Buried Former Canal Interim Remedial Measure Design (30 Percent) Work Plan

TRW Automotive U.S. LLC

Former TRW Union Springs Facility

3 December 2019

Project No.: 0496229

The business of sustainability

ERM

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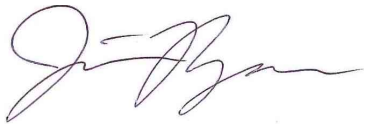
Former TRW Union Springs Facility

I, James Ryan, P.E. am currently a New York State registered professional engineer and that this Buried Former Canal Interim Remedial Measure Design (30 Percent) Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10).



_____

James Ryan, P.E.
Project Engineer
ERM Consulting & Engineering, Inc.
Date: 3 December 2019

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APPENDIX A BURIED FORMER CANAL 30 PERCENT REMEDIAL DESIGN DRAWINGS

ACRONYMS AND ABBREVIATIONS

Name	Description
AA	Alternative analysis
AOC	area of concern
BCP	Brownfield Cleanup Program
CCR	Construction Completion Report
COC	constituents of concern
CVOC	chlorinated volatile organic compound
cDCE	cis-1,2-dichloroethene
DER	Division of Environmental Remediation
DWP	Design Work Plan
ERM	ERM Consulting & Engineering, Inc.
HGU	hydrogeological unit
IRM	Interim Remedial Measure
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
OSHA	Occupational Safety and Health Administration
PAH	polycyclic aromatic hydrocarbons
PCN	polychlorinated naphthalenes
PFOA	perfluorooctanoic acid
ppt	parts per trillion
PRB	permeable reactive barrier
RI	remedial investigation
TCE	trichloroethene
TRW	TRW Automotive U.S. LLC
VC	vinyl chloride

1. INTRODUCTION

ERM Consulting & Engineering, Inc. (ERM) prepared this Interim Remedial Measure (IRM) Design Work Plan (DWP) on behalf of TRW Automotive U.S. LLC (TRW) for the Former Union Springs Facility at 107 Salem Street, Union Springs, New York (Figure 1; hereafter called the "site"). TRW entered into a Brownfield Cleanup Agreement with the New York State Department of Environmental Conservation (NYSDEC) on 7 January 2016 as a volunteer. The portion of the formerly owned TRW properties currently regulated under the Brownfield Cleanup Agreement has been assigned Brownfield Cleanup Program (BCP) Site Number C706019 by the NYSDEC.

The site was developed in approximately 1790 and has a long industrial history. The oldest building on the site is the former Mill Building, which was constructed in the 1830s. Beginning in 1932, the site was used by several companies for manufacturing electrical components for the automotive industry, with TRW operating the facility from 1990 through 1997. LPW Development, LLC acquired the facility and associated properties from TRW in 1997. Since acquiring the property, LPW Development, LLC has been leasing the facility to various manufacturing and commercial tenants.

From December 2015 to September 2017, ERM conducted a remedial investigation (RI) to satisfy the requirements of the NYSDEC Division of Environmental Remediation (DER) Technical Guidance for Site Investigation and Remediation (DER-10; NYSDEC 2010). A draft RI and Alternatives Analysis (AA) Report, which summarized the findings of the RI (hereafter called the "Report") was prepared and submitted to the NYSDEC and New York State Department of Health (collectively, Regulators) for review on 13 April 2018. The Regulators provided a comment letter to the Report on 17 September 2018. ERM is preparing a response and revising the Report based on comments, follow-up discussions, and correspondence with the NYSDEC; revisions will include removing the remedial alternatives analysis section of the Report. TRW intends to manage portions of the site using Interim Remedial Measures (IRMs) to expedite site remediation in some areas of concern (AOCs) and to pilot test remedial technologies to support evaluation of proposed remedial strategies for other AOCs identified in the Report (Figure 2). This DWP presents the remedial goals, design basis, and preliminary design (30 percent) for the buried portion of the Canal AOC. Contamination within the open portion of the Canal AOC will be addressed under a separate cover. Separate pilot-test work plans and an IRM Work Plan were previously submitted to the NYSDEC for the North Field AOC (ERM 2019a); the South Field AOC (ERM 2019b); and the IRM Work Plan (ERM 2019c).

1.1 Purpose and Objectives

The remedial action objectives (RAOs) for the IRM in the Canal AOC include:

Groundwater

1) Prevent contact with or inhalation of chlorinated volatile organic compounds (CVOCs) in contaminated groundwater
2) Prevent the discharge of contaminated groundwater to surface water

Soil

1) Prevent ingestion or direct contact with contaminated soil
2) Prevent intermedia transfer of contaminants that would result in groundwater, surface water or sediment contamination

The proposed means to achieve the ROAs includes the removal of source material and construction of a permeable reactive barrier (PRB) that will support biological reductive dechlorination of CVOCs in groundwater.

This document addresses required elements for a Remedial DWP established in Sections 5.1 and 5.2 of the NYSDEC's DER-10 (NYSDEC 2010).

1.2 Nature and Extent of Contamination by AOC

A detailed account of the nature and extent of contamination at the site is presented in the Report and in the Comprehensive Report: Site Characterization and Remedial Investigation, dated July 2015 (ERM 2015a). For the purposes of this DWP, a brief summary of the characteristics and constituents of concern (COCs) proximal to the proposed IRM area is presented below.

1.2.1 Buried Canal Soil

As manufacturing expanded at the site, several additions were made to the building starting in the 1950s. To accommodate these expansions, a portion of the canal and the area north of the mill building were filled to extend Howland Street and to construct the shipping and receiving parking lot (Figure 2).

In the buried portion of the canal, several inches to several feet of decayed organic material is present above the lacustrine silt and clay and is overlain by fill material, including industrial and construction debris, coal, reworked native soil, and topsoil. Also, within the buried portion of the former canal, ERM has observed limestone blocks approximately 2 to 3 feet in width set about 2 to 3 feet apart oriented northwest to southeast; these blocks are believed to have been used to construct the canal.

Polycyclic aromatic hydrocarbons (PAHs), CVOCs, polychlorinated naphthalenes (PCNs), pesticides, and metals were detected within the top 20 feet of soil at concentrations above applicable regulatory criteria in the buried portion of the Canal. The likely source of these impacts is the historical filling of the buried portion of the former canal. The lateral and vertical extents of the COC impacts in soil were defined in the RI (ERM 2018). COC concentrations in soil in the Canal AOC were modeled using Environmental Visualization System software; soil exceeding restricted-commercial soil cleanup objectives was used to define the footprint of the proposed remedial excavation (Appendix A, Sheet C-101).

1.2.2 Buried Canal Groundwater

Contamination present within the materials used to backfill the canal are one of two sources that impact shallow groundwater (i.e., defined as less than 20 feet below ground surface) quality in this AOC. The second source is dissolved phase CVOCs that migrate into the Canal AOC with groundwater flow from the South Field AOC. Groundwater within the buried portion of the former canal flows to the west and discharges to the open portion of the canal, as discussed in the Report. Upward vertical hydraulic gradients limit the potential for contaminated shallow groundwater to migrate downward. ERM is proposing to monitor the limited impacts to deeper groundwater over time (ERM 2019c).

Evidence of significant intrinsic biodegradation was observed within the South Field and Canal AOCs, based on the presence of relatively high concentrations in groundwater of the breakdown products cis-1,2-dichlorethene (cDCE), vinyl chloride (VC), ethane, and ethene concentrations, as compared to the parent compound, trichloroethene (TCE).

PAHs and PCNs were detected in shallow groundwater at concentrations above applicable regulatory criteria. These COCs do not typically generate large-scale groundwater plumes because they exhibit low solubility and PAHs have a strong tendency to sorb to organic particulates present in soil.

Perfluorooctanoic acid (PFOA) was detected in groundwater collected from two monitoring wells within the Canal AOC. There is currently no groundwater standard or guidance value for PFOA in New York State. The United States Environmental Protection Agency has issued a drinking water health advisory for total PFOA and perfluorooctanesulfonic acid concentration of 70 nanograms per liter (or parts per trillion [ppt]), PFOA exceeded this guidance with a maximum concentrations of 110 ppt.

2. IRM DESIGN INVESTIGATION AND SUBMITTAL SCHEDULE

2.1 Pre-Design Geotechnical Investigation and Determination of Excavation Benching/Shoring/Sheeting System

Following review and approval of the conceptual design described herein and prior to finalization of the final design, ERM will conduct a pre-design geotechnical investigation, which will determine soil strength (cohesion, C, and friction angle, Φ) and overall soil properties (e.g., grain size distribution, etc.) for the target excavation area. This strength and property information is required to design the excavation support system (e.g., benching, sheeting/shoring, etc.) in accordance with *Occupational Safety and Health Administration (OSHA) 1926 Subpart P 1926.651 Safety and Health Regulations for Construction, Specific Excavation Requirements*.

ERM will also perform a safety, value, cost and constructability evaluation for various excavation support systems (e.g., benching, sheet piles, or other earth-supporting systems) to enable selection of one that will meet the OSHA standard and be protective of nearby site infrastructure.

All work will be conducted in accordance with the site's Health and Safety Plan and Community Air Monitoring, which were included in the NYSDEC-approved Remedial Investigation Work Plan (RIWP). All drilling will follow the protocols outlined in the RIWP (ERM, 2015b)

2.2 Submittal Schedule

A 30 percent design is included in this DWP as Appendix A. Following approval of this DWP by the Regulators, an IRM Work Plan will be prepared, which will include the Pre-Final (95 percent) IRM Design and submitted to the Regulators for review. The 95 percent design will incorporate responses to any pertinent Regulator comments and consist of a set of biddable quality plans and specifications. Following Regulator approval of the DWP and 95 Pre-Final IRM Design, a Final (100 percent) IRM Design Work Plan will be prepared. Supporting documents (e.g., Quality Assurance Plan, Health and Safety Plans, an updated Community Air Monitoring Plan including odor management provisions, Health and Safety Plan, etc.) will be provided in the Final IRM Work Plan.

Following completion of the IRM construction activities, an as-built drawing set will be completed and included in a Construction Completion Report (CCR). The CCR will provide a summary of the completed IRM activities described in the Final IRM Design Work Plan, description of significant deviations from the DWP, results of closure sampling activities, results of waste characterization sampling, and copies of key documents (e.g., photo documentation, field logs, waste manifests, clean fill documentations, air monitoring data, analytical data, analytical data validation, etc.).

3. SCOPE OF PROPOSED IRM

The following subsections describe the planned IRM work for the buried portion of the Canal AOC. Contaminated soil within the buried portion of the canal will be excavated and disposed of off-site. The excavation area will be restored to the approximate original surface grade using imported and amended clean fill materials. The fill materials will consist of a bioremediation amendment to create a PRB below the water table, structural fill, and top-soil, where applicable. In addition, existing storm water features and the embankment at the head of the open portion of the canal will be restored. Details of the proposed IRM activities are provided in the subsections below and depicted on the drawings in Appendix A.

3.1 Buried Former Canal Excavation Limits and Water Management

The detailed civil engineering design will be prepared to address backfill and grading, and storm water requirements. A brief discussion of key civil design concepts is presented below and depicted on the 30 percent design drawing C-101 (Appendix A).

Profile 1—Longitudinal Alignment

This design profile addresses the backfill and restoration along the centerline of the excavation. Excavation will be implemented from the roadway edge at nominally station 2+30 and terminate at the boundary where the buried canal intersects with the existing open canal at nominally station 30 and generally over a 200-foot length.

Profile 2, 3, 4—Transverse Alignment

The deeper excavations are presented in the transverse profiles. The geotechnical design and benching/shoring/sheeting systems will address these excavation sidewalls, which will reach a depth of up to 15 feet.

Water Management

ERM will develop a water management approach that complies with NYSDEC permitting requirements during the detailed design and permitting stage. The presumptive approach, which may be adjusted pending permitting requirements, follows. Maintenance sumps will be installed proximal to the operable excavation / remediation area. Water extracted from the excavation area will be containerized as it is generated in one or more fractionation tanks, pending characterization per permit requirements. Wastewater characterization will include site contaminants of concern, including PCNs, VOCs, SVOCs (including 2-chloronaphthalene), pesticides, and any other analytes required by the permit. If non-compliant sample results are obtained, the excavation water associated with those samples would be treated to enable permit compliance and either conveyed to the Village's wastewater treatment plant (WWTP) or discharged to surface water, if compliant with the permit requirements. ERM will coordinate with the Village to determine acceptable flow rates, discharge limits, etc. and will not discharge at rates greater than allowed by the Village or at times when the WWTP is experiencing flow near, at, or over its flow capacity. Additional details on the water management approach will be included in the 95 percent design, and will specify acceptable flow rates, discharge limits, etc.

ERM will structure the bid form to retain flexibility around this approach. Specifically, the base bid pay items would include requirements around excavation water maintenance, dewatering, containerization, characterization and verification of permit compliance. An alternate pay item would also be integrated which would require contingent mobilization and operation of a water treatment system to treat excavation / soil management pad water, if needed for compliance with permit requirements.

3.2 Storm Water Management

The storm water management systems will be designed to control and convey the runoff as well as run-on from adjacent areas. Storm water management controls include temporary erosion controls to be in service during construction and permanent features for post-construction. The storm water management design, including construction-phase and permanent controls, will be prepared in accordance with the *New York State Stormwater Management Design Manual (January 2015) and* the New York State Standards and Specifications for Erosion and Sediment Control (November 2016).

Existing utilities will be replaced, including:

- The 10-inch high density polyethylene storm sewer, which runs along this profile alignment
- The three 30-inch diameter corrugated steel pipe culverts, which convey storm water flows beneath the existing roadway (including enough flow capacity in the event that the mill pond embankment were to fail)

The design of the proposed culverts to replace the 10-inch high density polyethylene storm sewer will be developed to accommodate a 100-year, 24-hour storm event. Further, the storm water management system will be designed to safely convey flows down the embankment slope and to the outfall to the open portion of the canal. These culverts will also be specified to handle the roadway stresses and loadings.

3.3 Embankment Grading Concept Design

Grading Design

The proposed grading will be provided in the Final IRM Design Work Plan. This grading will be developed with maximum slopes of 3 Horizontal to 1 Vertical (3H:1V) or 2H:1V if slopes are lined with rip rap, but it is anticipated that maximum 3H:1V slopes will be designed to avoid the use of rip-rap stone. This slope and grading would govern the slopes from the termination of excavation at the open canal to the Howland Street access road. The roadway alignment will then be adjusted to accommodate the slope grading as necessary. Grading along the eastern side of the culvert will be prepared to integrate the necessary swale to convey storm water to the replacement culverts—also sized for the 24-hour 100-year return period storm. Grading on the eastern end of this profile will also be designed to tie into the existing access road. The design profiles are provided on Drawing C-101.

3.4 Permeable Reactive Barrier Emplacement

A PRB will be installed as part of the backfill of the buried portion of the Canal AOC. The PRB will consist of a blend of aggregate and wood mulch placed at the bottom of the excavation, below the groundwater table. The wood mulch will stimulate biological reductive dechlorination of CVOCs in groundwater within and downgradient of the PRB zone. Details regarding the PRB technology are provided in the Bioremediation Pilot Test Work Plan (ERM 2019b).

3.5 Restoration and Soil Revegetation

Vegetation will be re-established with vegetated soil cover for all construction and adjacent disturbed areas. The top 4 inches of the soil cover will include the necessary amendments to enable the re-establishment of a hardy vegetative stand. Roadways will be graded and re-paved.

3.6 Construction Procurement and Construction Monitoring

The Final Design will include a comprehensive Construction Drawing and Technical Specification package. ERM will prepare the Construction Bid Documents, will assist with bid solicitation, and will provide construction monitoring and documentation.

3.7 Management of Existing Monitoring Wells

Any wells within the excavation area that will not be excavated entirely (i.e., if they extend below the limits of the excavation) will be decommissioned prior to excavation. Any wells within the work zone (excavation areas and support areas) will be protected or decommissioned prior to the start of excavation.

4. PERMITS AND AUTHORIZATIONS

All required permits, exempted permits, and/or authorizations, and any substantive conditions will be addressed in the 95 percent design. The need for the following permits is currently being considered; the list of required permits and permitting authority may modified during completion of the 95% design:

- State Pollutant Discharge Elimination System or Permit equivalence by the NYSDEC
- Excavation and fill within the 100-year floodplain by the Village, if applicable
- Excavation and fill within a waterbody and/or within a wetland by the Army Corps of Engineers (ACOE) and permit-equivalence by the NYSDEC
- Water Quality Certification/ 401 Water Quality Certification by the NYSDEC
- Temporary sanitary sewer relocation and restoration plan review by the Village and NYSDEC's Division of Water
- Hydrant use permit by the Village
- Storm water/ dam overflow under access road plan by the- NYSDEC Division of Water Bureau of Flood Protection and Dam Safety

5. SCHEDULE

Table 1 presents a general schedule of anticipated IRM-related activities. The schedule may be modified based on permit and/or permit-equivalent requirements, acceptable construction windows, or for unforeseen changes in to the project.

6. POST CONSTRUCTION

There will be a monitoring period following the IRM to evaluate the emplaced PRB. Details on post construction monitoring activities will be included in the 95 percent design and will include a plan for monitoring well replacement.

7. REFERENCES

ERM (Environmental Resources Management). 2015a. *Comprehensive Report: Site Characterization and Remedial Investigation, 107 Salem Street, Union Springs, New York*. ERM Project Number 0096370. July 2015.

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_____. 2019a. *Phytoremediation Pilot Test Work Plan, 107 Salem Street, Union Springs, New York*. ERM Project Number 0496229. July 2019.

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_____. 2014. *Screening and Assessment of Contaminated Sediment. Division of Fish, Wildlife and Marine Resources, Bureau of Habitat*. 24 June 2014.

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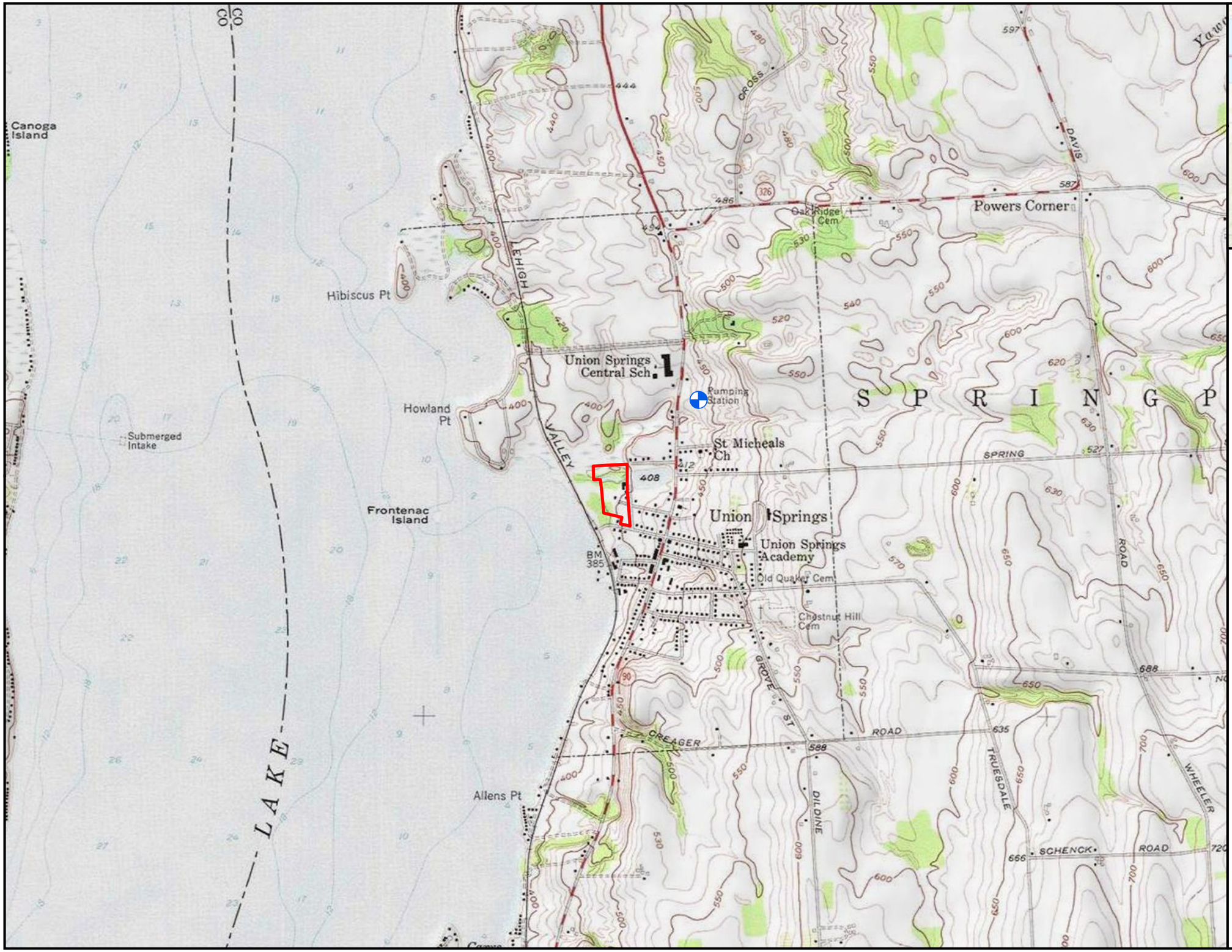
FIGURES



Legend

- Village of Union Springs Water Supply
- Approximate Site Boundary

NOTES:

- Location of Former TRW Union Springs Facility was digitized using aerial photography. Locations are approximate.

N

0 1,000 2,000 3,000 4,000

Feet

Figure 1: Site Location Map
Former TRW Union Springs Facility
Union Springs, New York

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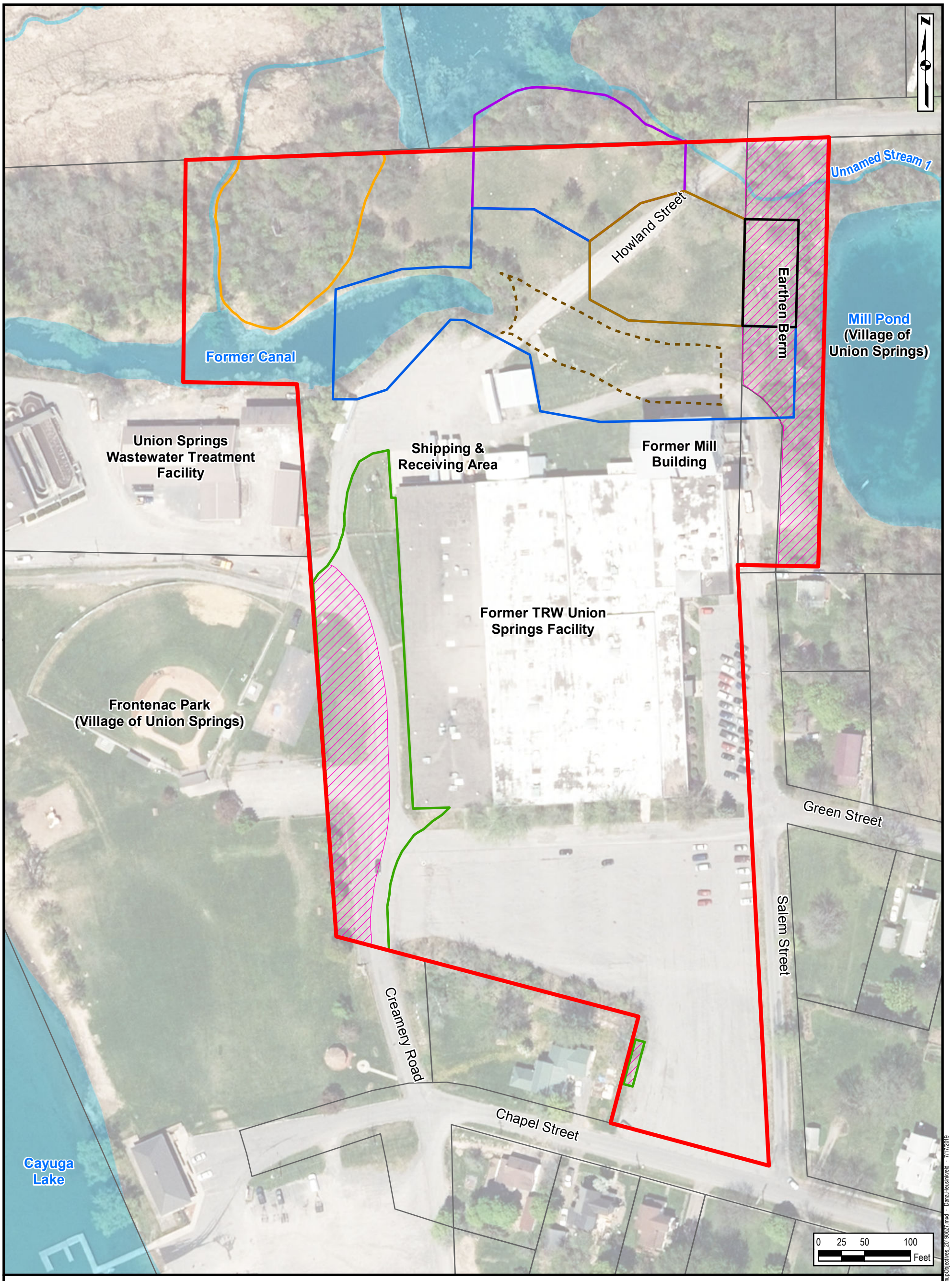


Legend

- Restricted - Residential SCOs
- Buried Portion of Former Canal
- Approximate Site Boundary (Restricted - Commercial SCOs)
- Stream
- Surface Water
- Cayuga County Parcels

Areas of Concern

- Berm
- Former Canal
- North Field
- South Field
- Creamery Road
- Northwest Corner

NOTES:

- SCOs = Soil Cleanup Objectives.
- Soil samples containing one or more COC at a concentration exceeding applicable Soil Cleanup Objectives were defined using the Restricted-Residential or Restricted-Commercial action levels documented in 6NYCRR Part 375 and CP-51 Soil Cleanup Guidance documents.
- The buried portion of the former canal was digitized based on historical maps and photographs. Location is approximate.
- Approximate boundary of former canal based on normal high water conditions.
- Aerial imagery captured in 2015 from New York State.

Figure 2: Area of Concern Layout and Soil Cleanup Objectives
Former TRW Union Springs Facility
Union Springs, New York

ERM

TABLES

TABLE 1
ESTIMATED PROJECT SCHEDULE- CANAL AOC IRM
FORMER TRW FACILITY
UNION SPRINGS, NEW YORK
BCP ID: C706019
ERM PROJECT NUMBER: 0496229

Task No.	Milestone	Milestone Date
1	Submit Buried Former Canal Interim Remedial Measure (IRM) Design (30 Percent) Work Plan for regulatory review	9/23/2019
2	NYSDEC submits comments Former Canal IRM Design (30 Percent) Work Plan	11/7/2019
3	Geotechnical Investigation/ API Design	11/25/2019
4	Submit Buried Former Canal IRM Design (95 Percent) Work Plan for regulatory review	2/28/2020
5	NYSDEC submits comments Former Canal IRM Design (95 Percent) Work Plan	4/13/2020
6	Finalize IRM Design and Work Plan	5/1/2020
7	Procurement and Planning	5/1/2020
8	Regulatory approval of Former Canal IRM Design Work	6/1/2020
9	Mobilization for IRM	8/31/2020

NOTES:
- all dates are subject to change based on review periods, permits and/or permit requirements, acceptable construction windows, contractor availability, weather or for any unforeseen changes in the project.

APPENDIX A IRM DESIGN DRAWINGS

30 PERCENT DESIGN OF CANAL AOC
INTERIM REMEDIAL MEASURES WORK PLAN

FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

SITE VICINITY MAP

0 300 600
SCALE (IN FEET)

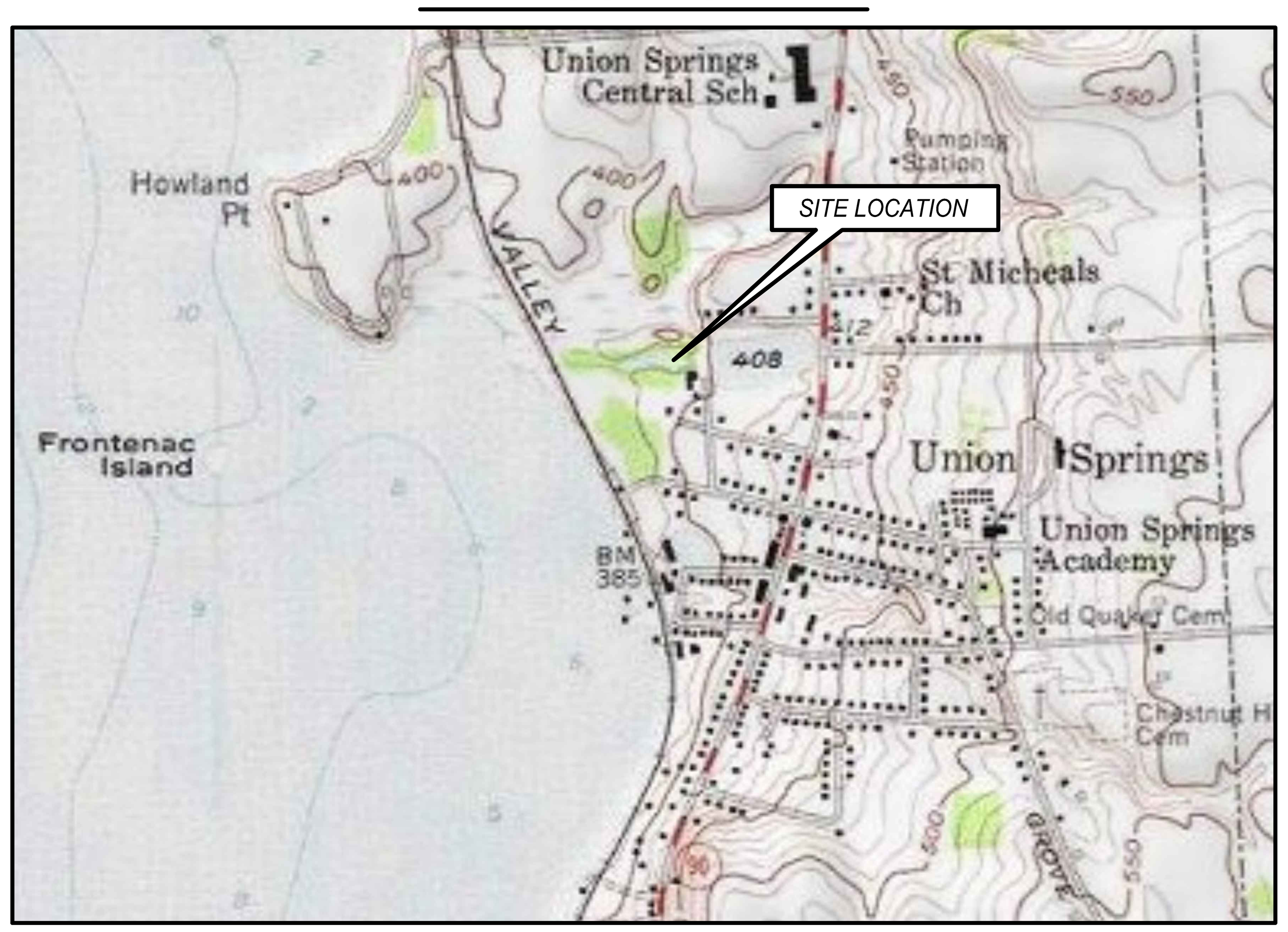
REVISION A
RESPONSE TO NYDEC COMMENTS

NOVEMBER 2019

PREPARED FOR
TRW AUTOMOTIVE U.S. LLC

DRAWING INDEX

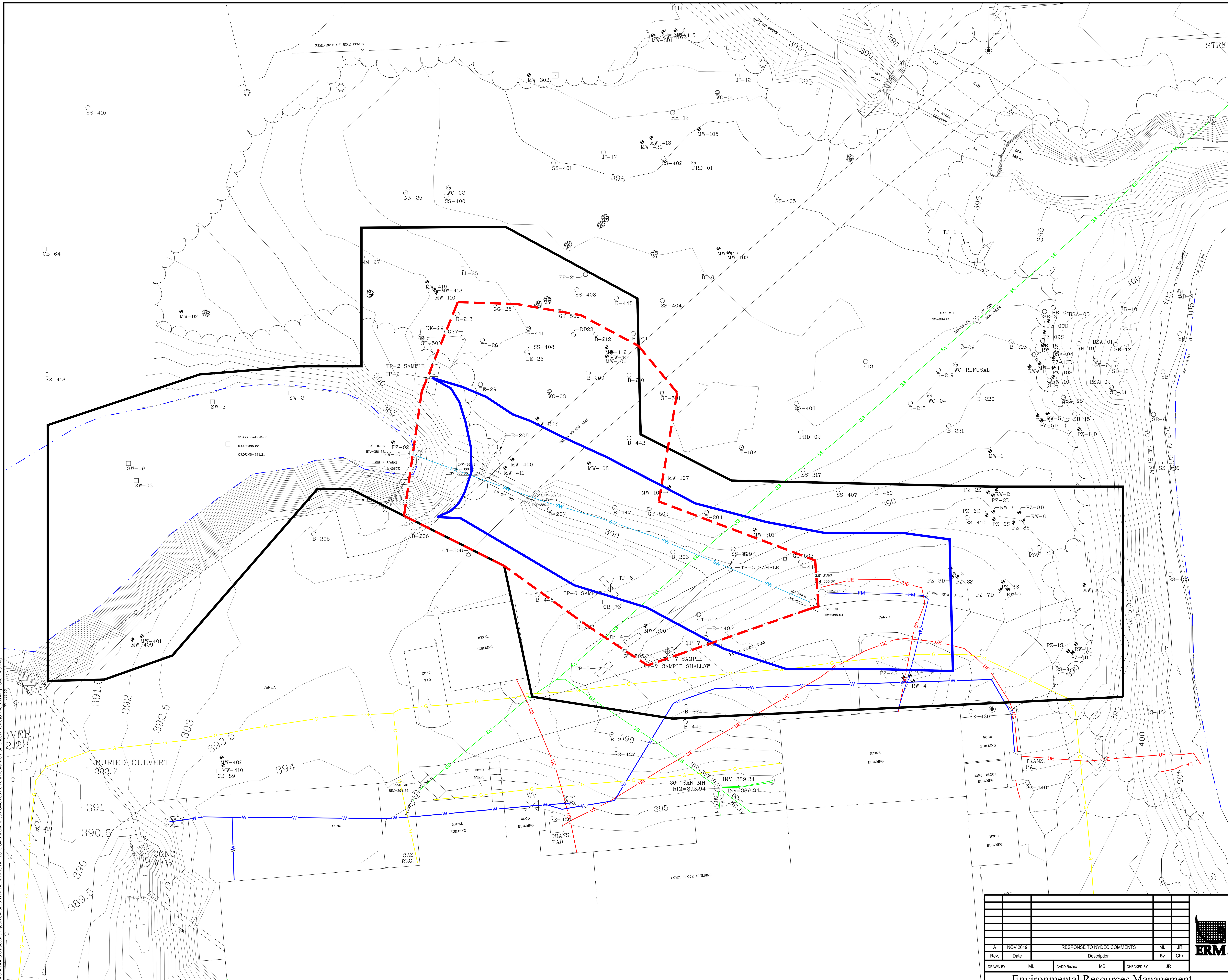
SITE LOCATION MAP



0 1,000 2,000
SCALE (IN FEET)

PREPARED BY

ERM
Environmental Resources Management
Syracuse Office 315-445-2534



GENERAL NOTES:

1. KNOW WHAT'S BELOW - CONTRACTOR TO CALL BEFORE YOU DIG! CALL NEW YORK ONE CALL AT 811 AT LEAST THREE FULL BUSINESS DAYS (NOT COUNTING WEEKENDS OR HOLIDAYS) PRIOR TO BEGINNING WORK. MAINTAIN CONFIRMATION IN PROJECT FILES. RESPECT MARKED-OUT UTILITIES.
2. PRIOR TO EXCAVATION OR ANY OTHER LAND DISTURBANCE ACTIVITIES, EXISTING SURFACE AND SUBSURFACE UTILITIES/STRUCTURES WITHIN THE PROJECT SITE (OR WHICH MAY BE AFFECTED BY OR INTERFERE WITH THE PROPOSED WORK), SHALL BE LOCATED BY CONTRACTOR.
3. ALL THE IMPORTED STONE OR SOIL SHALL BE DEMONSTRATED TO BE CLEAN IN ACCORDANCE WITH THE LATEST VERSION OF THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) REGULATIONS (6 NYCRR PART 360), ALL IMPORTED MATERIALS MUST BE RE-APPROVED BY THE NYSDEC AND ERM.
4. ANY EXISTING SITE FEATURE THAT IS DAMAGED OR REMOVED DURING THE WORK SHALL BE REPAIRED OR REPLACED UNLESS OTHERWISE NOTED.

LEGEND

- MONUMENT
- EXISTING WELLS
- BORING LOACTIONS
- STORM SEWER MANHOLE
- WATER VALVE
- HYDRANT
- SANITARY SEWER MANHOLE
- UTILITY POLE
- PROPERTY LINE
- CHAIN-LINK FENCE
- 400 EXISTING GROUND CONTOURS
- EDGE OF WATER
- BRUSH LINE
- GAS LINE
- WATER LINE
- UNDERGROUND ELECTRIC LINE
- OVERHEAD POWER LINE
- STORMWATER LINE
- SANITARY SEWER LINE
- FORCE MAIN
- PROPOSED EXCAVATION LIMIT
- AOC BOUNDARY
- FORMER BURIED CANAL

0 20 40
SCALE (IN FEET)

Rev.	Date	Description	By	Chk
A	NOV 2019	RESPONSE TO NYDEC COMMENTS	ML	JR

DRAWN BY ML | CADD Review MB | CHECKED BY JR

Environmental Resources Management

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30 PERCENT DESIGN OF CANAL AOC INTERIM REMEDIAL MEASURES WORK PLAN

FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

EXISTING CONDITIONS PLAN

SCALE	PROJECT NUMBER	DRAWING	REV.
AS SHOWN	0496229	C-100	A

DATE DRAWN AUGUST 2019

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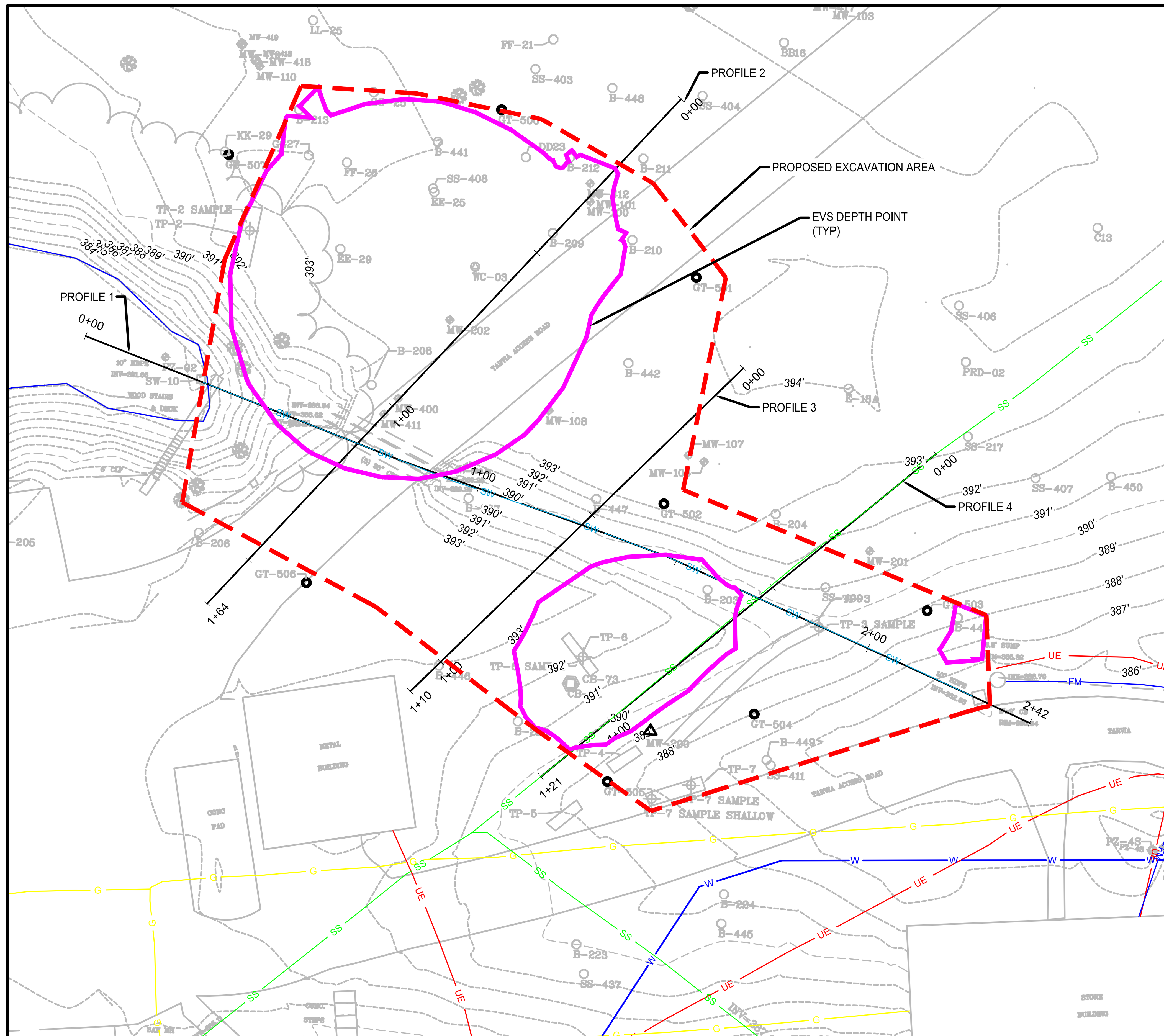
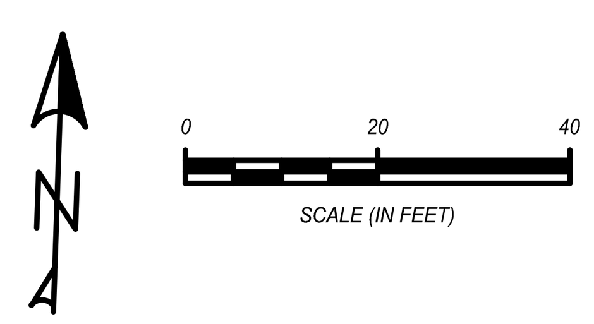
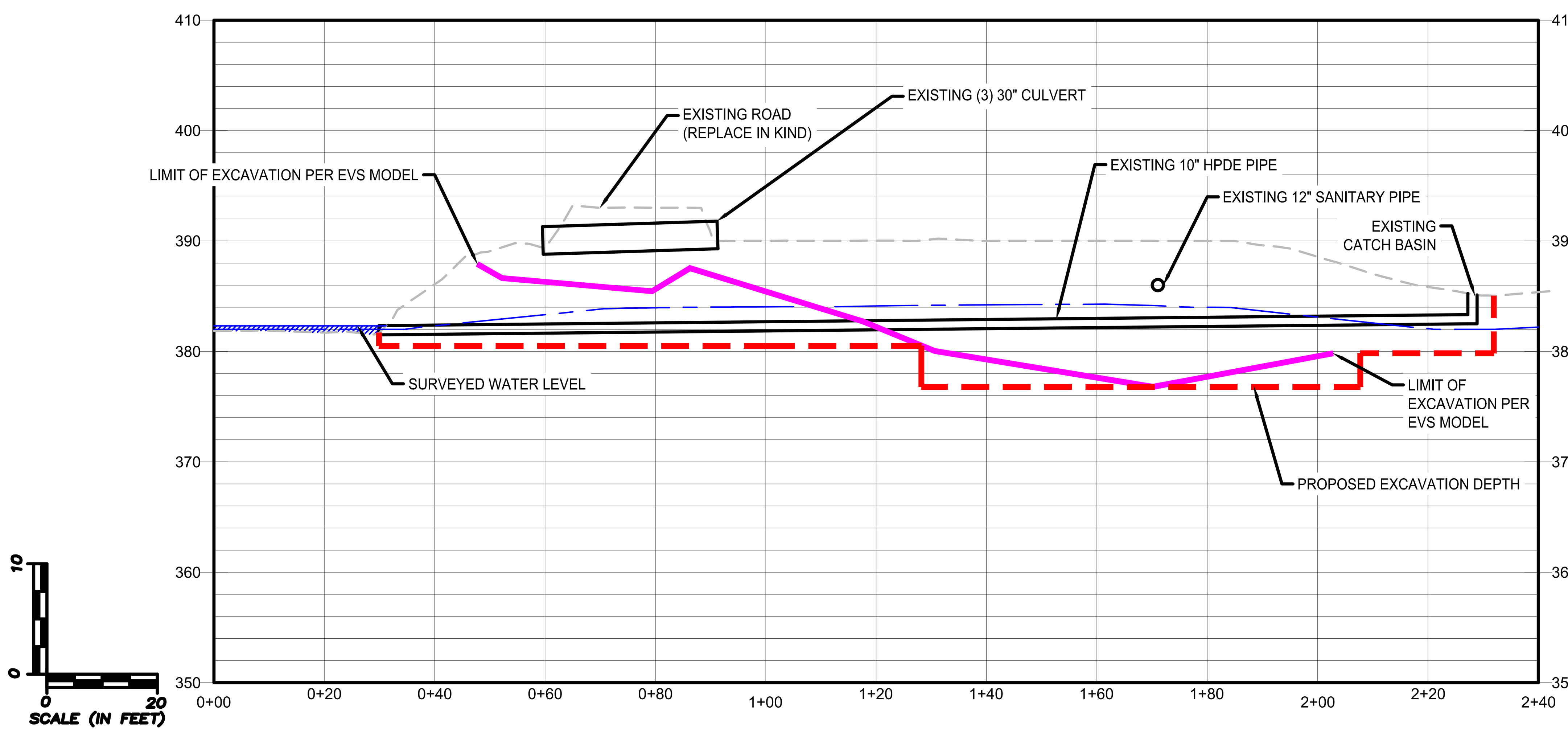






PROFILE 1

LEGEND

MONUMENT

EXISTING WELLS

BORING LOCATIONS

STORM SEWER MANHOLE

WATER VALVE

HYDRANT

SANITARY SEWER MANHOLE

UTILITY POLE

PROPERTY LINE

CHAIN-LINK FENCE

400 EXISTING GROUND INDEX CONTOUR (INTERVAL = 5 FT.)

399 EXISTING GROUND INTERMEDIATE CONTOUR

EDGE OF WATER

BRUSH LINE

G GAS LINE

W WATER LINE

UE UNDERGROUND ELECTRIC LINE

OP OVERHEAD POWER LINE

SW STORMWATER LINE

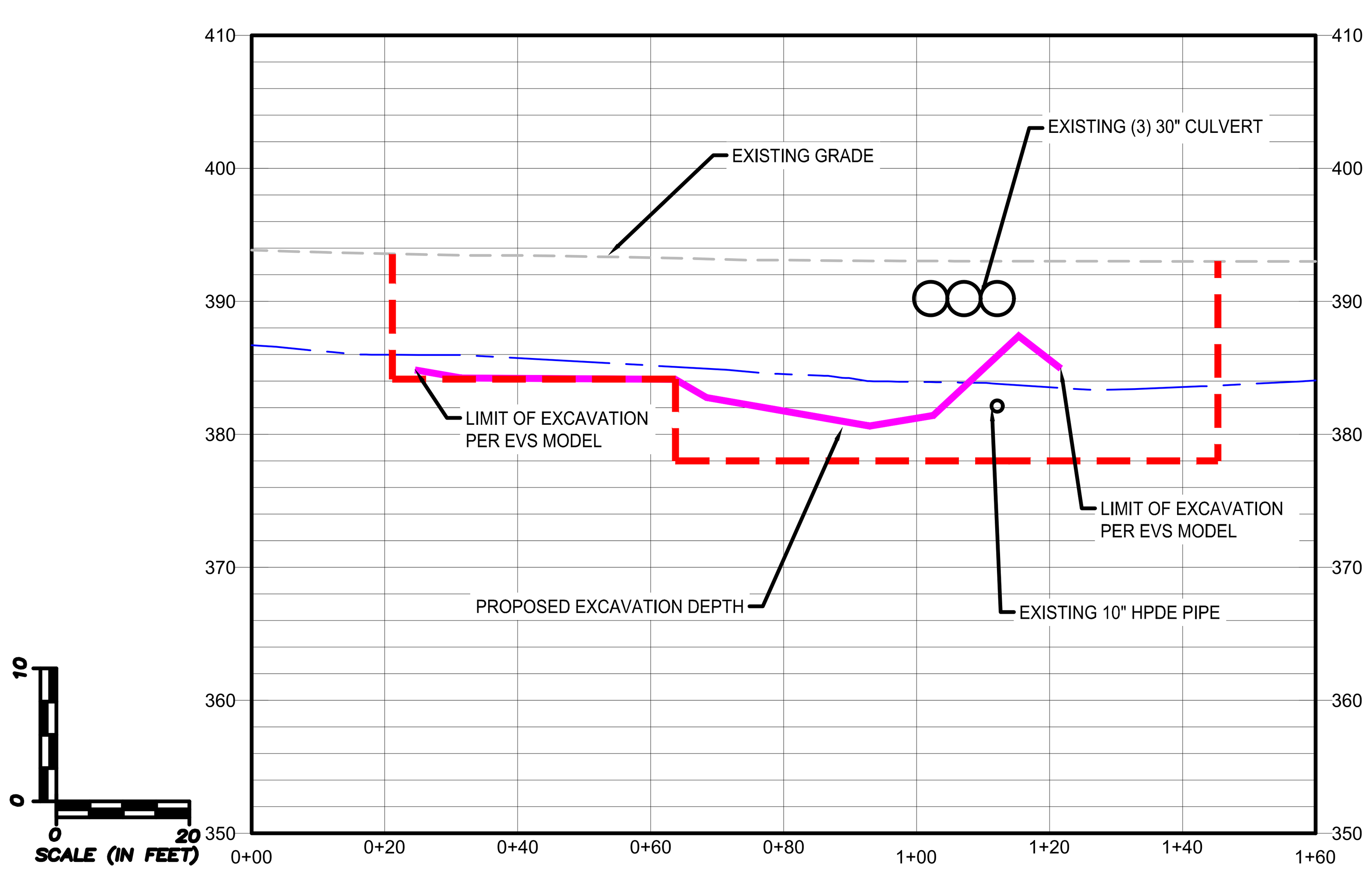
SS SANITARY SEWER LINE

FM FORCE MAIN

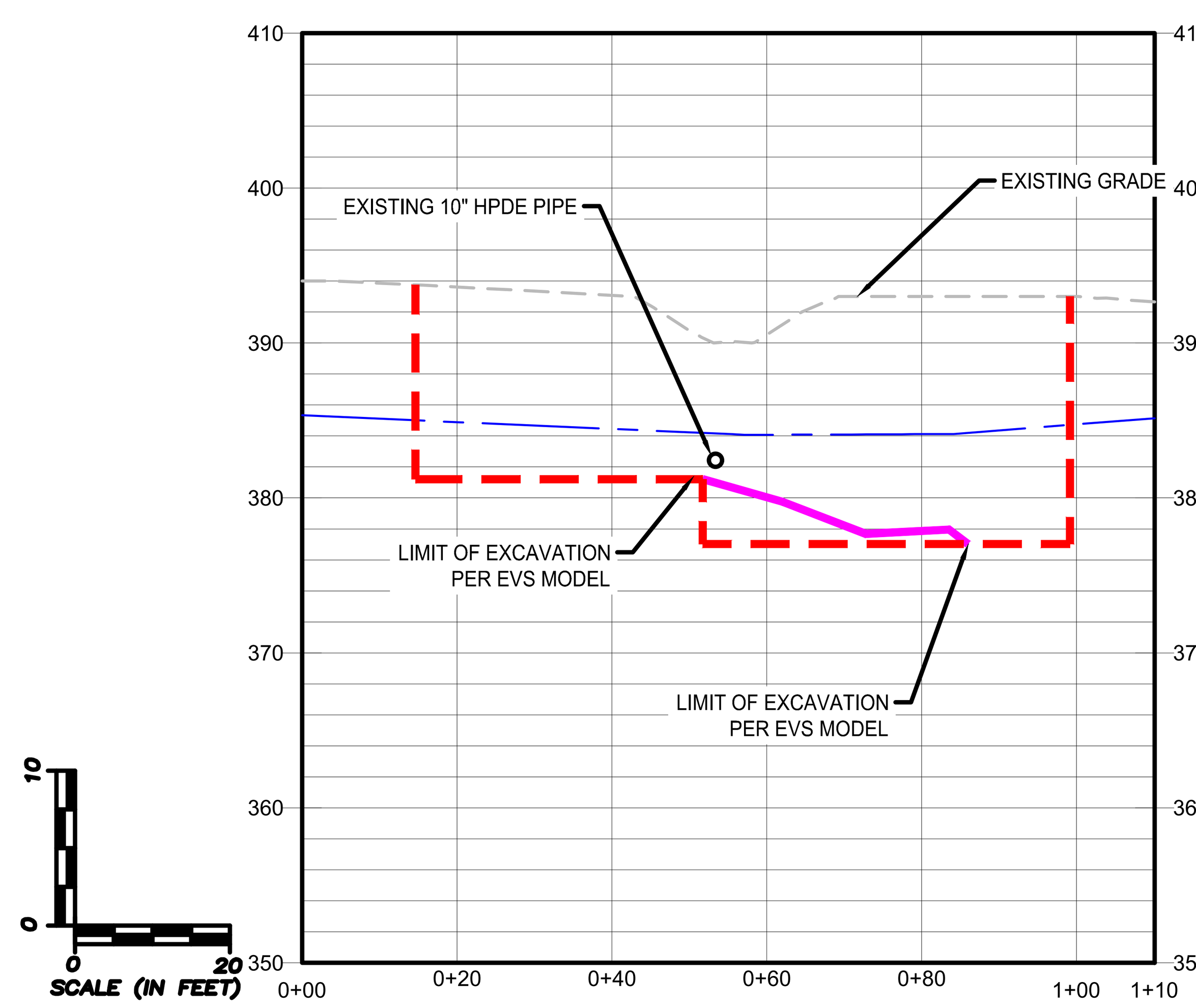
PROPOSED EXCAVATION LIMIT

EXCEEDANCES OF SCOs KRIGED/ MODELED USING ENVIRONMENTAL VISUALIZATION SOFTWARE (EVS) OR EQUIVALENCE

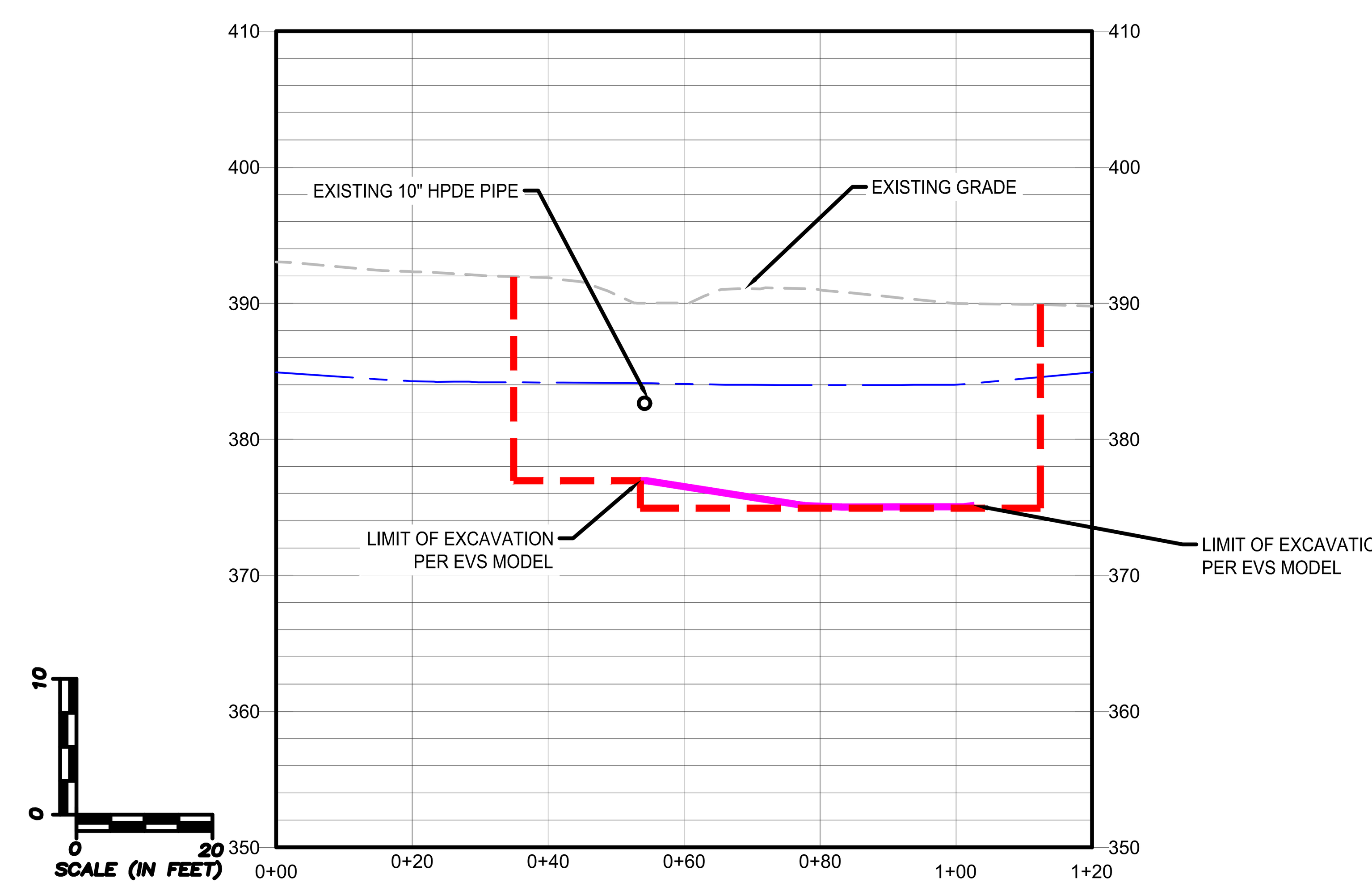
WATER TABLE



PROFILE 2



PROFILE 3



PROFILE 4

NOTE:

1. PROPOSED FINISHED CONTOUR GRADING AND BACKFILL TO BE PROVIDED WITH FINAL DESIGN.
2. THE CUT EXCAVATION SIDE SLOPE WILL BE DEFINED BY EXCAVATION/ BENCHING/ SHORING REQUIREMENTS TO BE PROVIDED IN THE PRE-FINAL 95% DESIGN FOLLOWING GEOTECHNICAL STUDY.
3. MULCH AMENDED FILL EMPLACEMENT DETAILS WILL BE SHOWN IN 95% DESIGN.
4. EXTANT OF EXCAVATION IS BASED ON SOILS EXCEEDING R-C SCOs, FIELD OBSERVATIONS OF GROSSLY CONTAMINATED MEDIA WITH THE FOOTPRINT OF THE BURIED CANAL.
5. DEPTH OF THE EXCAVATION BASED ON DEPTH OF THE EVS DATA AND 10" HDPE STORMWATER CONVEYANCE PIPE (REPLACEMENT).

Rev.	Date	Description	By	Chk
A	NOV 2019	RESPONSE TO NYDEC COMMENTS	ML	JR

DRAWN BY ML | CADD Review MB | CHECKED BY JR

ERM.

Environmental Resources Management

30 PERCENT DESIGN OF CANAL AOC INTERIM REMEDIAL MEASURES WORK PLAN

FORMER TRW UNION SPRINGS
UNION SPRINGS, NEW YORK

EXCAVATION AND GRADING PLAN

SCALE	PROJECT NUMBER	DRAWING	REV.
AS SHOWN	0496229	C-101	A
DATE DRAWN AUGUST 2019			