/heritage,              |
| removal/retention/transformation,       | • Visual quality/aesthetics, and    |
| • Production export,                    | • Endangered species habitat.       |

Waterways features were delineated using the limits defined in 33 Code of Federal Regulations (CFR) § 328. The boundaries of nontidal waterways features were set at the ordinary high water (OHW) mark and include, but are not limited to: palustrine open water (POW or ponds), stream systems (waterways), and some disturbed areas. The OHW mark was determined in the field using physical characteristics established by the fluctuations of water (e.g., change in plant community, changes in the soil character, shelving) in accordance with USACE Regulatory Guidance Letter No. 05-05. Federal jurisdiction of delineated features was determined in accordance with the pre-2015 regulatory definition of Waters of the US, which went into effect on August 31, 2021, and previously delineated feature data was supplemented to determine likely jurisdiction under the pre-2015 definition. Waterway functional assessment was completed in accordance with Beta version of the Maryland Stream Mitigation Framework which requires the use of EPA Rapid Habitat Assessment methods for stream segments less than 300 feet in length. The EPA Rapid Habitat Assessment datasheets for each feature are included in **Attachment C**.

Potential stormwater quality treatment sites that were almost entirely covered by wetlands and waterways features were not delineated, but instead the location, size, and basic information of features was noted and they were considered “walkthrough wetlands” or “walkthrough waterways.” Data forms were not completed for the walkthrough features because the potential stormwater quality treatment sites with a high concentration of wetlands and waterways were subsequently eliminated from the site search based on their significant impacts to wetlands and waterways.

As part of the avoidance and minimization process, each stormwater quality treatment LOD was rated based on its relative impact to wetlands and waterways to determine whether it could be considered for

compensatory stormwater quality treatment. Stormwater quality treatment LODs that would result in zero functional loss to wetlands or waterways were given a rating of “no impact” and were considered viable stormwater quality treatment sites from a wetlands and waterways perspective. Stormwater quality treatment LODs that would have minor impact to wetlands and/or waterways, where the functional loss would be partially compensated by the stormwater activity, were rated as “minor impact” sites and were included in the potential compensatory stormwater quality treatment site list. Sites rated as having a “moderate impact” had wetlands and/or waterways covering less than 50% of the site, and potential re-configuration of the site by the SWM Team could potentially reduce impacts to a level that would be acceptable to the regulatory agencies. These sites were either re-configured to remove much of the wetland and waterway impact or they were dropped from consideration. Sites were rated as having “significant impact” when greater than 50% of the site was covered by wetlands and/or waterways and construction of the site would result in functional loss to wetlands and/or waterways. These sites were either majorly re-configured or dropped from consideration as a compensatory stormwater quality treatment site.

Datasheets for waterways delineated within the 67 selected off-site compensatory stormwater quality treatment LODs are included in **Attachment C** and photo documentation is included in **Attachment D**.

## RESULTS

The I-495 & I-270 MLS Natural Resources Team conducted a wetlands and waterways delineation within the study area from October 2020 through October 2021. Detailed delineation results for the selected off-site compensatory stormwater quality treatment sites are summarized in **Attachment A**, organized by sub-segment and listed alphanumerically. Locations of these delineated features are included in the stormwater quality treatment site mapping in Appendix L of the *Compensatory SWM Mitigation Plan* (FEIS, Appendix D). Field datasheets and photographs for the delineated features can be found in **Attachments C** and **D**, respectively. Waterways impact data is summarized in Appendix M of the *Compensatory SWM Mitigation Plan* (FEIS, Appendix D) and detailed in the Compensatory Stormwater JPA Impact Tables.

## ATTACHMENT A: WATERWAY FEATURE TABLE





Table 1. Waterway Features  
Compensatory Stormwater Management Sites - Phase I South

| FEATURE ID     | CLASSIFICATION | ASSOCIATED SWM LOD | DOMINANT VEGETATION (WETLANDS) | CHANNEL -<br>APPROXIMATE<br>WIDTHS/DEPTHS                    | COVER TYPE ON LEFT AND RIGHT<br>BANKS (WATERWAYS)                 |
|----------------|----------------|--------------------|--------------------------------|--|---|
| SUB-SEGMENT 31 |                |                    |                                |  |   |
| 31000          | Intermittent   | WAS-4641           | -                              | Silt, cobble, gravel<br>Width: 3 ft<br>Depth: 0.5-1 in       | Right: forest/maintained lawn<br>Left: forest/emergent vegetation |
| SUB-SEGMENT 32 |                |                    |                                |  |   |
| 32L            | Perennial      | WAS-3622           | -                              | Sand, cobble, gravel, bedrock<br>Width: 15 ft<br>Depth: 2 ft | Right: forest<br>Left: rock/riprap                                |
| 32M            | Perennial      | WAS-3622           | -                              | Silt, muck<br>Width: 3 ft<br>Depth: 4 in                     | Right: Herbaceous vegetation<br>Left: scrub-shrub                 |

## **ATTACHMENT B: AGENCY CORRESPONDENCE**





## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
Chesapeake Bay Ecological Services Field Office  
177 Admiral Cochrane Drive  
Annapolis, MD 21401-7307  
Phone: (410) 573-4599 Fax: (410) 266-9127

<http://www.fws.gov/chesapeakebay/>  
<http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html>

In Reply Refer To:

December 13, 2021

Consultation Code: 05E2CB00-2022-SLI-0445

Event Code: 05E2CB00-2022-E-01201

Project Name: I-495 & I-270 MLS Offsite Compensatory SWM Sites

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

<http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF>

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan ([http://www.fws.gov/windenergy/eagle\\_guidance.html](http://www.fws.gov/windenergy/eagle_guidance.html)). Additionally, wind energy projects should follow the wind energy guidelines (<http://www.fws.gov/windenergy/>) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at:

<http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm>;

<http://www.towerkill.com>; and

[http://](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html)

[www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html](http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html).

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
  - USFWS National Wildlife Refuges and Fish Hatcheries
  - Wetlands
-

## Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**Chesapeake Bay Ecological Services Field Office**

177 Admiral Cochrane Drive

Annapolis, MD 21401-7307

(410) 573-4599

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## Project Summary

Consultation Code: 05E2CB00-2022-SLI-0445

Event Code: Some(05E2CB00-2022-E-01201)

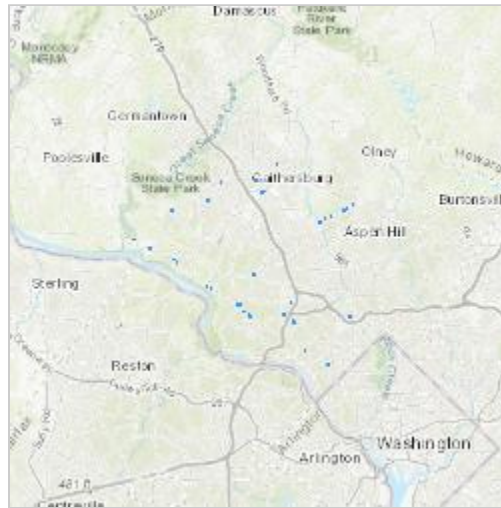
Project Name: I-495 & I-270 MLS Offsite Compensatory SWM Sites

Project Type: TRANSPORTATION

Project Description: The MLS stormwater requirement cannot be met onsite and therefore stormwater facilities must be constructed offsite to meet the MLS stormwater requirement. The offsite compensatory stormwater LODs are in various locations in Montgomery County, Maryland.

Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@39.12914980000005,-77.23456951672725,14z>



Counties: Montgomery County, Maryland

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## Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries<sup>1</sup>, as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## Mammals

| NAME  | STATUS     |
|---|------------|
| Northern Long-eared Bat <i>Myotis septentrionalis</i><br>No critical habitat has been designated for this species.<br>This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> <li>Projects with a federal nexus that have tree clearing = to or &gt; 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key</li> </ul> Species profile: <a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a> | Threatened |

## Insects

| NAME  | STATUS    |
|---|-----------|
| Monarch Butterfly <i>Danaus plexippus</i><br>No critical habitat has been designated for this species.<br>This species only needs to be considered under the following conditions: <ul style="list-style-type: none"> <li>The monarch is a candidate species and not yet listed or proposed for listing. There are generally no section 7 requirements for candidate species (FAQ found here: <a href="https://www.fws.gov/savethemonarch/FAQ-Section7.html">https://www.fws.gov/savethemonarch/FAQ-Section7.html</a>).</li> </ul> Species profile: <a href="https://ecos.fws.gov/ecp/species/9743">https://ecos.fws.gov/ecp/species/9743</a> | Candidate |

## Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

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# USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

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## Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED.  
PLEASE VISIT [HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML](https://www.fws.gov/wetlands/data/mapper.html) OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

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## United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Chesapeake Bay Ecological Services Field Office  
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<http://www.fws.gov/chesapeakebay/>

<http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html>



In Reply Refer To:

December 13, 2021

Consultation code: 05E2CB00-2022-TA-0445

Event Code: 05E2CB00-2022-E-01202

Project Name: I-495 & I-270 MLS Offsite Compensatory SWM Sites

Subject: Verification letter for the 'I-495 & I-270 MLS Offsite Compensatory SWM Sites' project under the January 5, 2016, Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-eared Bat and Activities Excepted from Take Prohibitions.

Dear Christina Simini:

The U.S. Fish and Wildlife Service (Service) received on December 13, 2021 your effects determination for the 'I-495 & I-270 MLS Offsite Compensatory SWM Sites' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. This IPaC key assists users in determining whether a Federal action is consistent with the activities analyzed in the Service's January 5, 2016, Programmatic Biological Opinion (PBO). The PBO addresses activities excepted from "take"<sup>[1]</sup> prohibitions applicable to the northern long-eared bat under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, the Action is consistent with activities analyzed in the PBO. The Action may affect the northern long-eared bat; however, any take that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the PBO satisfies and concludes your responsibilities for this Action under ESA Section 7(a)(2) with respect to the northern long-eared bat.

Please report to our office any changes to the information about the Action that you submitted in IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation. If the Action is not completed within one year of the date of this letter, you must update and resubmit the information required in the IPaC key.

This IPaC-assisted determination allows you to rely on the PBO for compliance with ESA Section 7(a)(2) only for the northern long-eared bat. It **does not** apply to the following ESA-protected species that also may occur in the Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

If the Action may affect other federally listed species besides the northern long-eared bat, a proposed species, and/or designated critical habitat, additional consultation between you and this Service office is required. If the Action may disturb bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act is recommended.

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[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

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**Action Description**

You provided to IPaC the following name and description for the subject Action.

**1. Name**

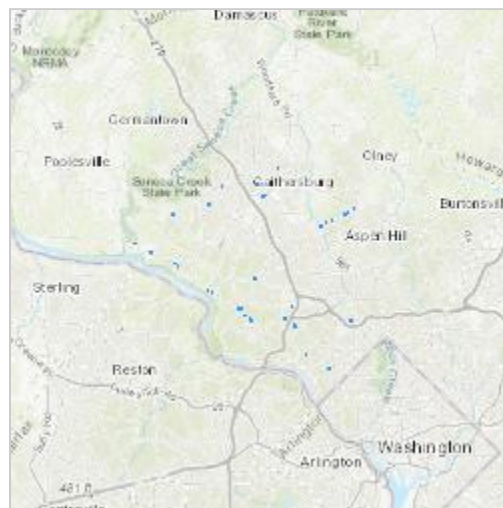
I-495 & I-270 MLS Offsite Compensatory SWM Sites

**2. Description**

The following description was provided for the project 'I-495 & I-270 MLS Offsite Compensatory SWM Sites':

The MLS stormwater requirement cannot be met onsite and therefore stormwater facilities must be constructed offsite to meet the MLS stormwater requirement. The offsite compensatory stormwater LODs are in various locations in Montgomery County, Maryland.

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/@39.12914980000005,-77.23456951672725,14z>

**Determination Key Result**

This Federal Action may affect the northern long-eared bat in a manner consistent with the description of activities addressed by the Service's PBO dated January 5, 2016. Any taking that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o). Therefore, the PBO satisfies your responsibilities for this Action under ESA Section 7(a)(2) relative to the northern long-eared bat.

**Determination Key Description: Northern Long-eared Bat 4(d) Rule**

This key was last updated in IPaC on May 15, 2017. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for Federal actions is to assist determinations as to whether proposed actions are consistent with those analyzed in the Service's PBO dated January 5, 2016.

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Federal actions that may cause prohibited take of northern long-eared bats, affect ESA-listed species other than the northern long-eared bat, or affect any designated critical habitat, require ESA Section 7(a)(2) consultation in addition to the use of this key. Federal actions that may affect species proposed for listing or critical habitat proposed for designation may require a conference under ESA Section 7(a)(4).

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## Determination Key Result

This project may affect the threatened Northern long-eared bat; therefore, consultation with the Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.) is required. However, based on the information you provided, this project may rely on the Service's January 5, 2016, *Programmatic Biological Opinion on Final 4(d) Rule for the Northern Long-Eared Bat and Activities Excepted from Take Prohibitions* to fulfill its Section 7(a)(2) consultation obligation.

## Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?  
Yes
2. Have you determined that the proposed action will have "no effect" on the northern long-eared bat? (If you are unsure select "No")  
No
3. Will your activity purposefully **Take** northern long-eared bats?  
No
4. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?  
**Automatically answered**  
No
5. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at [www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html](http://www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html).

Yes

6. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?  
No
  7. Will the action involve Tree Removal?  
Yes
-

8. Will the action only remove hazardous trees for the protection of human life or property?

*No*

9. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

*No*

10. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

*No*

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## Project Questionnaire

**If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.**

1. Estimated total acres of forest conversion:

0

2. If known, estimated acres of forest conversion from April 1 to October 31

0

3. If known, estimated acres of forest conversion from June 1 to July 31

0

**If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.**

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

**If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.**

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

**If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.**

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

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Larry Hogan, Governor  
Boyd Rutherford, Lt. Governor  
Jeannie Haddaway-Riccio, Secretary  
Allan Fisher, Deputy Secretary

February 1, 2022

Ms. Christina Simini  
Rummel, Klepper & Kahl, LLP  
700 East Pratt Street  
Suite 500  
Baltimore, MD 21202

**RE: Environmental Review for I-495 & I-270 Managed Lanes Study (MLS) - Offsite Compensatory Stormwater Facilities, OP3 SWM (67), Montgomery County, Maryland.**

Dear Ms. Simini:

For all of the proposed sites included in this submittal, the Wildlife and Heritage Service has no official records for State or Federal listed, candidate, proposed, or rare plant or animal species within the project area shown on the map provided. As a result, we have no specific concerns regarding potential impacts to such species or recommendations for protection measures at this time. If the project changes in the future such that the limits of proposed disturbance or overall site boundaries are modified, please provide us with revised project maps and we will provide you with an updated evaluation.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at [lori.byrne@maryland.gov](mailto:lori.byrne@maryland.gov) or at (410) 260-8573.

Sincerely,

Lori A. Byrne,  
Environmental Review Coordinator  
Wildlife and Heritage Service  
MD Dept. of Natural Resources

ER# 2021.1887.mo  
Cc: G. Gibson, DNR

## ATTACHMENT C: FIELD DATASHEETS



# Waters of the U.S. Data Sheet

|                               |                    |                     |               |
|-------------------------------|--------------------|---------------------|---------------|
| Project: MLS Compensatory SWM |                    | Feature ID: 31600   | Stream Order: |
| Date: 2/17/21                 | State: MD          | Photos: 3 US 4 DS   |               |
| Crew: BB JS                   | County: Montgomery | Last Flag Number: 4 |               |

## Feature Hydrologic Class (check one):

| Tidal   | Perennial  | Intermittent   | Ephemeral   |
|---|--|--|---|
| <input type="radio"/> TNW (Subject to ebb and flow) | <input type="radio"/> TNW - Perennial (Flowing year round) | <input checked="" type="radio"/> RPW - Seasonal (must flow at least 3 months a year) | <input type="radio"/> Non-RPW draining uplands  |
|   | <input type="radio"/> RPW - Perennial (Flowing year round) |  | <input type="radio"/> Non-RPW erosional feature   |
|   |  |  | <input type="radio"/> Non-RPW with abutting wetland   |
|   |  |  | <input type="radio"/> Non-RPW with adjacent wetland   |
|   |  |  | <input type="radio"/> Non-RPW wetland adjacent or abutting upstream (outside of study area) |

Describe rational hydrologic class: *hydraulic soils, bed banks, observed flow*

|                           |                |                        |                         |
|---------------------------|----------------|------------------------|-------------------------|
| Hydrologic Connectivity - | Upstream: None | Downstream: Outside SA | Adjacent/Abutting: None |
|---------------------------|----------------|------------------------|-------------------------|

## Feature Description: (check all that apply)

| Shape (with respect to OHW)                               |                                  | Substrate  |                                   |                                 |                            | Vegetation Cover Type (MBSS) |
|---|----------------------------------|--|-----------------------------------|---------------------------------|----------------------------|------------------------------|
| <input checked="" type="checkbox"/> Natural Channel Shape | Width: 3'                        | <input checked="" type="checkbox"/> Silts  | <input type="checkbox"/> Sands    | <input type="checkbox"/> Muck   | RB: Forest maintained lawn |                              |
| <input type="checkbox"/> Artificial (man-made)            | Depth: 0.5 - 1'                  | <input type="checkbox"/> Cobbles   | <input type="checkbox"/> Gravel   | <input type="checkbox"/> Other: |                            |                              |
| <input type="checkbox"/> Manipulated (man-altered)        | Bank Erosion/stability: Moderate | <input type="checkbox"/> Bedrock   | <input type="checkbox"/> Concrete |                                 | LB: Forest emergent        |                              |
| <input type="checkbox"/> Other:                           |                                  | Side slope: <input checked="" type="checkbox"/> >1:1 <input type="checkbox"/> 2:1 <input type="checkbox"/> 3:1 <input type="checkbox"/> <4:1 |                                   |                                 |                            |                              |

Notes: *incised, begins @ headcut, exposed banks but mostly healed over*

## Weather/Precipitation Conditions:

| Drying Field Visit                       | Inches of Rain Within Last Week | Monthly Drought Condition |                          |                          |                          |                          |                          |                         | Month: Jan              | Year: 2021              |
|--|---------------------------------|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|-------------------------|
|  |                                 | NCDC Regional PDSI        |                          |                          |                          |                          |                          |                         |                         |                         |
| <input checked="" type="radio"/> No rain | 0-0.5                           | <input type="radio"/> 0   | <input type="radio"/> 0  | <input type="radio"/> 0  | <input type="radio"/> 0  | <input type="radio"/> 0  | <input type="radio"/> 0  | <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 |
| <input type="radio"/> Light rain         | 0.5-1                           | <input type="radio"/> -6  | <input type="radio"/> -5 | <input type="radio"/> -4 | <input type="radio"/> -3 | <input type="radio"/> -2 | <input type="radio"/> -1 | <input type="radio"/> 0 | <input type="radio"/> 1 | <input type="radio"/> 2 |
| <input type="radio"/> Heavy Rain         | >1                              | Severe Drought            |                          | Moderate Drought         |                          | Normal                   |                          | Moderately Wet          |                         | Severely Wet            |

## Non-tidal tributary has: (check all that apply; include photos for each & list photo #)

| Bed and Banks                       | Ordinary High Water Mark  |  |   |   |   |   |   |
|-------------------------------------|---|--|---|---|---|---|---|
|                                     | <input checked="" type="checkbox"/> Clear, natural line impressed on the bank | <input type="checkbox"/> Sediment deposition                     | <input checked="" type="checkbox"/> Sediment sorting      | <input type="checkbox"/> Changes in the character of soil | <input type="checkbox"/> Water staining         | <input checked="" type="checkbox"/> Scour | <input type="checkbox"/> Observed/predicted flow events |
| <input type="checkbox"/> Shriveling | <input type="checkbox"/> Presence of flood litter/debris                      | <input checked="" type="checkbox"/> Presence of terrestrial veg. | <input type="checkbox"/> Abrupt change in plant community | <input type="checkbox"/> Leaf litter disturbed            | <input type="checkbox"/> Presence of wrack line | <input type="checkbox"/> Other:           |   |

## Tidal tributary has: (check all that apply; include photos for each & list photo #)

| High Tide Line   | Mean High Water Mark indicated by:                            |  | Chemical Characteristics                     |
|--|---|--|--|
|  | <input type="checkbox"/> Oil or scum line along shore objects | <input type="checkbox"/> Survey to available datum         |  |
| <input type="checkbox"/> Fine shell or debris deposits (foreshore) | <input type="checkbox"/> Physical markings                    | <input type="checkbox"/> Vegetation lines/changes in types | <input type="checkbox"/> Water is discolored |
| <input type="checkbox"/> Physical markings/characteristics         | <input type="checkbox"/> Tidal gauges                         |  | <input type="checkbox"/> Oily film           |
|  |   |  | <input type="checkbox"/> Other:              |

Notes:

# HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (FRONT)

|                                 |  |  |                   |
|---------------------------------|--|--|-------------------|
| STREAM NAME 31000               |  | LOCATION   |                   |
| STATION # _____ RIVERMILE _____ |  | STREAM CLASS Intermittent  |                   |
| LAT _____ LONG _____            |  | RIVER BASIN  |                   |
| STORET #                        |  | AGENCY   |                   |
| INVESTIGATORS EB, JS            |  |  |                   |
| FORM COMPLETED BY CAS           |  | DATE 2/17/2021<br>TIME 2:22 AM <input checked="" type="radio"/> PM | REASON FOR SURVEY |

| Parameters to be evaluated in sampling reach | Habitat Parameter                          | Condition Category  |   |   |  |
|--|--|---|---|---|--|
|  |  | Optimal   | Suboptimal  | Marginal  | Poor   |
|  | 1. Epifaunal Substrate/<br>Available Cover | Greater than 70% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient). | 40-70% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 20-40% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.  | Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.   |
|  | SCORE 1                                    | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 2 <input checked="" type="radio"/> 1 0   |
|  | 2. Embeddedness                            | Gravel, cobble, and boulder particles are 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space.  | Gravel, cobble, and boulder particles are 25-50% surrounded by fine sediment.   | Gravel, cobble, and boulder particles are 50-75% surrounded by fine sediment.   | Gravel, cobble, and boulder particles are more than 75% surrounded by fine sediment.   |
|  | SCORE 11                                   | 20 19 18 17 16  | 15 14 13 12 <input checked="" type="radio"/> 11   | 10 9 8 7 6  | 5 4 3 2 1 0  |
|  | 3. Velocity/Depth Regime                   | All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow). (Slow is < 0.3 m/s, deep is > 0.5 m.)   | Only 3 of the 4 regimes present (if fast-shallow is missing, score lower than if missing other regimes).  | Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).   | Dominated by 1 velocity/depth regime (usually slow-deep).  |
|  | SCORE 1                                    | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 2 <input checked="" type="radio"/> 1 0   |
|  | 4. Sediment Deposition                     | Little or no enlargement of islands or point bars and less than 5% of the bottom affected by sediment deposition.   | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 5-30% of the bottom affected; slight deposition in pools.  | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 30-50% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
|  | SCORE 6                                    | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 <input checked="" type="radio"/> 6   | 5 4 3 2 1 0  |
|  | 5. Channel Flow Status                     | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.   | Water fills >75% of the available channel; or <25% of channel substrate is exposed.   | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.   | Very little water in channel and mostly present as standing pools.   |
|  | SCORE 2                                    | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 <input checked="" type="radio"/> 2 1 0   |



# HABITAT ASSESSMENT FIELD DATA SHEET—HIGH GRADIENT STREAMS (BACK)

| Habitat Parameter   | Condition Category   |    |    |    |    |  |    |    |    |    |   |   |   |   |   |   |   |   |   |   |   |
|---|--|----|----|----|----|--|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|
|   | Optimal  |    |    |    |    | Suboptimal   |    |    |    |    | Marginal  |   |   |   |   | Poor  |   |   |   |   |   |
| <b>6. Channel Alteration</b>  | Channelization or dredging absent or minimal; stream with normal pattern.  |    |    |    |    | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.  |    |    |    |    | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.  |   |   |   |   | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.   |   |   |   |   |   |
| SCORE 15  | 20   | 19 | 18 | 17 | 16 | 15   | 14 | 13 | 12 | 11 | 10  | 9 | 8 | 7 | 6 | 5   | 4 | 3 | 2 | 1 | 0 |
| <b>7. Frequency of Riffles (or bends)</b>                                 | Occurrence of riffles relatively frequent; ratio of distance between riffles divided by width of the stream <7:1 (generally 5 to 7); variety of habitat is key. In streams where riffles are continuous, placement of boulders or other large, natural obstruction is important.     |    |    |    |    | Occurrence of riffles infrequent; distance between riffles divided by the width of the stream is between 7 to 15.  |    |    |    |    | Occasional riffle or bend; bottom contours provide some habitat; distance between riffles divided by the width of the stream is between 15 to 25.   |   |   |   |   | Generally all flat water or shallow riffles; poor habitat; distance between riffles divided by the width of the stream is a ratio of >25.   |   |   |   |   |   |
| SCORE 2   | 20   | 19 | 18 | 17 | 16 | 15   | 14 | 13 | 12 | 11 | 10  | 9 | 8 | 7 | 6 | 5   | 4 | 3 | 2 | 1 | 0 |
| <b>8. Bank Stability (score each bank)</b>                                | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.   |    |    |    |    | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.   |    |    |    |    | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.  |   |   |   |   | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.   |   |   |   |   |   |
| Note: determine left or right side by facing downstream.                  |  |    |    |    |    |  |    |    |    |    |   |   |   |   |   |   |   |   |   |   |   |
| SCORE 3 (LB)  | Left Bank  | 10 | 9  |    |    | 8  | 7  | 6  |    |    | 5   | 4 | 3 |   |   | 2   | 1 | 0 |   |   |   |
| SCORE 2 (RB)  | Right Bank   | 10 | 9  |    |    | 8  | 7  | 6  |    |    | 5   | 4 | 3 |   |   | 2   | 1 | 0 |   |   |   |
| <b>9. Vegetative Protection (score each bank)</b>                         | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. |    |    |    |    | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. |    |    |    |    | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. |   |   |   |   | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |   |   |   |   |   |
| SCORE 3 (LB)  | Left Bank  | 10 | 9  |    |    | 8  | 7  | 6  |    |    | 5   | 4 | 3 |   |   | 2   | 1 | 0 |   |   |   |
| SCORE 3 (RB)  | Right Bank   | 10 | 9  |    |    | 8  | 7  | 6  |    |    | 5   | 4 | 3 |   |   | 2   | 1 | 0 |   |   |   |
| <b>10. Riparian Vegetative Zone Width (score each bank riparian zone)</b> | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.  |    |    |    |    | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.   |    |    |    |    | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.   |   |   |   |   | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.   |   |   |   |   |   |
| SCORE 5 (LB)  | Left Bank  | 10 | 9  |    |    | 8  | 7  | 6  |    |    | 5   | 4 | 3 |   |   | 2   | 1 | 0 |   |   |   |
| SCORE 4 (RB)  | Right Bank   | 10 | 9  |    |    | 8  | 7  | 6  |    |    | 5   | 4 | 3 |   |   | 2   | 1 | 0 |   |   |   |

Total Score 58

WAS 3622

## RK&amp;K Waters of the U.S. Data Sheet

Version 2.1 - August 2019

|                               |                    |                                     |
|-------------------------------|--------------------|-------------------------------------|
| Project: MLS compensatory SWM | Feature ID: 32 L   | Use Class: <i>Perennial</i>         |
| Date: 12/29/2020              | State: MD          | Photos: WAS-3622-Photo 3-32L        |
| Crew: ES, MM                  | County: Montgomery | Last Flag Number: 32L 1 A/B - 4 A/B |

## Feature Hydrologic Class (check one):

| Tidal | Perennial                               | Intermittent                       | Ephemeral                          | Other                                |
|-------|---|------------------------------------|------------------------------------|--------------------------------------|
| TNW   | <input checked="" type="checkbox"/> TNW | <input type="checkbox"/> Tributary | <input type="checkbox"/> Tributary | <input type="checkbox"/> Impoundment |
|       | <input type="checkbox"/> Tributary      | <input type="checkbox"/> Ditch     | <input type="checkbox"/> Ditch     | <input type="checkbox"/> POW         |

Describe rationale for hydrologic class, including flow:

|  |  |  |  |
|--|--|--|--|
| Hydrologic Connectivity -                                | Upstream: Out of LOS                                     | Downstream: Out of LOS                                   | Adjacent/Abutting: N/A                                   |
| Ditch Information:                                       | Direct Flow to TNW                                       | Abutting a Wetland                                       | Within a Wetland   |
|  | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> |
| Toe of slope   | Symmetrical  | Const. Uplands   | Between Wetlands   |
| Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> | Yes <input type="checkbox"/> No <input type="checkbox"/> | Documentation:   |

## Feature Description: (check all that apply)

| Shape (with respect to OHW) | Substrate  | Vegetation Cover Type (MBSS) |
|-----------------------------|--|------------------------------|
| Natural Channel Shape       | Silts <input type="checkbox"/> Sands <input checked="" type="checkbox"/> Gravel <input type="checkbox"/> Muck <input type="checkbox"/> Other: <input type="checkbox"/> | RB: Forested                 |
| Artificial (man-made)       | Cobbles <input checked="" type="checkbox"/> Bedrock <input type="checkbox"/> Concrete <input type="checkbox"/>   | LB: None (Rock Riprap)       |
| Manipulated (man-altered)   |  | Notes:                       |
| Other:                      | Side slope: <input checked="" type="checkbox"/> >1:1 <input type="checkbox"/> 2:1 <input type="checkbox"/> 3:1 <input type="checkbox"/> <4:1                           |                              |

General Notes: Both banks have been altered. Downstream Right = block wall. Downstream left = Riprap and Road embankment material.

## Weather/Precipitation Conditions:

| Rain  |   | Monthly Drought Condition NCDC Regional PDSI |   |    |    |        |    |    |                |   |   |              |   |   |   |
|---|---|--|---|----|----|--------|----|----|----------------|---|---|--------------|---|---|---|
| During visit                                | Last 48hrs                                | Last week                                    | <a href="http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php">http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php</a> Month: Nov Year: 2020 |    |    |        |    |    |                |   |   |              |   |   |   |
| <input checked="" type="checkbox"/> No rain | <input checked="" type="checkbox"/> 0-0.1 | <input type="checkbox"/> 0-0.5               | -6  | -5 | -4 | -3     | -2 | -1 | 0              | 1 | 2 | 3            | 4 | 5 | 6 |
| Light rain                                  | <input type="checkbox"/> 0.1-0.5          | <input checked="" type="checkbox"/> 0.5-1    |   |    |    |        |    |    |                |   |   |              |   |   |   |
| Heavy Rain                                  | <input type="checkbox"/> > 0.5            | <input type="checkbox"/> > 1                 |   |    |    |        |    |    |                |   |   |              |   |   |   |
| Severe Drought                              |   |  | Moderate Drought  |    |    | Normal |    |    | Moderately Wet |   |   | Severely Wet |   |   |   |

## Non-tidal tributary has: (check all that apply)

| Ordinary High Water Mark                  |                        |                                 |                                  |
|---|------------------------|---------------------------------|----------------------------------|
| Clear, natural line impressed on the bank | Sediment deposition    | Water staining                  | Abrupt change in plant community |
| Changes in the character of soil          | Presence of wrack line | Shelving                        | Destruction of terrestrial veg.  |
| Presence of flood litter/debris           | Leaf litter disturbed  | Sediment sorting                | Observed/predicted flow events   |
| Vegetation matted down, bent, or absent   | Scour                  | Other: Edge of placed material. |                                  |

## Tidal tributary has: (check all that apply)

| High Tide Line                            |                                   | Mean High Water Mark indicated by: |  | Chemical Characteristics |  |
|---|-----------------------------------|------------------------------------|--|--------------------------|--|
| Oil or scum line along shore objects      | Survey to available datum         | Water is clear                     |  |                          |  |
| Fine shell or debris deposits (foreshore) | Physical markings                 | Water is discolored                |  |                          |  |
| Physical markings/characteristics         | Vegetation lines/changes in types | Oily film                          |  |                          |  |
| Tidal gauges                              | Other:                            |                                    |  |                          |  |



# HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

|   |  |  |                                     |
|---|--|--|-------------------------------------|
| STREAM NAME <u>32L</u>                                  |  | LOCATION   |                                     |
| STATION # <u>          </u> RIVERMILE <u>          </u> |  | STREAM CLASS <u>Perennial (I-P)</u>                    |                                     |
| LAT <u>38.9700</u> LONG <u>-77.1312</u>                 |  | RIVER BASIN <u>Potomac</u>                             |                                     |
| STORET # <u>          </u>                              |  | AGENCY <u>          </u>                               |                                     |
| INVESTIGATORS <u>ES, MM</u>                             |  |  |                                     |
| FORM COMPLETED BY <u>ES, MM</u>                         |  | DATE <u>12/29/2020</u><br>TIME <u>          </u> AM PM | REASON FOR SURVEY <u>          </u> |

|  | Habitat Parameter                       | Condition Category   |   |   |  |
|--|---|--|---|---|--|
|  |   | Optimal  | Suboptimal  | Marginal  | Poor   |
| Parameters to be evaluated in sampling reach | 1. Epifaunal Substrate/ Available Cover | Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and not transient). | 30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.  | Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.   |
|  | SCORE <u>16</u>                         | 20 19 <u>(18)</u> 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 2 1 0  |
|  | 2. Pool Substrate Characterization      | Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.  | Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.   | All mud or clay or sand bottom; little or no root mat; no submerged vegetation.   | Hard-pan clay or bedrock; no root mat or vegetation.   |
|  | SCORE <u>18</u>                         | 20 19 <u>(18)</u> 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 2 1 0  |
|  | 3. Pool Variability                     | Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.  | Majority of pools large-deep; very few shallow.   | Shallow pools much more prevalent than deep pools.  | Majority of pools small-shallow or pools absent.   |
|  | SCORE <u>16</u>                         | 20 19 18 17 <u>(16)</u>  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 2 1 0  |
|  | 4. Sediment Deposition                  | Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.  | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.   | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
|  | SCORE <u>13</u>                         | 20 19 18 17 16   | 15 14 <u>(13)</u> 12 11   | 10 9 8 7 6  | 5 4 3 2 1 0  |
|  | 5. Channel Flow Status                  | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.  | Water fills >75% of the available channel; or <25% of channel substrate is exposed.   | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.   | Very little water in channel and mostly present as standing pools.   |
|  | SCORE <u>11</u>                         | 20 19 18 17 16   | 15 14 13 12 <u>(11)</u>   | 10 9 8 7 6  | 5 4 3 2 1 0  |

# HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

| Habitat Parameter  | Condition Category   |    |    |    |    |  |    |    |    |    |   |   |          |          |   |   |   |   |   |   |   |
|--|--|----|----|----|----|--|----|----|----|----|---|---|----------|----------|---|---|---|---|---|---|---|
|  | Optimal  |    |    |    |    | Suboptimal   |    |    |    |    | Marginal  |   |          |          |   | Poor  |   |   |   |   |   |
| 6. Channel Alteration  | Channelization or dredging absent or minimal; stream with normal pattern.  |    |    |    |    | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.  |    |    |    |    | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.  |   |          |          |   | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.   |   |   |   |   |   |
| SCORE <u>6</u>   | 20   | 19 | 18 | 17 | 16 | 15   | 14 | 13 | 12 | 11 | 10  | 9 | <u>8</u> | 7        | 6 | 5   | 4 | 3 | 2 | 1 | 0 |
| 7. Channel Sinuosity   | The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)                             |    |    |    |    | The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.  |    |    |    |    | The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.   |   |          |          |   | Channel straight; waterway has been channelized for a long distance.  |   |   |   |   |   |
| SCORE <u>7</u>   | 20   | 19 | 18 | 17 | 16 | 15   | 14 | 13 | 12 | 11 | 10  | 9 | 8        | <u>7</u> | 6 | 5   | 4 | 3 | 2 | 1 | 0 |
| 8. Bank Stability (score each bank)  | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.   |    |    |    |    | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.   |    |    |    |    | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.  |   |          |          |   | Unstable; many eroded areas; "raw" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.   |   |   |   |   |   |
| SCORE <u>5</u> (LB)  | Left Bank 10 9   |    |    |    |    | 8 7 6  |    |    |    |    | <u>5</u> 4 3  |   |          |          |   | 2 1 0   |   |   |   |   |   |
| SCORE <u>5</u> (RB)  | Right Bank 10 9  |    |    |    |    | 8 7 6  |    |    |    |    | <u>5</u> 4 3  |   |          |          |   | 2 1 0   |   |   |   |   |   |
| 9. Vegetative Protection (score each bank)<br><br>Note: determine left or right side by facing downstream. | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. |    |    |    |    | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. |    |    |    |    | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. |   |          |          |   | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |   |   |   |   |   |
| SCORE <u>2</u> (LB)  | Left Bank 10 9   |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 3   |   |          |          |   | <u>2</u> 1 0  |   |   |   |   |   |
| SCORE <u>2</u> (RB)  | Right Bank 10 9  |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 3   |   |          |          |   | <u>2</u> 1 0  |   |   |   |   |   |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone)   | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.  |    |    |    |    | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.   |    |    |    |    | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.   |   |          |          |   | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.   |   |   |   |   |   |
| SCORE <u>0</u> (LB)  | Left Bank 10 9   |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 3   |   |          |          |   | 2 1 <u>0</u>  |   |   |   |   |   |
| SCORE <u>1</u> (RB)  | Right Bank 10 9  |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 3   |   |          |          |   | 2 <u>1</u> 0  |   |   |   |   |   |

Total Score 106

WAS 3622

## RK&amp;K Waters of the U.S. Data Sheet

Version 2.1 - August 2019

|                               |                    |                                    |
|-------------------------------|--------------------|------------------------------------|
| Project: WAS compensatory SWA | Feature ID: 32M    | Use Class: PERENNIAL (E-P)         |
| Date: 12/25/2020              | State: MO          | Photos: WAS-3622-Photo 4 - 32M     |
| Crew: ES MM                   | County: Montgomery | Last Flag Number: 32M 1A/B to 2A/B |

## Feature Hydrologic Class (check one):

| Tidal | Perennial                               | Intermittent                       | Ephemeral                          | Other       |
|-------|---|------------------------------------|------------------------------------|-------------|
| TNW   | <input checked="" type="checkbox"/> TNW | <input type="checkbox"/> Tributary | <input type="checkbox"/> Tributary | Impoundment |
|       | <input type="checkbox"/> Tributary      | <input type="checkbox"/> Ditch     | <input type="checkbox"/> Ditch     | POW         |

Describe rationale for hydrologic class, including flow:

|   |                |             |             |                    |           |                    |                     |
|---|----------------|-------------|-------------|--------------------|-----------|--------------------|---------------------|
| Hydrologic Connectivity -               | Upstream:      | Pipe        | Downstream: | Pipe               | Relocated | Adjacent/Abutting: | N/A                 |
| Ditch Information:                      | Roadside Ditch | Yes         | No          | Abutting a Wetland | Yes       | No                 | Relocated Tributary |
| N/A <input checked="" type="checkbox"/> | Toe of slope   | Symmetrical | Yes         | Const. Uplands     | Yes       | No                 | Documentation:      |
|   |                | Yes         | No          | Yes                | No        | No                 |                     |

## Feature Description: (check all that apply)

| Shape (with respect to OHW)                               | Substrate                                 | Vegetation Cover Type (MBSS)             |
|---|---|--|
| <input checked="" type="checkbox"/> Natural Channel Shape | <input checked="" type="checkbox"/> Silts | <input checked="" type="checkbox"/> Muck |
| <input checked="" type="checkbox"/> Artificial (man-made) | <input type="checkbox"/> Cobbles          | <input type="checkbox"/> Gravel          |
| <input type="checkbox"/> Manipulated (man-altered)        | <input type="checkbox"/> Bedrock          | <input type="checkbox"/> Concrete        |
| <input type="checkbox"/> Other:                           |   |  |

General Notes: Sheet, open channel portion of a re-directed pipe + tributary.

## Weather/Precipitation Conditions:

| Rain  |   | Monthly Drought Condition NCDC Regional PDSI |   |    |    |                  |    |    |        |   |   |                |   |   |              |  |
|---|---|--|---|----|----|------------------|----|----|--------|---|---|----------------|---|---|--------------|--|
| During visit                                | Last 48hrs                                | Last week                                    | <a href="http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php">http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php</a> Month: Nov Year: 2020 |    |    |                  |    |    |        |   |   |                |   |   |              |  |
| <input checked="" type="checkbox"/> No rain | <input checked="" type="checkbox"/> 0-0.1 | <input checked="" type="checkbox"/> 0-0.5    | -6  | -5 | -4 | -3               | -2 | -1 | 0      | 1 | 2 | 3              | 4 | 5 | 6            |  |
| <input type="checkbox"/> Light rain         | <input type="checkbox"/> 0.1-0.5          | <input type="checkbox"/> 0.5-1               | Severe Drought  |    |    | Moderate Drought |    |    | Normal |   |   | Moderately Wet |   |   | Severely Wet |  |
| <input type="checkbox"/> Heavy Rain         | <input type="checkbox"/> > 0.5            | <input type="checkbox"/> > 1                 |   |    |    |                  |    |    |        |   |   |                |   |   |              |  |

## Non-tidal tributary has: (check all that apply)

| Ordinary High Water Mark  |  |  |   |
|---|--|--|---|
| <input type="checkbox"/> Clear, natural line impressed on the bank          | <input type="checkbox"/> Sediment deposition               | <input checked="" type="checkbox"/> Water staining | <input type="checkbox"/> Abrupt change in plant community |
| <input checked="" type="checkbox"/> Changes in the character of soil        | <input checked="" type="checkbox"/> Presence of wrack line | <input type="checkbox"/> Shelving                  | <input type="checkbox"/> Destruction of terrestrial veg.  |
| <input checked="" type="checkbox"/> Presence of flood litter/debris         | <input checked="" type="checkbox"/> Leaf litter disturbed  | <input type="checkbox"/> Sediment sorting          | <input type="checkbox"/> Observed/predicted flow events   |
| <input checked="" type="checkbox"/> Vegetation matted down, bent, or absent | <input type="checkbox"/> Scour                             | <input type="checkbox"/> Other:                    |   |

## Tidal tributary has: (check all that apply)

| High Tide Line   |  | Mean High Water Mark indicated by: |  | Chemical Characteristics |  |
|--|--|------------------------------------|--|--------------------------|--|
| <input type="checkbox"/> Oil or scum line along shore objects      | <input type="checkbox"/> Survey to available datum         |                                    |  | Water is clear           |  |
| <input type="checkbox"/> Fine shell or debris deposits (foreshore) | <input type="checkbox"/> Physical markings                 |                                    |  | Water is discolored      |  |
| <input type="checkbox"/> Physical markings/characteristics         | <input type="checkbox"/> Vegetation lines/changes in types |                                    |  | Oily film                |  |
| <input type="checkbox"/> Tidal gauges                              |  |                                    |  | Other:                   |  |

# HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (FRONT)

|   |  |                         |
|---|--|-------------------------|
| STREAM NAME <u>32 M</u>                 | LOCATION                                   |                         |
| STATION # _____ RIVERMILE _____         | STREAM CLASS <u>Perennial (S-P)</u>        |                         |
| LAT <u>38.9698</u> LONG <u>-77.1309</u> | RIVER BASIN <u>Potomac</u>                 |                         |
| STORET # _____                          | AGENCY _____                               |                         |
| INVESTIGATORS <u>ES, MM</u>             |  |                         |
| FORM COMPLETED BY <u>ES, MM</u>         | DATE <u>12/29/2020</u><br>TIME _____ AM PM | REASON FOR SURVEY _____ |

|  | Habitat Parameter                       | Condition Category  |   |   |  |
|--|---|---|---|---|--|
|  |   | Optimal   | Suboptimal  | Marginal  | Poor   |
| Parameters to be evaluated in sampling reach | 1. Epifaunal Substrate/ Available Cover | Greater than 50% of substrate favorable for epifaunal colonization and fish cover; mix of snags, submerged logs, undercut banks, cobble or other stable habitat and at stage to allow full colonization potential (i.e., logs/snags that are <u>not</u> new fall and <u>not</u> transient). | 30-50% mix of stable habitat; well-suited for full colonization potential; adequate habitat for maintenance of populations; presence of additional substrate in the form of newfall, but not yet prepared for colonization (may rate at high end of scale). | 10-30% mix of stable habitat; habitat availability less than desirable; substrate frequently disturbed or removed.  | Less than 10% stable habitat; lack of habitat is obvious; substrate unstable or lacking.   |
|  | SCORE <u>4</u>                          | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 <u>4</u> 3 2 1 0   |
|  | 2. Pool Substrate Characterization      | Mixture of substrate materials, with gravel and firm sand prevalent; root mats and submerged vegetation common.   | Mixture of soft sand, mud, or clay; mud may be dominant; some root mats and submerged vegetation present.   | All mud or clay or sand bottom; little or no root mat; no submerged vegetation.   | Hard-pan clay or bedrock; no root mat or vegetation.   |
|  | SCORE <u>2</u>                          | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 <u>2</u> 1 0   |
|  | 3. Pool Variability                     | Even mix of large-shallow, large-deep, small-shallow, small-deep pools present.   | Majority of pools large-deep; very few shallow.   | Shallow pools much more prevalent than deep pools.  | Majority of pools small-shallow or pools absent.   |
|  | SCORE <u>2</u>                          | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 3 <u>2</u> 1 0   |
|  | 4. Sediment Deposition                  | Little or no enlargement of islands or point bars and less than <20% of the bottom affected by sediment deposition.   | Some new increase in bar formation, mostly from gravel, sand or fine sediment; 20-50% of the bottom affected; slight deposition in pools.   | Moderate deposition of new gravel, sand or fine sediment on old and new bars; 50-80% of the bottom affected; sediment deposits at obstructions, constrictions, and bends; moderate deposition of pools prevalent. | Heavy deposits of fine material, increased bar development; more than 80% of the bottom changing frequently; pools almost absent due to substantial sediment deposition. |
|  | SCORE <u>3</u>                          | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | 5 4 <u>3</u> 2 1 0   |
|  | 5. Channel Flow Status                  | Water reaches base of both lower banks, and minimal amount of channel substrate is exposed.   | Water fills >75% of the available channel; or <25% of channel substrate is exposed.   | Water fills 25-75% of the available channel, and/or riffle substrates are mostly exposed.   | Very little water in channel and mostly present as standing pools.   |
|  | SCORE <u>5</u>                          | 20 19 18 17 16  | 15 14 13 12 11  | 10 9 8 7 6  | <u>5</u> 4 3 2 1 0   |

# HABITAT ASSESSMENT FIELD DATA SHEET—LOW GRADIENT STREAMS (BACK)

| Habitat Parameter  | Condition Category   |    |    |    |    |  |    |    |    |    |   |   |   |   |   |   |          |   |          |   |   |
|--|--|----|----|----|----|--|----|----|----|----|---|---|---|---|---|---|----------|---|----------|---|---|
|  | Optimal  |    |    |    |    | Suboptimal   |    |    |    |    | Marginal  |   |   |   |   | Poor  |          |   |          |   |   |
| 6. Channel Alteration  | Channelization or dredging absent or minimal; stream with normal pattern.  |    |    |    |    | Some channelization present, usually in areas of bridge abutments; evidence of past channelization, i.e., dredging, (greater than past 20 yr) may be present, but recent channelization is not present.  |    |    |    |    | Channelization may be extensive; embankments or shoring structures present on both banks; and 40 to 80% of stream reach channelized and disrupted.  |   |   |   |   | Banks shored with gabion or cement; over 80% of the stream reach channelized and disrupted. Instream habitat greatly altered or removed entirely.   |          |   |          |   |   |
| SCORE <u>4</u>   | 20   | 19 | 18 | 17 | 16 | 15   | 14 | 13 | 12 | 11 | 10  | 9 | 8 | 7 | 6 | 5   | <u>4</u> | 3 | 2        | 1 | 0 |
| 7. Channel Sinuosity   | The bends in the stream increase the stream length 3 to 4 times longer than if it was in a straight line. (Note - channel braiding is considered normal in coastal plains and other low-lying areas. This parameter is not easily rated in these areas.)                             |    |    |    |    | The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.  |    |    |    |    | The bends in the stream increase the stream length 1 to 2 times longer than if it was in a straight line.   |   |   |   |   | Channel straight; waterway has been channelized for a long distance.  |          |   |          |   |   |
| SCORE <u>2</u>   | 20   | 19 | 18 | 17 | 16 | 15   | 14 | 13 | 12 | 11 | 10  | 9 | 8 | 7 | 6 | 5   | 4        | 3 | <u>2</u> | 1 | 0 |
| 8. Bank Stability (score each bank)  | Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems. <5% of bank affected.   |    |    |    |    | Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion.   |    |    |    |    | Moderately unstable; 30-60% of bank in reach has areas of erosion; high erosion potential during floods.  |   |   |   |   | Unstable; many eroded areas; "rav" areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.   |          |   |          |   |   |
| SCORE <u>3</u> (LB)  | Left Bank 10 9   |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 <u>3</u>  |   |   |   |   | 2 1 0   |          |   |          |   |   |
| SCORE <u>3</u> (RB)  | Right Bank 10 9  |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 <u>3</u>  |   |   |   |   | 2 1 0   |          |   |          |   |   |
| 9. Vegetative Protection (score each bank)<br><br>Note: determine left or right side by facing downstream. | More than 90% of the streambank surfaces and immediate riparian zone covered by native vegetation, including trees, understory shrubs, or nonwoody macrophytes; vegetative disruption through grazing or mowing minimal or not evident; almost all plants allowed to grow naturally. |    |    |    |    | 70-90% of the streambank surfaces covered by native vegetation, but one class of plants is not well-represented; disruption evident but not affecting full plant growth potential to any great extent; more than one-half of the potential plant stubble height remaining. |    |    |    |    | 50-70% of the streambank surfaces covered by vegetation; disruption obvious; patches of bare soil or closely cropped vegetation common; less than one-half of the potential plant stubble height remaining. |   |   |   |   | Less than 50% of the streambank surfaces covered by vegetation; disruption of streambank vegetation is very high; vegetation has been removed to 5 centimeters or less in average stubble height. |          |   |          |   |   |
| SCORE <u>4</u> (LB)  | Left Bank 10 9   |    |    |    |    | 8 7 6  |    |    |    |    | 5 <u>4</u> 3  |   |   |   |   | 2 1 0   |          |   |          |   |   |
| SCORE <u>1</u> (RB)  | Right Bank 10 9  |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 3   |   |   |   |   | 2 <u>1</u> 0  |          |   |          |   |   |
| 10. Riparian Vegetative Zone Width (score each bank riparian zone)   | Width of riparian zone >18 meters; human activities (i.e., parking lots, roadbeds, clear-cuts, lawns, or crops) have not impacted zone.  |    |    |    |    | Width of riparian zone 12-18 meters; human activities have impacted zone only minimally.   |    |    |    |    | Width of riparian zone 6-12 meters; human activities have impacted zone a great deal.   |   |   |   |   | Width of riparian zone <6 meters; little or no riparian vegetation due to human activities.   |          |   |          |   |   |
| SCORE <u>4</u> (LB)  | Left Bank 10 9   |    |    |    |    | 8 7 6  |    |    |    |    | 5 <u>4</u> 3  |   |   |   |   | 2 1 0   |          |   |          |   |   |
| SCORE <u>1</u> (RB)  | Right Bank 10 9  |    |    |    |    | 8 7 6  |    |    |    |    | 5 4 3   |   |   |   |   | 2 <u>1</u> 0  |          |   |          |   |   |

Total Score 38

## ATTACHMENT D: PHOTO DOCUMENTATION



**Sub-Segment 31**



Waterway 31000 – Intermittent



**Sub-Segment 32**



Waterway 32L – Perennial



Waterway 32M – Perennial