WERK & WESTBOURNE ENHANCED HIGH RATE TREATMENT FACILITY

Application for Ohio EPA Section 401 Water Quality Certification for the Proposed Werk-Westbourne Enhanced High Rate Treatment Facility Green Township, Hamilton County, Ohio

May 4, 2012

MSDGC PN 10130740

B & V PN 168242

Prepared By

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APPLICATION FOR OHIO EPA
SECTION 401 WATER QUALITY CERTIFICATION

Effective October 1, 1996
Revised August, 1998

This application must be completed whenever a proposed activity requires an individual Clean Water Act Section 401 Water Quality Certification (Section 401 certification) from Ohio EPA. A Section 401 certification from the State is required to obtain a federal Clean Water Act Section 404 permit from the U.S. Army Corps Engineers, or any other federal permits or licenses for projects that will result in a discharge of dredged or fill material to any waters of the State. To determine whether you need to submit this application to Ohio EPA, contact the U.S. Army Corps of Engineers District Office with jurisdiction over your project, or other federal agencies reviewing your application for a federal permit to discharge dredged or fill material to waters of the State, or an Ohio EPA Section 401 Coordinator at (614) 644-2001.

The Ohio EPA Section 401 Water Quality Certification Program is authorized by Section 401 of the Clean Water Act (33 U.S.C. 1251) and the Ohio Revised Code Section 6111.03(P). Ohio Administrative Code (OAC) Chapter 3745-32 outlines the application process and criteria for decision by the Director of Ohio EPA. In order for Ohio EPA to issue a Section 401 certification, the project must comply with Ohio's Water Quality Standards (OAC 3745-1) and not potentially result in an adverse long-term or short-term impact on water quality. Included in the Water Quality Standards is the Antidegradation Rule (OAC Rule 3745-1-05), effective October 1, 1996, revised October, 1997 and May, 1998. The Rule includes additional application requirements and public participation procedures. Because there is a lowering of water quality associated with every project being reviewed for Section 401 certification, every Section 401 certification applicant must provide the information required in Part 10 (pages 3 and 4) of this application. In addition, applications for projects that will result in discharges of dredged or fill material to wetlands must include a wetland delineation report approved by the Corps of Engineers, a wetland assessment with a proposed assignment of wetland category (ies), official documentation on evaluation of the wetland for threatened or endangered species, and appropriate avoidance, minimization, and mitigation as prescribed in OAC 3745-1-50 to 3745-1-54. Ohio EPA will evaluate the applicant's proposed wetland category assignment and make the final assignment.

Information provided with the application will be used to evaluate the project for certification and is a matter of public record. If the Director determines that the application lacks information necessary to determine whether the applicant has demonstrated the criteria set forth in OAC Rule 3745-32-05(A) and OAC Chapter 3745-1, Ohio EPA will inform the applicant in writing of the additional information that must be submitted. The application will not be accepted until the application is considered complete by the Section 401 Coordinator. An Ohio EPA Section 401 Coordinator will inform you in writing when your application is determined to be complete.

Please submit the following to "Section 401 Supervisor, Ohio EPA/DSW, P.O. Box 1049, Columbus, Ohio 43216-1049:

- Four (4) sets of the completed application form, including the location of the project (preferably on a USGS quadrangle) and 8-1/2 x 11 scaled plan drawings and sections.
- One (1) set of original scaled plan drawings and cross-sections (or good reproducible copies).

(See Application Primer for detailed instructions)

1. The federal permitting agency has determined this project: (check appropriate box and fill in blanks)

   a._X_ requires an individual 404 permit/401 certification- Public Notice # (if known) **LRH-2010-895-OHR**

   b.___ requires a Section 401 certification to be authorized by Nationwide Permit #

   c.___ requires a modified 404 permit/401 certification for original Public Notice #

   d.___ requires a federal permit under_____ jurisdiction identified by #

   e.___ requires a modified federal permit under_____ jurisdiction identified by #

2. Application number (to be assigned by Ohio EPA):

3. Name and address of applicant: Telephone number during business hours:

Mr. Ralph Johnstone
Metropolitan Sewer District of Greater Cincinnati (MSDGC)
1600 Gest Street
Cincinnati, OH 45204

(513) 244-1344 (Office)
(513) 557-7070 (Fax)

3a. Signature of Applicant: Ralph C Johnstone Date: May 1, 2012

4. Name, address and title of authorized agent: Telephone number during business hours:

Mr. Jason M. Earley
ASC Group, Inc.
800 Freeway Drive North, Suite 101
Columbus, Ohio 43229

(614) 268-2514 ext. 3444 (Office)
(614) 268-7881 (Fax)

4a. Statement of Authorization: I hereby designate and authorize the above-named agent to act in my behalf in the processing of this permit application, and to furnish, upon request, supplemental information in support of the application.

Signature of Applicant: Ralph C Johnstone Date: May 1, 2012

5. Location on land where activity exists or is proposed. Indicate coordinates of a fixed reference point at the impact site (if known) and the coordinate system and datum used.

The proposed Werk & Westbourne Enhanced High Rate Treatment (EHRT) Facility is located at the southwest corner of Werk Road and Westbourne Drive in Cincinnati, Ohio (Appendix A, Figures 1 and 2). The project is generally centered at 39° 08' 28" N and 84° 37' 55" W and is located in the Muddy Creek Watershed (HUC 05090203-020-040).

Street, Road, Route, and Coordinates, or other descriptive location

Watershed(s): Middle Ohio - Laughery (14-Digit HUC 05090203-020-040 Muddy Creek)
County: Hamilton Townships: Green City: Cincinnati State: Ohio Zip Code: 45248

6. Is any portion of the activity for which authorization is sought complete? _____Yes __X__ No
If answer is "yes," give reasons, month and year activity was completed. Indicate the existing work on the drawings.

7. List all approvals or certifications and denials received from other federal, interstate, state or local agencies for any structures, construction, discharge or other activities described in this application.

Issuing Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial
Ohio EPA	NPDES	1PX00022522	2008	March 9, 2009	
USACE	Jurisdictional Determination	LRH-2010-895-OHR	June 20, 2011	August 25, 2011	
SHPO	Section 106	Werk & Westbourne EHRT Facility	August, 2011	Pending	
USACE	Section 404	LRH-2010-895-OHR	October 18, 2011	Pending	
Ohio EPA	PTI		Pending		

8. **DESCRIPTION OF THE ACTIVITY (fill in information in the following four blocks - 8a, 8b, 8c & 9)**

8a. Activity: Describe the Overall Activity:

The proposed Werk & Westbourne Enhanced High Rate Treatment (EHRT) Facility is located in Green Township, Hamilton County, Ohio (Appendix A, Figures 1 and 2). The proposed project is located in a suburban area of predominantly residential development. The activity is being undertaken in order to comply with the requirements mandated by the Federal Consent Decree on combined sewer overflows, waste water treatment plants and implementation of capacity assurance program plan for sanitary sewers (available at http://msdgc.org/downloads/consent_decree/global_cd_signed.pdf). The goal of the proposed project is to reduce overflows from the Upper Muddy Creek (UMC) basin and Combine Sewer Overflow (CSO) 522. CSO 522 marks the beginning of Schaible Creek and the main source of hydrology of this creek. Schaible Creek is a tributary of Upper Muddy Creek.

The project includes the design and construction of an EHRT facility providing preliminary treatment (i.e., screening and sedimentation) and disinfection of flows discharging from CSO 522 (Appendix A). The project will include an influent control structure to direct flows from CSO 522 to the EHRT facility where it will be treated. Water discharging from CSO 522 will be diverted into the EHRT facility where it will be screened, settled, and disinfected prior to discharge from the facility. An effluent channel will direct flow from the disinfection structure back to the existing Schaible Creek channel, approximately 440 feet south of CSO 522. The construction of the proposed EHRT facility will result in the unavoidable impact to four jurisdictional stream channels (Appendices B and C).

The EHRT facility will be constructed to collect and treat overflows from CSO 522 to comply with the treatment objectives listed in the Wet Weather Improvement Program (WWIP). A schematic of the proposed EHRT Facility (Minimal Degradation Alternative) is presented in Appendix A, Figures 4-1 through 4-3. The EHRT facility will provide the following:

- Preliminary Treatment
- Solids Removal
- Disinfection

The preliminary treatment will be designed to capture overflows from CSO 522. Flows in excess of the facility's capacity will overtop a weir and be released to Schaible Creek. The preliminary treatment components will include:

- Screens
- Pump Station

The solids removal process will have the capability to remove suspended solids in the form of chemically enhanced floc formed in the flocculation basin. Solid materials that are removed will be disposed of in accordance with all applicable federal, state and local regulations. Solids removal components will include:

- Coagulation
- Rapid Mix
- Flocculation
- Sedimentation

The effluent flow from solids removal will be directed to the disinfection system. The disinfection system will be designed to provide adequate disinfection prior to discharging the treated effluent into Schaible Creek.

The Werk & Westbourne EHRT facility proposed for construction is presented in this application as the Minimal Degradation Alternative. The US Army Corps of Engineers (USACE) Huntington District issued a Section 404 Public Notice for the proposed Werk & Westbourne EHRT Facility on December 8, 2011 (Appendix C). The proposed project described in the Public Notice is the Preferred Alternative in this application. After issuance of the Public Notice, several

agencies responded with comments regarding the overall design and layout of the proposed EHRT facility. After a thorough review of these comments, MSDGC reevaluated the design of the project and were ultimately able to redesign the facility in order to minimize impacts to jurisdictional streams without compromising the effectiveness of the facility to treat CSO discharge.

After careful consideration of the alternatives, MSDGC has decided to construct this revised alternative. This revised alternative has been carried forward for construction and is presented in this application as the Minimal Degradation Alternative.

As proposed, the Minimal Degradation Alternative for the Werk & Westbourne EHRT Facility is approximately 58,400 square feet in size (Appendix A, Figure 4-2). The facility will be constructed in and around Schaible Creek using pre-cast and cast-in-place reinforced concrete. Associated utility improvements to support the EHRT are also proposed as part of this project and also include the upgrade of an existing interceptor sewer located along the west side of Westbourne Road (Appendix A, Figures 4-2 and 4-3). The sewer line will be upgraded with a larger line with a revised horizontal and vertical alignment. The existing sewer line will be abandoned once the sewer is capped and filled in place.

Figures 3-1 through 5-2 (Appendix A) detail the Alternatives considered for the EHRT facility. Photographs of the proposed location of the facility are included in the Wetland Delineation and Threatened and Endangered Species report for the project (Appendix B). The approved USACE Jurisdictional Determination Letter and a copy of the USACE issued Public Notice are provided in Appendix C.

The EHRT will be operated during wet weather events which results in a discharge from CSO 522. It is planned to be operated, controlled and monitored by MSDGC operators.

8b. Purpose: Describe the purpose, need and intended use of the activity:

In 1996, MSDGC completed a CSO Long Term Control Plan (LTCP) to comply with federal and state requirements. Subsequently, a fully integrated WWIP, including an update of the 1996 CSO LTCP, a Capacity Assurance Program Plan (CAPP) focused on sanitary sewer overflow (SSO) control and sanitary system capacity, and a Water-in-Basement (WIB) Program has been developed and used as a basis for the existing Federal Consent Decree. An Interim Partial Consent Decree (2002) and a Global Consent Decree (on combined sewer overflows, wastewater treatment plants and implementation of CAPP) were agreed to by MSDGC and Federal and State Regulators, as entered by the U.S. District Court for Southern District of Ohio Western Division on June 9, 2004. The final WWIP, agreed upon by all parties in June 2009, details the projects required to address CSOs and SSOs within the service area and includes an implementation schedule that MSDGC is required to meet. The Werk & Westbourne EHRT Facility is required by the WWIP to store and treat overflows from CSO 522 in order to reduce annual CSO volumes to 64.7 million gallons or less.

Both the community and MSDGC have made it a high priority to reduce overflows from the combined sewer system that occurs near the intersection of Werk Road and Westbourne Drive in Green Township. These overflows and the associated water quality and odor issues have been on-going concerns for the surrounding community. This project was given a very high priority in the agreed upon WWIP schedule.

The solution is to construct a demonstration EHRT facility to capture, store and treat overflows before they are released into Schaible Creek, a Muddy Creek tributary that runs parallel to Westbourne Drive. The facility is scheduled to be fully operational by December 2017.

By managing CSOs at this site, MSDGC will be better able to protect public health and the local environment, as well as improve stream water quality and neighborhood aesthetics by significantly reducing sewer odors and eliminating sewer debris originating from the CSO.

8c. Discharge of dredged or fill material: Describe type, quantity of dredged material (in cubic yards), and quantity of fill material (in cubic yards). **(OAC 3745-1-05(B)(2)(a))**

The Minimal Degradation Alternative for the Werk & Westbourne EHRT Facility is proposed for construction (Appendix A, Figures 4-1 to 4-3). This alternative will result in the discharge of approximately 1,971 CY of fill material below the ordinary high water mark (OHWM) of Schaible Creek and its unnamed tributaries. Approximately 1,512 CY of fill material will be discharged below the OHWM of Schaible Creek. This material will consist of concrete, granular backfill material, and pipe material, as needed to construct the facility. The remaining 459 CY of fill material will be discharged below the OHWM of Streams 3, 4, and 5. Approximately 120 CY of fill will be discharged into Stream 3, approximately 232 CY into Stream 4, and approximately 107 CY into Stream 5. Fill material will consist of granular backfill material and concrete. Unavoidable impacts to Streams 3, 4, and 5 results from the upgrade of an existing sewer that is located along the west side of Westbourne Road (Appendix A, Figure 4-3). In order to complete the EHRT facility, this sewer work must be completed to allow for the construction of the facility.

9. Waterbody and location of water body or upland where activity exists or is proposed, or location in relation to a stream, lake, wetland, wellhead or water intake (if known). Indicate the distance to, and the name of any receiving stream, if appropriate.

The proposed Werk & Westbourne EHRT Facility is located on approximately 7.5 acres generally centered at 39° 08’ 28” N and 84° 37’ 55” W. The construction of the Minimal Degradation Alternative for the proposed facility will result in the unavoidable impact to 1,092 of jurisdictional stream channel (Appendix C). The proposed project will result in the unavoidable impact to 700 feet of Schaible Creek, 146 feet of Stream 3, 122 feet of Stream 4, and 124 feet of Stream 5. Streams 3, 4, and 5 are tributaries to Schaible Creek, all of which originate from stormwater pipes discharging from under Werk Road and Westbourne Drive. Schaible Creek is a tributary to Muddy Creek, which is designated as Warm Water Habitat (WWH) in OAC 3745-1-30. Schaible Creek originates at CSO 522, which is the terminus of sewer 937B. Schaible Creek does not have an OAC designation. The confluence of Schaible Creek and Muddy Creek is located approximately 3,500 ft (0.67 mile) downstream of the proposed project.

10. To address the requirements of the Antidegradation Rule, your application must include a report evaluating the:

- Preferred Design (your project) and Mitigative Techniques
- Minimal Degradation Alternative(s) (scaled-down version(s) of your project) and Mitigative Techniques
- Non-Degradation Alternative(s) (project resulting in avoidance of all waters of the state)

At a minimum, item a) below must be completed for the Preferred Design, the Minimal Degradation Alternative(s), and the Non-Degradation Alternative(s), followed by completion of item b) for each alternative, and so on, until all items have been discussed for each alternative (see Primer for specific instructions). (Application and review requirements appear at **OAC 3745-1-05(B)(2), OAC 3745-1-05(C)(6), OAC 3745-1-05(C)(1) and OAC 3745-1-54).**

10a) Provide a detailed description of any construction work, fill or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water. **(OAC 3745-1-05(B)(2)(b))**

10b) Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including threatened and endangered species (include written comments from Ohio Department of Natural Resources and U.S. Fish and Wildlife Service), important commercial or recreational sport fish species, other individual species, and the overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation. **(OAC 3745-1-05(C)(6)(a, b) and OAC 3745-1-54)**

10c) Include a discussion of the technical feasibility, cost effectiveness, and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation.) **(OAC 3745-1-05(C)(6)(h, j-k) and OAC 3745-1-54)**

10d) For regional sewage collection and treatment facilities, include a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents. **(OAC 3745-1-05(C)(6)(i))**

10e) To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource. **(OAC 3745-1-05(B)(2)(g))**

10f) Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project. **(OAC 3745-01-05(C)(6)(g))**

10g) Describe any impacts on human health and the overall quality and value of the water resource. **(OAC 3745-1-05(C)(6)(c) and OAC 3745-1-54)**

10h) Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and tax revenues generated and a brief discussion on the condition of the local economy. **(OAC 3745-1-5(B)(2)(e), and OAC 3745-1-05(C)(6)(i))**

10i) Describe and provide an estimate of the important social and economic benefits that may be lost as a result of this project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans. **(OAC 3745-1-05(B)(2)(e,f), and OAC 3745-1-05(C)(6)(e))**

10j) Describe environmental benefits, including water quality, lost and gained as a result of this project. Include the effects on the aquatic life, wildlife, threatened or endangered species. **(OAC 3745-1-05 (B)(2)(e,f), OAC 3745-1-05 (C)(6)(b) and OAC 3745-1-54)**

10k) Describe mitigation techniques proposed (except for the Non-Degradation Alternative):

- o Describe proposed Wetland Mitigation (see OAC 3745-1-54 and Primer)
- o Describe proposed Stream, Lake, Pond Mitigation (see Primer)

11. Application is hereby made for a Section 401 Water Quality Certification. I certify that I am familiar with the information contained in this application and, to the best of my knowledge and belief, such information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities or I am acting as the duly authorized agent of the applicant.

Ralph Johnston — May 1, 2012 — Jon M. Lady

Signature of Applicant — Date — Signature of Agent

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in Block 3 has been filled out and signed.

MSD DOCUMENT CONTROL

10. To address the requirements of the Antidegradation Rule, your application must include a report evaluating the:

- **Preferred Design (your project) and Mitigative Techniques**
- **Minimal Degradation Alternative(s) (scaled-down version(s) of your project) and Mitigative Techniques**
- **Non-Degradation Alternative(s) (project resulting in avoidance of all waters of the state)**

At a minimum, item a) below must be completed for the Preferred Design, the Minimal Degradation Alternative(s), and the Non-Degradation Alternative(s), followed by completion of item b) for each alternative, and so on, until all items have been discussed for each alternative (see Primer for specific instructions). (Application and review requirements appear at OAC 3745-1-05(B)(2), OAC 3745-1-05(C)(6), OAC 3745-1-05(C)(1) and OAC 3745-1-54).

10a) Provide a detailed description of any construction work, fill or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water. (OAC 3745-1-05(B)(2)(b))

<u>Preferred Alternative</u>:

The Preferred Alternative for the Werk & Westbourne EHRT Facility is the project described in the USACE Public Notice dated December 8, 2011 (Appendix C). Upon the issuance of the Public Notice several comments from state and federal agencies were received. Upon receipt of the public comments MSDGC and the Werk & Westbourne EHRT Design Team evaluated the project in order to address these comments. As a result, the Design Team revised the proposed project and significantly reduced the amount and types of impacts proposed by the project. This revised plan was carried forward and ultimately became the proposed build alternative. The alternative to be built is presented in this application as the Minimal Degradation Alternative.

The Preferred Alternative for the Werk & Westbourne EHRT Facility includes the installation of a new CSO treatment facility. The existing 11-foot by 15-foot trunk sewer (937B) overflows into Schaible Creek approximately 66 times a year, resulting in a discharge of 517 million gallons of untreated effluent during a typical year. These overflow events are detrimental to the water quality of both Schaible Creek and Muddy Creek. The overflow events result in high bacteria levels, which are a public health concern, as well as a continual source of odors and sewage debris within the waterway.

The proposed project is to install an EHRT Facility at this location in order to comply with the requirements mandated by the Federal Court Consent Decree to reduce overflows from the Upper Muddy Creek and CSO 522. The proposed treatment facility will provide preliminary treatment (i.e. screening and sedimentation), and disinfection of flows discharging from the CSO.

The proposed project consists of a treatment facility, an influent channel, a storm channel, an effluent channel, yard piping, a tributary drain channel, and site work improvements (Appendix A, Figure 3-2). The proposed EHRT structure is approximately 180 feet wide and 300 feet long, the influent channel is approximately 30 feet wide and 350 feet long, and the effluent channel is approximately 30 feet wide and 150 feet long. As part of the project the existing sewer that runs along the west side of Westbourne Drive will be upgraded and the existing sewer will be capped

and filled in place. The sewer upgrade must be completed as part of the project in order to develop the proposed EHRT facility. The proposed project includes the unavoidable impact to Schaible Creek and its tributaries, Streams 3, 4, and 5. Impacts result from the discharge of pipe material and precast and reinforced concrete, which is needed to construct the proposed facility. The proposed project will result in the unavoidable impact to 1,458 feet/0.223 acre of jurisdictional stream channel and is the direct result of the discharge of approximately 14,163 CY of concrete and granular fill. Descriptions of impacts resulting from this project are summarized in Table 1.

Table 1. Summary of Proposed Fill Areas and Volumes for the Werk & Westbourne EHRT Project for the Preferred Alternative

Feature ID	Proposed Impact Amount (feet)	Proposed Impact Amount (acre)	Volume of Fill Required (cubic yards)
Schaible Creek	1,066	0.196	13,704
Stream 3	146	0.010	120
Stream 4	122	0.008	232
Stream 5	124	0.009	107
TOTALS	**1,458**	**0.223**	**14,163**

Minimal Degradation Alternative (To Be Constructed):

As in the Preferred Alternative, the Minimal Degradation Alternative includes the construction of an EHRT facility at a different location at the project site (Appendix A, Figure 4-2). The design of the Minimal Degradation Alternative was initiated after MSDGC reviewed agency comments that were generated after the issuance of the Public Notice of the USACE 404 Application. After receiving the comments from the Public Notice, the MSDGC Design Team reevaluated the proposed project and modified the design of the EHRT facility. The results of this substantial revision are presented as the Minimal Degradation Alternative.

The Minimal Degradation Alternative involves relocating the EHRT facility to the northwest edge of the project site, which reduces the overall impacts to jurisdictional streams from 1,458 feet to 1,092 feet, a reduction of 366 feet or approximately 25 percent. As part of the proposed project the existing sewer that runs along the west side of Westbourne Road will be upgraded and the existing sewer will be capped and filled in place. This sewer upgrade must be completed as part of the project in order to develop the proposed EHRT facility. Due to the installation of the sewer upgrade and the existing configuration of streams on the site, only linear impacts associated with Schaible Creek can be minimized.

The proposed Minimal Degradation Alternative consists of a treatment facility, an influent control structure, pump station, an effluent channel, and additional site work improvements. The proposed EHRT facility is approximately 58,400 square feet and includes an 80 foot by 170 foot influent control structure and screening unit and a 320 foot by 140 foot pump station and enhanced high rate treatment (Appendix A, Figure 4-2). Relocating and reconfiguring the design of the facility has eliminated the need for the concrete influent, storm, and tributary drain channels.

The proposed project includes the unavoidable impact to Schaible Creek and its tributaries, Streams 3, 4, and 5. Impacts result from the discharge of precast and reinforced concrete and pipe material, which is needed to install the proposed sewer upgrades and to construct the proposed facility. The proposed project will result in the unavoidable impact to 1,092 feet/0.204 acre of jurisdictional stream channel and is the direct result of the discharge of approximately 1,971 CY of concrete, pipe, and granular fill. Descriptions of impacts resulting from this project are summarized in Table 2.

Table 2. Summary of Proposed Fill Areas and Volumes for the Werk & Westbourne EHRT Project for the Minimal Degradation Alternative

Feature ID	Proposed Impact Amount (feet)	Proposed Impact Amount (acre)	Volume of Fill Required (cubic yards)
Schaible Creek	700	0.177	1,512
Stream 3	146	0.010	120
Stream 4	122	0.008	232
Stream 5	124	0.009	107
TOTALS	**1,092**	**0.204**	**1,971**

While the amount of impacts associated with the Preferred and Minimal Degradation Alternatives are similar, the impacts greatly differ in their effect on the impacted waterways. The majority of impacts to Schaible Creek in the Preferred Alternative are the result of placing much of the existing channel into enclosed concrete channels and basins (Appendix A, Figures 3-2 through 3-6). While the Minimal Degradation Alternative will result in impact of 1,092 feet of jurisdictional stream channel it also includes 936 feet of relocated channel (Appendix A, Figure 3-2). The 936 feet of relocated channel has been designed using aspects of natural channel design including the use of rock riffles and stone drop structures to create riffle pool complexes within the relocated channel. Other natural channel design features that have been incorporated into the design of the project include the use of bioengineered bank treatments and natural flow deflection

devices to improve the amount of available aquatic habitat within the channel while protecting the banks from erosion.

As proposed, the Minimal Degradation Alternative will result in the net loss of only 156 linear feet (1,092 feet of impact – 936 feet of natural stream channel design) of jurisdiction channel as part of the project.

Non-Degradation Alternative:

The Non-degradation Alternative for the Werk & Westbourne EHRT facility project is to construct a facility with the same general layout as presented in the Minimal Degradation Alternative; however the facility has been relocated north of Werk Road (Appendix A, Figure 5-1). Due to the dimensions of the Hamilton County owned parcel and the layout of streams within the parcel, the facility had to be moved north of Werk Road in order to completely avoid impacts to jurisdictional waters. While the Non-degradation Alternative completely avoids impacts to jurisdictional streams, this alternative was not selected for multiple reasons.

Construction of the Non-degradation Alternative would require the purchase of the property and the acquisition of temporary easements from several property owners, unlike the Minimal Degradation and Preferred Alternatives that are located on property owned by Hamilton County. Even if the parcel was owned by Hamilton County, there are several factors regarding this property that make the construction of the EHRT facility at this location undesirable. One issue with construction of the EHRT at this location is that this parcel directly abuts several residential parcels to the east of the property. And unlike the parcel used in the Preferred and Minimal Degradation Alternatives, the parcel north of Werk Road does not provide what MSDGC considers sufficient buffer between their facility and the neighboring residential parcels. In order to construct the facility at this location, the footprint of the facility would be located as close to the property line as possible, which would eliminate any potential for providing vegetated buffers between the facility and the neighboring properties (Appendix A, Figure 5-2). MSDGC did not select this location for the facility because they felt that this alternative was the most intrusive into the residential neighborhood and that this alternative would be negatively received by the community and could ultimately become a public relations dilemma.

Constructing the EHRT facility at this location may also increase the potential risk of flooding in the surrounding area. The surrounding area is located at a much higher elevation than the subject parcel which causes the site to act as an unofficial detention basin. This area is often flooded after rain events and filling the site could result in flooding of the adjacent residential properties.

10b) Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including threatened and endangered species (include written comments from Ohio Department of Natural Resources and U.S. Fish and Wildlife Service), important commercial or recreational sport fish species, other individual species, and the overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation. (OAC 3745-1-05(C)(6)(a, b) and OAC 3745-1-54)

Preferred Alternative:

Because the difference between the Minimal Degradation and the Preferred Alternatives is primarily the amount of stream impacts, the resulting effects to water quality and wildlife (including threatened and endangered species) associated with the Preferred Alternative are

essentially the same as the effects of the Minimal Degradation Alternative. A detailed evaluation of the anticipated impact to wildlife and water quality is provided in the Minimal Degradation Alternative discussion.

As in the Minimal Degradation Alternative, the construction of the Preferred Alternative will also treat CSO discharges, effectively improving the downstream water quality. The main difference between the Preferred Alternative and the Minimal Degradation Alternative is that the EHRT facility is to be located outside the channel of Schaible Creek, thus reducing the length and area of the proposed impacts. It is anticipated that the construction of the Preferred Alternative would effectively reduce annual overflow volumes to 64.7 million gallons or less, which in turn will improve downstream water quality and inevitably improve aquatic habitat and species diversity downstream of the proposed project.

As with the Minimal Degradation Alternative, no impacts to any listed species would be anticipated due to the construction of the Preferred Alternative.

Minimal Degradation Alternative (To Be Constructed):

During the development of the Minimal Degradation Alternative, attempts to avoid, minimize, and reduce impacts to Waters of the US were incorporated into the overall design of the project, while considering the most effective treatment process to reduce the amount of CSO discharge to ultimately improve water quality. As part of the project development, representatives of MSDGC assessed the functions and values of the aquatic resources within the project area. Streams were assessed using either the Qualitative Habitat Evaluation Index (QHEI) or the Primary Headwater Habitat Evaluation Index (HHEI). A Copy of the Wetland Delineation and Threatened and Endangered Species Report for the project, including the completed QHEI and HHEI forms, is provided in Appendix B.

The Minimal Degradation Alternative will result in the unavoidable impact to Waters of the U.S.; however, the overall impact to water quality will be positive. As previously mentioned, the purpose of this project is to treat overflow events that discharge from the CSO as required by the Federal Consent Decree. The construction of the proposed Minimal Degradation Alternative for the Werk & Westbourne EHRT Facility will result in the unavoidable impact to 1,092 feet of jurisdictional stream channel (Appendices B and C). During the construction of the project, aquatic organisms will likely be displaced as a result of instream activities. These impacts are expected to be minor and localized within the area of impact. Impacts to aquatic organisms will likely be minor as all of the impacted channels are intermittent in nature and as a result offer minimal habitat for solely aquatic organisms. In addition, impacts will be minimized through the use of construction Best Management Practices (BMPs) for sediment and erosion controls which include the installation of silt fencing and adhering to the projects' Stormwater Pollution Prevention Plan (SWPPP). The proposed EHRT facility influent control structure has been designed to allow non-CSO flows to continue to flow into Schaible Creek. The facility has been designed and will be constructed so as not to impede flow or alter the channels' ability to transport naturally occurring sediments downstream.

It is anticipated that upon completion of the new EHRT Facility proposed in the Minimal Degradation Alternative, water quality will continually improve downstream as this facility will effectively treat the majority of untreated CSO discharges that currently enter the waterway. This untreated CSO discharge is a major contributor to the impairment of downstream water quality. Once the facility is completed, CSO will receive treatment for total suspended solids and bacteria prior to discharging downstream. This treatment process includes an initial screening process in

which sewage debris larger than 0.5 inch is removed. The facility will also include a retention area which will allow particulates to settle out of the CSO discharge. Water that enters the facility will undergo a disinfection process prior to discharging downstream. This treatment process will effectively reduce annual overflow volumes to 64.7 million gallons or less, which in turn will improve downstream water quality and inevitably improve aquatic habitat downstream of the proposed project. It is anticipated that the approximately 0.67 mile (3,500 feet) of Schaible Creek located downstream of the facility will see a net improvement in water quality and the improvement in water quality will likely increase the amount of available aquatic habitat.

The proposed project will provide an overall benefit to the surrounding community by reducing the volume of untreated CSO into Schaible Creek. The EHRT facility will also reduce sewage debris and sewage odors ultimately caused by CSO events. The proposed project will also provide a public health benefit by reducing the public's potential exposure to pathogens and pollutants, such as *E. coli* bacteria.

Once the project is complete, it is anticipated that the habitat and water quality in the downstream portion of Schaible Creek will improve. The improvement in water quality that will occur as a result of this project, may allow less pollution tolerant aquatic life to repatriate the upstream portion of the creek from downstream areas that currently offer suitable habitat for these species.

In addition, the proposed Minimal Degradation Alternative has incorporated several types of habitat enhancement features into the design of Schaible Creek. Additional habitat features incorporated into the design of the project include rock riffles and bioengineered bank treatments, which also provide additional habitat within the channel. The anticipated return of less pollution tolerant species to the creek will improve the overall quality of the stream and increase the diversity within the aquatic community.

Threatened/Endangered Species:

According to information provided by the ODNR Division of Wildlife (Appendix B: ODNR 2011), no federally listed or state-listed species occur within 1-mile radius of the study area.

Hamilton County is within the known ranges of eight federally listed species. No listed species were identified during the May 16, 2011 investigation of the project site.

Indiana Bat (Federally Endangered)

The range of the federally endangered Indiana bat (*Myotis sodalis*) includes Hamilton County. There are no records of capture sites within a 5-mile radius or hibernacula within 10 miles of the study area (Appendix B: ODNR 2010). The nearest record is located approximately 12 miles from the study area. The study area contained no potential roosting trees and no maternity roost trees were observed in the study area. The wooded slope adjacent to Schaible Creek (Stream 2) contained young second growth trees and Amur honeysuckle (*Lonicera maackii*) in the understory. The trees in this area primarily exhibited intact limbs and tight bark. Impacts to potential habitat for this species are not expected.

Running Buffalo Clover (Federally Endangered)

Running buffalo clover (*Trifolium stoloniferum*) prefers habitats that contain partially filtered sunlight and periodic disturbance. It is typically found in mesic woodlands, savannahs, floodplains, stream banks, grazed woodlots, mowed paths, logging roads, trails, and steep ravines.

No individuals were observed during the survey. The study area has been historically disturbed and contains soils derived from fill material. In addition, the study area is heavily infested with thickets of Amur honeysuckle (*Lonicera maackii*). Suitable habitat for the running buffalo clover was not observed in the study area. Impacts to potential habitat for this species are not expected.

Pink Mucket Pearly Mussel (Federally Endangered)

The pink mucket pearly mussel (*Lampsilis orbiculata*) is found in mud and sand and in shallow riffles and shoals swept free of silt in major rivers and tributaries. No individuals or potentially suitable habitat was observed in the study area. The streams in the study area are intermittent in nature, and been previously disturbed by past activities, and when water is present it is of poor quality. Impacts to potential habitat for this species are not expected.

Fanshell (Federally Endangered)

The fanshell (*Cyprogenia stegaria*) is typically found in medium to large rivers in gravel riffles. No individuals or suitable habitat was observed in the study area. The streams in the study area are intermittent in nature, and been previously disturbed by past activities, and when water is present it is of poor quality. Impacts to potential habitat for this species are not expected.

Sheepnose (Federally Endangered)

The sheepnose (*Plethobasus cyphyus*) is typically found in medium to large rivers in gravel or mixed sand and gravel. No individuals or suitable habitat was observed in the study area. The streams in the study area are intermittent in nature, and been previously disturbed by past activities, and when water is present it is of poor quality. Impacts to potential habitat for this species are not expected.

Snuffbox (Federally Endangered)

The snuffbox (*Epioblasma triquetra)* prefers medium to large rivers in clear, gravel riffles. No individuals or suitable habitat was observed in the study area. The streams in the study area are intermittent in nature, and been previously disturbed by past activities, and when water is present it is of poor quality. Impacts to potential habitat for this species are not expected.

Rayed Bean (Federally Endangered)

The rayed bean (*Villosa fabalis*) generally lives in smaller, headwater creeks, but they are sometimes found in large rivers and wave-washed areas of glacial lakes, including Lake Erie. They prefer gravel or sand substrates, and are often found in and around roots of aquatic vegetation. No individuals or suitable habitat was observed in the study area. The streams in the study area are intermittent in nature, and been previously disturbed by past activities, and when water is present it is of poor quality. Impacts to potential habitat for this species are not expected.

Bald Eagle (Federal Species of Concern)

The range of the bald eagle (*Haliaeetus leucocephalus*) includes Hamilton County. There are no records of this species within a 1-mile radius of the study area (Appendix B: ODNR 2011) and no individuals or nests were observed during the survey. The ODNR reported that the nearest known bald eagle nest is located approximately nine miles from the study area. Impacts to potential habitat for this species are not expected.

State-Listed Species

No state-listed species were identified in the study area during the ODNR Biodiversity Database search or during the field survey.

Table 3. Listed Species within the Limits of the Preferred, Minimal, and Non-Degradation Alternatives

Species		Group	Federal Status	State Status
Common Name	**Scientific Name**			
Bald Eagle	*Haliaeetus leucocephalus*	Bird	Species of Concern	Threatened
Fanshell Mussel	*Cyprogenia stegaria*	Mollusk	Endangered	Endangered
Indiana Bat	*Myotis sodalis*	Mammal	Endangered	Endangered
Pink Mucket Pearly Mussel	*Lampsilis orbiculata*	Mollusk	Endangered	Endangered
Rayed Bean	*Villosa fabalis*	Mollusk	Endangered	Endangered
Running Buffalo Clover	*Trifolium stoloniferum*	Plant	Endangered	Endangered
Sheepnose	*Epioblasma triquetra*	Mollusk	Endangered	Endangered
Snuffbox	*Epioblasma triquetra*	Mollusk	Endangered	Endangered

A survey for listed species was completed in conjunction with field survey completed by representatives of MSDGC. No listed species were identified within the proposed limits of the project.

Non-Degradation Alternative:

Short-term impacts resulting from the construction of the Non-degradation Alternative with regards to water quality would be less than either of the other two alternatives as impacts to jurisdictional waters have been eliminated. The Non-degradation Alternative would also result in the likely improvement of downstream water quality, as the EHRT Facility would also effectively treat the discharge from the CSO.

As with the other two alternatives, impacts to listed species would not be expected.

10c) Include a discussion of the technical feasibility, cost effectiveness and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation.) (OAC 3745-1-05(C)(6)(h, j-k) and OAC 3745-1-54)

Preferred Alternative:

The Preferred Alternative is available, cost effective, and technically feasible. The construction techniques and associated BMPs that would be used to construct the Preferred Alternative have been used on numerous occasions on other CSO treatment and other MSDGC projects. The EHRT Facility will utilize proven technologies to treat CSO discharge events. As designed, the Preferred Alternative is a cost effective way to treat CSO discharges and will comply with the requirements of the Federal Consent Decree to reduce the environmental impact associated with combined sewer overflows. There are no foreseeable operational or maintenance difficulties that would have a detrimental impact to water quality within the project area. Any possible impacts to water quality during the construction phase of the Preferred Alternative would be minimized through implementation of the BMPs specified in the Contractor's SWPPP. Upon completion of

the project, downstream water quality will be improved by treating CSO discharges that currently enter Schaible Creek.

The estimated cost to construct the Preferred Alternative is approximately $35.7 million.

Minimal Degradation Alternative (To Be Constructed):

As with the Preferred Alternative, the Minimal Degradation Alternative is an available, technically feasible, and cost effective way to address the CSO discharges. By locating the majority of the EHRT facility to the north-west of the property site requires that only the influent control structure be located in a manner to impact Schaible Creek.

The construction techniques and associated BMPs that would be used to construct the Minimal Degradation Alternative have been used on numerous occasions on other MSDGC projects. The processes by which the EHRT Facility will use to treat CSO discharge have been proven as a highly reliable way to effectively treat CSO discharge events. As designed, the Minimal Degradation Alternative will comply with the requirements of the Federal Consent Decree to reduce the environmental impact associated with CSOs. There are no foreseeable operational or maintenance difficulties that would have a detrimental impact to water quality within the project area. Any possible impacts to water quality during the construction phase of the Minimal Degradation Alternative would be minimized through implementation of the BMPs specified in the Contractor's SWPPP. Upon completion of the project, downstream water quality will be improved by treating CSO discharges that currently enter Schaible Creek.

The cost to construct the Minimal Degradation Alternative is greater than the cost to construct the Preferred Alternative as this alternative will require additional excavation to ensure the proper elevations to allow for the construction of the facility. The Minimal Degradation Alternative also includes several green engineering elements including natural channel design and native landscaping. The inclusion of these additional design elements has increased the overall construction cost of the Minimal Degradation Alternative to $37.8 million, which is approximately $2.1 million more than the cost of the Preferred Alternative. A portion of the financing for the construction of the Minimal Degradation Alternative for Werk & Westbourne EHRT Facility is being provided through funds secured by MSDGC through the Water Pollution Control Loan Fund (WPCLF) which is administered by the Ohio EPA.

Non-Degradation Alternative:

The Non-degradation Alternative is available, technically feasible, and cost effective. In the Non-degradation Alternative, the entire EHRT facility has been relocated north of Werk Road (Appendix A, Figure 5-1). There are no known operational disadvantages to locating the facility at this location. However, any large scale maintenance projects may be made more difficult due to the close proximity to the residential properties located on the east side of the facility. Large scale maintenance projects would include activities that require the removal of pumps and screens for maintenance and replacement. No other operational or maintenance difficulties would be anticipated as a result of construction the Non-degradation Alternative.

The estimated cost to construct the Non-degradation Alternative is approximately $36.3 million, which is approximately $600,000 more than the Preferred Alternative and approximately $1.5 million less than the Minimal Degradation Alternative.

10d) For regional sewage collection and treatment facilities, include a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents. (OAC 3745-1-05(C)(6)(i))

The proposed project does not involve regional sewage collection or treatment facilities.

10e) To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource. (OAC 3745-1-05(B)(2)(g))

Review of the list of watershed groups within the Mill Creek and Ohio River Tributaries Watershed (8-Digit HUC 05090203) provided by the Ohio Watershed Network (available at http://ohiowatersheds.osu.edu/groups) revealed two watershed groups that target improvement of water quality within the watershed. Table 4 lists these groups and the watersheds they focus on for improving water quality.

Table 4. Watershed Groups in HUC 05090203

Watershed Group Name	Targeted Watershed(s)
Mill Creek Restoration Project (MCRP)	Mill Creek Watershed
Mill Creek Watershed Council of Communities	Mill Creek Watershed

Neither of these groups has reported any projects located within the project limits that specifically target water quality improvements within Schaible Creek. The proposed Werk & Westbourne EHRT Facility is the only known government sponsored project that specifically target the improvement of water quality in Schaible Creek. No privately sponsored projects were identified.

10f) Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project. (OAC 3745-01-05(C)(6)(g))

Preferred Alternative:

Best management practices to control run-off and erosion have been implemented during project development and will be adhered to during the construction of the proposed project. Approximately $485,353 would be spent on the protection of water quality during the construction and ongoing during the operation of the Preferred Alternative. These water pollution controls include but are not limited to silt fencing, seeding and mulching, construction entrances, and the installation of a green roof system. The temporary creek bypass/diversion channel will be used to divert water away from the excavations and will allow CSO events to discharge from CSO 522 during construction. These BMPs are generally temporary in nature and will be used during the construction phase of the project. The proposed green roof system, native revegetation, and the infiltration trench are permanent fixtures in the EHRT facility and have been incorporated into the overall design of the facility to passively treat stormwater runoff prior to discharging into Schaible Creek. Table 5 provides a breakdown of the estimated costs for water pollution control during construction of the Preferred Alternative.

Table 5. Cost Estimate for Water Pollution Controls for the Preferred Alternative

Item	Quantity	Unit	Unit Cost	Total Cost
Bioretention Basin	5,250	SF	$7.90	$41,475
Green Roof	28,000	SF	$5.00	$140,000
Revegetation	1.25	AC	$43,560 .00	$54,450
Infiltration Trench	400	LF	$50.00	$20,000
Temporary Seeding	2.50	AC	$1,307.00	$3,268
Silt Fence	2,184	LF	$2.50	$5,460
Temporary Construction Entrance	40	LF	$35.00	$1,400
Temporary Creek Bypass	1	LS	$219,300	$219,300
			Total Cost	**$485,353**

Minimal Degradation Alternative (To Be Constructed):

The methods and unit costs for water pollution controls used during the construction and the daily operation of the Minimal Degradation Alternative are very similar to the costs for the Preferred Alternative. As with the Preferred Alternative, the Minimal Degradation Alternative includes the use of Best Management Practices to help minimize and control run-off and erosion during the construction and operation of the EHRT facility. The change of the layout in the Minimal Degradation Alternative from the Preferred Alternative allows for a shorter temporary creek bypass, which reduces the cost of construction for water pollution controls, and reduced the overall cost $97,300 as compared with the Preferred Alternative. The overall cost for water pollution control for the Minimal Degradation Alternative is approximately $388,053. Table 6 provides a breakdown of the estimated costs for water pollution control during construction of the Minimal Degradation Alternative.

Table 6. Cost Estimate for Water Pollution Controls for the Minimal Degradation Alternative

Item	Quantity	Unit	Unit Cost	Total Cost
Bioretention Basin	5,250	SF	$7.90	$41,475
Green Roof	28,000	SF	$5.00	$140,000
Revegetation	1.25	AC	$43,560.00	$54,450
Infiltration Trench	400	LF	$50.00	$20,000
Temporary Seeding	2.50	AC	$1,307.00	$3,268
Silt Fence	2,184	LF	$2.50	$5,460
Temporary Construction Entrance	40	LF	$35.00	$1,400
Temporary Creek Bypass	1	LS	$122,000.00	$122,000
			Total Cost	**$388,053**

Non-Degradation Alternative:

The Non-degradation Alternative does not impact Waters of the US. However, the water pollution control methods and costs used during the construction and operation of the facility are very similar to the other alternatives, with the exception that no temporary creek bypass is required. Discharge from the CSO during the construction of the facility will continue to discharge from the pipe until which time the facility can be brought online to treat the CSO discharge events. The approximate cost for water pollution controls during the construction and operation of the facility is approximately $207,943. A summary of the overall costs for water pollution controls for the Non-degradation Alternative are provided in Table 7.

Table 7. Cost Estimate for Water Pollution Controls for the Non-Degradation Alternative

Item	Quantity	Unit	Unit Cost	Total Cost
Bioretention Basin	5,250	SF	$7.90	$41,475
Green Roof	28,000	SF	$5.00	$140,000
Infiltration Trench	400	LF	$50.00	$20,000
Temporary Seeding	2.50	AC	$1,307.00	$3,268
Silt Fence	720	LF	$2.50	$1,800
Temporary Construction Entrance	40	LF	$35.00	$1,400
			Total Cost	**$207,943**

10g) Describe any impacts on human health and the overall quality and value of the water resource. (OAC 3745-1-05(C)(6)(c) and OAC 3745-1-54)

Preferred Alternative:

Since the Preferred Alternative and the Minimal Degradation Alternative only differ in the facility layout and length of stream impacted, both of these alternatives would result in a net benefit to human health and improve the overall water quality within the project vicinity. The construction of the Preferred Alternative would result in the unavoidable impact to 1,458 feet of jurisdictional stream channel. Upon completion, the EHRT facility constructed in the Preferred Alternative would provide all of the same benefits as the EHRT facility proposed in the Minimal Degradation Alternative. Additional information about the anticipated positive impact to human health and water quality are detailed in the Minimal Degradation Section below.

Minimal Degradation Alternative (To Be Constructed):

Overall, impacts to human health will be positive as a result of the construction of the Minimal Degradation Alternative for the Werk & Westbourne EHRT Facility, as the main purpose of the proposed project is to improve water quality. However, as a result of the construction, approximately 1,092 feet of jurisdictional stream will be impacted. These unavoidable impacts to waterways are required to construct the proposed EHRT Facility. In spite of these impacts, the overall project will improve water quality and enhance the overall value of the resource. The main purpose of the proposed project is to reduce the amount of untreated CSO events discharging into the community as specified in the Federal Consent Decree. Untreated CSO discharge is the main source of impairment of downstream water quality in Schaible Creek. Currently, CSO events discharge water contaminated with sewage debris into the creek, resulting in an unsightly, foul smelling, and degraded stream channel. These overflow events also cause the stream to have elevated levels of pathogens, including *E. coli*, which can be a serious public health concern.

The Minimal Degradation Alternative has been designed and will be permitted and constructed in accordance with all federal, state and local regulations intended to protect human health and water quality. In addition, the construction BMPs identified in the projects' SWPPP will be implemented during construction, further minimizing potential impacts to human health resulting from the lowering of water quality.

The proposed project will also improve the value of the water resource by improving the water quality of the creek. The improved water quality will likely improve the diversity of aquatic life within the creek, as less pollution tolerant species may be able to repatriate the stream channel as the improvement in water quality increases the amount of available habitat for these species.

Improving downstream water quality may encourage more recreational use downstream of the proposed project, as Schaible Creek is intermittent at this location. The improvement in water quality will undoubtedly improve wildlife habitat in the immediate vicinity of the project and for an undetermined length downstream of the project. The proposed project has been designed using elements of natural stream channel design which have been included in the project in order to enhance instream habitat for various aquatic organisms. Upon completion of construction, the project area and immediately adjacent areas will likely benefit from the aesthetic improvement to Schaible Creek, as the facility will begin operation which will allow for the removal of sewage debris and disinfection of CSOs, thus reducing the source of impairment and foul odors that plague this portion of Schaible Creek.

Non-Degradation Alternative:

As with the Preferred and Minimal Degradation Alternative, impacts to human health would be positive as a result of the construction of the EHRT facility. Since all three of the proposed alternatives result in the construction of an EHRT facility, construction of this alternative would require essentially the same construction activities. Positive impacts to human health resulting from the construction of the project would be similar to that of the Minimal Degradation Alternative.

10h) Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and tax revenues generated and a brief discussion on the condition of the local economy. (OAC 3745-1-5(B)(2)(e), and OAC 3745-1-05(C)(6)(i))

According to the 2010 Census, the population of Hamilton County was 802,374. The county's median household income was $48,363 and the estimated per capita income was $43,918. The median home value in Hamilton County is $146,100. The percentage of families living below the poverty line was 10.4 percent. In February 2012, Hamilton County had a non-seasonally adjusted unemployment rate of approximately 7.9 percent (US Bureau of Labor Statistics).

The construction of the proposed Werk & Westbourne EHRT Facility may negatively affect the property value of those residences immediately adjacent to the project site. Attempts to mitigate this potentially negative effect are being incorporated into the overall design and layout of the proposed project. The proposed control facility structure will be a residential style building in order to blend into the surrounding community. The overall effect of the project will be positive, regardless of any effect on adjacent properties, as the main purpose of the project is to improve the overall water quality in Schaible Creek and within the larger Muddy Creek Watershed, and reduce sewage related odors in the area.

Preferred Alternative:

Since the primary difference between the Preferred and Minimal Degradation Alternatives is the location of the EHRT facility, it is likely that the economic benefits would be similar in nature between these two alternatives. Construction of the Preferred Alternative will cost approximately $35.7 million and construction of the Minimal Degradation Alternative will cost approximately $37.8 million, a difference of $2.1 million.

Minimal Degradation Alternative (To Be Constructed):

Since the Preferred Alternative and the Minimal Degradation differ only in the facility layout and the amount of unavoidable stream impact, the economic impact of the two alternatives is essentially the same. Construction of the EHRT facility will provide many social and economic benefits to the surrounding community. Social benefits that will be realized after the construction of the proposed EHRT facility include:

- Improved water quality will encourage more recreational use of waterways;
- The enhancement of streams and other natural areas for use by wildlife and enjoyment by citizens;
- Improved aesthetic appeal of waterways;
- The enhancement of onsite aquatic habitat and riparian corridors;
- Reduction in offensive odors;
- Creation of green space.

Economic benefits associated with the construction of the proposed EHRT facility include:

- The creation/retention of jobs and an increase in business revenues for local contractors and tradesmen working on the construction of the proposed facility;
- MSDGC promotes the use of small, women-owned, and minority businesses on their projects;
- Potential increase in revenues generated in the retail space located north of the project site due to reduction in offensive odors;
- Increase in property values in areas that previously experienced chronic overflows resulting in poor water quality, sewage odors and debris after rain events.

The proposed project is anticipated to begin construction in March 2014 and is expected to continue until January 2017. The construction of the EHRT facility will result in the creation and/or retention of approximately 200 jobs within the community.

It is anticipated that the proposed project will generate or retain approximately 200 employment opportunities. These new or continued employment opportunities would also provide an additional increase in state and local tax revenues. The economies of Hamilton County generate the following tax revenues:

- 5.5 percent State Sales Tax;
- 1.00 percent County Sales Tax;
- 0.587 – 5.925 percent State Income Tax (varies based on income);
- 2.1 percent Municipal Income Tax (Cincinnati).

According to the U.S. Department of Labor, Bureau of Labor Statistics, the trade, transportation and utilities sector is the largest employer within Hamilton County, accounting for approximately 23 percent, or 141,560 jobs within the county. In terms of total jobs, retail trade, finance, manufacturing, education, and health care, provide the top five largest employers in Hamilton County. Major employers in Hamilton County are listed in Table 8.

Table 8. Major Employers in Hamilton County, Ohio[1]

Employer	Type
American Financial Group, Inc.	Insurance
Chiquita Brands International, Inc.	Trade
Cincinnati Children's Hospital	Service
Fifth Third Bancorp	Financial
Ford Motor Company	Manufacturing
General Electric Company	Manufacturing
Johnson & Johnson	Manufacturing
Kroger Company	Trade
Macy's, Inc.	Trade
Mercy Health Partners	Service
Proctor & Gamble Company	Manufacturing
TriHealth, Inc.	Service
University of Cincinnati	Government

[1] Information Obtained from the Ohio Department of Development

The construction of the proposed project is anticipated to take approximately 3 years to complete (35 months). Assuming the project will result in the employment of 200 individuals at average hourly rate of $18.00; all three alternatives will generate approximately $1,094,520 in state and local revenues over the 35 month period. Table 9 presents a summary of the estimated total state and local revenues that are expected to be generated as a result the Preferred, Minimal, and Non-degradation Alternatives for this project.

Table 9. Estimated State and Local Tax Revenues Generated by the Preferred and Minimal Degradation Alternatives

Category	Dollars Generated From Construction Project
Annual total income, before taxes	$7,488,000
Annual state income tax receipts[1]	$202,600
Annual state and local tax income from sales[2]	$162,240

[1] Figure based on 2010 1040 State Income Tax Tables for an Income of $37,440 ($18.00 an hour, 40 hours per week)
[2] Figure based on 6.50% State and local sales tax on 33.3% of salary

<u>Non-Degradation Alternative:</u>

As in the other two alternatives, the construction of the Non-degradation Alternative is expected to create or retain approximately 200 jobs. Since the proposed project will cost approximately $36.3 million, this alternative would likely have similar economic benefits including state and local taxes generated.

10i) Describe and provide an estimate of the important social and economic benefits that may be lost as a result of this project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans. (OAC 3745-1-05(B)(2)(e,f), and OAC 3745-1-05(C)(6)(e)).

Preferred Alternative:

Since the Preferred and Minimal Degradation Alternatives differ only in the layout of the facility and the length of stream impacted, these two alternatives have essentially the same social and economic impacts. Social and economic benefits as they relate to the construction of the Preferred Alternative are essentially the same as for the Minimal Degradation Alternative.

Minimal Degradation Alternative (To Be Constructed):

No important social or economic benefits are expected to be lost as a result of the construction of the Minimal Degradation Alternative for the proposed project. The project may result in temporary traffic delays and possibly detour routes during the course of construction. In order to minimize the delays, detour routes will be posted and all emergency and public transportation services will be made aware of the project well in advance of the commencement of construction so that they may make the necessary arrangements to avoid the area. The main purpose of the proposed project is to improve the water quality that currently discharges from the CSO. The existing CSO overflow pipe overflows approximately 66 times a year, which equates to an annual discharge of approximately 517 million gallons of untreated water into the environment. These untreated overflows result in high bacteria levels in Schaible Creek, which creates a public health concern. The discharge of untreated water and sewage debris is also the main source of foul odors emanating from the creek. In addition, debris that is washed out of the CSO is carried downstream and is eventually deposited along the channel, creating an unsightly and generally unsafe nuisance within the community.

Because the headwaters of Schaible Creek originate from the CSO outfall, the creek is not used for any commercial or recreational activities. Schaible Creek is also not used for recreation, it is not a tourist destination, it is not aesthetically pleasing and is not likely even enjoyed by humans as it is quite often bacteria laden and foul smelling.

Non-Degradation Alternative:

The Non-degradation Alternative includes the construction of an EHRT Facility to treat CSO, which in itself is not anticipated to result in any negative social or economic impacts. However, the construction of the Non-degradation Alternative may result in a negative perception of the project by the adjacent landowners and the public in general because of its close proximity to adjacent landowners and the lack of buffers, make this alternative mush less desirable to meet the purpose and need of the proposed project.

10j) Describe environmental benefits, including water quality, lost and gained as a result of this project. Include the effects on the aquatic life, wildlife, threatened or endangered species. (OAC 3745-1-05 (B)(2)(e, f), OAC 3745-1-05 (C)(6)(b) and OAC 3745-1-54)

Preferred Alternative:

The construction of the Preferred Alternative would be permitted and constructed in accordance with all federal, state and local regulations that are designed to protect the environment, including regulations applicable to water quality, aquatic life, wildlife, and threatened and endangered species. The construction of the Preferred Alternative will result in the unavoidable impact to 1,458 feet of jurisdictional stream channel. Despite this impact, the proposed project will result in the net improvement in water quality, which in turn will benefit aquatic life, wildlife and any threatened and endangered species that may be located downstream of the proposed project.

Minimal Degradation Alternative (To Be Constructed):

The Minimal Degradation Alternative will be constructed in accordance with all federal, state and local regulations that are designed to protect the environment, including regulations applicable to water quality, aquatic life, wildlife, and threatened and endangered species. The construction of the Minimal Degradation Alternative will result in the unavoidable impact to 1,092 feet of jurisdictional stream channel. Despite this impact, the proposed project will result in the net improvement in water quality, which in turn will benefit aquatic life, wildlife and any threatened and endangered species that may be located downstream of the proposed project.

Benefits to aquatic life and wildlife will be realized through the net improvement of water quality discharging into Schaible Creek. The improved water quality discharging within the creek will undoubtedly reduce the amount of environmental stresses placed upon downstream aquatic organisms resulting from CSO discharge events. Reducing the amount of pollution and sediment in the discharge events will help stabilize the downstream aquatic communities by decreasing the range of water quality between wet weather events. The improved water quality will likely improve the diversity of aquatic life within the creek, as less pollution tolerant species may be able to repatriate the stream channel as the improvement in water quality increases the amount of suitable habitat for these species. The EHRT facility will reduce the amount of sediments and pathogens discharging downstream which will inevitably reduce the stress on aquatic life downstream of the facility. The reduction in the discharge of these pollutants will also help to improve the aesthetics and increase the ecological diversity in downstream aquatic communities.

In addition to the net improvement in water quality that will result from the construction of the proposed project, the Minimal Degradation Alternative includes the relocation and subsequent enhancement/restoration of 936 feet of Schaible Creek and its unnamed tributaries (Appendix A, Figure 4-2). These relocated channels have been designed using elements of natural channel design and when factoring the 936 feet of proposed enhancements compared to the 1,092 feet of impact, a net loss of only 156 feet results.

In addition to offsetting some of the linear feet of impact, the restoration/enhancement of these channels includes several features that will increase the amount of available aquatic habitat within the project area. Rock riffle and drop structures will be installed along the stream channels. The features have been incorporated into the overall design of the facility to prevent future channel incision and erosion, and also create in-stream habitat for aquatic invertebrates. These structures provide a controlled drop in channel gradient, dissipating energy through turbulent flow, and introducing oxygen into the water. The project also includes the installation of several bioengineered bank treatments to prevent erosion and to create additional habitat along the channel. These bioengineered bank treatments incorporate willow stakes into the banks of the channel which help prevent erosion along the channel and as the willows mature will provide canopy cover for the stream. In addition, suitable woody materials salvaged during initial clearing and grubbing of the site will be incorporated into the channels as flow deflection structures, which prevent erosion by deflecting flow away from the banks of the channel toward the center of the channel. These deflection structures also provide additional habitat for aquatic organisms by providing additional cover, shade, and pools within the channel.

Non-Degradation Alternative:

The construction of the Non-degradation Alternative will result in the same water quality benefits as the other two alternatives, as an EHRT facility will be constructed as part of this project. This alternative does not include the enhancements to the available aquatic habitat. While the overall

length of impacts to jurisdictional waterways have been eliminated in this alternative, possible negative perception by the adjacent landowners and the public in general make this alternative less desirable to meet the purpose and need of the proposed project.

10k) Describe mitigation techniques proposed (except for the Non-Degradation Alternative):

- **Describe proposed Wetland Mitigation (see OAC 3745-1-54 and Primer)**
- **Describe proposed Stream, Lake, Pond Mitigation (see Primer)**

To the greatest extent possible, impacts to streams were minimized throughout the planning and design of the proposed project. Unavoidable impacts to jurisdictional waterways were necessary to design a facility that could best meet the needs of MSDGC and fulfill the mandates of the Federal Consent Decree.

The construction of the Minimal Degradation Alternative for the Werk &Westbourne EHRT Facility will result in the unavoidable impact to 1,092 feet of jurisdictional stream channel. Several mitigative techniques to enhance downstream water quality and on-site aquatic habitat have been incorporated into the overall design of the EHRT facility. In order to offset the unavoidable impact of 1,092 feet of jurisdictional stream channel, the proposed design of the EHRT facility includes 936 feet of restored and enhanced stream channel (Appendix A, Figure 4-2). The restored and enhanced stream channels have been designed incorporating elements of natural stream channel design. When considering the onsite stream restoration and enhancement included in the Minimal Degradation Alternative, the net impact to streams proposed under this alternative is only 156 feet (1,092 of impact – 936 feet of enhancement and restoration).

The restoration/enhancement of the project reach of Schaible Creek and its adjacent tributaries has been incorporated into the overall design of the EHRT facility. These stream restoration/enhancement techniques have been incorporated into the design of the facility to improve the overall design of the facility. These natural channel design features have been incorporated into the design to reduce and prevent channel erosion, restore and enhance native riparian vegetation, improve pollutant attenuation within the floodplain of Schaible Creek, and to improve in-stream habitat. These objectives can be achieved with the application of bioengineered bank treatments and in-stream structures that replicate natural features found in healthy stream systems.

The existing channel alignments will be enhanced, in order to avoid conflicts with existing infrastructure and other site constraints. Channel stability and in-stream habitat will be improved by restoring pool-riffle complexes in the impacted steams. Constructed rock riffles and drop structures incorporated into the channels serve as grade controls in order to prevent channel incision and erosion, which is currently an issue on the site. These structures also create in-stream habitat within the project area. In addition, these riffles and drop structures provide additional benefits by dissipating the energy through turbulent flow and by introducing oxygen into the water.

In addition to constructed riffles, flow deflection structures constructed of salvaged woody materials (logs and root wads) may be incorporated into the design to further enhance in-stream habitat. Deflection structures re-direct the flow toward the center of the channel and reduce direct stresses at the toe of slope. These structures not only affect the hydraulics of the stream, they provide critical habitat, such as overhead cover, slack water areas, and deep pools with cooler temperatures. Flow deflection structures will be constructed in-tandem with bioengineered bank

treatments like earth wraps with branch packing, vegetated rock toe, or fabric and plant bank treatments.

Revegetation efforts will extend beyond the stream banks, including the adjacent floodplain and upland slope areas. Revegetation of native riparian species will be achieved using a combination of invasive plant removal (*Lonicera* sp.), seeding, live-staking, and planting of containerized seedlings and/or potted trees and shrubs. A native riparian buffer will aid in non-point source pollution filtration from urban stormwater runoff, restore habitat diversity within the restoration area, and improve site aesthetics surrounding the EHRT facility.

Upon completion of the project, there will be a net improvement in water quality and availability of instream habitat. This improved water quality will in turn help to restore aquatic habitat downstream of the project, as fluctuations in water quality in the channel will be reduced. The distance from the proposed facility at Schaible Creek to the confluence with Muddy Creek is approximately 3,500 feet (0.67 mile). The entire downstream portion of Schaible Creek will likely see an improvement in water quality and subsequently the quality of available aquatic habitat. The benefits of improved water quality will also positively affect Muddy Creek downstream of its confluence with Schaible Creek.

The proposed Werk & Westbourne EHRT Facility will result in the unavoidable impact to 1,092 feet of jurisdiction stream channel. However, the proposed project includes the relocation and subsequent enhancement/restoration of 936 feet of Schaible Creek and its unnamed tributaries as part of the project. In addition to the habitat improvements resulting from the proposed project, the proposed EHRT facility will improve the overall water quality of Schaible Creek. The proposed 936 feet of onsite channel restoration/enhancements combined with the 3,500 feet of potential downstream water quality improvements equates to an overall improvement of over 4 to 1 (1,092 feet of impact compared to 4,400 feet of enhanced and improved downstream channel), which undoubtedly will result in an overall improvement to the Schaible Creek watershed.

Appendix A – Figures

Figure 1. Portion of the ODOT Hamilton County map showing the vicinity of the proposed Werk - Westbourne EHRT Facility project location.

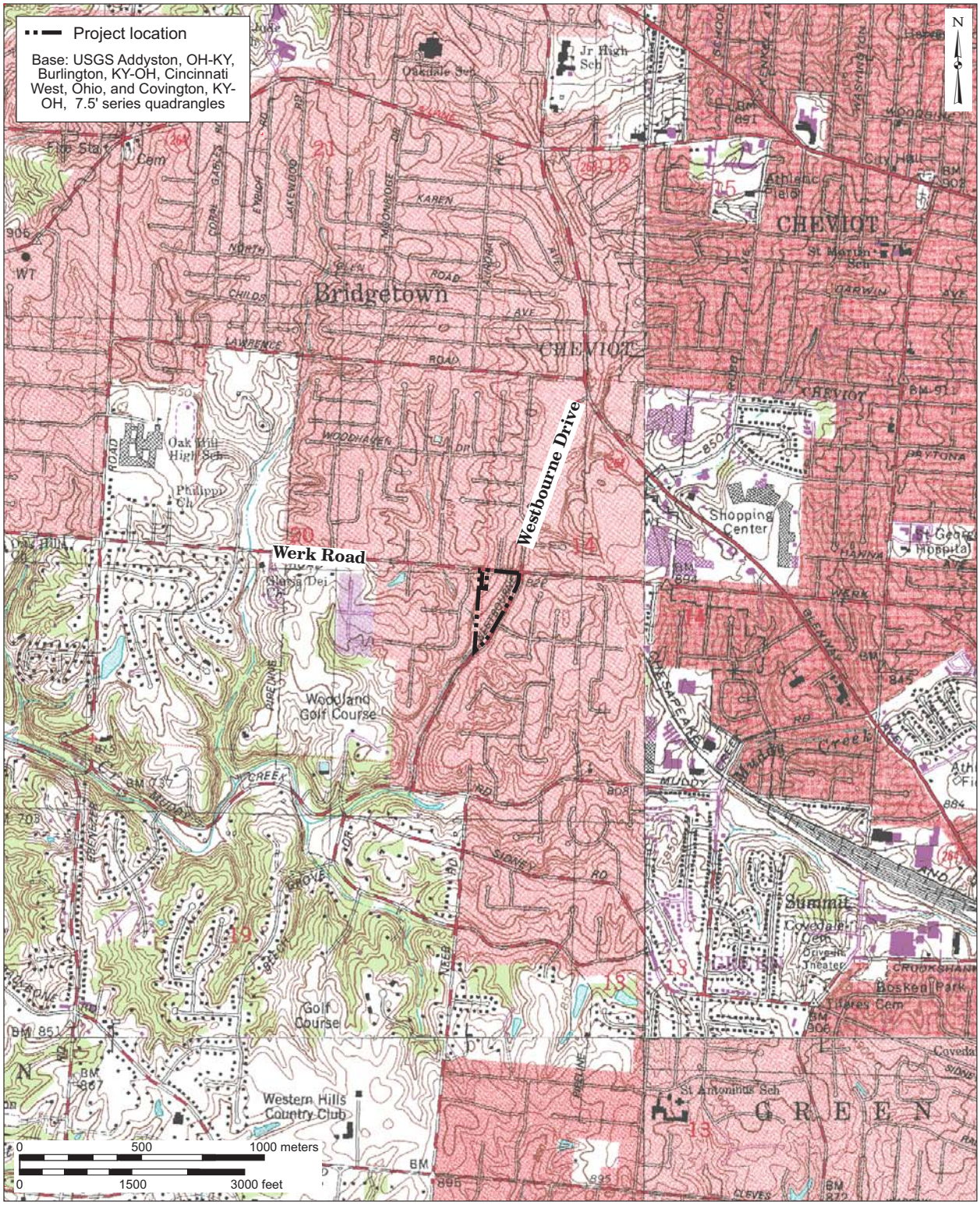
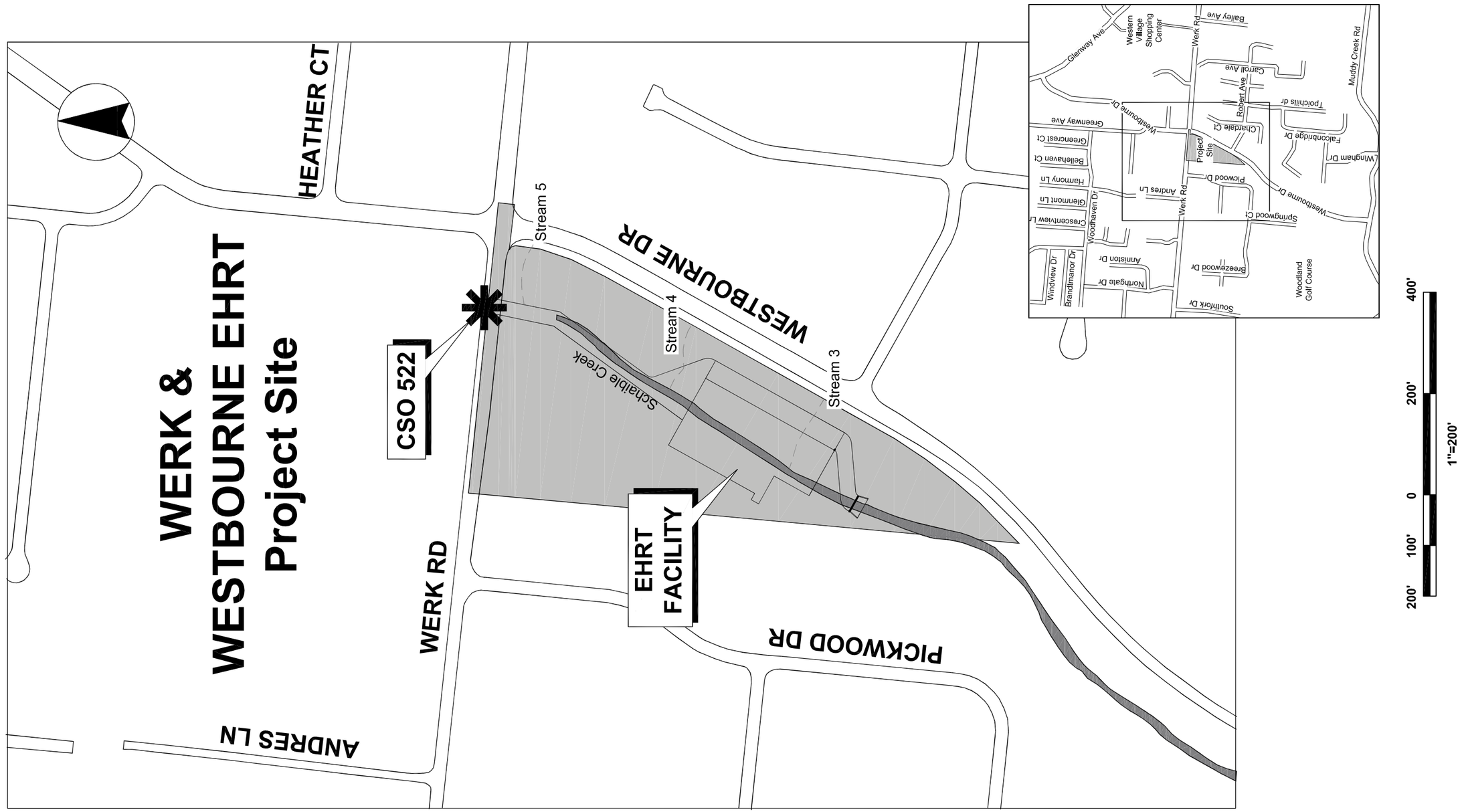


Figure 2. Portions of the Addyston, OH-KY; Burlington, KY-OH; Cincinnati West, Ohio; and Covington, KY-OH quadrangles (USGS 7.5' topographic maps) showing the proposed Werk - Westbourne EHRT Facility project location.

Preferred Alternative



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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

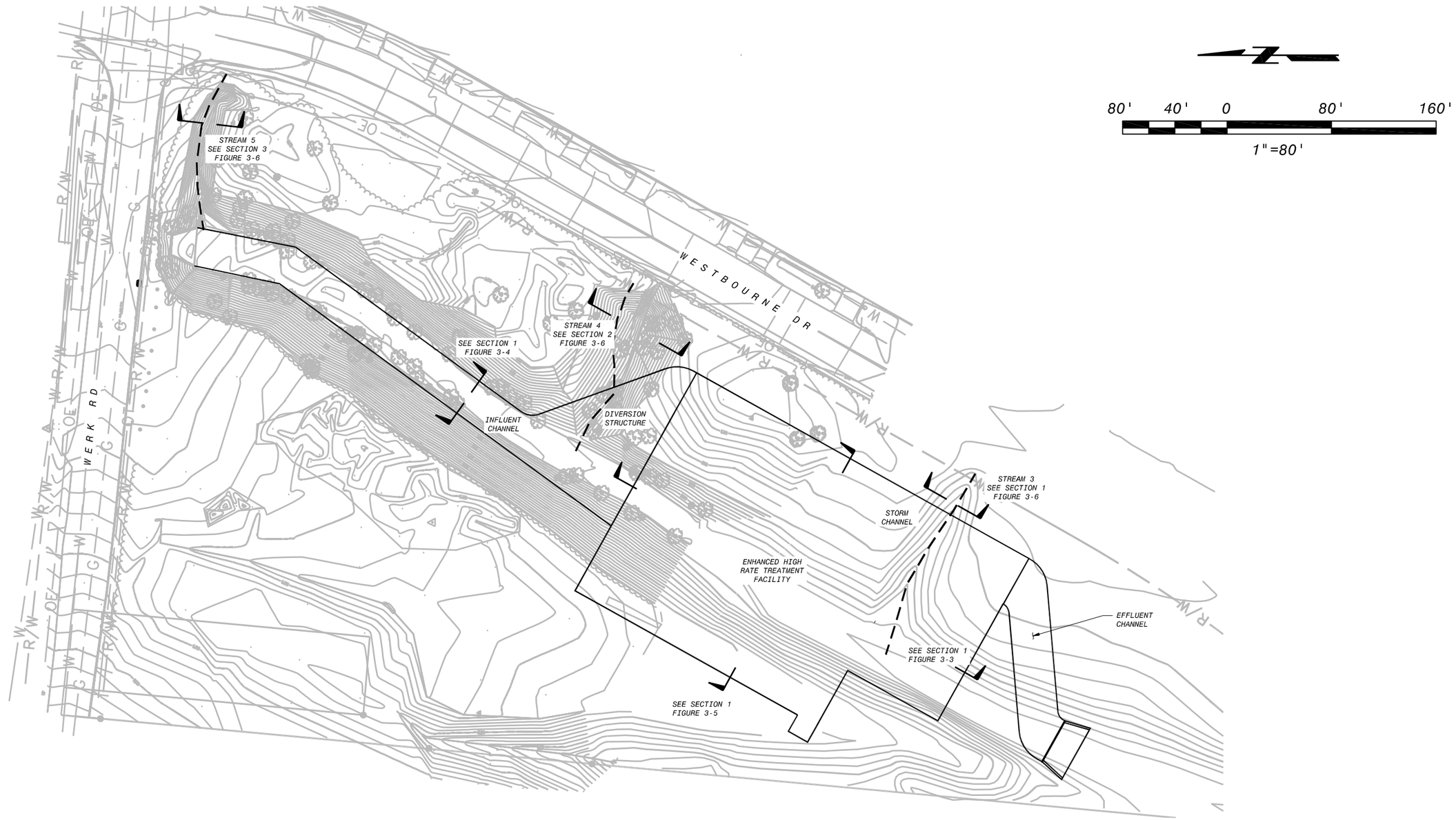
VICINITY MAP
PREFERRED ALTERNATIVE

FIGURE 3-1

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____ SHEET ___ OF___ (XXXX)



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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

PRELIMINARY SITE PLAN
PREFERRED ALTERNATIVE

FIGURE 3–2

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

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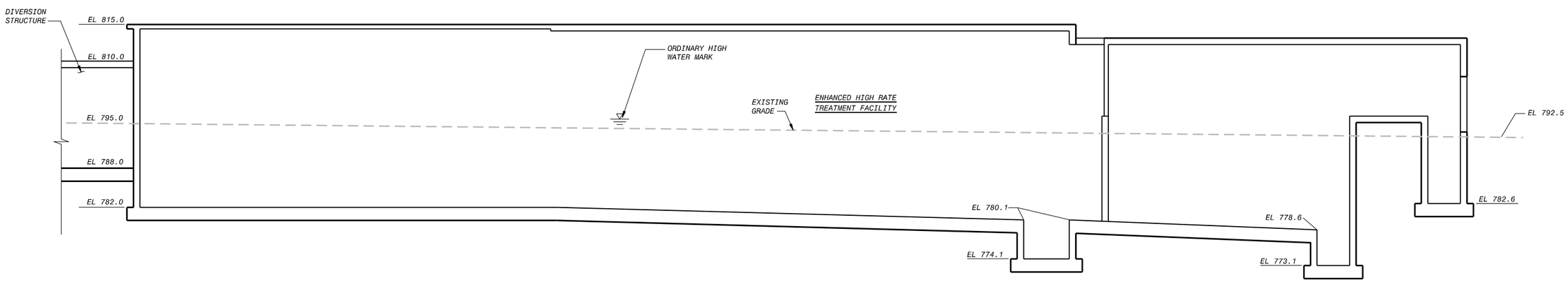

WERK & WESTBOURNE EHRT FACILITY (1)
1/16" = 1'-0"

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BY:	DATE:	DESCRIPTION:

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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

SECTION 1
PREFERRED ALTERNATIVE

FIGURE 3–3

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____

SHEET ___ OF ___

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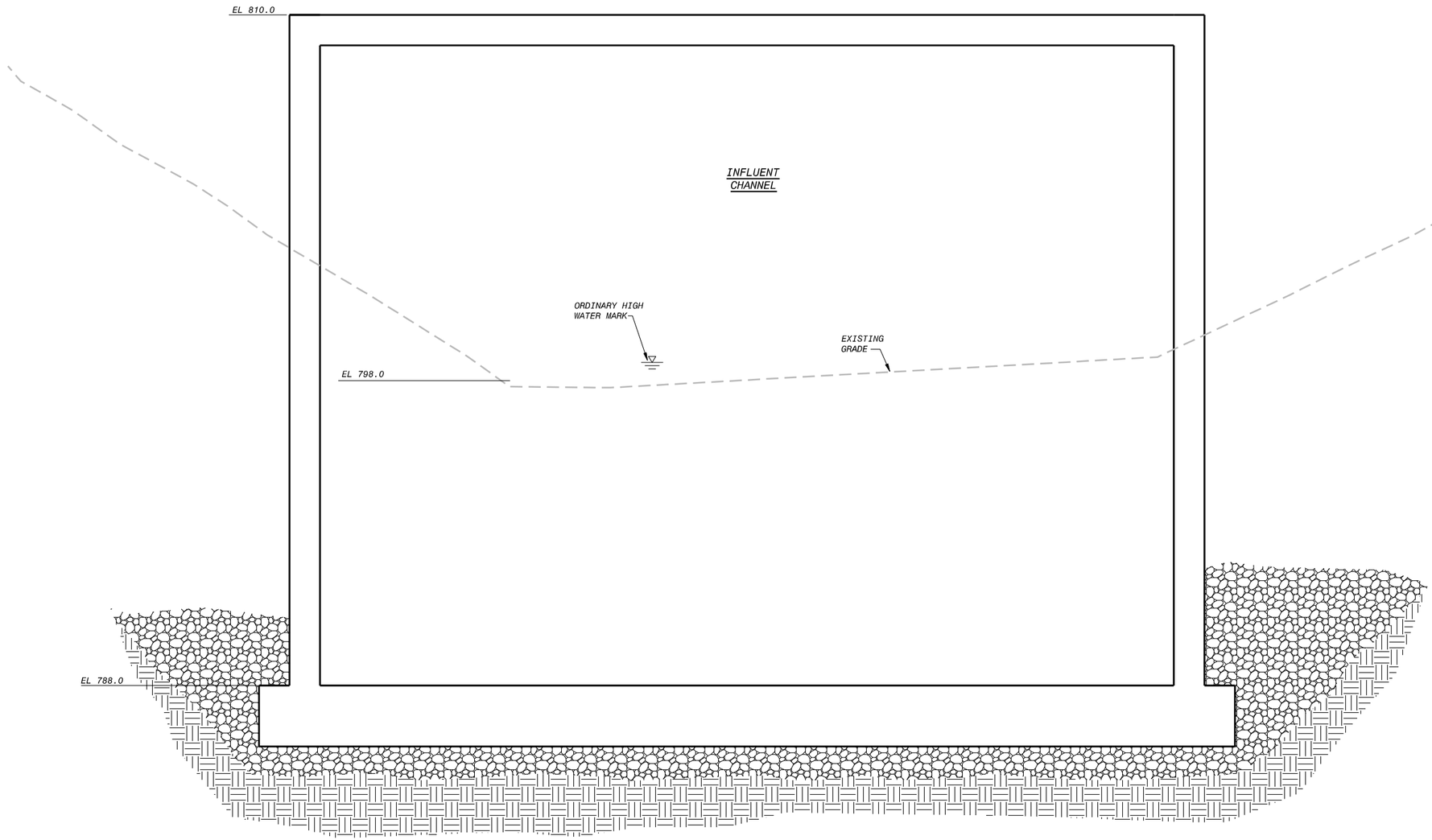

WERK & WESTBOURNE EHRT FACILITY 1
1/4" = 1'-0"

PRELIMINARY – NOT FOR CONSTRUCTION

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DATE:
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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

SECTION 1
PREFERRED ALTERNATIVE

FIGURE 3-4

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____

SHEET ___ OF___

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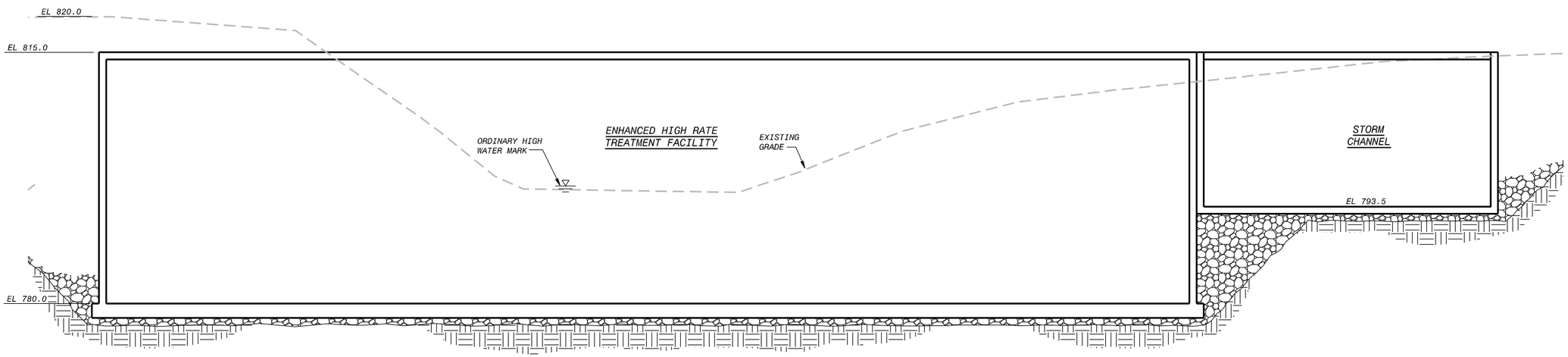

WERK & WESTBOURNE EHRT FACILITY (1)
1/16" = 1'-0"

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	BY:	DATE:	DESCRIPTION:
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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

SECTION 1
PREFERRED ALTERNATIVE

FIGURE 3–5

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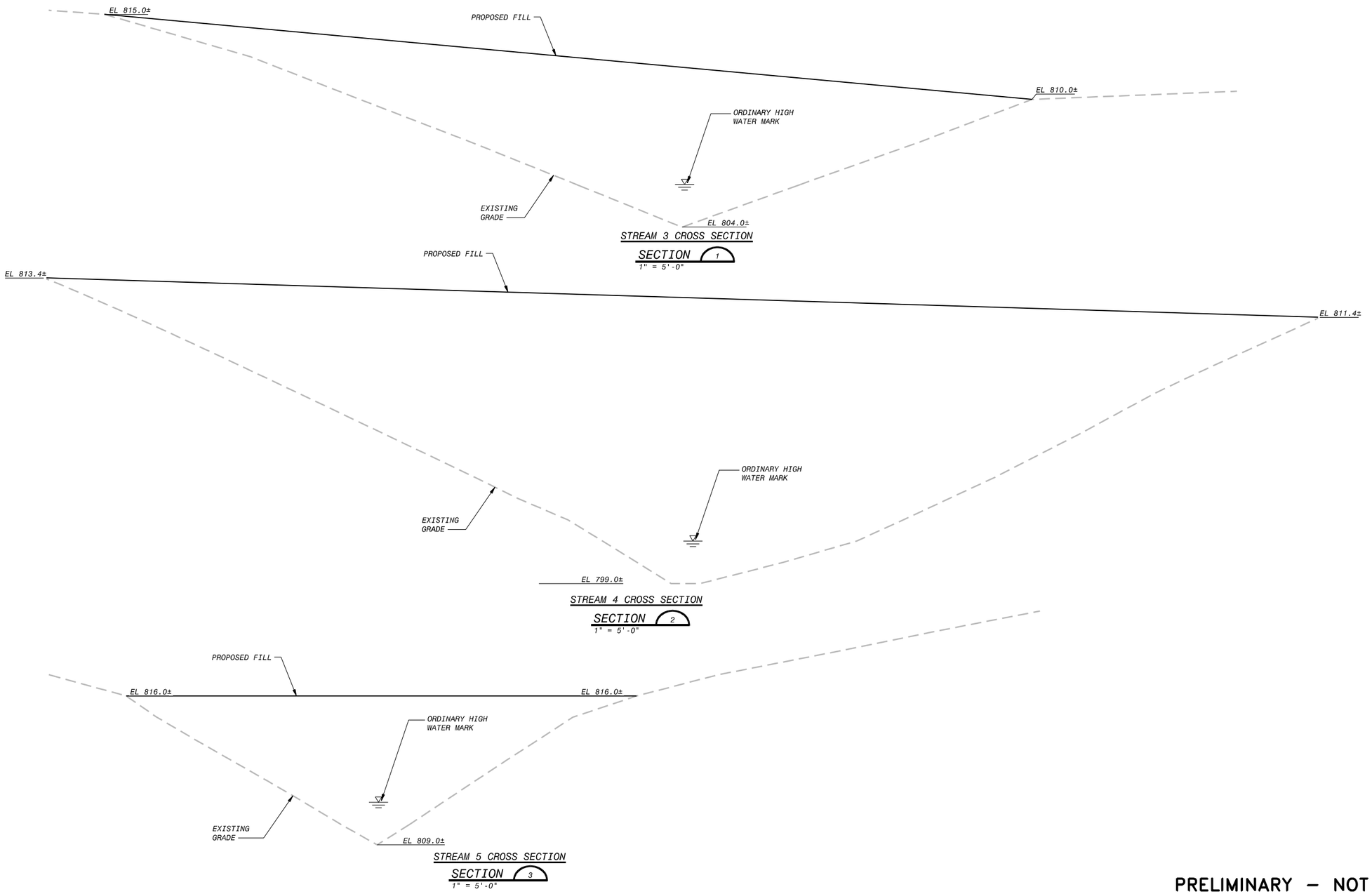

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SECTIONS
PREFERRED ALTERNATIVE

FIGURE 3–6

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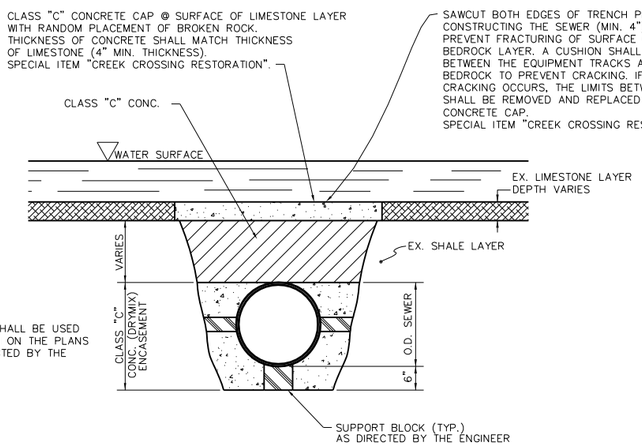

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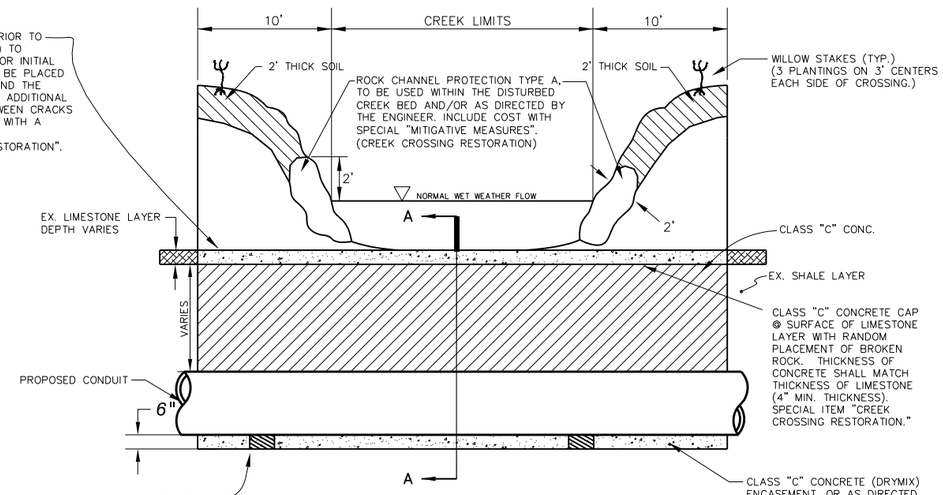
CREEK CROSSING DETAIL (CROSS SECTION A–A)



CREEK CROSSING DETAIL (PROFILE)

NOT TO SCALE

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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

CREEK CROSSING DETAIL

FIGURE 3–7

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____ SHEET ___ OF___

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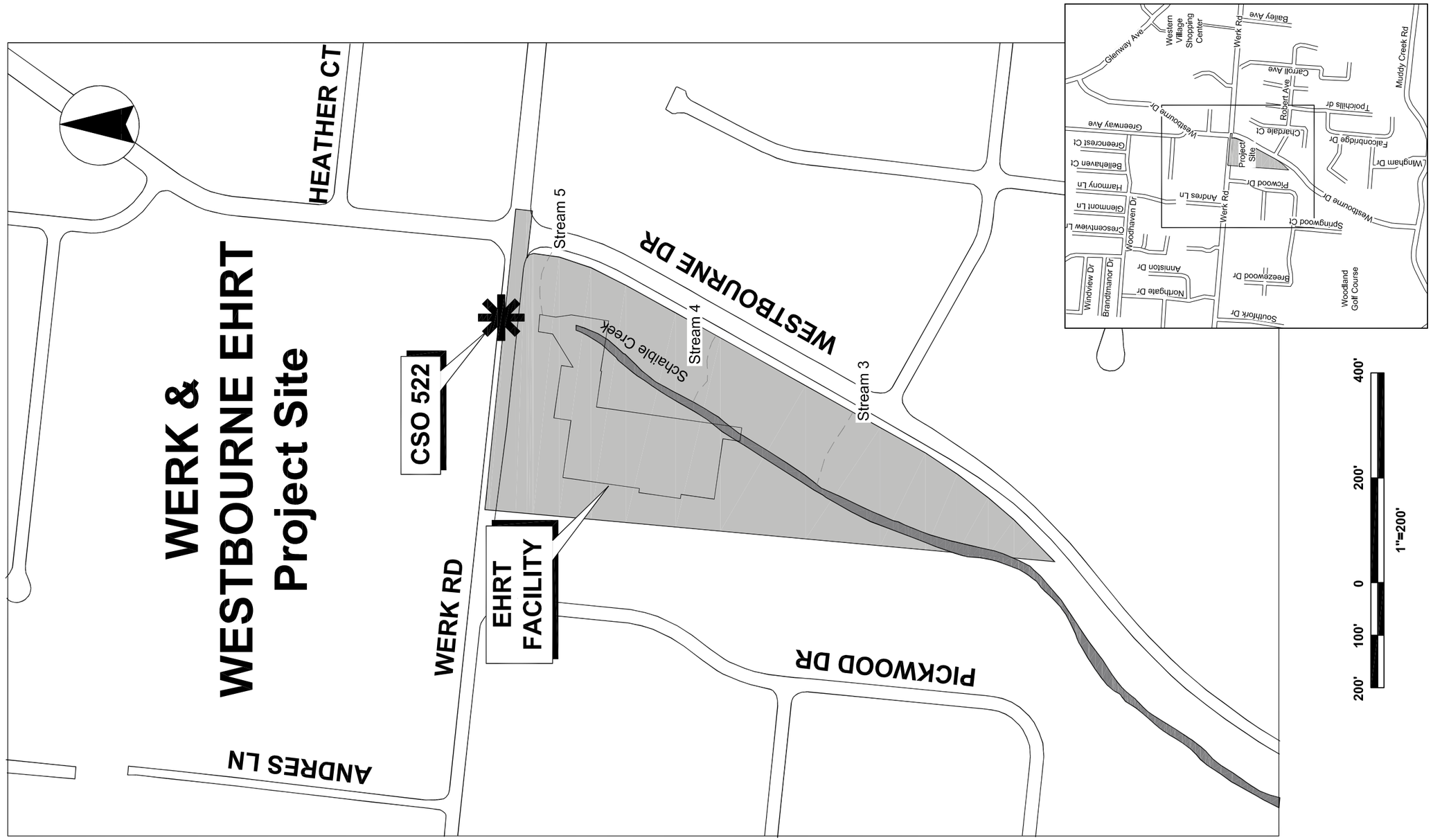
Minimal Degradation Alternative – To Be Constructed



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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

VICINITY MAP
MINIMAL DEGRADATION ALTERNATIVE

FIGURE 4–1

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____

SHEET ___ OF___

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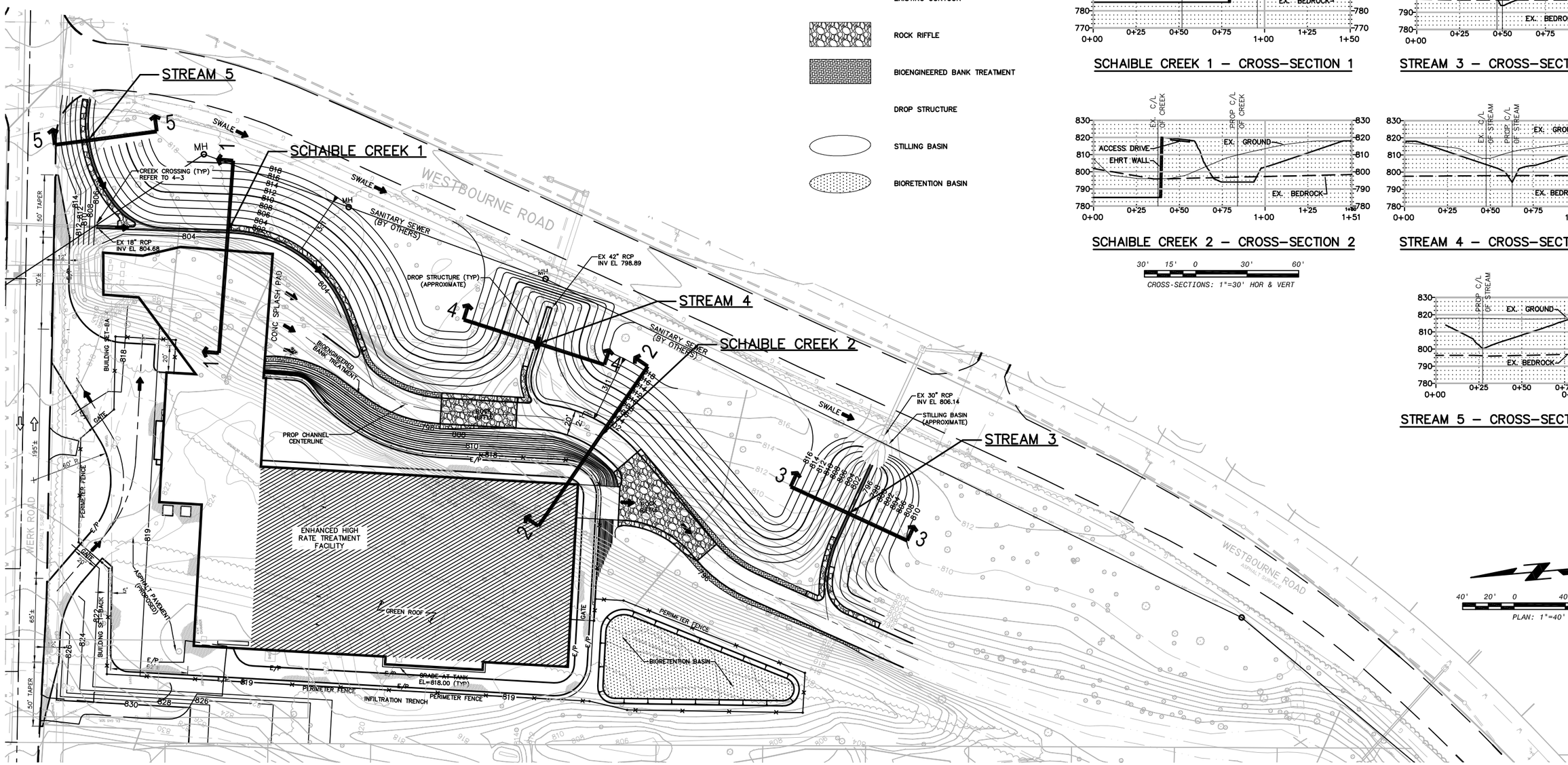
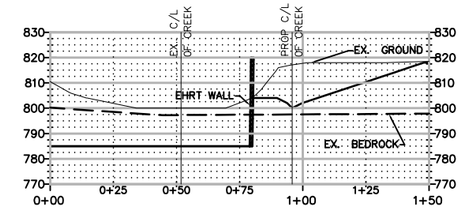
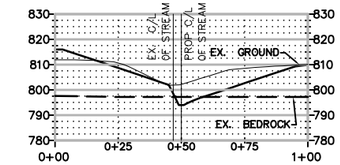
LEGEND

- TOP OF BANK
- PROPOSED CHANNEL CENTERLINE
- EXISTING CONTOUR
- ROCK RIFFLE
- BIOENGINEERED BANK TREATMENT
- DROP STRUCTURE
- STILLING BASIN
- BIORETENTION BASIN



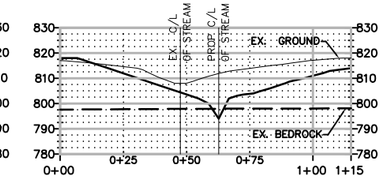


SCHAIBLE CREEK 1 – CROSS-SECTION 1



STREAM 3 – CROSS-SECTION 3

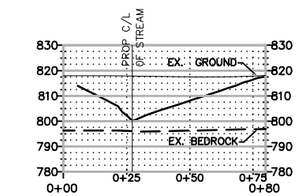
SCHAIBLE CREEK 2 – CROSS-SECTION 2



STREAM 4 – CROSS-SECTION 4

30' 15' 0 30' 60'

CROSS-SECTIONS: 1"=30' HOR & VERT



STREAM 5 – CROSS-SECTION 5

40' 20' 0 40' 80'

PLAN: 1"=40'

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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

PRELIMINARY SITE PLAN
MINIMAL DEGRADATION ALTERNATIVE

FIGURE 4-2

PATH: C:\PW_WORKING\CNGPW\00334789\MINIMAL DEGRADATION ALTERNATIVE.DWG
DATE: Apr 27, 2012 – 09:52 AM
PLOTTED BY: WLZ5364

ACAD DRAWING NAME: MINIMAL DEGRADATION ALTERNATIVE.DWG

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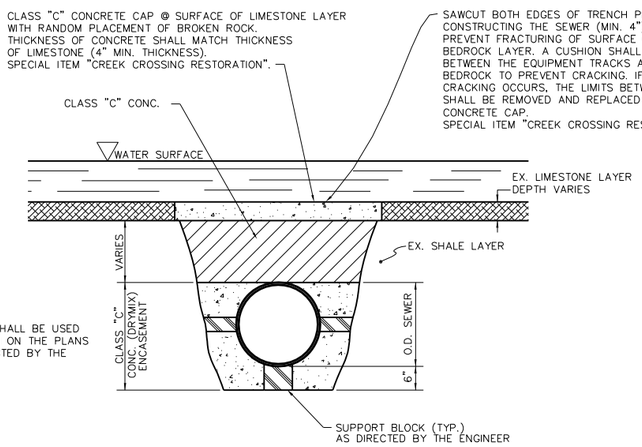

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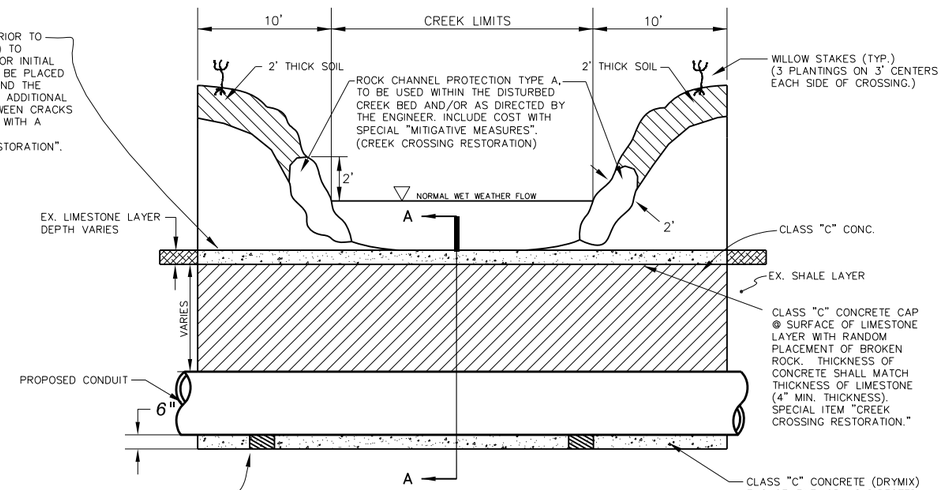
CREEK CROSSING DETAIL (CROSS SECTION A–A)



CREEK CROSSING DETAIL (PROFILE)

NOT TO SCALE

PRELIMINARY – NOT FOR CONSTRUCTION

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DATE:
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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

CREEK CROSSING DETAIL

FIGURE 4–3

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____ SHEET ___ OF___

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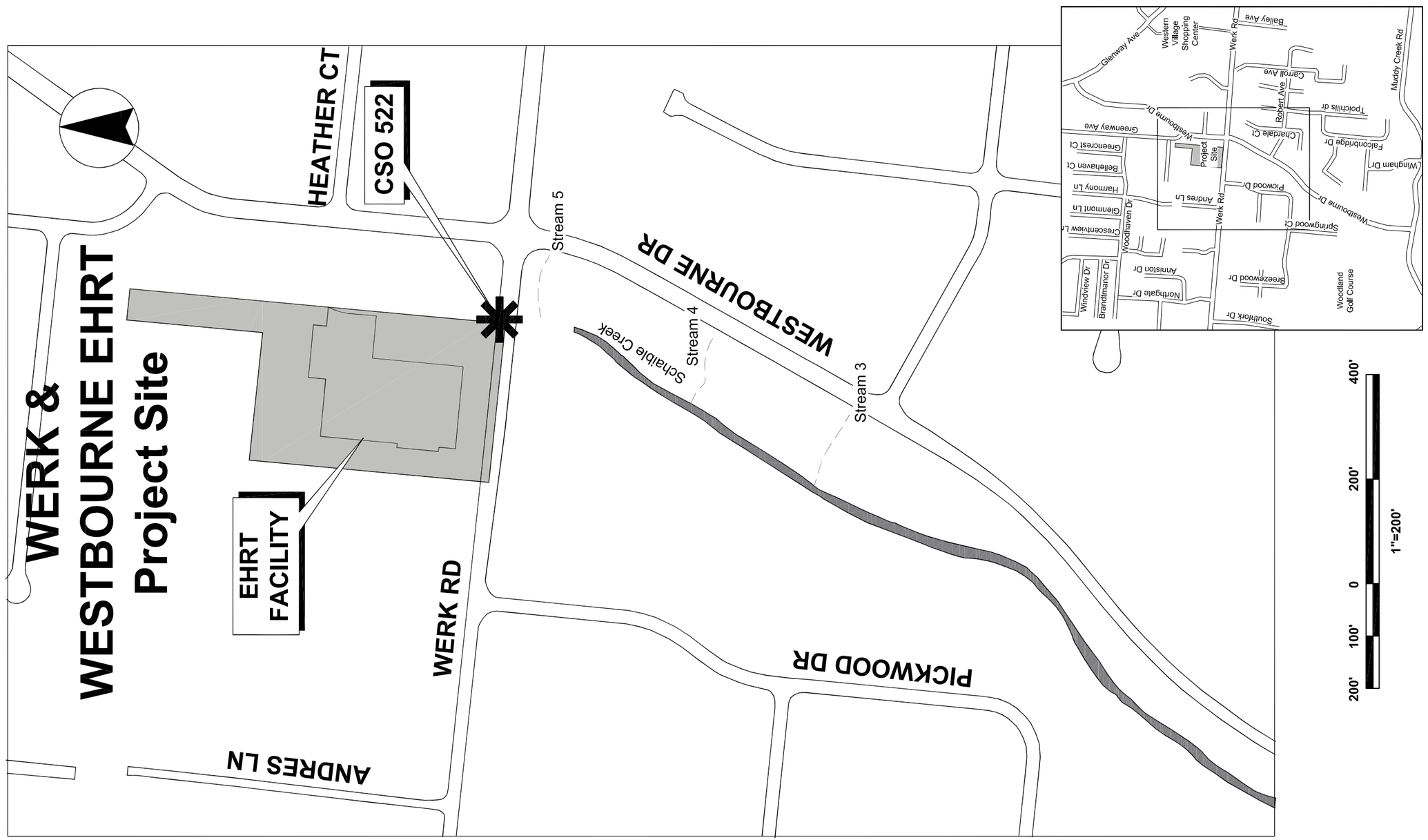
Non-Degradation Alternative



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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE:

VICINITY MAP
NON-DEGRADATION ALTERNATIVE

FIGURE 5-1

ACAD DRAWING NAME:_____

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____

SHEET ___ OF___

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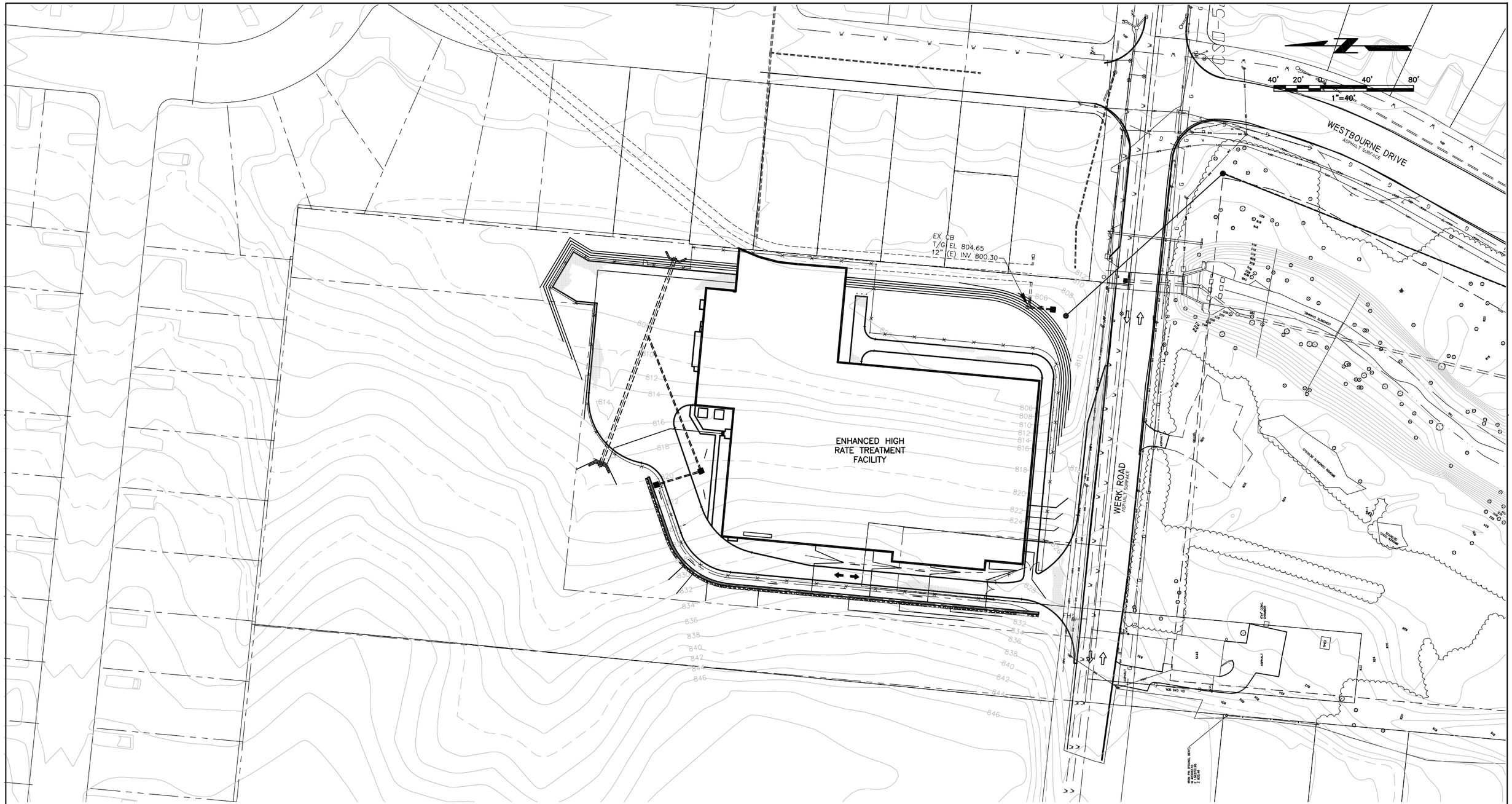

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METROPOLITAN SEWER DISTRICT
WERK & WESTBOURNE EHRT FACILITY

SCALE: 1"=40'

NORTH SITE PLAN

FIGURE 5-2

ACAD DRAWING NAME: Figure 1 – Site Plan.dwg

FOR EASEMENT DRAWING SEE ACC. NO. _____

ACC. NO._____ SHEET ___ OF ___

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PW:\\168242-MSDGC Werk Westbourne EHRT Facility\50.3010\North Site Drawings

Appendix B – Wetland Delineation and Threatened and Endangered Species Report

WERK & WESTBOURNE ENHANCED HIGH RATE TREATMENT FACILITY

Wetland Delineation and Threatened and Endangered Species Report for the Proposed Werk - Westbourne Enhanced High Rate Treatment (EHRT) Facility in Green Township, Hamilton County, Ohio

June 2011

MSDGC PN 10130740
B & V PN 168242

Prepared By
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Wetland Delineation and Threatened and Endangered Species Report for the Proposed Werk - Westbourne Enhanced High Rate Treatment (EHRT) Facility in Green Township, Hamilton County, Ohio

By

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EXECUTIVE SUMMARY

ASC Group, Inc., under contract with RA Consultants, LLC, performed wetland delineations and a threatened and endangered species survey on an approximately 7.17-acre parcel located in Green Township, Hamilton County, Ohio. The study area is located southwest of the intersection of Werk Road and Westbourne. This report documents the extent and quality of wetlands and/or other surface waters present at the site. This report also summarizes the results of a threatened and endangered species survey.

Four artificial channels (Streams 2–5) were identified in the study area. Approximately 1,458 feet of channel was identified in the study area. No wetlands were identified in the study area during the field survey.

Hamilton County is included in the range of the federally endangered Indiana bat (*Myotis sodalis*), pink mucket pearly mussel (*Lampsilis orbiculata*), fanshell (*Cyprogenia stegaria*), and running buffalo clover (*Trifolium stoloniferum*). The proposed endangered sheepnose (*Plethobasus cyphyus*), snuffbox (*Epioblasma triquetra*), and rayed bean (*Villosa fabalis*) as well as the federal species of concern, the bald eagle (*Haliaeetus leucocephalus*), also have ranges that include Hamilton County. None of these federally listed species have been documented within a 1-mile radius of the study area from the ODNR Biodiversity Database search or in the study area during the field review. Potential habitat for these species was not identified in the project area. Impacts to potential habitat for these species are not expected if the parcel is developed. In addition, no state-listed species were identified in the study area during the ODNR Biodiversity Database search or during the field survey.

The information provided in this report is based on our understanding of the current U.S. Army Corps of Engineers (USACE) guidelines and our professional judgment. Only the USACE can make the final jurisdictional determination for all areas examined in this report. Coordination with the USACE and/or Ohio Environmental Protection Agency (Ohio EPA) may be required for impacting the features identified in this report.

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INTRODUCTION

The 2009 Metropolitan Sewer District of Greater Cincinnati Wet Weather Improvement Program (WWIP), approved by regulators in September 2010, included reducing the annual overflow volume at Combined Sewer Overflow (CSO) 522 to 64.7 million gallons (Mgal) by December 31, 2017. CSO volume reduction can be achieved through a variety of new construction projects, including: Enhanced High Rate Treatment (EHRT), separation of storm and sanitary sewers, stormwater detention projects, and green infrastructure projects on private property. The WWIP envisioned constructing an EHRT facility as the single means of achieving the goal and a Business Case Evaluation (BCE) submitted at the end of 2010 confirmed this solution. The proposed EHRT would be located near the intersection of Werk and Westbourne Roads in Green Township.

ASC Group, Inc., under contract with RA Consultants, LLC performed wetland delineations and a threatened and endangered species survey on an approximately 7.17-acre parcel located in Green Township, Hamilton County, Ohio. The study area is located southwest of the intersection of Werk Road and Westbourne (Figures 1–5). On May 16, 2011, Senior Ecologist Len Mikles determined the extent and quality of wetlands and/or other surface waters present at the site. This report summarizes the results of a wetland investigation and a threatened and endangered species survey. This report provides technical documentation for all delineated wetlands and other surface waters present at the site. Photographs (1–15) of the study are presented in Appendix B.

METHODS

A routine on-site assessment of potential wetlands was conducted. The entire study area was surveyed on foot and major vegetative communities were noted. The *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region* (USACE 2010) were used to determine whether wetlands were present within the study area. Wetlands were identified according to the routine determination method outlined in Section D of the manual (Environmental Laboratory 1987). Using this method, the three criteria—vegetation, soil, and hydrological features—were examined and evaluated to determine the presence of wetlands. Examination of the vegetation for the presence of obligate, facultative-

wet, or facultative wetland species is based on the *Floristic Quality Assessment Index (FQAI) for Vascular Plants and Mosses for the State of Ohio* (Andreas et al. 2004).

When a wetland determination indicated that an area was not a wetland, the location was noted and no further action was taken. When the wetland determination indicated that an area was a wetland, a delineation would be performed to identify the boundary between wetland and non-wetland areas. A wetland sampling point and non-wetland sampling point would be completed for each wetland encountered.

The *Ohio Rapid Assessment Method for Wetlands (ORAM) version 5.0* would be used to assess the functional quality of each wetland encountered (Ohio EPA 2001). The wetland would be assigned a category according to the most recent ORAM score calibration (Mack 2000).

The *Soil Survey of Hamilton County* (United States Department of Agriculture, Soil Conservation Service [USDA, SCS] 1982) was also reviewed to identify potential jurisdictional waters. A provisional jurisdictional waters determination was performed in the field to determine if waterways that possessed a defined channel and streambed as defined by the ordinary high water mark were present in the study area.

Potential jurisdictional streams were evaluated to determine whether the stream qualified as a primary headwater habitat (PHWH) stream as defined by the Ohio EPA (2002) or a non-headwater stream as defined by the Ohio EPA (2006). PHWH streams have a defined bed and bank, with either continuous or periodic flowing water, a watershed area of less than 1 mi^2, and maximum pool depth (excluding plunge pools) of 16 inches or less. A Headwater Habitat Evaluation Index (HHEI) data form was completed for all streams meeting this criteria. This evaluation is based on three physical measurements that have been found to correlate well with biological measures of stream quality. Streams are assigned to a Class (I, II, or III) based on the score that is derived from the HHEI.

Class I streams typically are ephemeral with little or no aquatic life present. Class II streams are typically found to have a moderately diverse community of warm-water adapted native fauna either present seasonally or on an annual basis. Class III streams have native fauna adapted to cool-cold perennial flowing water characterized by a community of vertebrate and /or a diverse community of benthic macroinvertebrates. HHEI data forms for the streams identified in the study area are located in Appendix E.

The Qualitative Habitat Evaluation Index (QHEI), as described by the Ohio EPA (2006), would be used to evaluate the habitat quality for all streams in the survey area with watersheds larger than 1 mi^2. The QHEI is based on a quality rating of the stream substrate, in-stream cover, channel morphology, riparian zone, stream bank erosion, pool/glide as well as riffle/run quality. QHEI scores can range from zero to 100, and are grouped into five narrative ranges: very poor (0–30), poor (31–45), fair (46–59), good (60–74), and excellent ($\geq$75).

The Ohio Department of Natural Resources (ODNR) Biodiversity Database was consulted for the presence of any federally or state-listed species known to occur within the current study area or within a 1-mile radius (Appendix A). The ODNR Biodiversity Database search also included a 5-mile radius for the Indiana bat capture sites and a 10-mile radius for Indiana bat hibernacula. The study area was surveyed for the presence of any federally listed species whose range includes Hamilton County (United States Fish and Wildlife Service [USFWS] 2011) or state-listed species known to occur in within a 1-mile radius of the study area.

LITERATURE REVIEW

Streams

The study area is located in the Muddy Creek watershed (HUC: 05090203-020-040) [United States Department of Agriculture, Natural Resource Conservation Service (USDA, NRCS) 1999]. Two streams were identified in the study area from the Hamilton County soil survey (USDA, SCS 1982). The streams are first and second order unnamed tributaries of Muddy Creek. These streams do not have an aquatic life use designation.

Wetlands

The Ohio Wetland Inventory (OWI) map was also reviewed and showed no wetlands in the study area (ODNR 1991) [Figure 4]. The Addyston Ohio - Kentucky National Wetlands Inventory (NWI) map (USFWS 2011b) was also reviewed and shows no wetlands in the study area (Figure 4).

The *Soil Survey of Hamilton County, Ohio* (USDA, NRCS 2009a) was also examined to determine if hydric soils were present in the area, since these soils are the most likely locations for wetlands (Figure 3). According to the hydric soils list of Hamilton County (USDA, NRCS 2009b) no hydric soils are mapped within the study area. Ava-Urban land complex, 8 to 15

percent slopes (AsC), is mapped in the project area. This soil is known to occasionally contain small hydric inclusions.

Threatened and Endangered Species

Coordination with USFWS determined that Hamilton County is included in the range of the federally endangered Indiana bat (*Myotis sodalis*), pink mucket pearly mussel (*Lampsilis orbiculata*), fanshell (*Cyprogenia stegaria*), and running buffalo clover (*Trifolium stoloniferum*) [USFWS 2011a]. The proposed endangered sheepnose (*Plethobasus cyphyus*), snuffbox (*Epioblasma triquetra*), and rayed bean (*Villosa fabalis*) as well as the federal species of concern, the bald eagle (*Haliaeetus leucocephalus*), also have ranges that include Hamilton County (USFWS 2011a).

None of these federally listed species have been documented within a 1-mile radius of the study area from the ODNR Biodiversity Database search (Appendix A: ODNR 2011). The nearest bald eagle record is located approximately 9 miles from the study area (Appendix A: ODNR 2010). The nearest Indiana bat record is located approximately 12 miles from the study area (Appendix A: ODNR 2010). The nearest running buffalo clover record is located approximately 4.5 miles from the study area (Appendix A: ODNR 2011).

No state-listed species were identified in the study area or within a 1-mile radius during the ODNR Biodiversity Database search.

FIELD INVESTIGATION RESULTS

Wetlands

No wetlands were identified in the study area during the field investigation. The northwestern portion of the study area consists of a historically disturbed successional community, primarily dominated by Amur honeysuckle (*Lonicera maackii*) [Appendix B: Photographs 14 and 15]. Most of the vegetation observed was growing on historic fill material. The remainder of the study area consists of a wooded slope that extends from Westbourne Drive down to an unnamed tributary of Muddy Creek (Appendix B: Photographs 11–13). The slope showed signs of historic disturbance and evidence of a buried sewer pipe. The slope was dominated by box-elder (*Acer negundo*), white mulberry (*Morus alba*), red cedar (*Juniperus virginiana*), Siberian elm (*Ulmus pumila*), and black locust (*Robinia pseudoacacia)* in the overstory and Amur honeysuckle (*Lonicera maackii*) in the understory.

Streams

One intermittent stream (Stream 1), an unnamed tributary to Muddy Creek, was identified near the study area during the literature review on the USGS topographic map (Figure 2). This stream was located just outside the western boundary of the study area during the field review (Appendix B: Photographs 1 and 2).

Four artificial channels (Streams 2–5) were observed in the study during the field review. Stream 2 (Schaible Creek) appears to be an artificial channel that was constructed to assist with the combined sewer overflow system. The stream serves as a conduit for discharging the sewer overflow, including raw sewage, into Stream 1. A portion of the channel is lined with concrete while the remainder is lined with rock channel protection (Appendix B: Photographs 2–6). This channel was identified on the Soil Survey of Hamilton County map (USDA, SCS 1982) during the literature review. This feature exhibited a bed and bank and an Ordinary High Water Mark (OHWM). A QHEI was conducted for this stream since pools greater than 40 cm were observed. The stream scored a 47, which is indicative of fair habitat conditions. A QHEI data form for the stream is located in Appendix C.

In addition, three channels (Streams 3–5) are located along the wooded side slope between Stream 2 and Westbourne Drive (Appendix B: Photographs 7–10). The hydrology of these three channels is governed by stormwater inputs from the surrounding suburban development. The channels originate at the outlet of stormwater pipes and ultimately drain into Stream 2. These three features exhibited a bed and bank and an OHWM. These channels were not identified on the Soil Survey of Hamilton County map (USDA, SCS 1982) during the literature review. A representative HHEI was conducted for these features. These streams scored a 27 on the HHEI, which is indicative of an ephemeral Class I PHWH. A representative HHEI data form for these streams is located in Appendix C.

Threatened and Endangered Species

According to information provided by the ODNR Division of Wildlife (Appendix A: ODNR 2011), no federally listed and one state-listed species occur within 1-mile radius of the study area.

Federally Listed Species

Indiana Bat (Federally Endangered)

The range of the federally endangered Indiana bat (*Myotis sodalis*) includes Hamilton County. There are no records of capture sites within a 5-mile radius or hibernacula within 10 miles of the study area (Appendix A: ODNR 2010). No individuals were observed during the survey. The nearest record is located approximately 12 miles from the study area. The study area contained no potential roosting trees and no maternity roost trees were observed in the study area. The wooded slope adjacent to Stream 2 contained young second growth trees and Amur honeysuckle (*Lonicera maackii*) in the understory. The trees in this area primarily exhibited intact limbs and tight bark. Impacts to potential habitat for this species are not expected.

Running Buffalo Clover (Federally Endangered)

Running buffalo clover (*Trifolium stoloniferum*) prefers habitats that contain partially filtered sunlight and periodic disturbance. It is typically found in mesic woodlands, savannahs, floodplains, stream banks, grazed woodlots, mowed paths, logging roads, trails, and steep ravines. No individuals were observed during the survey. The study area has been historically disturbed and contains soils derived from fill material. In addition, the study area is heavily infested with thickets of Amur honeysuckle (*Lonicera maackii*). Suitable habitat for the running buffalo clover was not observed in the study area. Impacts to potential habitat for this species are not expected.

Pink Mucket Pearly Mussel (Federally Endangered)

The pink mucket pearly mussel (*Lampsilis orbiculata*) is found in mud and sand and in shallow riffles and shoals swept free of silt in major rivers and tributaries. No individuals or suitable habitat was observed in the study area. The streams in the study area are very disturbed and have poor water quality. Impacts to potential habitat for this species are not expected.

Fanshell (Federally Endangered)

The fanshell (*Cyprogenia stegaria*) is typically found in medium to large rivers in gravel riffles. No individuals or suitable habitat was observed in the study area. The streams in the study area are very disturbed and have poor water quality. Impacts to potential habitat for this species are not expected.

Sheepnose (Proposed Endangered)

The sheepnose (*Plethobasus cyphyus*) is typically found in medium to large rivers in gravel or mixed sand and gravel. No individuals or suitable habitat was observed in the study area. The streams in the study area are very disturbed and have poor water quality. Impacts to potential habitat for this species are not expected.

Snuffbox (Proposed Endangered)

The snuffbox (*Epioblasma triquetra)* prefers medium to large rivers in clear, gravel riffles. No individuals or suitable habitat was observed in the study area. The streams in the study area are very disturbed and have poor water quality. Impacts to potential habitat for this species are not expected.

Rayed Bean (Proposed Endangered)

The rayed bean (*Villosa fabalis*) generally lives in smaller, headwater creeks, but they are sometimes found in large rivers and wave-washed areas of glacial lakes, including Lake Erie. They prefer gravel or sand substrates, and are often found in and around roots of aquatic vegetation. No individuals or suitable habitat was observed in the study area. The streams in the study area are very disturbed and have poor water quality. Impacts to potential habitat for this species are not expected.

Bald Eagle (Federal Species of Concern)

The range of the bald eagle (*Haliaeetus leucocephalus*) includes Hamilton County. There are no records of this species within a 1-mile radius of the study area (Appendix A: ODNR 2011) and no individuals or nests were observed during the survey. The ODNR reported that the nearest known bald eagle nest is located approximately nine miles from the study area. Impacts to potential habitat for this species are not expected.

State-Listed Species

No state-listed species were identified in the study area during the ODNR Biodiversity Database search or during the field survey.

SUMMARY

Four artificial channels (Streams 2–5) were identified in the study area. Approximately 1,458 feet of channel was identified in the study area. The streams are summarized in Table 1 below.

Table 1. Stream Summary for the Proposed Werk - Westbourne Enhanced High Rate Treatment (EHRT) Facility in Green Township, Hamilton County, Ohio.

Stream ID	Photo #	Receiving Waters	Drainage Area (mi^2)	Stream Hydrology Type	USACE Flow Characteristics*	OEPA Use Designation **	Scenic River	Length within the Study Area (ft.)	Impacts (ft.)	QHEI/ HHEI SCORE
Stream 2 Schiable Creek	2–6	Stream 1	2	Intermittent	RPW	N/A	No	1,066	Unknown	47 QHEI
Stream 3	7 and 8	Stream 2	0.2	Ephemeral	NRPW	N/A	No	146	Unknown	27 HHEI
Stream 4	9	Stream 2	0.2	Ephemeral	NRPW	N/A	No	122	Unknown	27 HHEI
Stream 5	10	Stream 2	0.2	Ephemeral	NRPW	N/A	No	124	Unknown	27 HHEI

***Subject to verification by the USACE (TNW=Traditional Navigable Water, RPW=Relatively Permanent Water Perennial or Seasonal, NRPW=Non-RPW)**
****May be provisional based on habitat assessment forms**

How the stream(s) connect to Traditional Navigable Water (TNW): Streams 3–5 drain into Stream 2 and Stream 2 drains into Stream 1. Stream 1 flows into Muddy Creek which drains into the Ohio River. The Ohio River is a TNW.

No wetlands were identified in the project area. No state or federally listed species have been documented within the study area from the literature review or in the study area during the field survey.

The information provided in this report is based on our understanding of the current USACE guidelines and our professional judgment. Only the USACE can make the final jurisdictional determination for all of the areas examined in this report. Coordination with the USACE and/or Ohio EPA may be required for impacting the features identified in this report.

LITERATURE CITED

Andreas, Barbara K., John J. Mack, and James S. McCormac. 2004. *Floristic Quality Assessment Index (FQAI) for Vascular Plants and Mosses for the State of Ohio.* Ohio EPA, Division of Surface Water, Wetland Ecology Group, Columbus, Ohio.

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USFWS. 2011a. Federally Listed Species By Ohio Counties. Reynoldsburg, Ohio. U. S. Fish and Wildlife Service. January 2011.

USFWS. 2011b. National Wetlands Inventory Map, Addyston, Ohio - Kentucky. U.S. Fish and Wildlife Service.

FIGURES

Figure 1. Portion of the ODOT Hamilton County map showing the vicinity of the proposed Werk - Westbourne EHRT Facility study area.

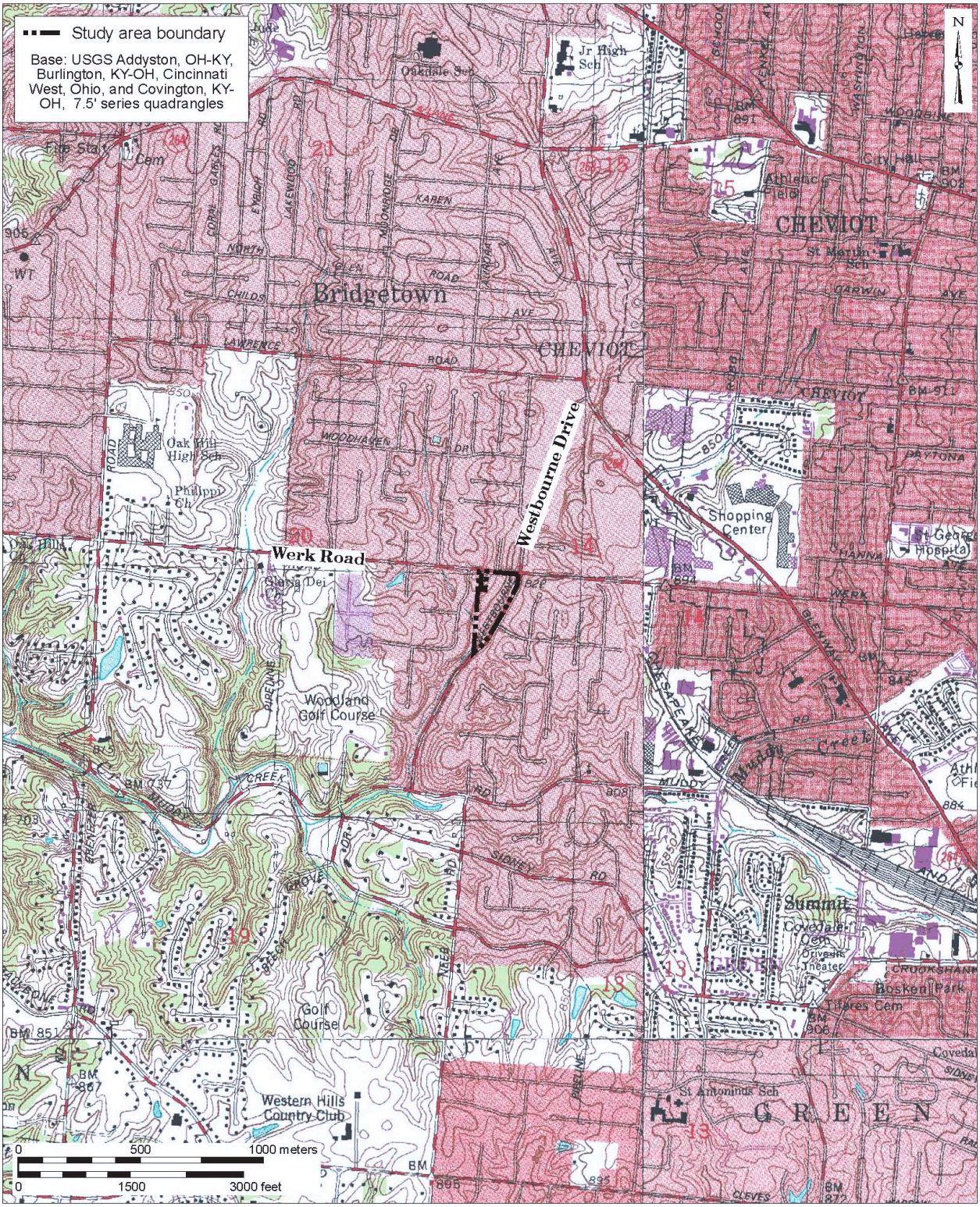


Figure 2. Portions of the Addyston, OH-KY; Burlington, KY-OH; Cincinnati West, Ohio; and Covington, KY-OH quadrangles (USGS 7.5' topographic maps) showing the proposed Werk - Westbourne EHRT Facility study area.

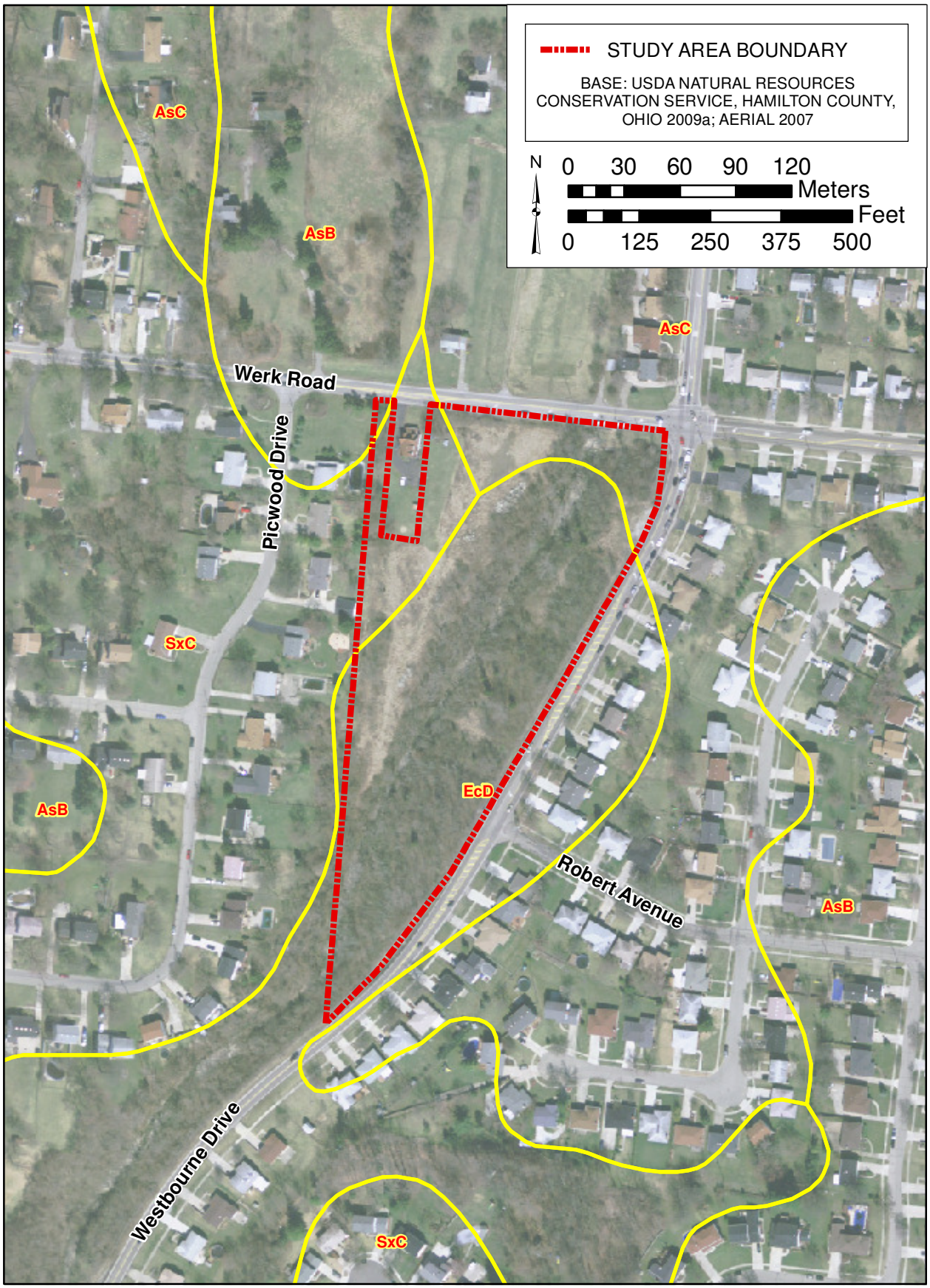


Figure 3. Portion of the Soil Survey of Hamilton County, Ohio (USDA, NRCS 2009a) showing the proposed Werk - Westbourne EHRT Facility study area.

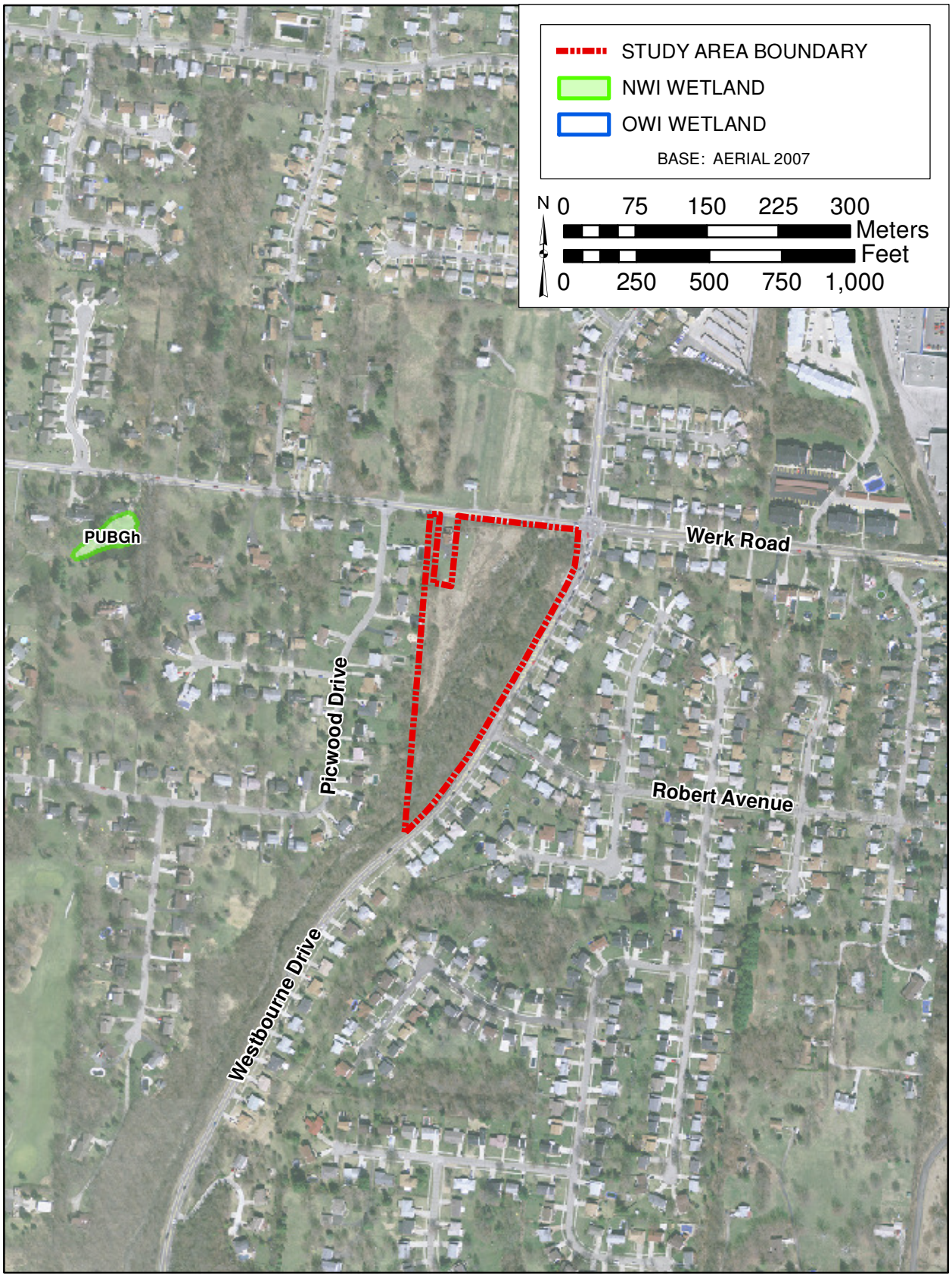


Figure 4. Portions of the Addyston, OH-KY; Burlington, KY-OH; Cincinnati West, Ohio; and Covington, KY-OH National Wetland Inventory and Ohio Wetland Inventory Maps showing the proposed Werk - Westbourne EHRT Facility study area.

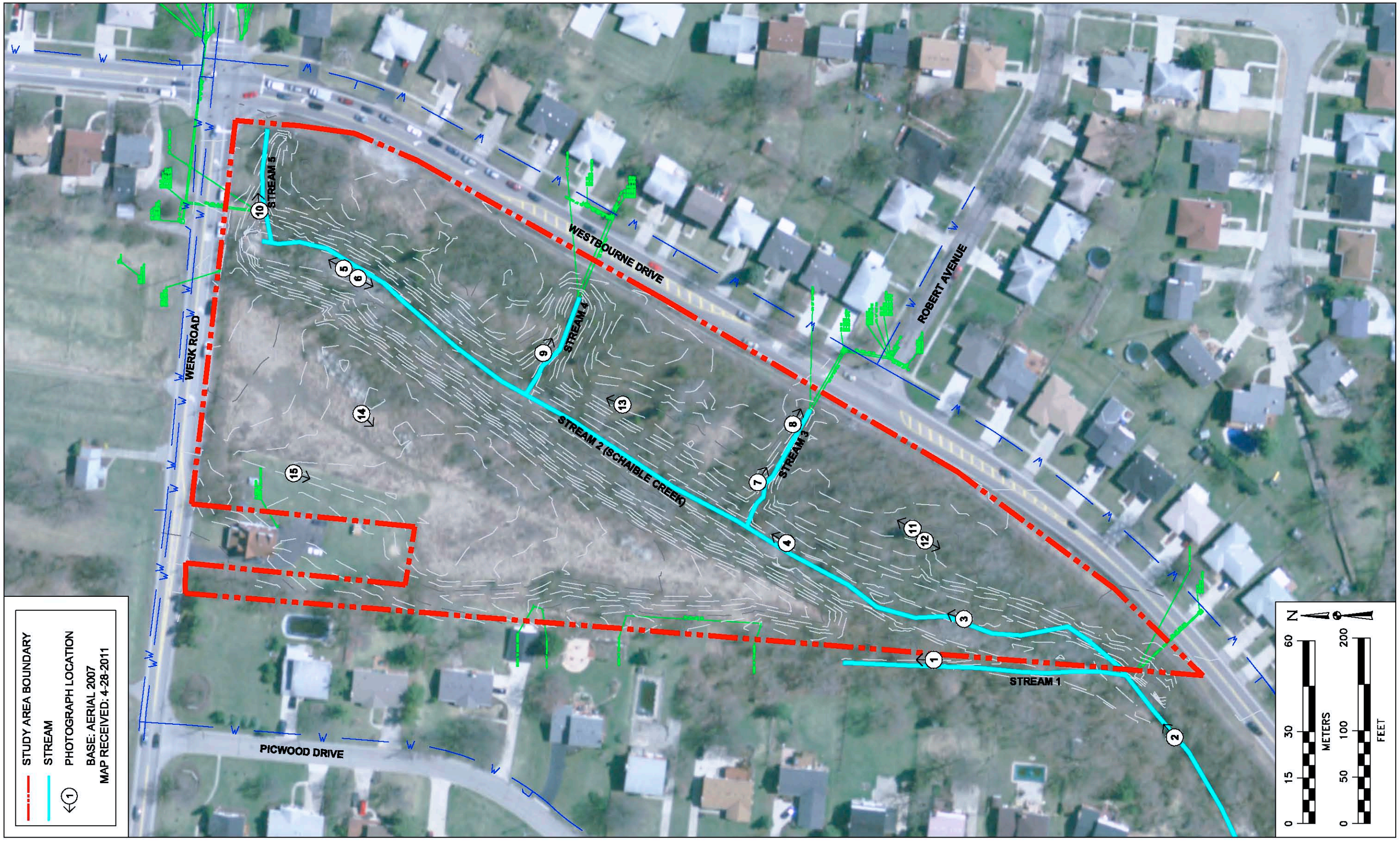


Figure 5. Streams and photograph locations for the proposed Werk - Westbourne EHRT Facility study area.

APPENDIX A: AGENCY CORRESPONDENCE

Ohio Department of Natural Resources

JOHN R. KASICH, GOVERNOR | DAVID MUSTINE, DIRECTOR

Ohio Division of Wildlife

Office of the Chief
2045 Morse Rd., Bldg. G
Columbus, OH 43229-6693
Phone: (614) 265-6300

April 11, 2011

Len Mikles
ASC Group, Inc.
800 Freeway Dr. N., Suite 101
Columbus, OH 43229

Dear Len:

After reviewing our Biodiversity Database, I find the Division of Wildlife has no records of rare or endangered species in the Werk Wastewater Treatment Facility project area, including a one mile radius, at Werk Rd. and Westbourne Rd. in Green Township, Hamilton County, and on the Addyston Quad (1963-1). We are unaware of any unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests, national wildlife refuges, parks or forests, or other protected natural areas within a one mile radius of the project area.

We have no records for Indiana Bat (*Myotis sodalis*, state endangered, federal endangered) capture locations within a five mile radius or hibernacula within a ten mile radius of the project site. The nearest Indiana Bat location is approximately 12 miles away. The nearest Running Buffalo Clover (*Trifolium stoloniferum*, state endangered, federal endangered) record is approximately 4.5 miles away. The nearest Bald Eagle (*Haliaeetus leucocephalus*, threatened) record is approximately 9 miles away.

Our inventory program has not completely surveyed Ohio and relies on information supplied by many individuals and organizations. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area. Although we inventory all types of plant communities, we only maintain records on the highest quality areas.

Please contact me at 614-265-6818 if I can be of further assistance.

Sincerely,

Debbie Woischke, Ecological Analyst
Ohio Biodiversity Database Program

APPENDIX B: PHOTOGRAPHS

Photograph 1. View of Stream 1 located outside the project area, looking north.

Photograph 2. View of confluence of Stream 1 and Stream 2, looking northeast.

Photograph 3. View of Stream 2, looking northeast.

Photograph 4. View of pool in Stream 2, looking northeast.

Photograph 5. View of concrete lined portion of Stream 2, looking north.

Photograph 6. View of Stream 2, looking south.

Photograph 7. View of Stream 3, looking southeast.

Photograph 8. View of storm water pipe discharging into Stream 3, looking southeast.

Photograph 9. View of Stream 4, looking southeast.

Photograph 10. View of Stream 5, looking east.

Photograph 11. View of wooded slope, looking northeast.

Photograph 12. View of wooded slope, looking southwest.

Photograph 13. View of wooded slope, looking northeast.

Photograph 14. View of successional area, looking southwest.

Photograph 15. View of successional area, looking southwest.

APPENDIX C: QHEI AND HHEI DATA FORMS

FAIR

OhioEPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 47

Stream & Location: STREAM 2 WEST EAST RM: ___ Date: 5/16/11

Scorers Full Name & Affiliation: YL

River Code: - - STORET #: Lat./Long.: (NAD 83 - decimal °) . 18 . Office verified location ☐

1] SUBSTRATE

Check ONLY Two substrate TYPE BOXES; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐☐ BLDR /SLABS [10]			☐☐ HARDPAN [4]		
☐☐ BOULDER [9]			☐☐ DETRITUS [3]		
☐☐ COBBLE [8]			☐☐ MUCK [2]		
☐☐ GRAVEL [7]		5	☐☐ SILT [2]		
☐☒ SAND [6]		25	☒☐ ARTIFICIAL [0]		80
☐☐ BEDROCK [5]			(Score natural substrates; ignore sludge from point-sources)		

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☒ 3 or less [0]

Check ONE (Or 2 & average)

ORIGIN: ☒ LIMESTONE [1] ☐ TILLS [1] ☐ WETLANDS [0] ☐ HARDPAN [0] ☐ SANDSTONE [0] ☐ RIP/RAP [0] ☐ LACUSTURINE [0] ☐ SHALE [-1] ☐ COAL FINES [-2]

QUALITY: SILT: ☐ HEAVY [-2] ☐ MODERATE [-1] ☒ NORMAL [0] ☐ FREE [1]; EMBEDDEDNESS: ☐ EXTENSIVE [-2] ☐ MODERATE [-1] ☒ NORMAL [0] ☐ NONE [1]

Comments

Substrate: 7 (Maximum 20)

2] INSTREAM COVER

Indicate presence 0 to 3: 0-Absent; 1-Very small amounts or if more common of marginal quality; 2-Moderate amounts, but not of highest quality or in small amounts of highest quality; 3-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

0 UNDERCUT BANKS [1]	0 POOLS > 70cm [2]	0 OXBOWS, BACKWATERS [1]	
2 OVERHANGING VEGETATION [1]	0 ROOTWADS [1]	0 AQUATIC MACROPHYTES [1]	
2 SHALLOWS (IN SLOW WATER) [1]	2 BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]	
0 ROOTMATS [1]			

AMOUNT (Check ONE (Or 2 & average)): ☐ EXTENSIVE >75% [11] ☒ MODERATE 25-75% [7] ☐ SPARSE 5-<25% [3] ☐ NEARLY ABSENT <5% [1]

Comments

Cover: 11 (Maximum 20)

3] CHANNEL MORPHOLOGY

Check ONE in each category (Or 2 & average)

SINUOSITY	DEVELOPMENT	CHANNELIZATION	STABILITY
☐ HIGH [4]	☐ EXCELLENT [7]	☐ NONE [6]	☐ HIGH [3]
☐ MODERATE [3]	☐ GOOD [5]	☐ RECOVERED [4]	☒ MODERATE [2]
☐ LOW [2]	☒ FAIR [3]	☒ RECOVERING [3]	☐ LOW [1]
☒ NONE [1]	☐ POOR [1]	2 ☒ RECENT OR NO RECOVERY [1]	

Comments

Channel: 8 (Maximum 20)

4] BANK EROSION AND RIPARIAN ZONE

Check ONE in each category for EACH BANK (Or 2 per bank & average)

River right looking downstream

EROSION (L R)	RIPARIAN WIDTH (L R)	FLOOD PLAIN QUALITY (L R)	(L R)
☒☒ NONE / LITTLE [3]	☐☐ WIDE > 50m [4]	☒☒ FOREST, SWAMP [3]	☐☐ CONSERVATION TILLAGE [1]
☐☐ MODERATE [2]	☒☒ MODERATE 10-50m [3]	☐☐ SHRUB OR OLD FIELD [2]	☐☐ URBAN OR INDUSTRIAL [0]
☐☐ HEAVY / SEVERE [1]	☐☐ NARROW 5-10m [2]	☒☒ RESIDENTIAL, PARK, NEW FIELD [1]	☐☐ MINING / CONSTRUCTION [0]
	☐☐ VERY NARROW < 5m [1]	☐☐ FENCED PASTURE [1]	
	☐☐ NONE [0]	☐☐ OPEN PASTURE, ROWCROP [0]	

Indicate predominant land use(s) past 100m riparian.

Comments 2

Riparian: 8 (Maximum 10)

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH (Check ONE (ONLY!)): ☐ > 1m [6] ☐ 0.7-<1m [4] ☒ 0.4-<0.7m [2] ☐ 0.2-<0.4m [1] ☐ < 0.2m [0]

CHANNEL WIDTH (Check ONE (Or 2 & average)): ☒ POOL WIDTH > RIFFLE WIDTH [2] ☐ POOL WIDTH = RIFFLE WIDTH [1] ☐ POOL WIDTH < RIFFLE WIDTH [0]

CURRENT VELOCITY (Check ALL that apply): ☐ TORRENTIAL [-1] ☒ SLOW [1] ☐ VERY FAST [1] ☐ INTERSTITIAL [-1] ☐ FAST [1] ☐ INTERMITTENT [-2] ☐ MODERATE [1] ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential: Primary Contact / Secondary Contact (circle one and comment on back)

Comments

Pool / Current: 5 (Maximum 12)

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: (Check ONE (Or 2 & average)). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH	RUN DEPTH	RIFFLE / RUN SUBSTRATE	RIFFLE / RUN EMBEDDEDNESS
☒ BEST AREAS > 10cm [2]	☐ MAXIMUM > 50cm [2]	☒ STABLE (e.g., Cobble, Boulder) [2]	☐ NONE [2]
☐ BEST AREAS 5-10cm [1]	☒ MAXIMUM < 50cm [1]	☐ MOD. STABLE (e.g., Large Gravel) [1]	☒ LOW [1]
☐ BEST AREAS < 5cm [metric=0]		☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]	☐ MODERATE [0]
			☐ EXTENSIVE [-1]

Comments

Riffle / Run: 6 (Maximum 8)

6] GRADIENT

GRADIENT (3 ft/mi) ☒ VERY LOW - LOW [2-4] ☐ MODERATE [6-10] ☐ HIGH - VERY HIGH [10-6]

DRAINAGE AREA (2 mi²)

%POOL: 30 %GLIDE: 0 %RUN: 35 %RIFFLE: 35

Gradient: 2 (Maximum 10)

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?, *Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☐ OTHER

STAGE

1st -sample pass-	2nd
☐ HIGH	☐
☐ UP	☐
☐ NORMAL	☐
☐ LOW	☐
☐ DRY	☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

_____ meters

CLARITY

1st --sample pass--	2nd
☐ < 20 cm	☐
☐ 20-<40 cm	☐
☐ 40-70 cm	☐
☐ > 70 cm/ CTB	☐
☐ SECCHI DEPTH	☐

CANOPY

- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☐ 10%-<30%
- ☐ <10%- CLOSED

pass 1st_____ cm

2nd_____ cm

B] AESTHETICS

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☐ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

C] RECREATION

	AREA	DEPTH
POOL:	☐ >100ft²	☐ >3ft

D] MAINTENANCE

Circle some & *COMMENT*

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

E] ISSUES

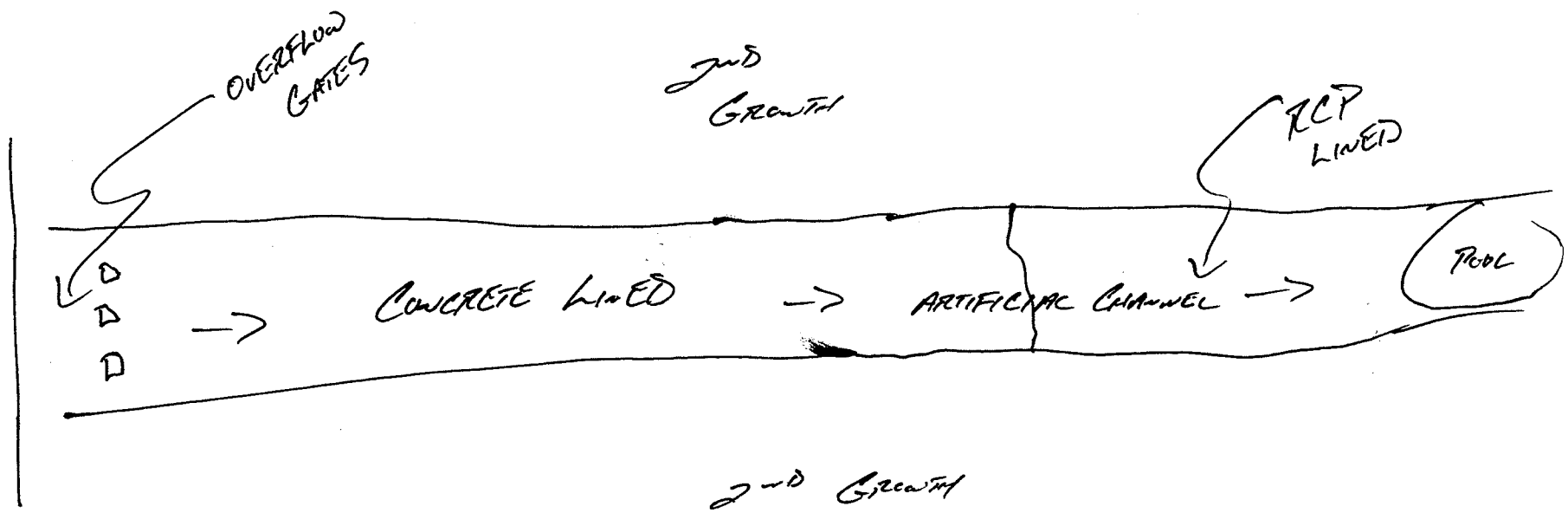
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width
- $\bar{x}$ depth
- max. depth
- $\bar{x}$ bankfull width
- bankfull $\bar{x}$ depth
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Legacy Tree:

Stream Drawing:



OhioEPA Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3) : 27

SITE NAME/LOCATION: Werk EHRT, Streams 3-5

SITE NUMBER: Streams 3-5 RIVER BASIN: DRAINAGE AREA (mi²): 0.20

LENGTH OF STREAM REACH (ft): LAT. 40.49790 LONG. -82.71380 RIVER CODE: RIVER MILE:

DATE: 05/16/11 SCORER: LM COMMENTS: Artificial Channels

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0%	☐	SILT [3 pt]	30%
☐	BOULDER (>256 mm) [16 pts]	0%	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0%
☐	BEDROCK [16 pt]	0%	☐	FINE DETRITUS [3 pts]	0%
☐	COBBLE (65-256 mm) [12 pts]	10%	☐	CLAY or HARDPAN [0 pt]	0%
☑	GRAVEL (2-64 mm) [9 pts]	25%	☐	MUCK [0 pts]	0%
☐	SAND (<2 mm) [6 pts]	15%	☐	ARTIFICIAL [3 pts]	20%

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 10.00% (A)

Substrate Percentage Check: 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12

TOTAL NUMBER OF SUBSTRATE TYPES: 5

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☑ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAXIMUM POOL DEPTH (centimeters): 4

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (<=3' 3") [5 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 0.80

HHEI Metric Points

Substrate Max = 40	17
A + B	
Pool Depth Max = 30	5
Bankfull Width Max=30	5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

L	R	RIPARIAN WIDTH (Per Bank)	L	R	FLOODPLAIN QUALITY (Most Predominant per Bank)	L	R	
☑	☑	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☑ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☑ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: Muddy Creek Distance from Evaluated Stream 1.00
☐ CWH Name: _____ Distance from Evaluated Stream _____
☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: Addyston NRCS Soil Map Page: 35 NRCS Soil Map Stream Order 1

County: Hamilton Township / City: Green Township

MISCELLANEOUS

Base Flow Conditions? (Y/N): N Date of last precipitation: 05/15/11 Quantity: 0.10

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 0%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts:

Storm water/road runoff inputs observed

BIOTIC EVALUATION

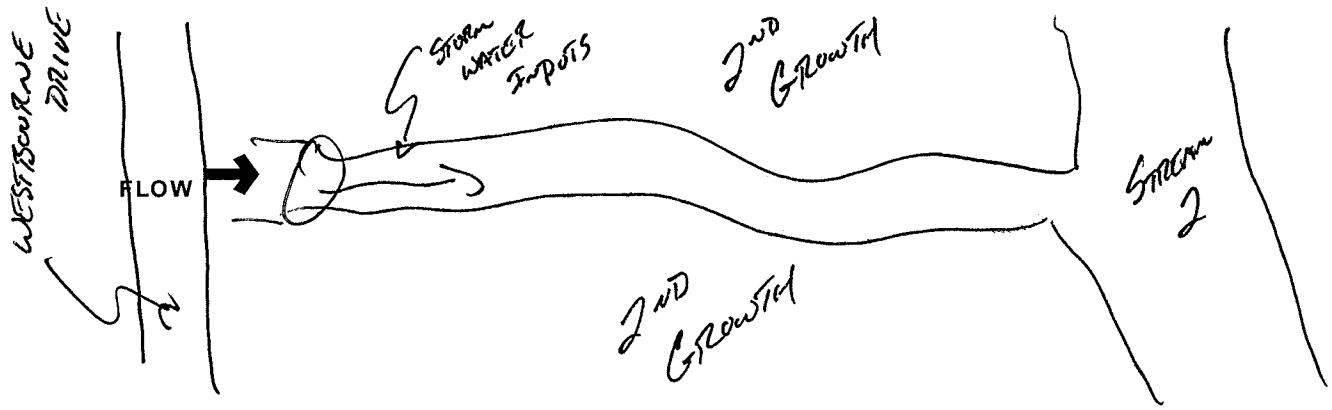
Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N
Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location



October 24, 2002 Revision

Save as pdf Reset Form

Appendix C – Approved JD and Section 404 Public Notice

DEPARTMENT OF THE ARMY
HUNTINGTON DISTRICT, CORPS OF ENGINEERS
502 EIGHTH STREET
HUNTINGTON, WEST VIRGINIA 25701-2070

AUG 2 5 2011

Rg

Operations and Readiness Division
Regulatory Branch
Untrib Muddy Creek – LRH-2010-895-OHR

Mr. Ralph Johnstone
Metropolitan Sewer District of Greater Cincinnati
1600 Gest Street
Cincinnati, Ohio 45204

Dear Mr. Johnstone:

I refer to a delineation of waters of the United States submitted on your behalf by ASC Group, Inc. and received in this office on June 20, 2011. The report contains information concerning potential waters of the United States within a study area located on a 7.17-acre parcel on unnamed tributaries to Muddy Creek southwest of the intersection of Werk Road and Westbourne Drive in Green Township, Hamilton County, Ohio. A total of four potential waters of the United States (Streams 2, 3, 4 and 5) were identified within the study area.

The United States Army Corps of Engineers (USACE) authority to regulate waters of the United States is based on the definitions and limits of jurisdiction contained in 33 CFR 328 and 33 CFR 329. Section 404 of the Clean Water Act requires that a Department of the Army (DA) permit be obtained prior to discharging dredged or fill material into waters of the United States, including wetlands. Section 10 of the Rivers and Harbors Act of 1899 requires that a DA permit be obtained for any work in, on, over or under a navigable water. Our December 2, 2008 headquarters guidance entitled "Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States" was followed in the final verification of Clean Water Act jurisdiction.

Based on a review of the submitted information and other information available to us, it has been determined that Stream 2 (1,066 linear feet) is a seasonally flowing intermittent relatively permanent water (RPW) which is an indirect tributary to the Ohio River, a traditionally navigable water (TNW) and is therefore jurisdictional. Streams 3 (146 linear feet), 4 (122 linear feet) and 5 (124 linear feet), ephemeral non-RPWs, were determined to have a significant nexus to the Ohio River, a TNW. The four streams, totaling 1,458 linear feet, have been correctly delineated and are waters of the United States, subject to regulation under Section 404 of the Clean Water Act.

In accordance with the June 5, 2007 Joint Memorandum between the U.S. Environmental Protection Agency (USEPA) and USACE and the January 28, 2008 USACE Memorandum regarding coordination on jurisdictional determinations, this determination was coordinated with the USEPA Region 5, with coordination completed on August 24, 2011.

AUG29'11PM 1:37
MSD DOCUMENT CONTROL
DC RCVD_08/29/2011_1/4

Printed on Recycled Paper

This jurisdictional verification is valid for a period of five years from the date of this letter unless new information warrants revision of the delineation prior to the expiration date. This letter contains an approved jurisdictional determination for the subject site. If you object to this determination, you may request an administrative appeal under USACE regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the Great Lakes and Ohio River Division Office at the following address:

Appeal Review Officer
U.S. Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street, Room 10524
Cincinnati, Ohio 45202-3222
Phone: (513) 684-6212
Fax: (513) 684-2460

In order for an RFA to be accepted by the USACE, the USACE must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by OCT 24 2011. **It is not necessary to submit an RFA form to the Division office if you do not object to the determination in this letter.**

If you have any questions concerning the above, please contact Ms. Denise Marmer at (513) 825-4518.

Sincerely,

Lee A. Pittman
Regulatory Project Manager
North Regulatory Section

Enclosure

Copy Furnished:
Mr. Andrew Campbell
ASC Group, Inc.
800 Freeway Drive N, Suite 101
Columbus, Ohio 43229

Mr. Paul Novak
Ohio Environmental Protection Agency, Division of Surface Water
Post Office Box 1049
Columbus, Ohio 43216-1049

DC RCVD_08/29/2011_2/4

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Metropolitan Sewer District of Greater Cincinnati	File Number: LRH-2010-895-OHR	Date: AUG 25 2011
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

DC RCVD_08/29/2011_3/4

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Ginger Mullins, Chief, Regulatory Branch, 304-399-5710
Rebecca Rutherford, Chief, North Regulatory Section, 304-399-5210
Mark Taylor, Chief, Energy Resource Section, 304 399-5610
LuAnne Conley, Chief, South Regulatory Section, 304-399-5710

Address: U.S. Army Corps of Engineers
Regulatory Branch
502 8th Street
Huntington, WV 25701

If you only have questions regarding the appeal process you may also contact:

US Army Corps of Engineers
Great Lakes & Ohio River Division
Attn: Pauline Thorndike, Review Officer
550 Main Street RM 10-524
Cincinnati, OH 45202-3222
Phone: (513) 684-6212
Fax: (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:

DC RCVD_08/29/2011_4/4

Public Notice

U S Army Corps
of Engineers
Huntington District

In reply refer to Public Notice No. **LRH-2010-895-OHR**

Issuance Date: DEC 0 8 2011

Stream: **Unnamed tributaries to Muddy Creek**

Closing Date: JAN 0 9 2012

Please address all comments and inquiries to:
U.S. Army Corps of Engineers, Huntington District
ATTN: CELRH-OR-FN Public Notice No. (*reference above*)
10557 McKelvey Road
Cincinnati, Ohio 45240-3929
Phone: (513) 825-2752

PUBLIC NOTICE: The purpose of this public notice is to inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest. We hope you will participate in this process.

REGULATORY PROGRAM: Since its early history, the United States Army Corps of Engineers (USACE) has played an important role in the development of the nation's water resources. Originally, this involved construction of harbor fortifications and coastal defenses. Later duties included the improvement of waterways to provide avenues of commerce. An important part of our mission today is the protection of the nation's waterways through the administration of the USACE Regulatory Program.

SECTION 10: The USACE is directed by Congress under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) to regulate all work or structures in or affecting the course, condition or capacity of navigable waters of the United States (U.S.). The intent of this law is to protect the navigable capacity of waters important to interstate commerce.

SECTION 404: The USACE is directed by Congress under Section 404 of the Clean Water Act (33 USC 1344) to regulate the discharge of dredged and fill material into all waters of the U.S., including wetlands. The intent of the law is to protect the nation's waters from the indiscriminate discharge of material capable of causing pollution and to restore and maintain their chemical, physical and biological integrity.

TO WHOM IT MAY CONCERN: The following application has been submitted for a Department of the Army Permit under the provisions of Section 404 of the Clean Water Act. This notice serves as the USACE's request to the Ohio Environmental Protection Agency to act on Section 401 Water Quality Certification for the following application.

APPLICANT: Metropolitan Sewer District of Greater Cincinnati (MSDGC)
1600 Gest Street
Cincinnati, Ohio 45204

LOCATION: The proposed project is located on an unnamed tributary to Muddy Creek locally known as Schaible Creek (Stream 2) and its three unnamed tributaries (Streams 3, 4 and 5) on a 7.2-acre parcel of land southwest of the intersection of Werk Road and Westbourne Drive in Green Township, Hamilton County, Ohio. Latitude 39.1407, Longitude -84.6319.

DESCRIPTION OF PROPOSED WORK: The applicant proposes to discharge fill material into waters of the U.S. to facilitate the construction of the Werk and Westbourne Enhanced High Rate Treatment (EHRT) Facility. EHRT facilities use physical-chemical processes to treat wastewater instead of the biological processes used by more conventional wastewater treatment plants. The proposed EHRT facility would provide treatment of wet weather wastewater overflows which discharge from the combined sewer overflow (CSO) located on Stream 2 at the northern boundary of the project site (CSO 522). The applicant proposes to discharge an estimated 14,500 cubic yards of concrete and clean native soil into approximately 800 linear feet of intermittent Stream 2, 146 linear feet of ephemeral Stream 3 and 122 linear feet of ephemeral Stream 4 in association with the construction of the EHRT facility and associated influent and effluent channels. Additionally, approximately 370 cubic yards of clean native soil would be discharged into 124 linear feet of ephemeral Stream 5 in association with site grading. The project would include the construction of an EHRT facility on Stream 2 with a 350 linear-foot concrete lined influent channel to direct overflows from CSO 522 to the facility, and a 150 linear-foot concrete lined effluent channel to convey treated flow from the facility back to Stream 2. A 290 linear-foot concrete lined bypass channel would be constructed along the eastern side of the EHRT facility to convey normal flow during non-wet weather conditions. The project would result in impacts to a total of 1,192 linear feet of streams. The applicant's stated purpose is to construct a facility for the storage and treatment of the majority of the wet weather overflows from CSO 522 in order to comply with Section 301 of the Clean Water Act to reduce releases of untreated wastewater.

Plans of the proposal are attached to this notice. Additional project information may be accessed via the internet at: http://www.projectgroundwork.org/projects/werkwestbourne/about.htm

AVOIDANCE AND MINIMIZATION: In evaluating a project area containing waters of the U.S., consideration must be given to avoiding impacts on these sites. A total of approximately 1,066 linear feet of intermittent stream and 392 linear feet of ephemeral streams subject to Section 404 Clean Water Act regulation exist on the project site. According to the applicant, alternative plans were considered, including alternative locations for the EHRT facility. The applicant has stated that impacts to waters of the U.S. are unavoidable due to the necessity to intercept the flow from CSO 522, the facility size required to treat the quantity of sewage overflow from CSO 522 (a 180-foot by 300-foot facility), and the slope constraints of the site. If waters of the U.S. cannot be avoided, impacts must be minimized. The proposed project has been designed to minimize impacts by avoiding impacts to the lower 266 linear feet of Stream 2. The applicant has indicated that impacts to the upper reach of Stream 2 and Streams 3, 4 and 5 are unavoidable to intercept and treat the overflows from CSO 522.

COMPENSATORY MITIGATION PLAN: The applicant has submitted a description of a conceptual mitigation plan to compensate for impacts to the intermittent stream and three ephemeral tributaries. The applicant proposes to compensate for unavoidable impacts to waters of the U.S. by enhancing habitat downstream of the EHRT facility through erosion control measures and other off-site mitigation measures. No additional details are available at this time.

WATER QUALITY CERTIFICATION: A Section 401 Water Quality Certification is required for this project. It is the applicant's responsibility to obtain certification from the Ohio Environmental Protection Agency.

HISTORIC & CULTURAL RESOURCES: The National Register of Historic Places (NRHP) has been consulted and it has been determined there are no properties currently listed on the NRHP which would be directly affected by the proposed work. A Phase I Cultural Resources Survey has been performed by the applicant for the 7.2-acre site. Our office is currently reviewing this survey. A copy of this public notice and a copy of the Phase I Cultural Resources Survey will be furnished to the State Historic Preservation Office for their review. Comments concerning archaeological sensitivity of the project area should be based on collected data.

THREATENED & ENDANGERED SPECIES: The project is located within the known or historic range of the following proposed endangered (PE), threatened, or endangered (E) species: Indiana bat (E), running buffalo clover (E), pink mucket pearly mussel (E), and fanshell (E), rayed bean (PE), sheepnose (PE) and snuffbox mussels (PE). The Huntington District has consulted the most recently available information and information provided by the applicant, including results of a habitat assessment, and has determined that the streams lack habitat suitable for the fanshell, rayed bean, sheepnose, snuffbox and pink mucket pearly mussels; therefore the project would have no effect on these mussel species. The project site is a combination of wooded area dominated by young trees and honeysuckle and open disturbed field. The site is surrounded by residential development. Based on the location and lack of suitable habitat, it has been determined the project may affect, but is not likely to adversely affect running buffalo clover. Based on limited suitable habitat, the Huntington District has determined the project may affect, but is not likely to adversely affect the Indiana bat, provided the applicant does not cut any suitable habitat trees (if present) during the designated summer roosting months for this species. Based on this information, the proposed project is not likely to adversely affect the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of habitat of such species which has been determined to be critical. This public notice serves as a request to the United States Fish and Wildlife Service for any additional information they may have on whether any listed or proposed to be listed endangered or threatened species may be present in the area which would be affected by the activity, pursuant to Section 7(c) of the Endangered Species Act of 1972 (as amended).

PUBLIC INTEREST REVIEW AND COMMENT: Any person who has an interest that may be adversely affected by the issuance of a permit may request a public hearing. The request must be submitted in writing to the District Engineer on or before the expiration date of this notice and

must clearly set forth the interest which may be adversely affected and the manner in which the interest may be adversely affected by the activity. This application will be reviewed in accordance with 33 CFR 320-332, the Regulatory Program of the USACE, and other pertinent laws, regulations, and executive orders. Our evaluation will also follow the guidelines published by the United States Environmental Protection Agency pursuant to Section 404(b) (1) of the Clean Water Act. Interested parties are invited to state any objections they may have to the proposed work. The decision whether to issue a permit will be based on an evaluation of the probable impact including cumulative impacts of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefit that reasonably may be expected to accrue from the proposal must be balanced against its reasonably foreseeable detriments. All factors that may be relevant to the proposal will be considered including the cumulative effects thereof; of those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership and, in general, the needs and welfare of the people. Written statements on these factors received in this office on or before the expiration date of this public notice will become a part of the record and will be considered in the final determination. A permit will be granted unless its issuance is found to be contrary to the public interest.

SOLICITATION OF COMMENTS: The USACE is soliciting comments from the public; Federal, state, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of this proposed activity. For accuracy and completeness of the administrative record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition. Any comments received will be considered by the USACE to determine whether to issue, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

CLOSE OF COMMENT PERIOD: All comments pertaining to this Public Notice must reach this office on or before the close of the comment period listed on page one of this Public Notice.

If no comments are received by that date, it will be considered that there are no objections. Comments and requests for additional information should be submitted to:

Ms. Denise Marmer, Project Manager
North Regulatory Section
Cincinnati Field Office
10557 McKelvey Road
Cincinnati, Ohio 45240-3929.

Please note names and addresses of those who submit comments in response to this public notice become part of our administrative record and, as such, are available to the public under provisions of the Freedom of Information Act. Thank you for your interest in our nation's water resources. If you have any questions concerning this public notice, please contact Ms. Denise Marmer of the North Regulatory Section, Cincinnati Regulatory Field Office, at 513-825-2752 or by email at denise.m.marmer@usace.army.mil.

Ginger Mullins

Ginger Mullins, Chief
Regulatory Branch

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MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Project Location Map
Figure 1 of 8

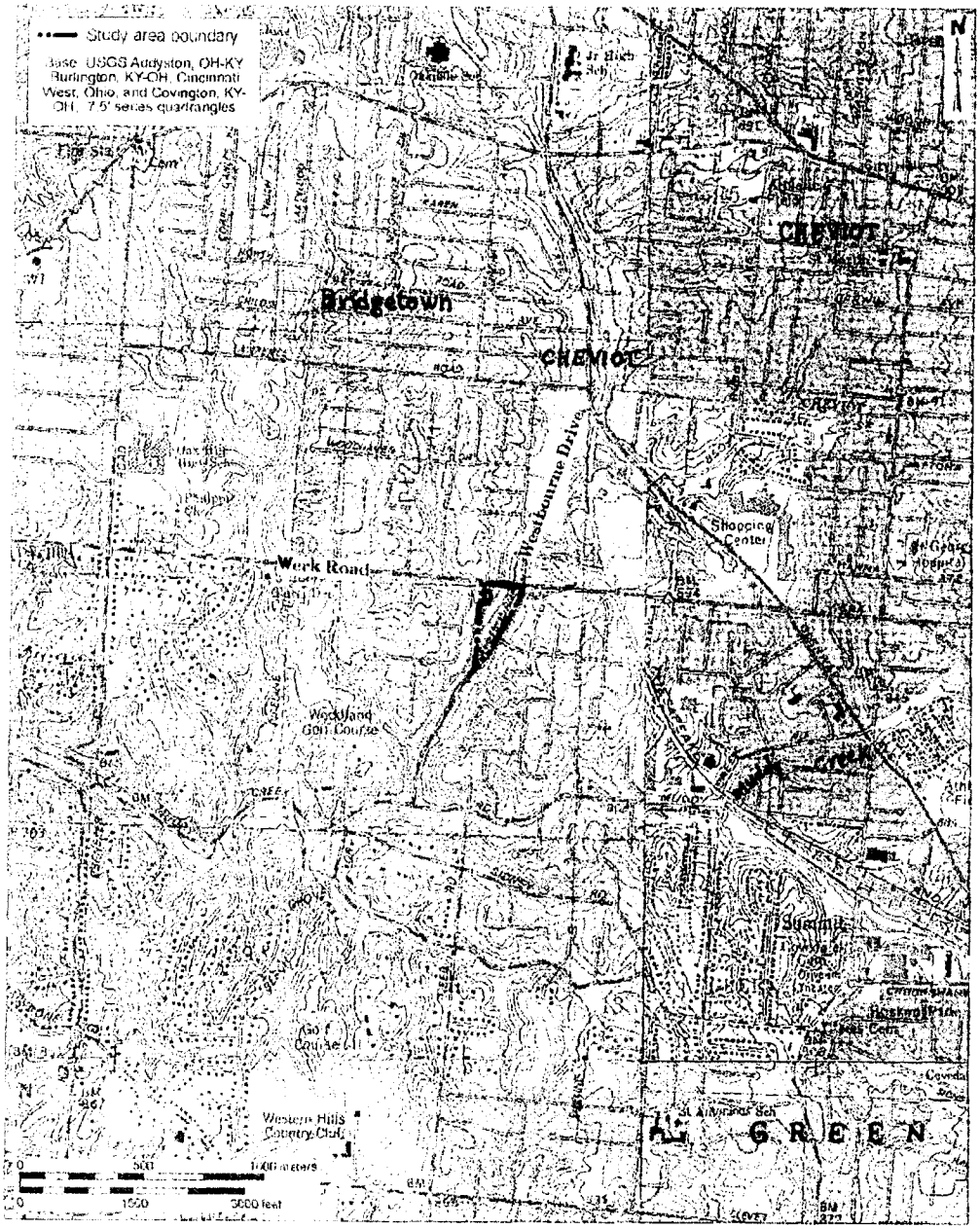
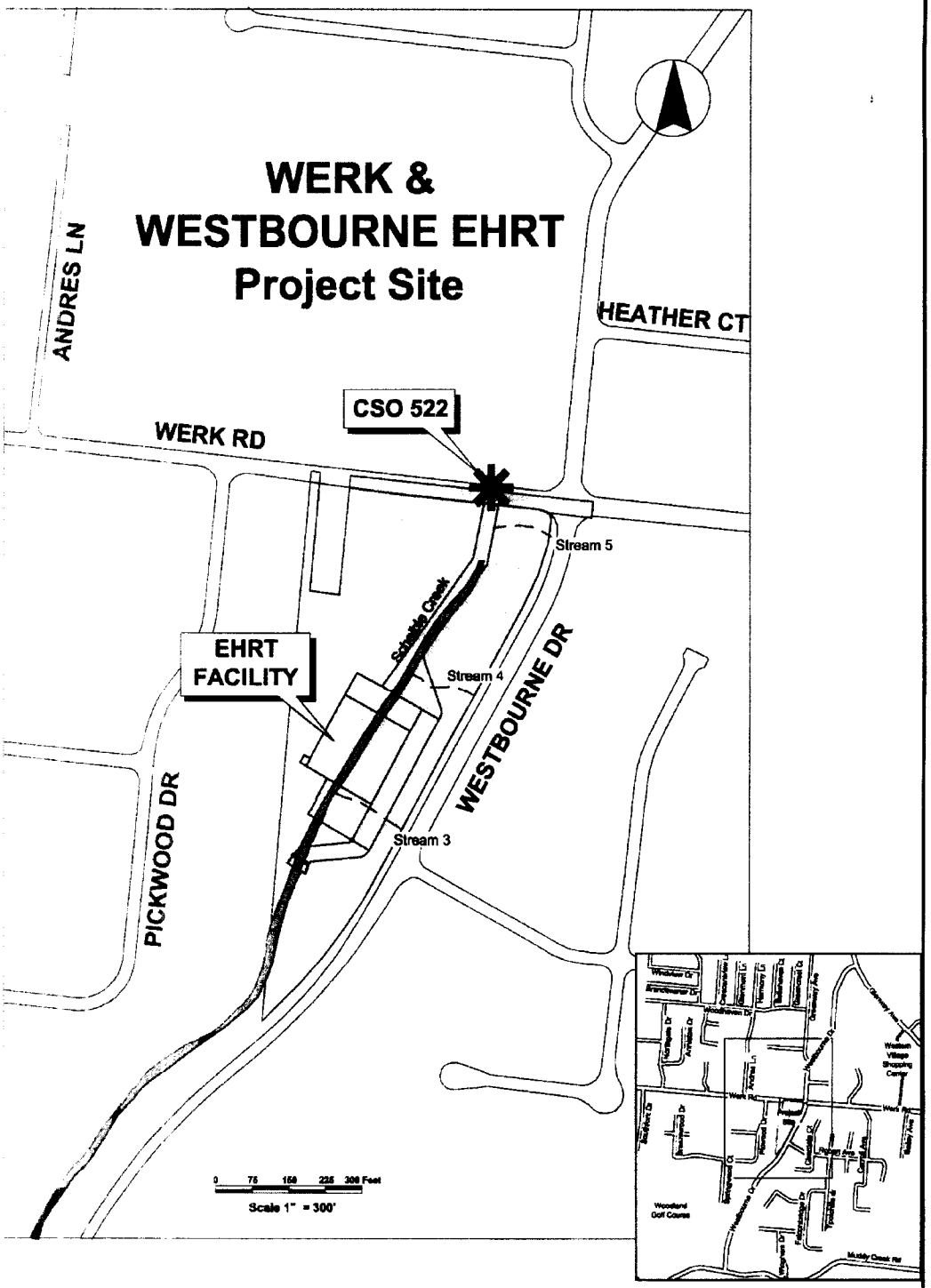


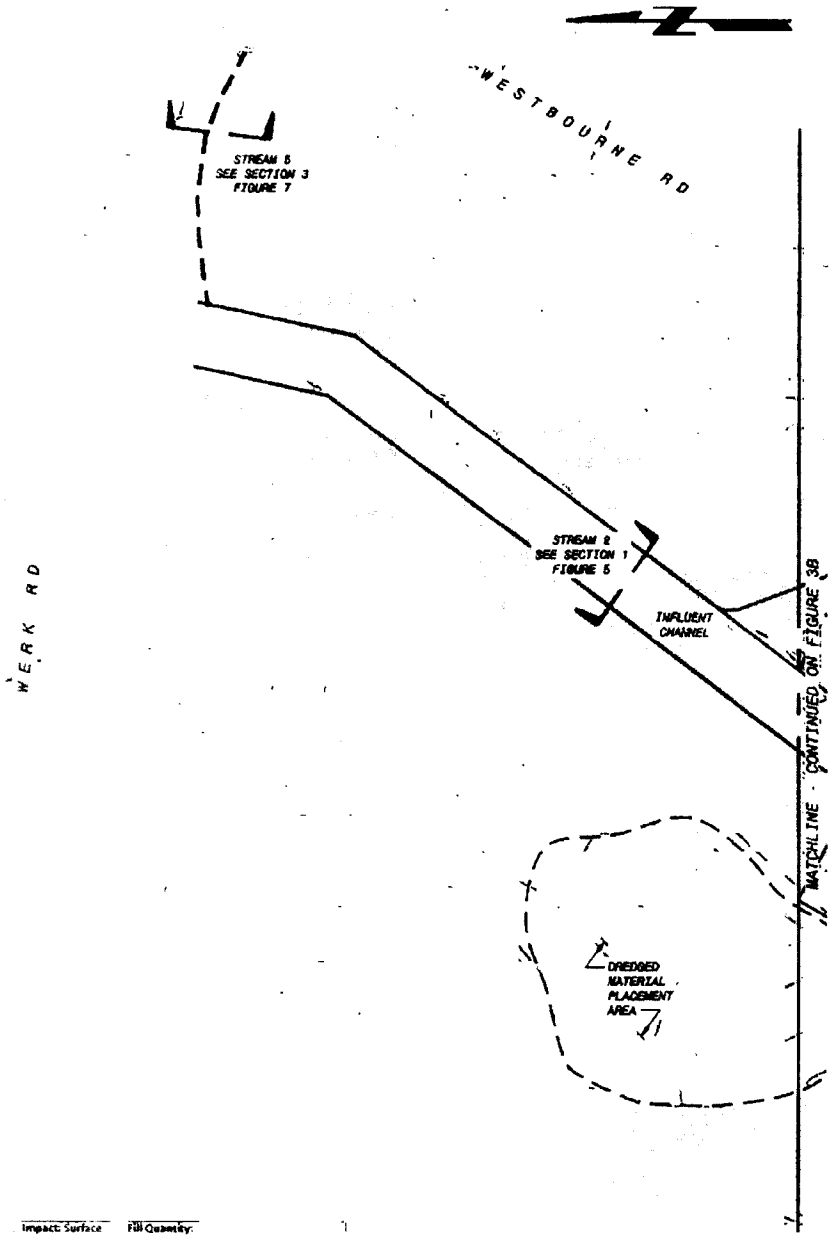
Figure 1. Portions of the Addyston, OH-KY; Burlington, KY-OH; Cincinnati West, Ohio; and Covington, KY-OH quadrangles (USGS 7.5' topographic maps) showing the proposed Werk - Westbourne EHRT Facility study area.

MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Site Development Plan
Figure 2 of 8



BLACK & VEATCH Building a world of difference.	METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI WERK & WESTBOURNE EHRT FACILITY	OCTOBER 2011
168242	VICINITY MAP	FIGURE 2

MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Site Plan - Northern Section
Figure 3 of 8



Stream Name	Impact: Linear Feet	Impact: Surface Area	Fill Quantity: Cubic Yard	Fill Material
				Granular Material
Schaitle Creek	1,066	0.196 ac	13,704	Construction Material
				Granular Material
Stream 3	142	438 sq ft	438	Construction Material
				Granular Material
Stream 4	122	366 sq ft	366	Construction Material
Stream 5	126	372 sq ft	372	Granular Material

80' 40' 0 80' 160'

1"=80'

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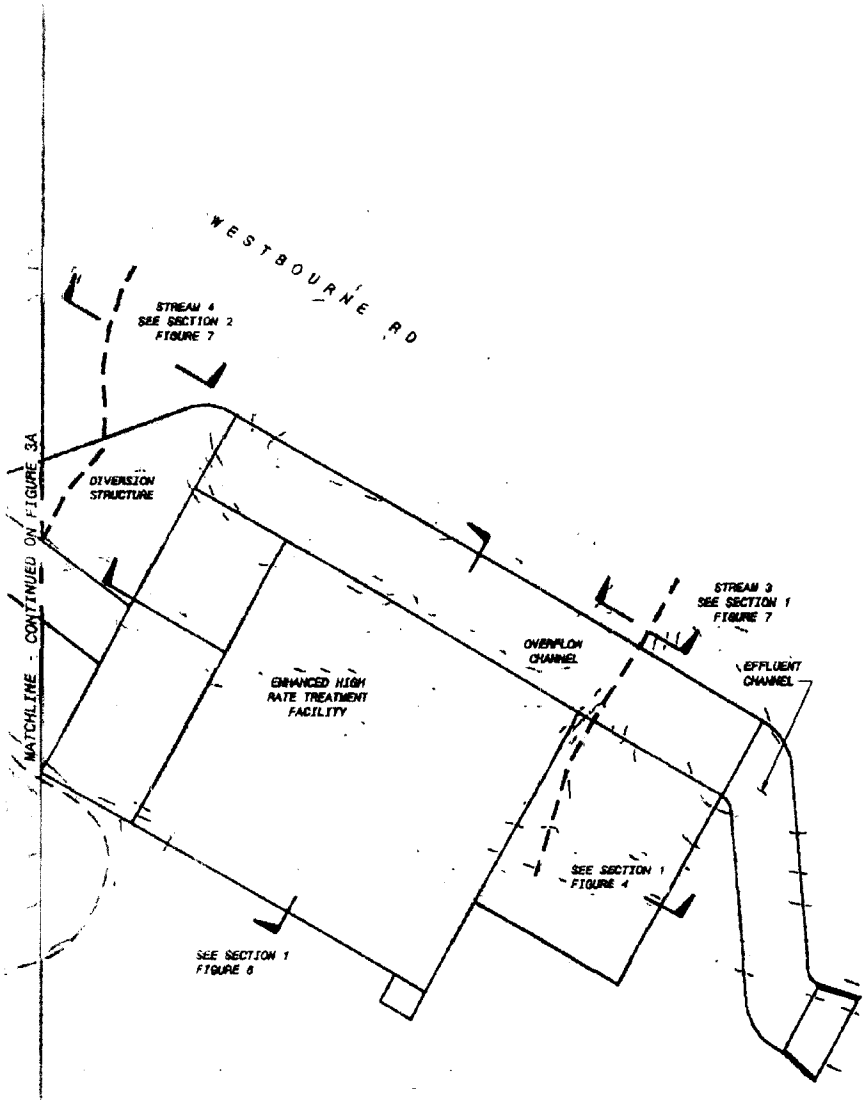
168242	PRELIMINARY SITE PLAN	FIGURE 3A

FD6000

MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Site Plan - Southern Section
Figure 4 of 8



Stream Name	Impact: Linear Feet	Impact: Surface Area	Fill Quantity Cubic Yard	Fill Material
				Granular Material
Schable Creek	1,060	0.196 ac	13,704	Construction Material
				Granular Material
Stream 3	14[illegible]	438 sq ft	438	Construction Material
				Granular Material
Stream 4	12[illegible]	366 sq ft	366	Construction Material
Stream 5	12[illegible]	372 sq ft	372	Granular Material

80' 40' 0 80' 160'

1"=80'

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METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI
WERK & WESTBOURNE EHRT FACILITY

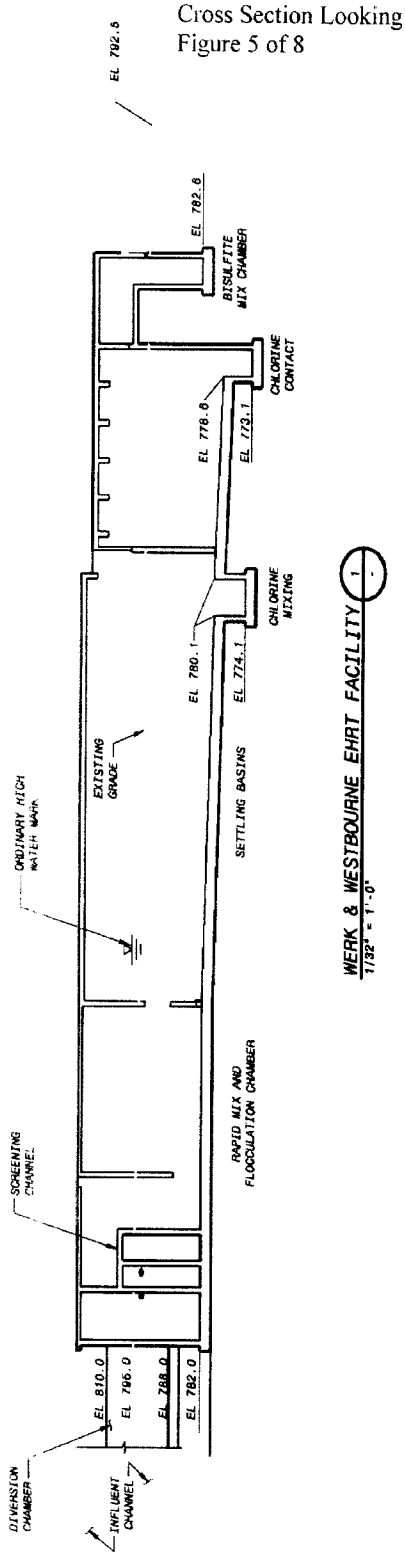
OCTOBER 2011

PRELIMINARY SITE PLAN

FIGURE 3B

FD6000

MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Cross Section Looking East
Figure 5 of 8



WERK & WESTBOURNE EHRT FACILITY 1/32" = 1'-0"

METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI
WERK & WESTBOURNE EHRT FACILITY

SECTION 1

OCTOBER 2011

FIGURE 4

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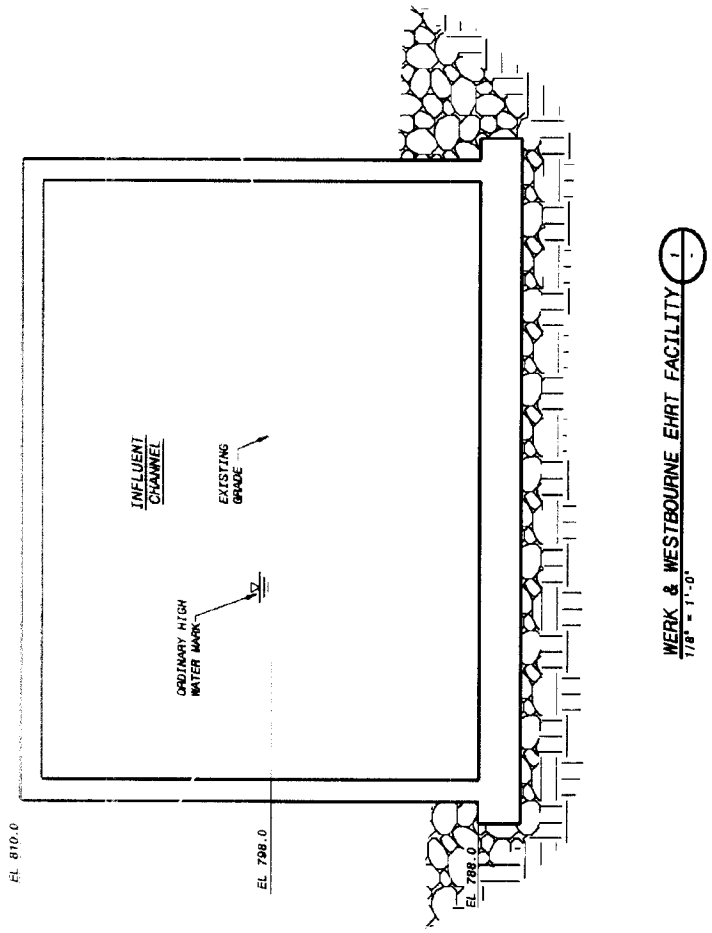
MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Cross Section Influent Channel
Figure 6 of 8



METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI
WERK & WESTBOURNE EHRT FACILITY

SECTION 1

OCTOBER 2011

FIGURE 5

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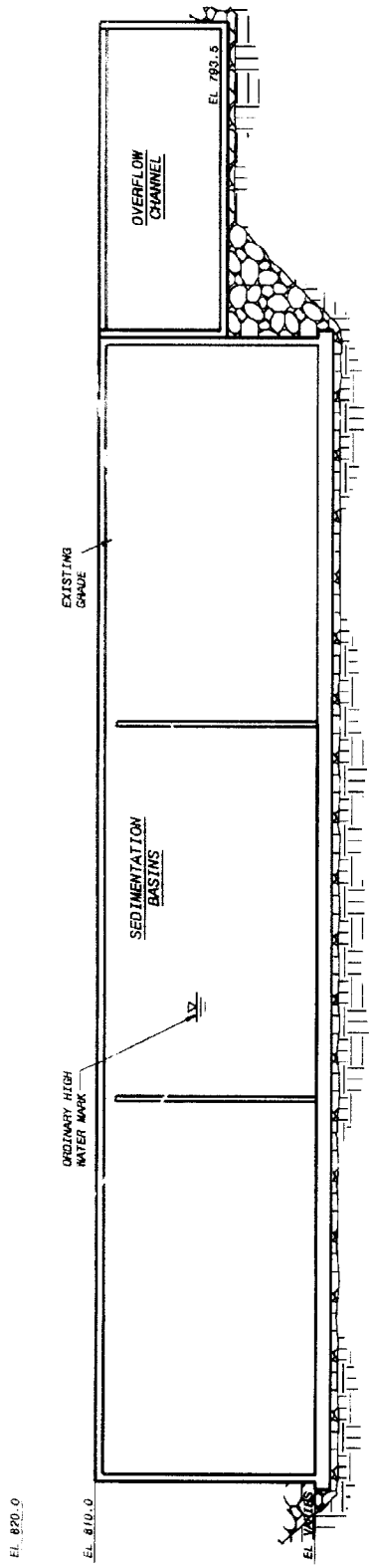
MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Cross Section EHRT, Overflow Channel
Figure 7 of 8



WERK & WESTBOURNE EHRT FACILITY 1

METROPOLITAN SEWER DISTRICT
OF GREATER CINCINNATI
WERK & WESTBOURNE EHRT FACILITY

OCTOBER 2011

FIGURE 6

SECTION 1

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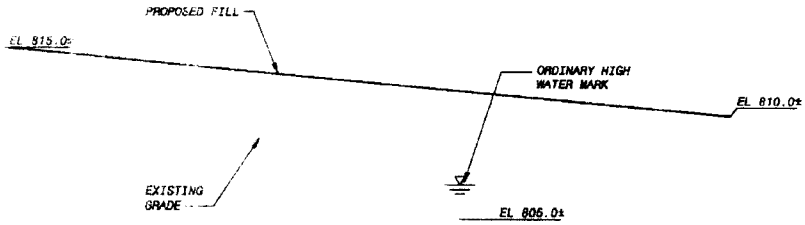
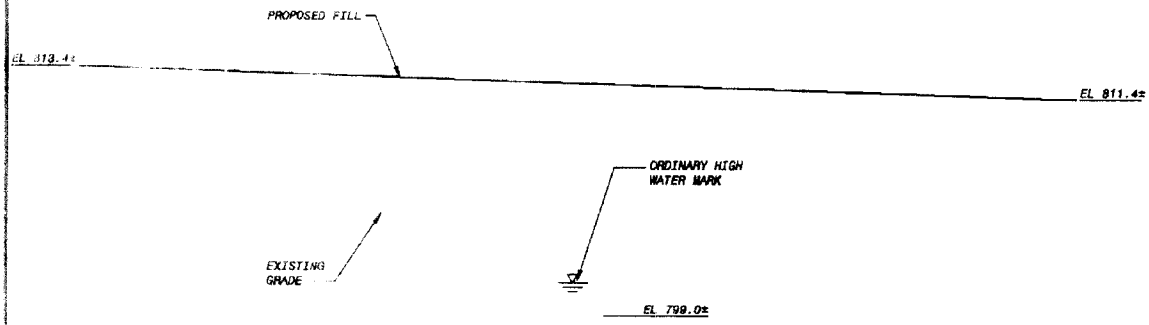
MSDGC EHRT Facility
Un Trib Muddy Creek 2010-895-OHR
Hamilton County, Ohio
Cross Sections Streams 3, 4 and 5
Figure 8 of 8



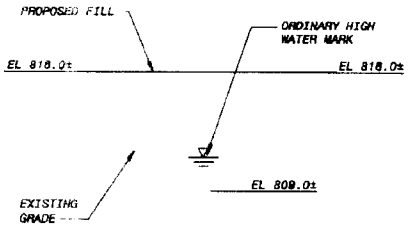
STREAM 3 CROSS SECTION

SECTION 1
1" = 10'-0"



STREAM 4 CROSS SECTION

SECTION 2
1" = 10'-0"



STREAM 5 CROSS SECTION

SECTION 3
1" = 10'-0"

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168242	SECTIONS	FIGURE 7