

NORTH COAST REGIONAL COUNCIL OF PARK DISTRICTS IN-LIEU FEE PROGRAM
BUFFALO DISTRICT
LRB 2012-00668

Draft Mitigation Plan for the
Proposed Nine Mile Ditch Stream Project
Portage River Watershed
Sandusky County, Ohio

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1.0 Objectives

The North Coast Regional Council of Park Districts (NCRCPD or North Coast or Sponsor) was formed in 1998 pursuant to Chapter 167 of the Ohio Revised Code by three metropolitan park districts established under Chapter 1545 of the Ohio Revised Code. North Coast has since expanded to five park districts: Erie MetroParks, Lorain County Metropolitan Park District, Medina County Park District, Sandusky County Park District, and Wood County Park District. The NCRCPD's primary goal is the restoration and enhancement of wetlands and streams as compensatory mitigation under Sections 401 and 404 of the Clean Water Act and the State of Ohio's isolated wetland statute, and the incorporation of the restored wetlands and streams into the park system of its member districts. North Coast's objectives in sponsoring an in-lieu fee program (ILF Program) are as follows:

- To provide compensatory mitigation for all activities regulated under Section 10 of the Rivers and Harbors Act of 1899, Sections 401 and/or 404 of the Clean Water Act and Ohio's isolated wetland statute and rules; to provide compensatory mitigation for environmental impacts to aquatic resources authorized under other programs, such as state or local wetland or stream regulatory programs, the NPDES program, the wetland conservation provisions of the Food Security Act, Army Corps of Engineers civil works projects, Superfund removal and remedial actions; and to provide compensatory mitigation for the resolution of local, state and federal enforcement actions including supplemental environmental projects required by orders, settlement agreements, contingency plans, consent decrees or court orders;
- To provide an alternative to permittee responsible mitigation;
- To provide cost-effective compensatory mitigation options including opportunities to compensate for authorized impacts when compensatory mitigation might not otherwise be reasonably identifiable, available and practicable;
- To maximize opportunities to contribute to biodiversity and watershed functions by restoring, enhancing, and in appropriate circumstances, preserving habitat complexes; and
- To maximize opportunities to contribute to services (Compensatory Mitigation Rule §332.2) by integrating the habitat complexes into local park systems to provide educational and recreational benefits to the community.

The North Coast ILF Program's Compensation Planning Framework (CPF) describes how implementing mitigation projects will help offset impacts resulting from threats to wetlands and streams by:

- Identifying aquatic restoration opportunities in each 8-digit HUC within the ILF program;
- Focusing on larger scale mitigation projects in watersheds with significant cumulative impacts;
- Selecting potential mitigation sites that maximize opportunities to contribute to multiple watershed functions, including biological diversity;
- Identifying opportunities to restore croplands to wetlands and to relocate and reconnect channelized agricultural drainages to their floodplains;
- Enhancing riparian corridors in primary headwater streams through native plantings and;
- Reducing habitat fragmentation, when possible, by facilitating connections (an ecosystem approach): wetlands to uplands, streams to floodplains, and mitigation projects to parklands.

As described in the North Coast ILF Program CPF for this service area, the Sponsor's goal is to restore (re-establish and/or rehabilitate) emergent, open water, scrub shrub and wet meadow communities. Stream projects

in this watershed will focus on enhancement of riparian corridors and natural channel design relocation projects that incorporate instream habitat restoration. Additionally, the objectives of North Coast mitigation plans will be to contribute to biodiversity and multiple watershed functions by restoring and enhancing habitat complexes: wetland – upland; instream – floodplain.

The NCRCPD’s objectives also include contributing to federal and state policies of “no net loss” of wetlands and maintaining existing in-stream uses (antidegradation) through effective, successful restoration and enhancement of wetlands and streams; incorporating recommended actions in approved watershed plans or TMDL program documents, in planning aquatic resource goals and objectives in each service area; and identifying and incorporating local interests and priorities for aquatic resource restoration in mitigation plans.

The Portage River service area (USGS Hydrologic Unit Code (HUC) #04100010; Figure 5) has had significant stream (in excess of 11,000 linear feet) impacts during SFY 2004-2015. Recommended actions in approved watershed plans and/or TMDL program documents in this service area include: restore wetlands; restore stream banks; restore riparian buffers; restore instream habitat; preserve wetlands and streams.

Implementation of the proposed Nine Mile Ditch Stream Project as conceptualized herein is consistent with the North Coast ILF program objectives and its CPF and will offset stream losses in this service area from permits authorized by the US Army Corps of Engineers, Buffalo District (Corps of Engineers or COE) or the Ohio Environmental Protection Agency (OEPA) through the utilization of advance credits. Approval of implementation of this proposed project and budget by the District Engineer, in consultation with the IRT, also constitutes the spending authorization required by §332.8(i)(2) of the Federal Compensatory Mitigation Rule. Implementation of this project will also be in accordance with a NW 27 permit verification.

The proposed Nine Mile Ditch Stream Project is located south of Gibsonburg, west of County Road (CR) 66, within the boundaries of Sandusky County Park District’s (SCPD) White Star Park, which encompasses ±797 acres in Madison Township, Sandusky County, Ohio (Figures 1 and 2). The proposed stream project is located south of the White Star III mitigation bank with approximately 900 linear feet of ditch restoration proposed.

2.0 Service Area

The Nine Mile Ditch Stream Project is located in the Portage River subbasin (HUC #04100010; Figure 5). The geographic service area for stream impacts includes the entire HUC #04100010 in which the proposed project is located. This service area is consistent with the Federal Compensatory Mitigation Rule, Ohio’s wetland water quality rules and provisions on service areas; and is appropriately sized to compensate for stream impacts within

the watershed. Allocating advance credits for unavoidable stream impacts at the Nine Mile Ditch Stream Project is subject to project specific regulatory approval by the Corps of Engineers under the Federal Compensatory Mitigation Rule and/or the Director of the OEPA under Chapter 6111 of the Ohio Revised Code. Stream credits generated from the proposed Nine Mile Ditch Stream Project will be first applied to fulfill advance credit sales in the service area.

3.0 Site Selection

The Nine Mile Ditch Stream Project area was evaluated for stream restoration potential as an in-lieu fee mitigation site which included office research and field evaluations regarding potential restoration attributes such as landscape position, hydrology, soils, existing vegetation communities, education and recreation opportunities, and consideration of watershed functions and aquatic resources. Potential compensatory mitigation projects that are ecologically suitable are evaluated based on the criteria from the North Coast In-Lieu Fee Program Compensation Planning Framework described in the table below.

Mitigation Project Considerations

| Criteria | Considerations | Criteria Met |
|---|---|--------------|
| Likelihood of success | Will the potential project be ecologically successful, stable (ecological integrity) and sustainable with limited maintenance. Does the site have the potential to incorporate multiple restoration or enhancement strategies. Does the site contain degraded, remnant or reverted wetlands or tributaries. Can invasive species on the potential site be managed. | ✓ |
| Multiple objectives and functions | Will the potential site maximize opportunities to contribute to biodiversity and multiple watershed functions by restoring and enhancing habitat complexes (wetland – upland; instream - floodplain). Does the site have the potential to restore or improve a range of hydroperiods. Does the site have the potential to provide or connect to important habitat corridors or migratory pathways for mammals, birds, amphibians, reptiles, insects/invertebrates. Does the site have the potential to restore connections to floodplains, improve water quality and enhance riparian buffers/corridors. Can functional gains be measured/quantified and monitored. | ✓ |
| Supports park or other conservation resource management plans | Is the potential project located in a watershed that has had significant cumulative wetland and stream impacts. Is a potential preservation project compatible with a park/resource | ✓ |

| | | |
|------------------------------------|--|---|
| or TMDL actions or recommendations | management plan and a candidate for preservation under the Compensatory Mitigation Rule. Does the potential mitigation project provide linkages to park facilities, trails, bike trails, green areas/zones or habitat patches in the community. Will the potential project provide an opportunity to the Sponsor to restore aquatic resources in a different ecoregion or of a differing type or on an appropriate undeveloped site in the midst of development. Does the potential project present an opportunity for recreational or educational uses (to be provided independently by the park district). | |
| Economic feasibility | Conceptual designs will be developed for potential mitigation projects so that budgets can be prepared and reviewed by the Sponsor's board. The budget process will include an evaluation of the demand for credits in the watershed and the likelihood of funding all or increments of the project within the time period provided in the Instrument. | ✓ |
| Regulatory policy | Compensatory mitigation priorities will, in large part, be dictated by regulatory policies, including the interplay of jurisdictional and isolated waters regulated by federal or state authorities, ILF project service area determinations, and other federal and state permitting factors such as interpretation of mitigation location requirements under state and federal rules and available alternative mitigation options. The availability of wetland mitigation bank credits within a particular 8-digit HUC may delay the development of ILF projects for similar resource types. | ✓ |

In conceptualizing the proposed plan for the Nine Mile Ditch Stream Project, North Coast has reviewed and incorporated, as appropriate, the factors identified in the Compensatory Mitigation Rule as contributing to the ecological suitability (and ultimate success and quality) of resource restoration (§332.3(d); Preamble, p. 19605).

These factors are:

- Hydrological conditions, soil characteristics and other physical and chemical characteristics;
- Watershed-scale features, such as aquatic habitat diversity, habitat connectivity, and other landscape scale functions;
- The size and location of the compensatory mitigation site relative to hydrologic sources and other ecological features;
- Compatibility with adjacent land uses and watershed management plans;
- Reasonably foreseeable effects the compensatory mitigation project will have on ecologically important aquatic or terrestrial resources (e.g., mature forests), cultural sites, or habitat for federally- or state-listed threatened and endangered species;

- Other relevant factors including, but not limited to, development trends, anticipated land use changes, habitat status and trends, the relative locations of the impact and mitigation sites in the stream network, local or regional goals for the restoration or protection of particular habitat types or functions (e.g., re-establishment of habitat corridors or habitat for species of concern), water quality goals, floodplain management goals, and the relative potential for chemical contamination of the aquatic resources.

4.0 Site Protection Instrument

The proposed mechanism for long-term protection of the mitigation project is a conservation easement. The proposed conservation easement for the Nine Mile Ditch Stream Project will be included in the appendices to the draft instrument modification. The holder of the conservation easement will be Wood County Park District, a member district of the NCRCPD, also organized and operating in accordance with Chapter 1545 of the Ohio Revised Code. Following authorization of this stream project by the District Engineer, the conservation easement will be recorded in the deed or official records of the Sandusky County Recorder and a recorded copy provided to the District Engineer. The provision required by §332.7(a)(3) of the Compensatory Mitigation Rule is found in paragraphs 12 and 16 of the conservation easement.

5.0 Baseline Conditions

The Lake Erie Tributaries and Portage River watershed (HUC #04100010) is included within the Western Lake Erie Basin. The drainage area for this watershed is approximately 969 miles, including much of the land covered by the former Great Black Swamp, with the Lake Erie Tributaries draining approximately 200 square miles of the watershed. The Lake Erie Tributaries are included within the Maumee Area of Concern. The Portage River drains to Lake Erie in Ottawa County near the Ottawa National Wildlife Refuge. Row crop agriculture dominates land use in this watershed. Six counties are included in this watershed. Sandusky County has a land area of approximately 408 square miles, nearly flat topography, and includes the Maumee Lake Plain and Marblehead Drift Limestone Plain Level IV ecoregions.

Soils

Millsdale silty clay loam (Ms) is the only soil located in the stream zone (Figure 4). It is a very poorly drained moderately deep soil located on flat ground that formed in till overlying limestone or dolostone. Millsdale is in the taxonomic class Typic Argiaquolls. A water table near the surface is typically associated with this soil between November and May. Millsdale soil also comprises approximately 20% of the total watershed area. Other important soils include Haskins (HaB) sandy loam (Aeric Epiaqualfs), at ±54%; and Dunbridge (DuB) sandy loam (Mollic Hapludalfs), at ±15% of the total watershed. The watershed soils occur on relatively flat land with maximum slopes reaching ±4% where minor soils occur.

Hydrology

Nine Mile Ditch drains northward approximately 17 miles from the proposed stream relocation site via the Little Portage drainage and Portage River to Lake Erie. It is located in the Portage River subbasin (USGS 8-digit HUC #04100010). The USGS topographic map designates Nine Mile Ditch in the restoration area and within its ±260 acre watershed an intermittent (headwater) stream (Figure 2; Photos 1-4). Flows during the wet season and through the winter months into the early growing season are sustained by surface water runoff and infiltration from saturated and ponded soils and groundwater. High water tables are associated with Millsdale and Haskins soils and ponding on Millsdale soil. Ponding may occur on Millsdale soil for durations up to 30 days. Unless ditch flows are replenished during storm events natural drydown usually will occur during dry summer months.

Stream Morphology

Nine Mile Ditch is a straight, wide, relatively deep symmetrical ditch without instream structure and floodplain capacity. It lacks natural stream morphology characteristics and is devoid of instream physical habitat and therefore, biodiversity. A summary of the existing waters is found in the table below:

Existing Waters of the United States⁽¹⁾

| Stream | Flow Regime | Length |
|-----------------|--------------------|-------------------|
| Nine Mile Ditch | Intermittent | ± 750 linear feet |

1. No wetlands occur in the proposed stream corridor or work area (Appendix D: Wetlands and Waters Delineation Figure.).

Topography

This site is located on nearly flat ground in a landscape with elevations from ±684 ft. near the project area to ±695 ft. at various locations in its watershed. This excludes relief associated with the Penn Central railroad berm bisecting a portion of the watershed. The gradient for Nine Mile Ditch in the project area averages about 6 ft. to 7 ft. per mile. Ditch depths reach approximately 3 ft. to 5 ft., or more, have steep banks with bank full widths of approximately 10 ft. to 15+ ft. and a narrow stream bed. Nine Mile Ditch extends ±1.2 miles south into its ±260 acre watershed from the proposed restoration area near Shade Rd.

Land Use and Description

Figure 3 shows the land use pattern in the vicinity of the stream relocation project. Overall, agricultural land use in this part of Sandusky County is about 70%. Prior to SCPD’s acquisition of land in the Nine Mile Ditch watershed approximately 55% was in agriculture as cropland. SCPD’s acquisitions decreased agricultural use to ±40% by restoring large areas of prairie and meadow and preserving existing forests and other natural areas. The SCPD’s White Star complex combined conservation management and nature preservation areas total ±800 acres locally which includes ±190 acres of restored palustrine wetlands that make up a sizeable portion of wildlife habitat contributing to the ecology in the region. Wildlife corridors and various habitat connections exist along the Nine Mile Ditch corridor and nearby Muddy Creek drainage corridor as well as scattered woodlots and blocks

of forest, pastures and vegetated fence lines. Farm land, mostly conservation tillage promotes interconnections among these important wildlife linkages.

Land planning and zoning is influenced by State and local government entities including Sandusky County, Gibsonburg, and Washington and Madison townships. The local zoning classifications reflect the land use pattern for this region which is mostly agricultural; farm land, farmsteads and related uses. Agricultural land use in this region has been relatively stable for decades and will likely remain so in the future. SCPD and their partners promote good conservation management for biological diversity, multiple watershed functions and habitat connectivity across landscapes. These mutual efforts have included large areas of wetland restoration that have provided significant educational, recreational and wildlife benefits and this work will continue in the future.

6.0 Mitigation Credits

Stream credits are determined by the District Engineer in consultation with the IRT in accordance with §332.8(o) of the Federal Compensatory Mitigation Rule. Stream credits are based on the activity level of the stream restoration or enhancement project, with stream credits also generated from reestablishing buffer where no functional buffer exists. In accordance with §332.8(o), the number of credits must reflect the difference between pre- and post-compensatory mitigation project site conditions, as determined by a functional or condition assessment or other suitable metric.

The estimated credits indicated in the table below are derived from the credit generation ratios provided by the IRT as suggested credit ratios in the *Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs for Ohio, Version 1.1*, for streams (Table 11-2)(Guidelines).

| Type of Credit | Estimated Quantity | Proposed Ratio | Estimated Credits |
|-----------------------|---------------------------|-----------------------|--------------------------|
| Stream Restoration | 900 linear feet | 1.75:1 | 1575 |
| Total: | | | 1575 |

The stream restoration credit ratio is based on level 2 activity including construction of a 900 linear foot meandering 5 foot wide channel and ±100 foot wide floodplain. In addition, a 10 foot wide grassed swale will be created along County Road 65 adjacent to a new graded 15 foot wide shoulder to improve safety and driving conditions along the county road. The proposed restoration will replicate a more natural channel, provide an appropriately-sized floodplain and improve in-stream and buffer habitat.

Mitigation ratios/debits for impacts are determined by the Corps of Engineers and/or OEPA on a project specific basis, depending on factors including the location, resource class/category and assessment of impacted aquatic resources. As provided by §332.3(f)(2), the Corps of Engineers “must require a mitigation ratio greater than 1:1 where necessary to account for the method of compensatory mitigation (e.g., preservation), the likelihood of success, differences between the functions lost at the impact site and the functions expected to be produced by the compensatory mitigation project, temporal losses of aquatic resource functions, the difficulty of restoring or establishing the desired aquatic resource type and functions and/or the distance between the affected aquatic resource and the compensation site.”

Credit Release Schedule

Releases of credits are based on the achievement of specific stream milestones as determined by the District Engineer in consultation with the IRT in accordance with §332.8(d)(6)(iii)(B) of the Federal Compensatory Mitigation Rule. Stream credits generated from the Dent Ditch Stream Restoration Project will be first applied to fulfill advance credit sales in the service area.

Advance credits means any credits of an approved in-lieu fee program that are available for sale prior to being fulfilled in accordance with an approved mitigation project plan. Advance credit sales require an approved in-lieu fee program instrument that meets all applicable requirements including a specific allocation of advance credits, by service area where applicable. The instrument must also contain a schedule for fulfillment of advance credit sales.

Fulfillment of advance credit sales of an in-lieu fee program means application of credits released in accordance with a credit release schedule in an approved mitigation project plan to satisfy the mitigation requirements represented by the advance credits. Only after any advance credit sales within a service area have been fulfilled through the application of released credits from an in-lieu fee project (in accordance with the credit release schedule for an approved mitigation project plan), may additional released credits from that project be sold or transferred to permittees. When advance credits are fulfilled, an equal number of new advance credits is restored to the program sponsor for sale or transfer to permit applicants.

Release of credits means a determination by the District Engineer, in consultation with the IRT, that credits associated with an approved mitigation plan are available for sale or transfer, or in the case of an in-lieu fee program, for fulfillment of advance credit sales. A proportion of projected credits for a specific mitigation bank or in-lieu fee project may be released upon approval of the mitigation

plan, with additional credits released as milestones specified in the credit release schedule are achieved.

The proposed credit release schedule based on Section 10 of the Guidelines is set forth below.

| Action or Milestone | Advance Credits | | Cumulative Release | |
|---|-----------------|---------|--------------------|-------------|
| | Percentage | Credits | Percentage | Credits |
| Approval of Instrument Modification and recording of site protection instrument | 10% | 157 | 10% | 157 |
| Completion of construction | 10% | 157 | 20% | 314 |
| Completion of seeding or planting | 10% | 157 | 30% | 471 |
| Completion of monitoring year 2 ¹ | 20% | 315 | 50% | 786 |
| Completion of monitoring year 4 ² | 15% | 236 | 65% | 1022 |
| Completion of monitoring year 6 ³ | 15% | 236 | 80% | 1258 |
| Completion of monitoring year 8 ⁴ | 10% | 157 | 90% | 1415 |
| Completion of monitoring year 10 and achievement of all performance standards | 10% | 160 | 100% | 1575 |
| Total Project Credits | 1575 | | | |

¹ Section 10 of the Guidelines specifies the success criteria for a release of credits after submission of the year 2 monitoring report.

² Section 10 of the Guidelines specifies the success criteria for a release of credits after submission of the year 4 monitoring report.

³ Section 10 of the Guidelines specifies the success criteria for a release of credits after submission of the year 6 monitoring report.

⁴ Section 10 of the Guidelines specifies the success criteria for a release of credits after submission of the year 8 monitoring report.

The District Engineer, in consultation with the IRT, may modify the credit release schedule, including reducing the number of available credits or suspending credit sales or transfers altogether, where necessary to ensure that all credit sales or transfers remain tied to compensatory mitigation projects with a high likelihood of meeting performance standards (§332.8(d)(6)(iii)(B)).

7.0 Mitigation Activities

The conceptual site plan and reference stream description are found in Appendix C. Attributes for the reference stream, Little Muddy Creek, which is located in a similar mostly flat agricultural landscape are similar to the attributes for proposed stream restoration segment. The Nine Mile Ditch stream relocation will be facilitated by creating a new ±900 lft. channel within the SCPD's land parcel south of Shade Road and the design and flow

characteristics are based on its watershed characteristics. The new stream corridor is a 5 ft. wide meandering channel approximately 1 ft. deep with a bankfull width of ± 9 ft. The floodplain area is ± 100 ft. wide with gradual slopes to the top of the flood zone. Maximum surface water flows through the new stream channel will be ± 11 CFS with maximum velocities reaching approximately 1 ft./sec. Normal capacities and velocities will be less and the overall range of flows and timing of flow cycles will promote physical and biological processes for this stream type. The combination of stream channel and floodplain dimensions essentially eliminate potential stream bank erosion and ensure overall stream stability in the future.

Restoration of the in-stream environment will include riffle structures/other bed forms/stream zones to promote diverse instream habitat and the adjacent floodplain elevations will allow connectivity of higher stream flows to the floodplain. Surface water flow through the new stream section will normally occur for five to six months; from the wet season during the fall through the winter and into the spring growing season. Higher flows will be followed by mostly intermittent flow through the remaining part of the growing season. Ecological lift within the stream and along the stream corridor is achieved by creating complex habitat that will support greater biological diversity and improve trophic conditions compared to the original ditched stream environment. The floodplain will be seeded and planted with vegetation to improve buffer quality and wildlife habitat. Herbaceous and woody wetland areas are expected to develop along parts of the floodplain.

8.0 Performance Standards

The proposed restoration will significantly improve stream physical processes, improve in-stream habitat and better integrate potential ecological functions associated with the surrounding upland grassland complex. The performance standards for the restored stream channel are set forth below:

1. The stream channel will be stable, have an accessible floodplain and meet the Headwater Macroinvertebrates Field Evaluation Index (HMF EI) criteria for Class II primary headwater stream by the end of the monitoring period. This performance standard should translate to a Headwater Habitat Evaluation Index (HHEI) score of at least 45.
2. Stream physical stability will be evaluated using longitudinal and cross-section surveys comparing baseline as-built elevations with year 2, 6 and 10 elevations. These elevation data in combination with substrate sampling as pebble counts will track stream bed, lateral bank and floodplain stability over time. They will also provide measurement points for necessary stream stability evaluations. The goal for the stream is no signs of excessive bank erosion, sedimentation, head cutting, aggradation, entrenchment or degradation. The stream and floodplain cross-sections will be located at ± 20 bankfull widths along the stream at ± 180 ft. intervals beginning at the first meander upstream. This includes a total of 3 cross-sections through bends and 2 across straight sections of stream. The longitudinal elevation survey will span the entire length of stream along the center line.

3. Qualitative macroinvertebrate data will be collected from Nine Mile Ditch prior to construction and during monitoring years 4, 6, 8 and 10 from the restored stream to evaluate ecological/functional lift. The HMF EI score for the restored stream is expected to exceed a score of 24 by the end of the monitoring period.
4. The floodplain buffer vegetation will be assessed visually during the walk about inspections and should comprise a minimum of 75% relative coverage by native perennial herbaceous, shrub and tree species and less than 5% relative coverage of the invasive plant species identified in Appendix 7 of the 2011 Guidelines.

9.0 Monitoring

Monitoring is required of all compensatory mitigation projects to determine if the project is meeting its performance standards and if additional measures are necessary to ensure that the compensatory mitigation project is accomplishing its goals (33 CFR §332.6; RGL 08-03). The monitoring will evaluate stream habitat development to determine whether remedial measures are necessary. Monitoring will take place for a period of ten years following construction of the mitigation project, with monitoring data collected and reports submitted in at least five years of the ten year monitoring period.

The District Engineer in consultation with the IRT may reduce or waive the remaining monitoring requirements upon a determination that the compensatory mitigation project has met its performance standards, or extend the monitoring period upon a determination that performance standards have not been met, are not on track to be met, or remediation or adaptive management measures are required (33 CFR §332.6(b)).

After construction an as-built report will be submitted to members of the IRT by December 31st of the year of construction and seeding/planting. Thereafter, monitoring reports will be submitted by December 31st of each monitoring year. Monitoring years are expected to be as indicated in the table below, however, the schedule for submitting monitoring reports may be adjusted based on site conditions or to facilitate credit releases. Schedule adjustment requests will be coordinated through the District Engineer in consultation with the IRT and do not require modification of the Plan or ILF Instrument.

Monitoring reports will be consistent with RGL 08-03 and include a narrative that summarizes project conditions; supporting data such as plans, maps and photographs to illustrate project conditions; monitoring results from functional, condition or other assessments that compare the status of the developing project to performance standards; and any recommendations for adaptive management or remedial measures at the project. A summary of the parameters to be monitored, the length of the monitoring period, the date that the monitoring report must

be submitted, the monitoring methodology, and the frequency for submitting monitoring reports is provided in the table below.

| Monitoring Parameters and Schedule | | | | | | | |
|--|--|------------------|---------|---------|---------|---------|---------|
| Monitoring Parameter | Monitoring Methodology | Year | | | | | |
| | | 0 | 2 | 4 | 6 | 8 | 10 |
| As-built Drawings | | X | | | | | |
| Site Photographs | Fixed points and representative conditions | | X | X | X | X | X |
| Cross sections including stream depths and flows | Benchmark Elevations | X ⁽¹⁾ | X | | X | | X |
| Longitudinal profile for entire stream length (±900 ft.) | Benchmark Elevations | X ⁽¹⁾ | X | | X | | X |
| Habitat Assessment | HHEI ⁽³⁾ | | X | X | X | X | X |
| Substrate Sampling | Standard Pebble Counts | | X | X | X | X | X |
| Macroinvertebrate Sampling | Qualitative HMFEI | X ⁽²⁾ | | X | X | X | X |
| Water Chemistry | Selected Parameters | | | X | | X | |
| Floodplain Vegetation | Percent Relative Cover | | X | X | X | X | X |
| Annual Reporting | | | | | | | |
| Annual Monitoring Report Submittal | | Dec. 31 | Dec. 31 | Dec. 31 | Dec. 31 | Dec. 31 | Dec. 31 |

- (1) Baseline elevation data and stream and floodplain dimensions for the as-built and follow-up performance monitoring.
- (2) The Year 0 macroinvertebrate sampling is conducted in Nine Mile Ditch which will be compared with the Year 4, 6, 8 and 10 macroinvertebrate sampling in the restored stream.
- (3) Includes field measurements for water and air temperature, pH, DO, water depths and flow.

10.0 Maintenance, Adaptive Management

Routine maintenance during the restoration and monitoring phase of the Nine Mile Ditch Stream Project will include inspection and repair of instream structures, management of invasive species, as needed. Adaptive habitat measures during this phase may include additional planting or seeding of buffer areas.

11.0 Long-Term Management

Long-term management will be assumed by the Sandusky County Park District which will own the Nine Mile Ditch Stream ILF Project and integrate management of the project into its park/natural resource management plan. Public ownership of and access to the mitigation project will maximize opportunities to contribute to services by

providing educational and recreational benefits to the community. *Services* means the benefits that human population receive from functions that occur in ecosystems. (§332.2 of the Federal Compensatory Mitigation Rule).

At the end of the monitoring period and after confirmation that the project has achieved its performance standards and all credits have been sold or abandoned, the long-term management and stewardship phase of the Nine Mile Ditch Stream Project will commence. The proposed conservation easement to insure long term protection of the mitigation project (§332.8(t)) will be included in the appendices to the instrument modification. The holder of the conservation easement will be Wood County Park District, a member district of the NCRCPD, organized and operating in accordance with Chapter 1545 of the Ohio Revised Code. Following authorization of the project by the District Engineer, the conservation easement will be recorded in the deed or official records of the Lorain County Recorder and a recorded copy provided to the District Engineer.

Funding for long-term management is provided through the transfer of funds in the contingency/long-term management account from the NCRCPD to LCMP as discussed in Section 12. The long-term sustainability of a mitigation project, particularly a project sited in a park with public use, necessitates active long-term management. Typical ongoing active management/maintenance activities may include, inspection and upkeep of water control structures, inspection and repair of berms, inspection and repair of instream rock structures, repair of drain tile blowouts, management of invasive species through mowing, burning or appropriate herbicide treatments, and annual site walk-about condition assessments. Annual walk-about reviews will also be conducted by the conservation easement holder to inspect the project for any activities prohibited under the terms of the easement as well as maintenance or management concerns.

12.0 Financial Assurances

Financial assurances will be provided by contingency/long-term management funds established in the approved budget for the stream and wetland project. The project budget will be approved by the District Engineer in consultation with the IRT. Approval of the budget by the District Engineer constitutes the spending authorization required by §332.8(i)(2) of the Federal Compensatory Mitigation Rule. Up to 23% of the project budget will be earmarked for contingency/long-term management activities.

The contingency/long-term management account funds will be held by the NCRCPD and used for remedial activities necessary to complete the restoration of the project in accordance with its performance standards as specified in this Plan. When the restoration and monitoring of the project are completed, the remaining funds in the contingency/long-term management account will cumulate and be used for long-term management.

13.0 Default

Should the District Engineer determine that the NCRCPD is in material default of any provision of this Plan, the District Engineer may take appropriate action (§332.8(o)(10)). The District Engineer, in consultation with the IRT, will notify the NCRCPD in writing with reasonable specificity of the circumstances or actions which constitute a material default and provide a reasonable period of time to cure the default. If the NCRCPD fails to cure the default, the District Engineer will inform NCRCPD in writing of the action to be taken. Such actions may include, but are not limited to, adaptive management, suspending or decreasing available credits generated by the project, directing the use of contingency funds to cure said default or purchase alternative mitigation (which will result in a reduction of said mitigation liability to the NCRCPD) or taking enforcement action. In the event this Plan is terminated, NCRCPD is responsible for fulfilling any remaining obligations for credits sold prior to termination. Such obligations include the successful completion of the restoration project, relevant maintenance, monitoring, reporting, and long term management requirements.

14.0 Closure

All or part of the Dent Ditch Stream ILF Project can be closed in accordance with the procedures set forth herein. Closed projects will be certified as such by the District Engineer in consultation with the IRT. Closure certification will be requested by the NCRCPD once performance standards have been achieved, the minimum monitoring requirements have been completed and all credits have been sold or abandoned. The District Engineer in consultation with the IRT will conduct a final compliance inspection to confirm that all performance standards have been achieved and to verify the final stream delineation, as appropriate. The closing procedures will also include confirmation that SCPD has integrated long-term management of the Nine Mile Ditch Stream ILF Project into its park management plan; that the NCRCPD has transferred the remaining funds in the long-term management account to a dedicated or other appropriate fund; and such other steps as may be mutually agreed by the NCRCPD and the District Engineer.

15.0 Other Provisions

Notice. Any notice required or permitted hereunder will be deemed to have been given either (i) when delivered by hand or transmitted by electronic mail or facsimile transmission, (ii) three (3) business days following the date deposited in the United States mail, postage prepaid, by registered or certified mail, or (iii) sent by express or next-day nationwide delivery service, addressed as follows (or addressed in such other manner as the party being notified will have requested by written notice to the other party):

District Engineer
US Army Corps of Engineers, Buffalo District

President
North Coast Regional Council of Park Districts

1776 Niagara Street
Buffalo, NY 14207

12882 Diagonal Road
LaGrange, OH 44050

Invalid Provision. In the event any one or more of the provisions contained in this Plan are held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability will not affect any other provisions hereof, and this Plan will be construed as if such invalid, illegal or unenforceable provision had not been included herein.

Rules of Convenience. For convenience, any masculine pronouns used in this Plan include the feminine and neuter pronouns and the singular tense includes the plural tense. Any paragraph headings or captions contained in this Plan are for convenience only and are not intended by the parties to affect the meaning or interpretation of any provision of this Plan.

Effective Date. This Plan will be immediately binding upon the NCRCPD and the District Engineer upon signing whether or not executed by other members of the IRT.

Modifications. This Plan may not be modified or amended except by written agreement between NCRCPD and the District Engineer in accordance with the provisions set forth in §332.8(g) of the Compensatory Mitigation Rule. Revisions to the approved budget must be approved by the District Engineer but are not considered to be modifications to the Plan.

Force Majeure. Any delay or failure of the NCRCPD to comply with the terms of this Plan shall not constitute a default if and to the extent that such delay or failure is caused by any force majeure or other conditions beyond the NCRCPD's reasonable control that significantly adversely affects its ability to perform its obligations, prevent or mitigate, such as flood, drought, lightning, earthquake, fire, landside, disease or regional pest infestation. The NCRCPD shall give written notice to the District Engineer and IRT if the performance of the Plan is affected by any such event as soon as is reasonably practicable, documenting why a given event should be considered a force majeure and recommendations, if any, for modifications or corrective measures. The District Engineer, in consultation with the IRT, retains sole discretion whether a given event qualifies as a force majeure, whether and to what extent significant, adverse impacts have occurred, and whether and to what extent modifications or corrective measures will be implemented.

16.0 References

Andreas, B.K., J.J. Mack and J.S. McCormac. 2004. Floristic quality assessment index (FQAI) for vascular plants and mosses for the State of Ohio. OEPA, DSW, Wetland Ecology Group, Columbus, OH.

Cowardin, L.M., Carter, V., Golet, F.C and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service. Biological Services Program. FWS/OBS-79/31.

Clean Water Act of 1977. (33 U.S.C. §§ 1251-1387).

COE, US Department of the Army and Environmental Protection Agency. 2008. *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule*. Referred to as the Federal Compensatory Mitigation Rule or Compensatory Mitigation Rule. As published in the Federal Register, April 10, 2008.

COE, U.S. Department of the Army, Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*. U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi. 92 pp. and appendices.

COE, RGL-08-03. Minimum Monitoring Requirements for Compensatory Mitigation Projects Involving the Restoration, Establishment and/or Enhancement of Aquatic Resources. October 10, 2008.

Lichvar, R.W. et al. 2016. *2016 National Wetland Plant List*. Available at http://wetland_plants.usace.army.mil.

Maidment, D.R. (Editor). 1992. *Handbook of Hydrology*. McGraw-Hill, Inc. NY.

National Wetlands Inventory. 2018. Wetlands Mapper. USGS Topographic Map. www.fws.gov/wetlands/data/mapper.html

Ohio Interagency Review Team (IRT). 2011. *Guidelines for Wetlands Mitigation Banking in Ohio, March 2011*. As published by the Huntington District of the COE on July 20, 2011 and revised per PN 2015-2, June 25, 2015.

Ohio Interagency Review Team (IRT). 2014. *Guidelines for Stream Mitigation Banking and In-Lieu Fee Programs in Ohio, Version 1.1*. As published by the Huntington District of the COE in March, 2016.

Ohio Isolated Wetland Law. 2001. (Ohio Revised Code §§6111.02-6111.029).

Richardson, J.L. and M.J. Vepraskas (Editors). 2001. First Edition. *Wetland Soils; Genesis, Hydrology, Landscapes, and Classification*. Lewis Publishers, Boca Raton, FL.

Rosgen, D.L. and Lee Silvey 1996, 1998. *Applied River Morphology and Field Guide for Stream Classification*. Available from Wildland Hydrology, Pagosa Springs, Colorado.

Sandusky County Auditor's G.I.S. Office. 2018. www.sanduskycountygis.org

Schoeneberger, P.J., Wysocki, D.A., Benham, E.C., and W.D. Broderson (Editors). 2002. *Field Book for Describing and Sampling Soils, Version 2.0*. NRCS National Soil Survey Center, Lincoln, NE.

Soil Survey Staff. 2010. *Keys to Soil Taxonomy* (Eleventh Edition). USDA-NRCS. National Cooperative Soil Survey. U.S. Govt. Printing Office. Washington, D.C.

Thorne, C.R. 1998. *Stream Reconnaissance Handbook*. John Wiley & Sons, Ltd. New York, NY.
USDA-NRCS. 2018. Soil Ratings by Map Unit, Sandusky County, OH. Web Soil Survey and Official Series Descriptions, National Cooperative Soil Survey. www.websoilsurvey.nrcs.usda.gov

USGS. United States Geological Service 1988 (drainage modified from *Ohio Base Map* 1951). *Hydrologic Unit Map, State of Ohio*. Available from USGS, Reston, Virginia 22092.

Clean Water Act of 1977. (33 U.S.C. §§ 1251-1387).

USDA-NRCS. 2018. Soil Ratings by Map Unit, Sandusky County, OH. Web Soil Survey and Official Series Descriptions, National Cooperative Soil Survey. www.websoilsurvey.nrcs.usda.gov

USDA-NRCS. 2010. Field Indicators of Hydric Soils in the United States, Version 7.0. L.M. Vasilas, G.W. Hurt, and C.V. Noble (Editors). USDA Natural Resources Conservation Service National Technical Committee for Hydric Soils. landcare@usda.gov

Vepraskas, M.J. and C.B. Craft (Editors). 2016. Second Edition. *Wetland Soils; Genesis, Hydrology, Landscapes, and Classification*. CRC Press, Boca Raton, FL.

17.0 Project Contacts

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1970 Countryside Place
Fremont, OH 43420 (419) 334-4495

Wood County Park District (MCPD), Conservation Easement Holder
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Bowling Green, OH 43402 (419) 353-1897

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Plain City, OH 43064 (614) 580-0050

Figures



Figure 1. State Location Map



Figure 2. USGS Topographic Map

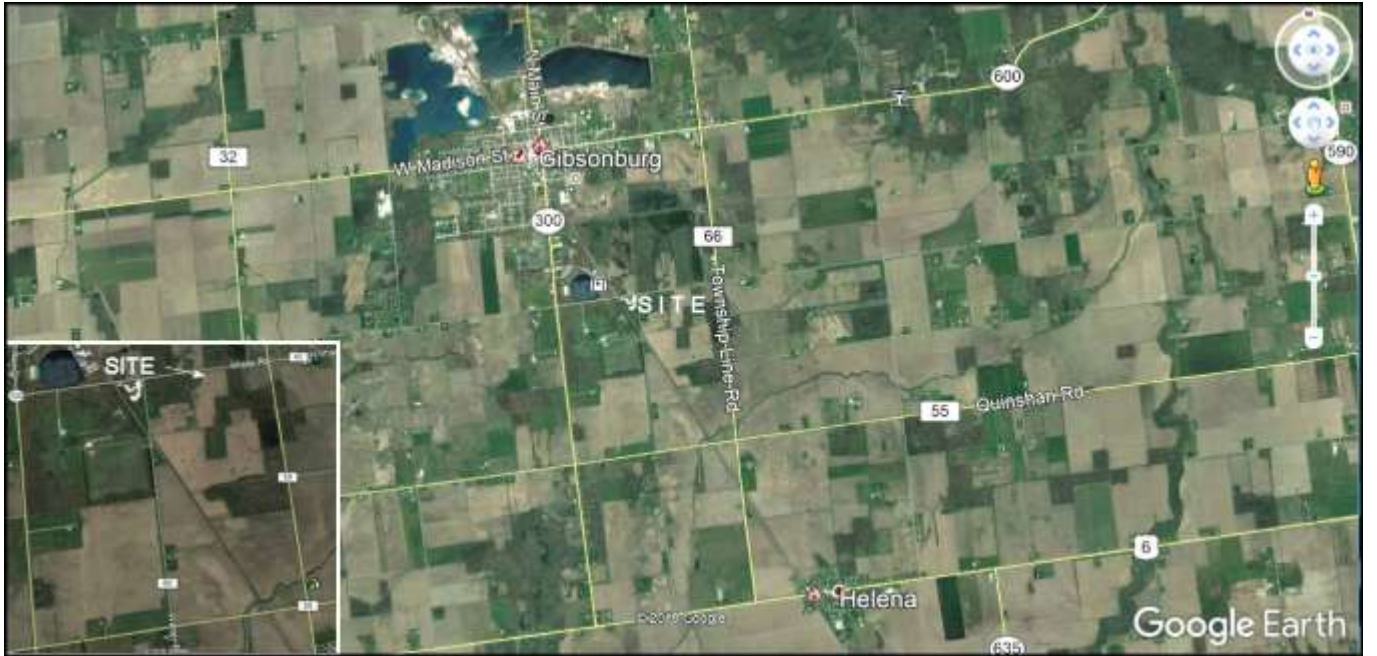


Figure 3. Aerial Photograph

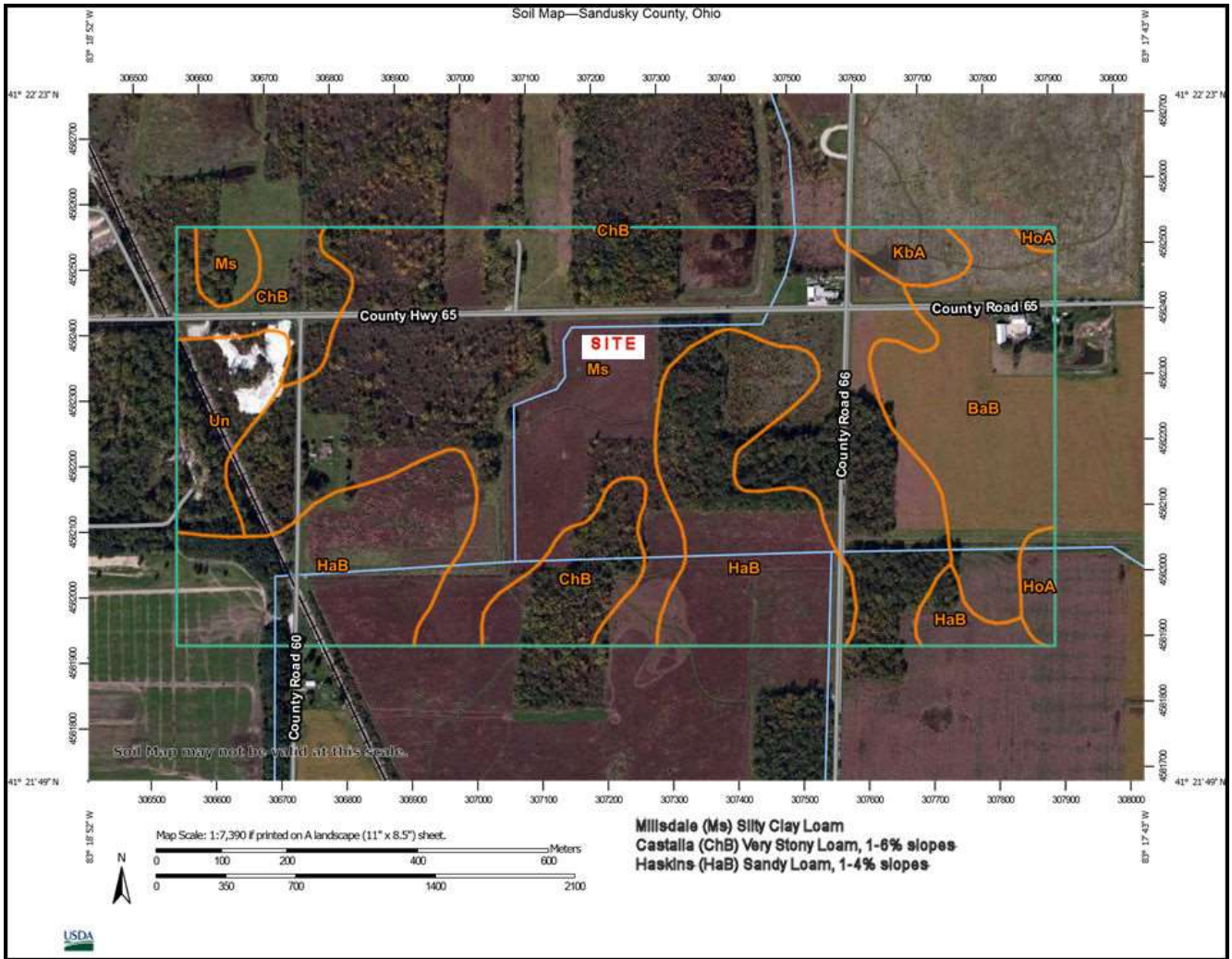


Figure 4. NRCS Soils Map



Figure 5. Service Area Map

Appendices

Appendix A Representative Site Photographs



Photo 1: Nine Mile Ditch facing west at Shade Road from the northwest corner of parcel (Sandusky County Park District photo, 2.9.18).



Photo 2: Nine Mile Ditch facing east at Shade Road from northwest corner of parcel (Sandusky County Park District photo, 2.9.18).



Photo 3: Nine Mile Ditch parallel to the proposed relocation channel, facing west along Shade Road (Sandusky County Park District photo, 2.9.18).



Photo 4: Nine Mile Ditch channel and example of flow just north of the stream relocation site, facing south (Sandusky County Park District Photo, 2.16.18)

Appendix B
Planting and Seeding Lists

Nine Mile Ditch Stream Buffer ACRES: 1

| Scientific Name | Common Name | Form | CoC | Ind-OH | AMT (oz) |
|------------------------------------|----------------------|------|-----|--------|----------|
| <i>Asclepias incarnata</i> | Swamp Milkweed | F | 4 | OBL | 8 |
| | Midwest Tickseed | | | | |
| <i>Bidens aristosa</i> | Sunflower | F | 4 | FACW | 8 |
| <i>Eutrochium maculatum</i> | Spotted Joe Pye Weed | F | 6 | OBL | 1 |
| <i>Eupatorium perfoliatum</i> | Boneset | F | 3 | FACW | 1 |
| <i>Helenium autumnale</i> | Sneezeweed | F | 4 | FACW | 1 |
| <i>Helianthus giganteus</i> | Giant Sunflower | F | 6 | FACW | 4 |
| <i>Hibiscus moscheutos</i> | Swamp Rose-mallow | F | 4 | OBL | 8 |
| <i>Lobelia cardinalis</i> | Cardinal Flower | F | 5 | OBL | 0.125 |
| <i>Lobelia siphilitica</i> | Great Blue Lobelia | F | 3 | FACW | 0.125 |
| <i>Lycopus americanus</i> | Water Horehound | F | 3 | OBL | 0.25 |
| <i>Mimulus ringens</i> | Monkey Flower | F | 4 | OBL | 0.0625 |
| <i>Silphium trifoliatum</i> | Whorled Rosin Weed | F | 5 | FAC | 6 |
| <i>Solidago patula</i> | Swamp Goldenrod | F | 6 | OBL | 0.5 |
| <i>Symphotrichum novae-angliae</i> | New England Aster | F | 2 | FACW | 0.5 |
| <i>Symphotrichum puniceum</i> | Swamp Aster | F | 7 | OBL | 0.5 |
| <i>Thalictrum dasycarpum</i> | Purple Meadow Rue | F | 4 | FACW | 4 |
| <i>Verbena hastata</i> | Blue Vervain | F | 4 | FACW | 0.5 |
| <i>Calamagrostis canadensis</i> | Blue Joint Grass | G | 4 | FACW | 0.5 |
| <i>Carex crinita</i> | Fringed Sedge | G | 3 | OBL | 4 |
| <i>Carex grayii</i> | Common Bur Sedge | G | 5 | FACW | 2 |
| <i>Carex tribuloides</i> | Blunt Broom Sedge | G | 4 | FACW | 1 |
| <i>Elymus riparius</i> | Riverbank Wild Rye | G | 5 | FACW | 32 |
| <i>Elymus virginicus</i> | Virginia Wild Rye | G | 3 | FACW | 32 |
| <i>Glyceria striata</i> | Fowl Manna Grass | G | 2 | OBL | 1 |
| <i>Leersia oryzoides</i> | Rice Cut Grass | G | 1 | OBL | 2 |
| <i>Coleataenia rigidula</i> | Rigid Panic Grass | G | 5 | FACW | 8 |
| <i>Panicum virgatum</i> | Switch Grass | G | 4 | FAC | 16 |
| <i>Poa palustris</i> | Fowl Bluegrass | G | 5 | FACW | 2 |
| <i>Physocarpus opulifolius</i> | Prairie Ninebark | S | 4 | FACW | 4 |
| <i>Platanus occidentalis</i> | Sycamore | T | 7 | FACW | 12 |
| <i>Sambucus nigra</i> | Elderberry | S | 3 | FACW | 3 |
| <i>Spiraea alba</i> | Meadow-sweet | S | 3 | FACW | 1 |

Per Acre Totals

| | |
|---------------|----------|
| Ounces | 164.0625 |
| Pounds | 10.25 |

Nine Mile Ditch Streambank/Floodplain

| Scientific Name | Common Name | Form | CofC | Ind-OH | Qty. | Unit |
|-----------------------|----------------|------|------|--------|----------|------|
| <i>Salix interior</i> | Sandbar Willow | S | 1 | FACW | 750 3ft. | LS* |
| <i>Salix lucida</i> | Shining Willow | S | 4 | FACW | 750 3ft | LS |
| <i>Salix nigra</i> | Black Willow | S | 2 | OBL | 750 3ft | LS |

*LS (live stakes)

Total 2250

**Nine Mile Ditch Grassed
Swale Adjacent to Road
Shoulder**

ACRES: 1

| Scientific Name | Common Name | Form | Ind- OH | AMT (lbs) |
|---|---------------------|-------------|--------------------|----------------------|
| <i>Festuca longifolia</i> | Hard fescue | G | NL | 55 |
| <i>Festuca rubra</i> | Creeping red fescue | G | FACU | 35 |
| <i>Lolium Multiflorum</i> | Annual rye | G | NL | 10 |
| | | | | 100 |
| Per Acre Totals Pounds (Grasses) | | 100 | | |

Appendix C
Proposed Construction Plan and Reference Stream Description

| NO. | DESCRIPTION | UNIT | QUANTITY |
|-----|-----------------|-----------------|----------|
| 1 | GRAVEL | CU YD | 100 |
| 2 | CRUSHED GRANITE | CU YD | 100 |
| 3 | TOPSOIL | CU YD | 100 |
| 4 | BASE | CU YD | 100 |
| 5 | CURB | LINEAR FEET | 100 |
| 6 | CONCRETE | CY | 100 |
| 7 | ASPHALT | CU YD | 100 |
| 8 | LANDSCAPING | PER LINEAR FOOT | 100 |
| 9 | PAVING | CU YD | 100 |
| 10 | EMBANKMENT | CU YD | 100 |
| 11 | DRAINAGE | CU YD | 100 |
| 12 | ROCK | CU YD | 100 |
| 13 | REINFORCEMENT | LINEAR FEET | 100 |
| 14 | UTILITY | LINEAR FEET | 100 |
| 15 | LANDSCAPING | PER LINEAR FOOT | 100 |
| 16 | PAVING | CU YD | 100 |
| 17 | ASPHALT | CU YD | 100 |
| 18 | CRUSHED GRANITE | CU YD | 100 |
| 19 | GRAVEL | CU YD | 100 |
| 20 | TOPSOIL | CU YD | 100 |
| 21 | BASE | CU YD | 100 |
| 22 | CURB | LINEAR FEET | 100 |
| 23 | CONCRETE | CY | 100 |
| 24 | ASPHALT | CU YD | 100 |
| 25 | CRUSHED GRANITE | CU YD | 100 |
| 26 | GRAVEL | CU YD | 100 |
| 27 | TOPSOIL | CU YD | 100 |
| 28 | BASE | CU YD | 100 |
| 29 | CURB | LINEAR FEET | 100 |
| 30 | CONCRETE | CY | 100 |
| 31 | ASPHALT | CU YD | 100 |
| 32 | CRUSHED GRANITE | CU YD | 100 |
| 33 | GRAVEL | CU YD | 100 |
| 34 | TOPSOIL | CU YD | 100 |
| 35 | BASE | CU YD | 100 |
| 36 | CURB | LINEAR FEET | 100 |
| 37 | CONCRETE | CY | 100 |
| 38 | ASPHALT | CU YD | 100 |
| 39 | CRUSHED GRANITE | CU YD | 100 |
| 40 | GRAVEL | CU YD | 100 |
| 41 | TOPSOIL | CU YD | 100 |
| 42 | BASE | CU YD | 100 |
| 43 | CURB | LINEAR FEET | 100 |
| 44 | CONCRETE | CY | 100 |
| 45 | ASPHALT | CU YD | 100 |
| 46 | CRUSHED GRANITE | CU YD | 100 |
| 47 | GRAVEL | CU YD | 100 |
| 48 | TOPSOIL | CU YD | 100 |
| 49 | BASE | CU YD | 100 |
| 50 | CURB | LINEAR FEET | 100 |

| GENERAL QUANTITIES | |
|--------------------|---------------------------------|
| ITEM | REMOVE SECTION OF DISTRICT ROAD |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |



LOCATION MAP
SCALE 1" = 2000'

HELINA

WASHINGTON

GIBSONBURG

SPRUDE

TOURISHAN

SWANZMAN

WALTER

Ditch

Other Ditch

300

600

24

25

26

27

28

29

30

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GENERAL NOTES

- The existing site conditions of any lots within and outside the boundaries of the project shall be shown on the site plan and shall be shown in accordance with the Ohio Department of Public Safety, Division of Highway Safety, as shown on the site plan. The contractor shall be responsible for verifying the accuracy of the site plan and shall be responsible for verifying the accuracy of the site plan. The contractor shall be responsible for verifying the accuracy of the site plan and shall be responsible for verifying the accuracy of the site plan.
- The contractor shall be responsible for obtaining all necessary permits for the project and shall be responsible for obtaining all necessary permits for the project.
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CONSTRUCTION SCHEDULE

- Site preparation and clearing of the project site.
- Excavation and foundation work.
- Structural steel erection.
- Roofing and exterior wall construction.
- Interior wall construction.
- Finish work including painting and landscaping.
- Final inspection and closeout.

TEMPORARY SITEWORK

- Site access and roadways.
- Erosion control measures.
- Safety fencing and signage.
- Temporary parking areas.
- Site security measures.

GENERAL NOTES

- The contractor shall be responsible for obtaining all necessary permits for the project and shall be responsible for obtaining all necessary permits for the project.
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SHEET INDEX

| SHEET | TITLE |
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| 81 | TEMPORARY SITEWORK |
| 82 | GENERAL NOTES |
| 83 | CONSTRUCTION SCHEDULE |
| 84 | TEMPORARY SITEWORK |
| 85 | GENERAL NOTES |
| 86 | CONSTRUCTION SCHEDULE |
| 87 | TEMPORARY SITEWORK |
| 88 | GENERAL NOTES |
| 89 | CONSTRUCTION SCHEDULE |
| 90 | TEMPORARY SITEWORK |
| 91 | GENERAL NOTES |
| 92 | CONSTRUCTION SCHEDULE |
| 93 | TEMPORARY SITEWORK |
| 94 | GENERAL NOTES |
| 95 | CONSTRUCTION SCHEDULE |
| 96 | TEMPORARY SITEWORK |
| 97 | GENERAL NOTES |
| 98 | CONSTRUCTION SCHEDULE |
| 99 | TEMPORARY SITEWORK |
| 100 | GENERAL NOTES |

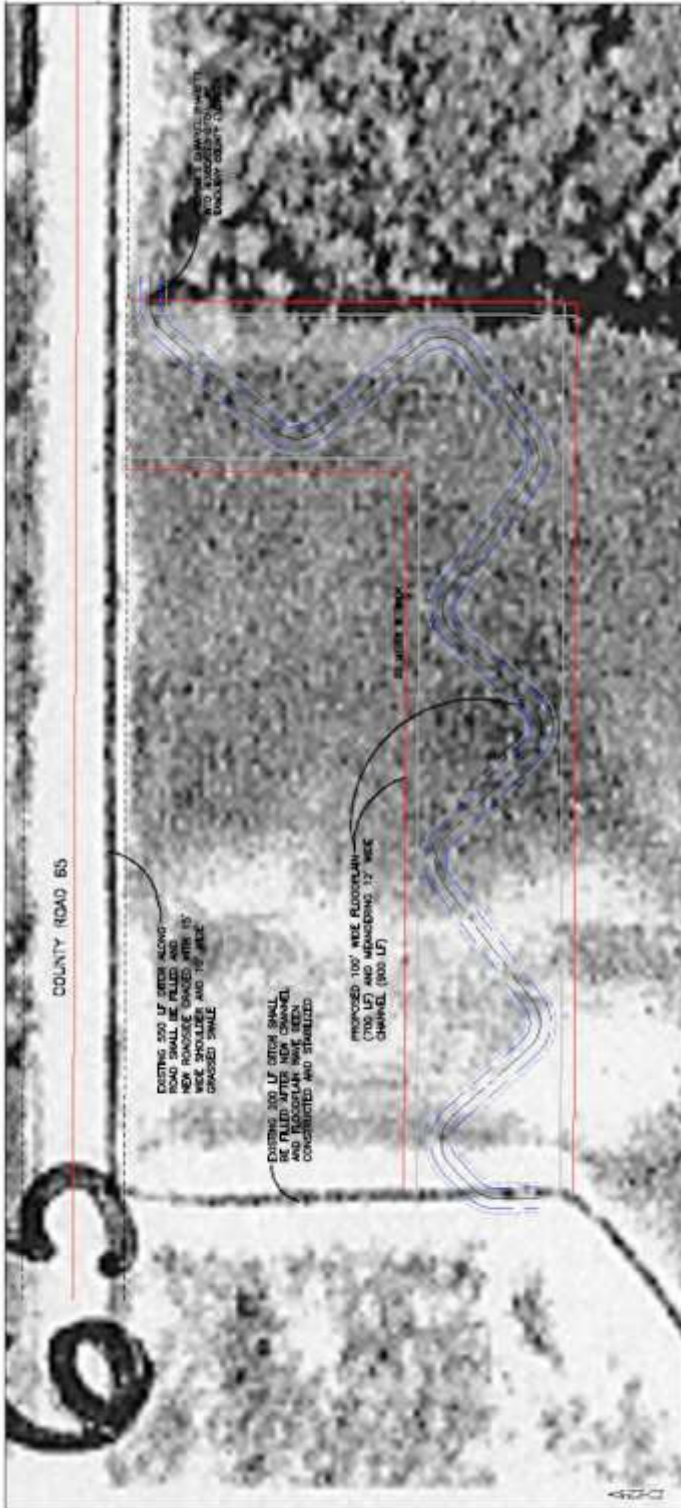
LOCATION PLAN
SCALE 1" = 200'



SANDUSKY COUNTY PARK DISTRICT
WHITE STAR NINE MILE DITCH
COUNTY ROAD 65
GIBSONBURG, SANDUSKY COUNTY, OHIO

ECO-DESIGN & ENGINEERING, LM
7733 White Road, Fairport, OH 43024
Phone: (614) 471-7333

10/2022



GRADING PLAN
SCALE 1" = 30'

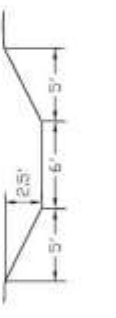
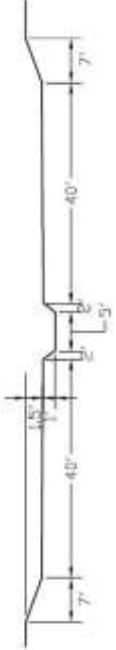
- NOTES**
1. A 1/4" INCHES THICKNESS SHALL BE CHECKED FROM FLOODPLAIN AND 1000 GRADES TO CORNER. IN EACH CASE FOR INDICATED AFTER FLOOD
 2. EXISTING 100' WIDE FLOODPLAIN AND CHANNEL FROM CO SHALL BE
 3. FLOODPLAIN AND CHANNEL SHALL BE FILLED IN THE FIELD BY DESIGN
 4. FLOODPLAIN AND CHANNEL SHALL BE LIMITED TO THE FLOODPLAIN AND CHANNEL UNLESS OTHERWISE NOTED. THE FLOODPLAIN AND CHANNEL SHALL BE APPROVED BY THE ENGINEER FOR USE IN SETTING FLOODING OF CHANNEL AND FLOODPLAIN.

PROPOSED FLOODPLAIN CAPACITY 400' WIDE
SECTION AREA = 11.1 LF
SLOPE = 1:1
CAPACITY = 11.1 CFS

PROPOSED FLOODPLAIN CAPACITY 40' WIDE
SECTION AREA = 1.1 LF
SLOPE = 1:1
CAPACITY = 1.1 CFS

EXISTING DITCH CAPACITY 40' WIDE
SECTION AREA = 1.1 LF
SLOPE = 1:1
CAPACITY = 1.1 CFS

EXISTING EXISTING DITCH
SECTION AREA = 1.1 LF
SLOPE = 1:1
CAPACITY = 1.1 CFS



C-2
DATE: 11/11/11
BY: JLD
SCALE: 1" = 30'

SANDUSKY COUNTY PARK DISTRICT
WHITE STAR NINE MILE DITCH
COUNTY ROAD 65
GIBSONBURG, SANDUSKY COUNTY, OHIO



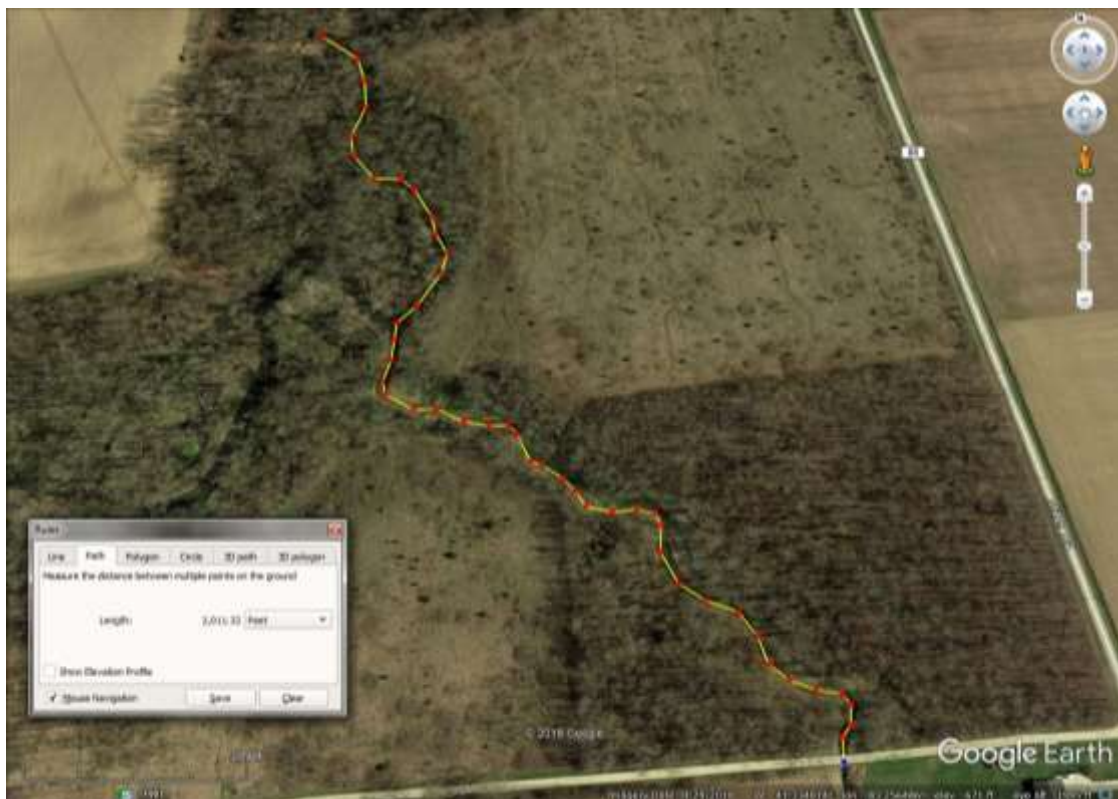
ECO-DESIGN & ENGINEERING, Ltd
7700 White Road, Plain City, Ohio 43064
Phone / FAX (614) 733-0049
envirotech consultants, inc.
5280 Towne & Road 143 NE, Sunnyside, Ohio 43083
740-743-1889, FAX 740-743-1844

11/11/11

Stream Reference and Landscape



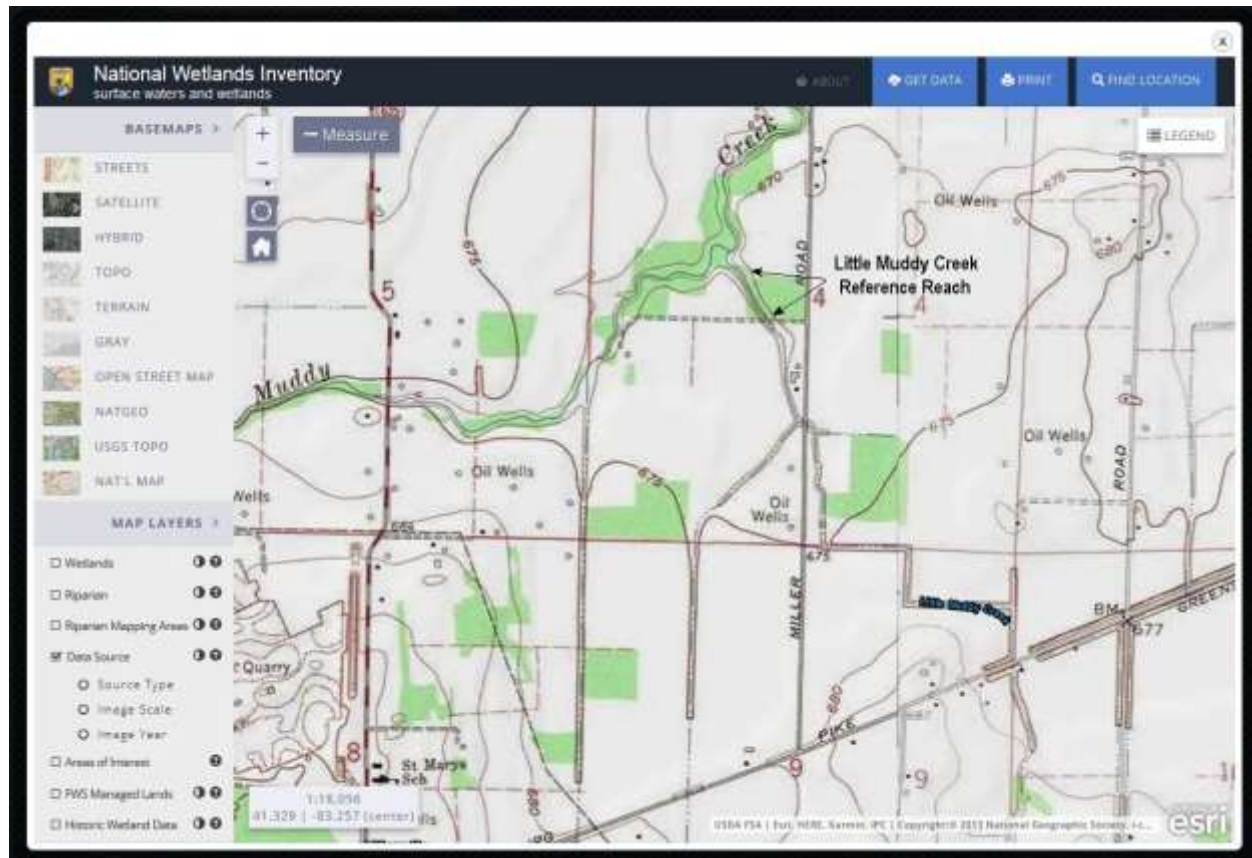
Little Muddy Creek reference stream is 3.4 miles southeast of the Nine Mile restoration site in a similar landscape position.



Little Muddy Creek stream reference section is an intermittent tributary with morphology similar to the proposed Nine Mile Ditch restoration.

Reference Reach: Morphology Attributes Table

| Morphology Attributes ⁽¹⁾ | Nine Mile Ditch Restoration | Little Muddy Creek Reference Reach |
|--------------------------------------|-----------------------------|------------------------------------|
| Landscape | Flat | Flat |
| Flow | Intermittent | Intermittent |
| Stream gradient | 6-7 ft./mile | 9 - 10 ft./mile |
| Meander wave radius | 28 ft. | 24 - 38 ft. |
| Meander wave length | 98 ft. | 70 - 148 ft. |
| Sinuosity | 1.8 | 1.3 |
| Channel width | 5 ft. | 4 - 17 ft. |
| Bankfull Width | 9 ft. | 8 - 30 ft. |
| Floodplain Width | 94 ft. | 55 - 147 ft. |
| Watershed | 260 acres | 570 acres |
| Predominant Soils | Miner and Hoytville | Miner and Hoytville |



Little Muddy Creek reference section is located in a similar landscape position and has similar watershed characteristics.

Appendix D
Wetlands & Waters Delineation Figure

