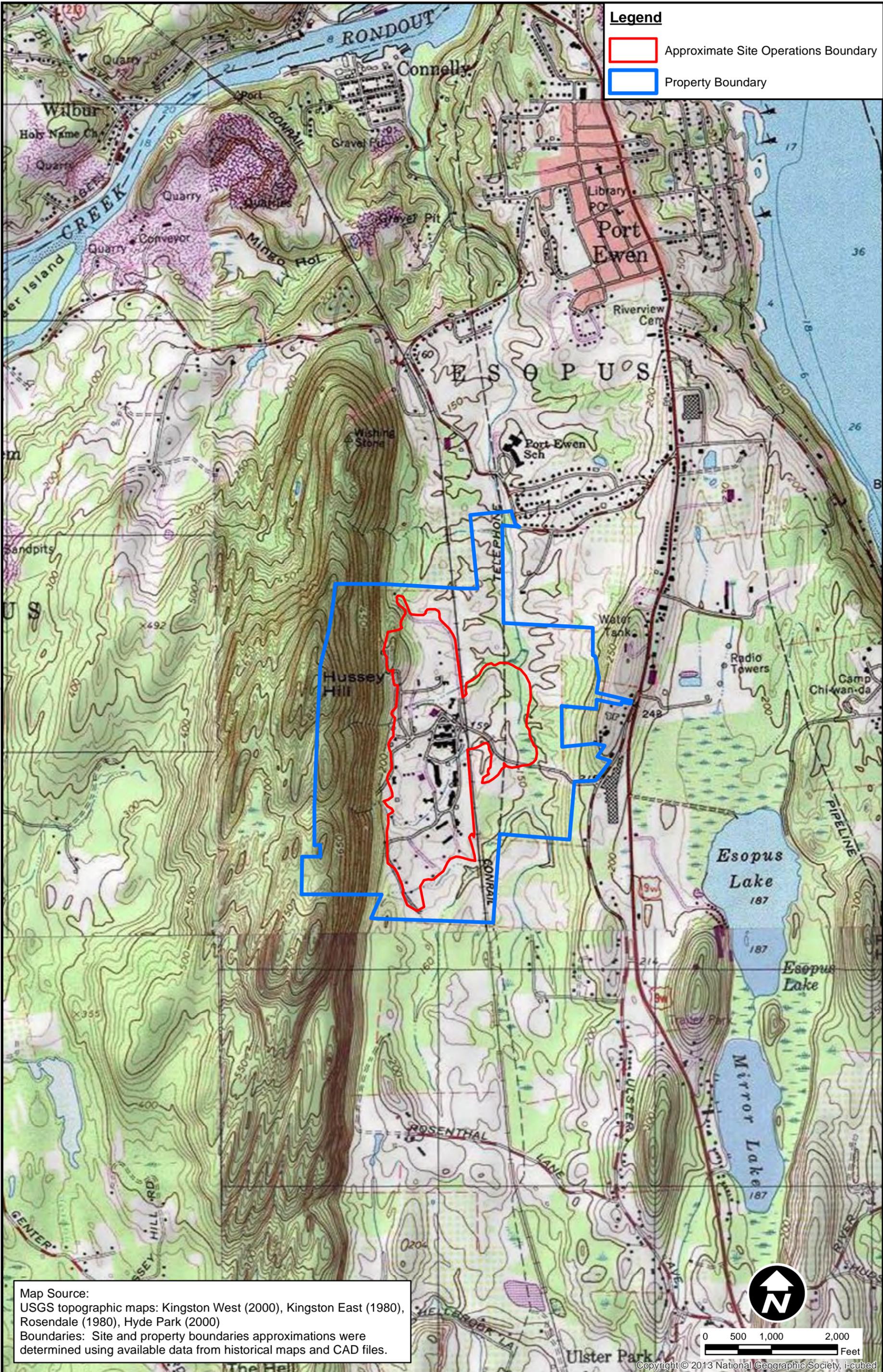


FIGURES

Legend

-  Approximate Site Operations Boundary
-  Property Boundary



Map Source:
 USGS topographic maps: Kingston West (2000), Kingston East (1980),
 Rosendale (1980), Hyde Park (2000)
 Boundaries: Site and property boundaries approximations were
 determined using available data from historical maps and CAD files.

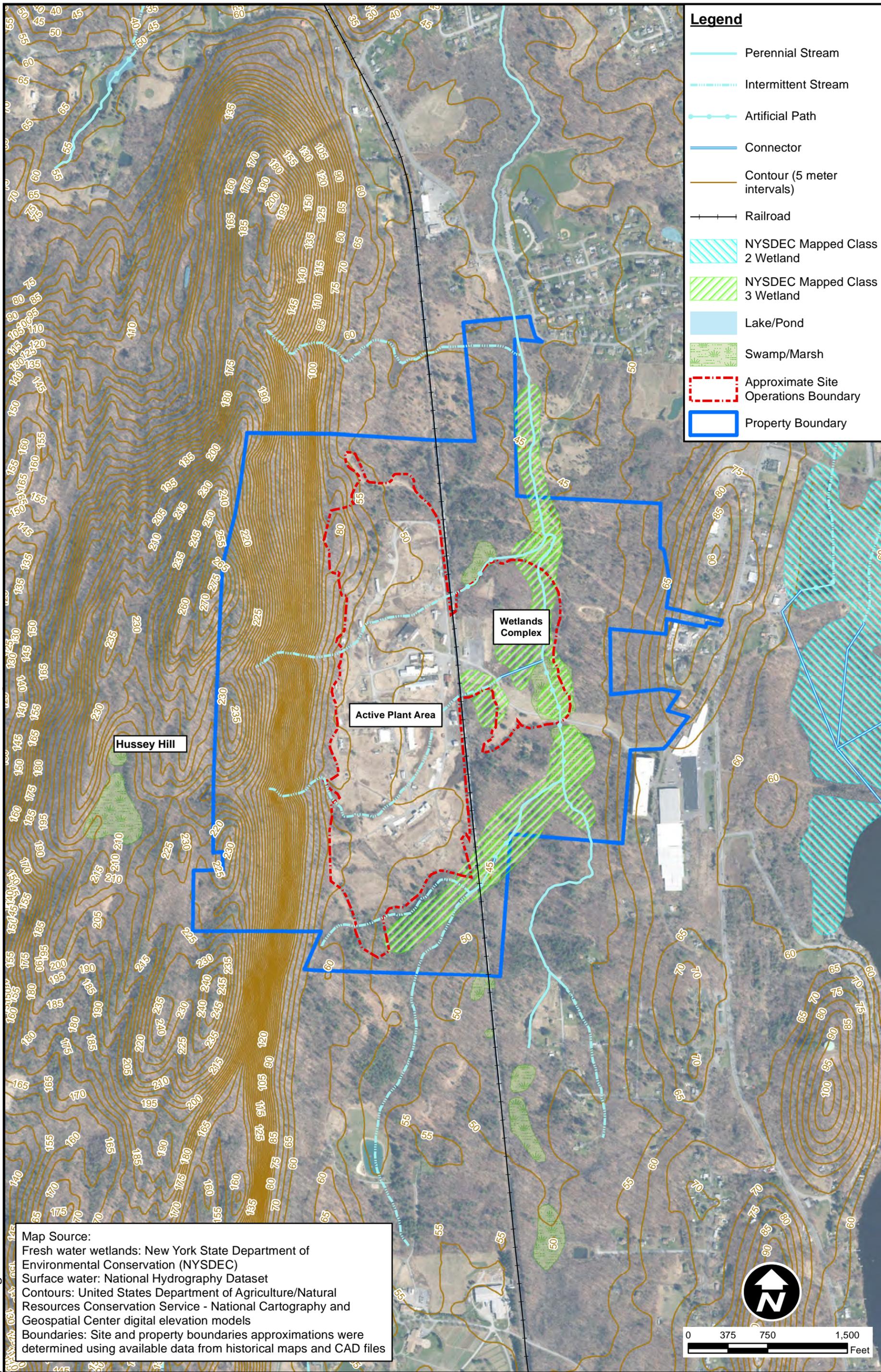


0 500 1,000 2,000
 Feet

Copyright © 2013 National Geographic Society, i-cubed

Reviewed By: K. VanLandingham

J:\EHSS_GIS\CO0363_Ashland\PortEwen\01_ANALYSIS\20190605_Public\Outreach\Posers\1x17_Figures\Figure 1-1 - Site Location Map.mxd
 Printed 5/15/2024 2:08:14 PM by Kaitlyn Burdington

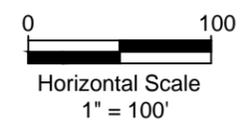


Reviewed By: K. VanLandingham



LEGEND

- XSD result is less than 1.0×10^5 uV
- XSD result is greater than 1.0×10^5 uV but less than 3.0×10^5 uV
- XSD result is greater 3.0×10^5 uV
- 1996 Hydropunch Sample Location
- Surface Water Piezometer
- Monitoring Well LCS or Till
- Monitoring Well Glacial Outwash
- Monitoring Well Bedrock
- 2021 Soil Boring (No MIP)
- Groundwater Contour LCS and Till 10/18/2022
- Estimated extent of residual source area based on MIP, groundwater, and soil results.
- Ponded Water Area



REVISIONS

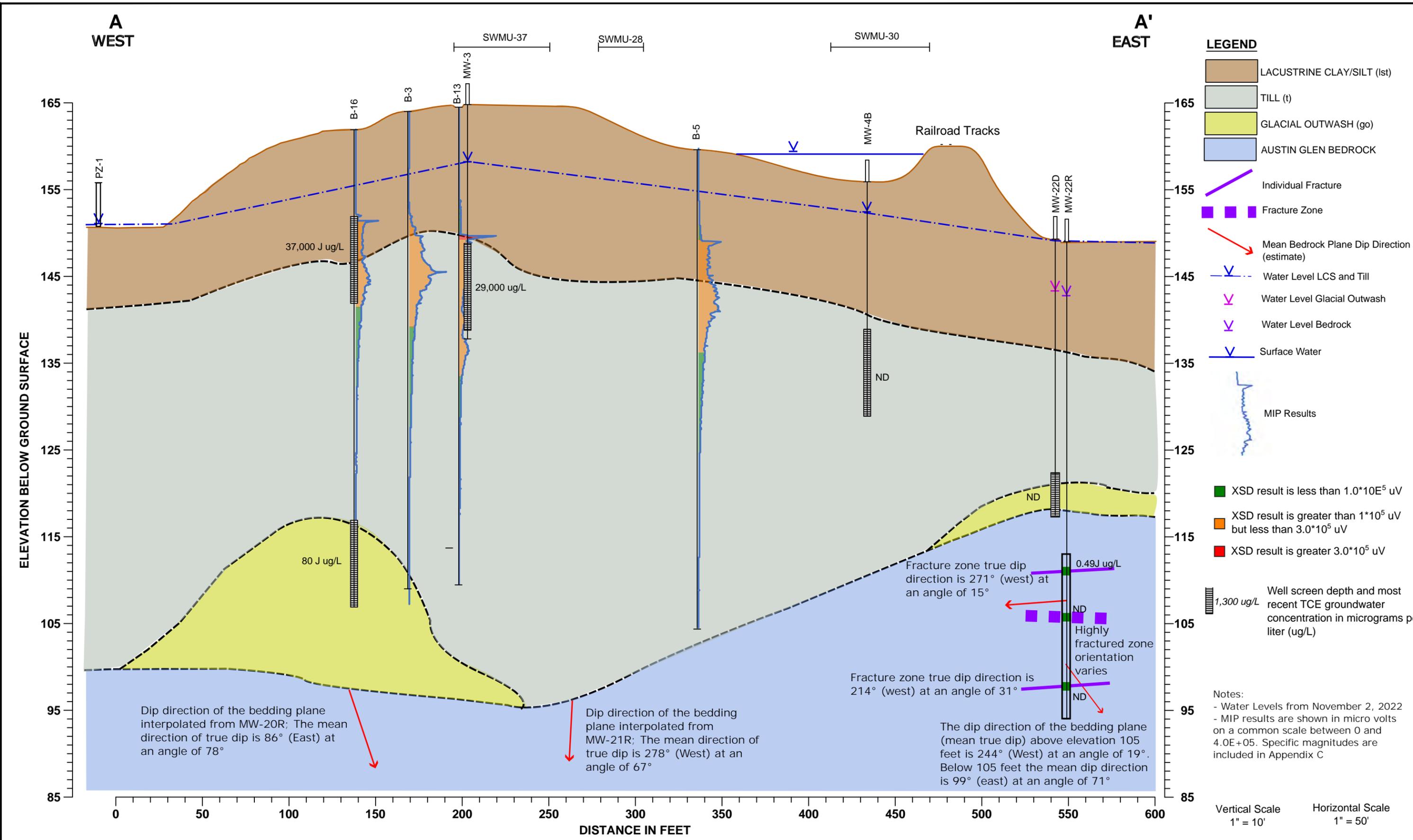
Rev.	By:	Disc.:	Date:

HERCULES SITE
PORT EWEN
ULSTER COUNTY, NEW YORK

FIGURE 4A
CROSS-SECTION LOCATIONS

Drawn By: TD	Date Drawn: 01/2023
Reviewed By: KVL	Date Reviewed: 01/2023
Scale: As Shown	Plot Date: 01/2023
Project Number.: C00363_2022	



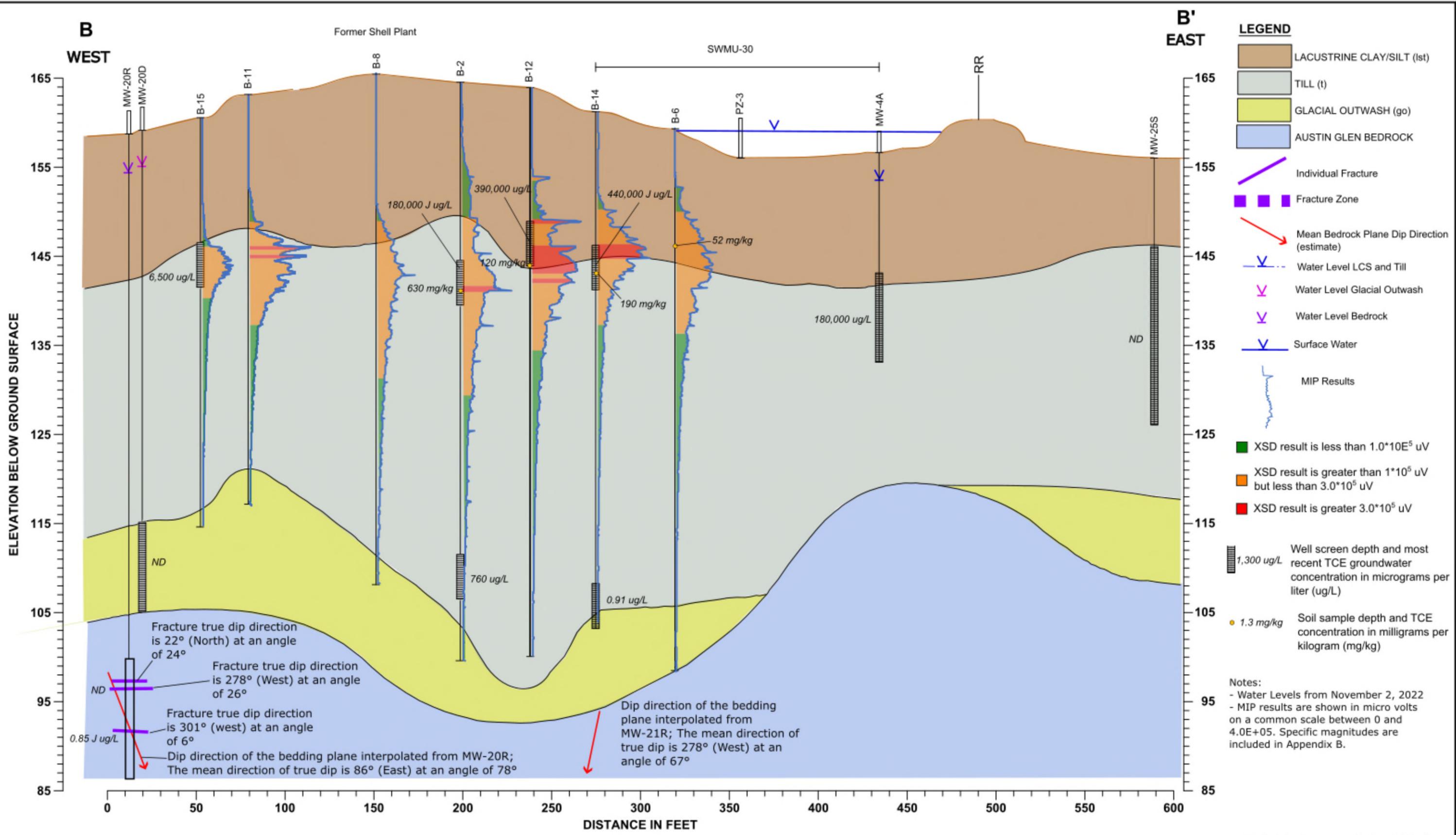


REVISIONS				
Rev.	By:	Disc.:	Date:	

HERCULES SITE
PORT EWEN
 ULSTER COUNTY, NEW YORK

FIGURE 4B
 CROSS SECTION A - A'

Drawn By: TD	Date Drawn: 01/2023
Reviewed By: KVL	Date Reviewed: 01/2023
Scale: As Shown	Plot Date: 01/2023
Project Number.: C00363_2022	



Vertical Scale 1" = 10'
Horizontal Scale 1" = 50'

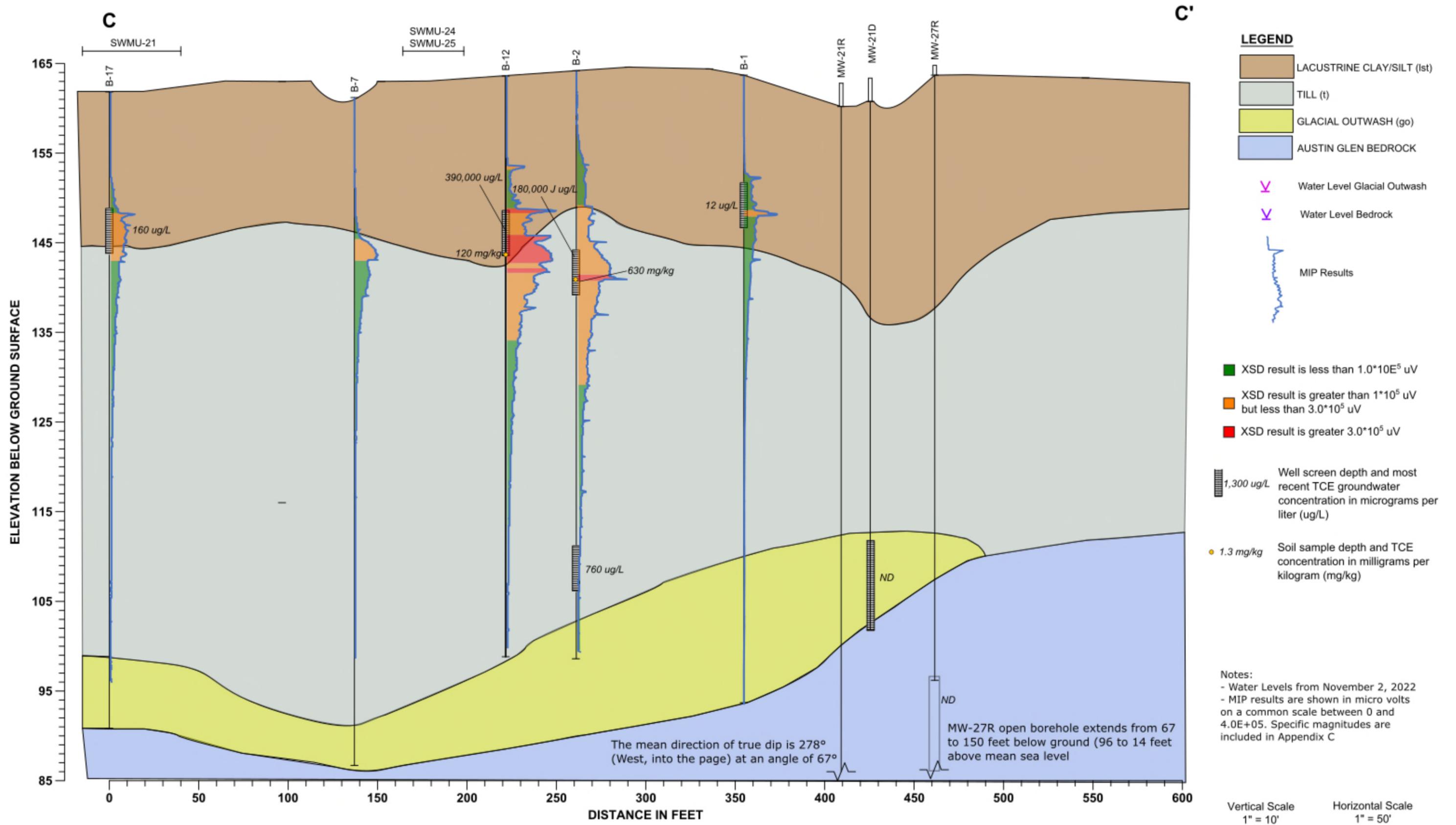


REVISIONS			
Rev.	By:	Disc.:	Date:

HERCULES SITE
PORT EWEN
ULSTER COUNTY, NEW YORK

FIGURE 4C
CROSS SECTION B - B'

Drawn By: TD	Date Drawn: 01/2023
Reviewed By: KVL	Date Reviewed: 01/2023
Scale: As Shown	Plot Date: 01/2023
Project Number.: C00363_2022	





Legend

- Shallow Overburden Monitoring Well
- Groundwater Elevation Contours (ft amsl) Dashed Where Inferred
- Groundwater Flow Direction
- Fence
- Buildings
- Approximate Property Boundary

NG = Not Gauged WI = Well Inaccessible
 amsl = above mean sea level NL = Not Located

0 75 150 300 Feet

FIGURE 5
 Potentiometric Surface Contour Map - Shallow
 Overburden Wells, June 25, 2024
 Hercules Site
 Port Ewen, New York

PROJECT NO. ASHEWEN24	PREPARED BY MDE	REF SCALE 1:3,600	AG Geology & Engineering, D.P.C.
DATE 8/12/2024	REVIEWED BY KA	MAP SCALE 1 inch = 300 feet	



Legend

- ◆ Deep Overburden/Bedrock Monitoring Well
- Groundwater Elevation Contours (ft amsl) Dashed Where Inferred
- ➔ Approximate Groundwater Flow Direction
- Fence
- Buildings
- Approximate Property Boundary

NG = Not Gauged WI = Well Inaccessible
 amsl = above mean sea level NL = Not Located
 WO = Well Obstructed

0 75 150 300
Feet

FIGURE 6
 Potentiometric Surface Contour Map - Deep
 Overburden Wells, June 25, 2024
 Hercules Site
 Port Ewen, New York

PROJECT NO. ASHEWEN24	PREPARED BY MDE	REF SCALE 1:3,600	AG Geology & Engineering, D.P.C.
DATE 8/12/2024	REVIEWED BY AM	MAP SCALE 1 inch = 300 feet	



Legend

- ◆ Bedrock Monitoring Well
- Groundwater Elevation Contours (ft amsl) Dashed Where Inferred
- ➔ Approximate Groundwater Flow Direction
- Fence
- Buildings
- Approximate Property Boundary

NG = Not Gauged NL = Not Located
amsl = above mean sea level

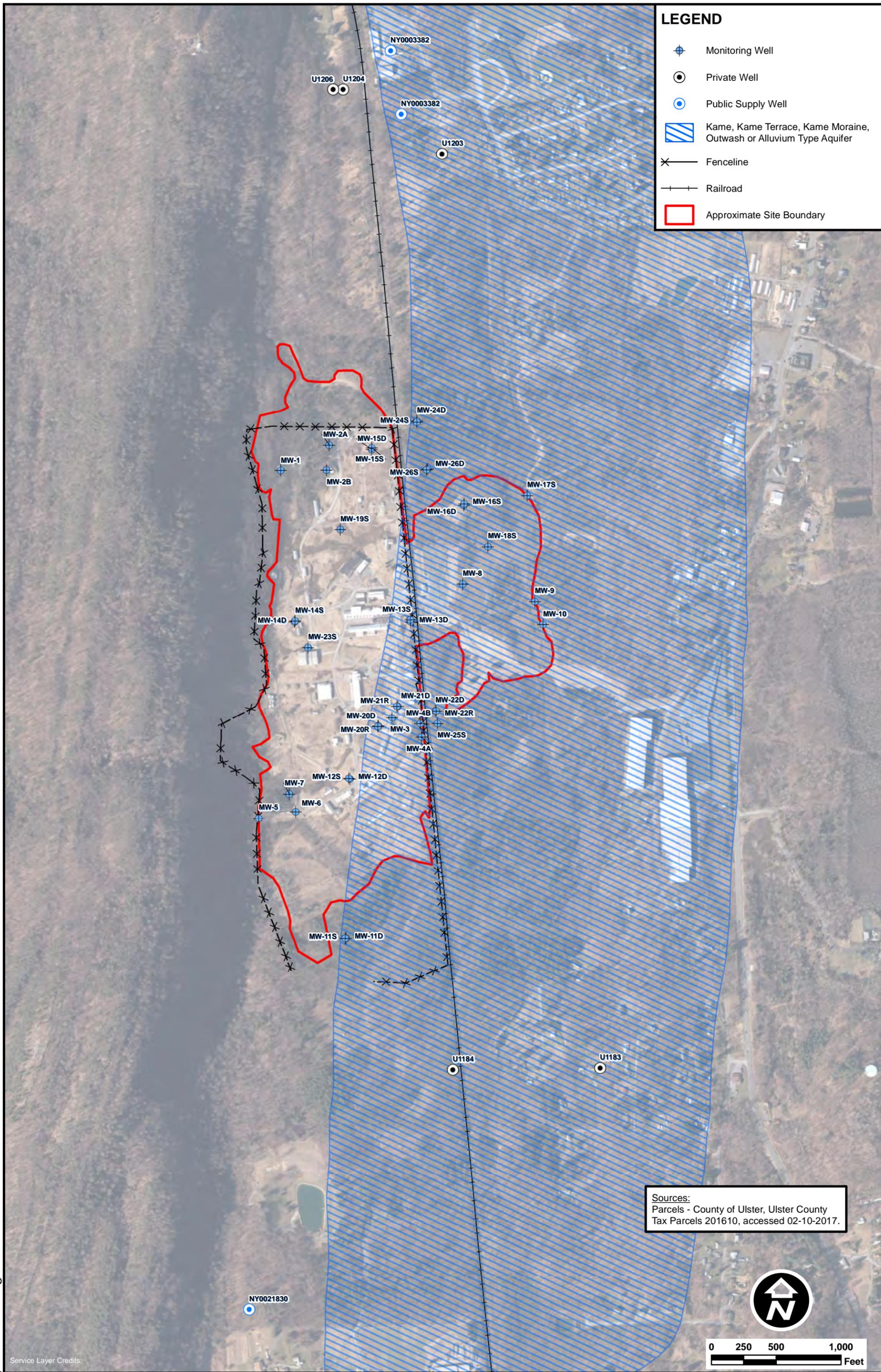
0 75 150 300
 Feet

FIGURE 7
 Potentiometric Surface Contour Map - Bedrock Wells
 Overburden Wells, June 25, 2024
 Hercules Site
 Port Ewen, New York

PROJECT NO. <i>ASHEWEN24</i>	PREPARED BY <i>MDE</i>	REF SCALE <i>1:3,600</i>	AG Geology & Engineering, D.P.C.
DATE <i>8/12/2024</i>	REVIEWED BY <i>AM</i>	MAP SCALE <i>1 inch = 300 feet</i>	

LEGEND

-  Monitoring Well
-  Private Well
-  Public Supply Well
-  Kame, Kame Terrace, Kame Moraine, Outwash or Alluvium Type Aquifer
-  Fenceline
-  Railroad
-  Approximate Site Boundary



Reviewed By: K. VanLandingham

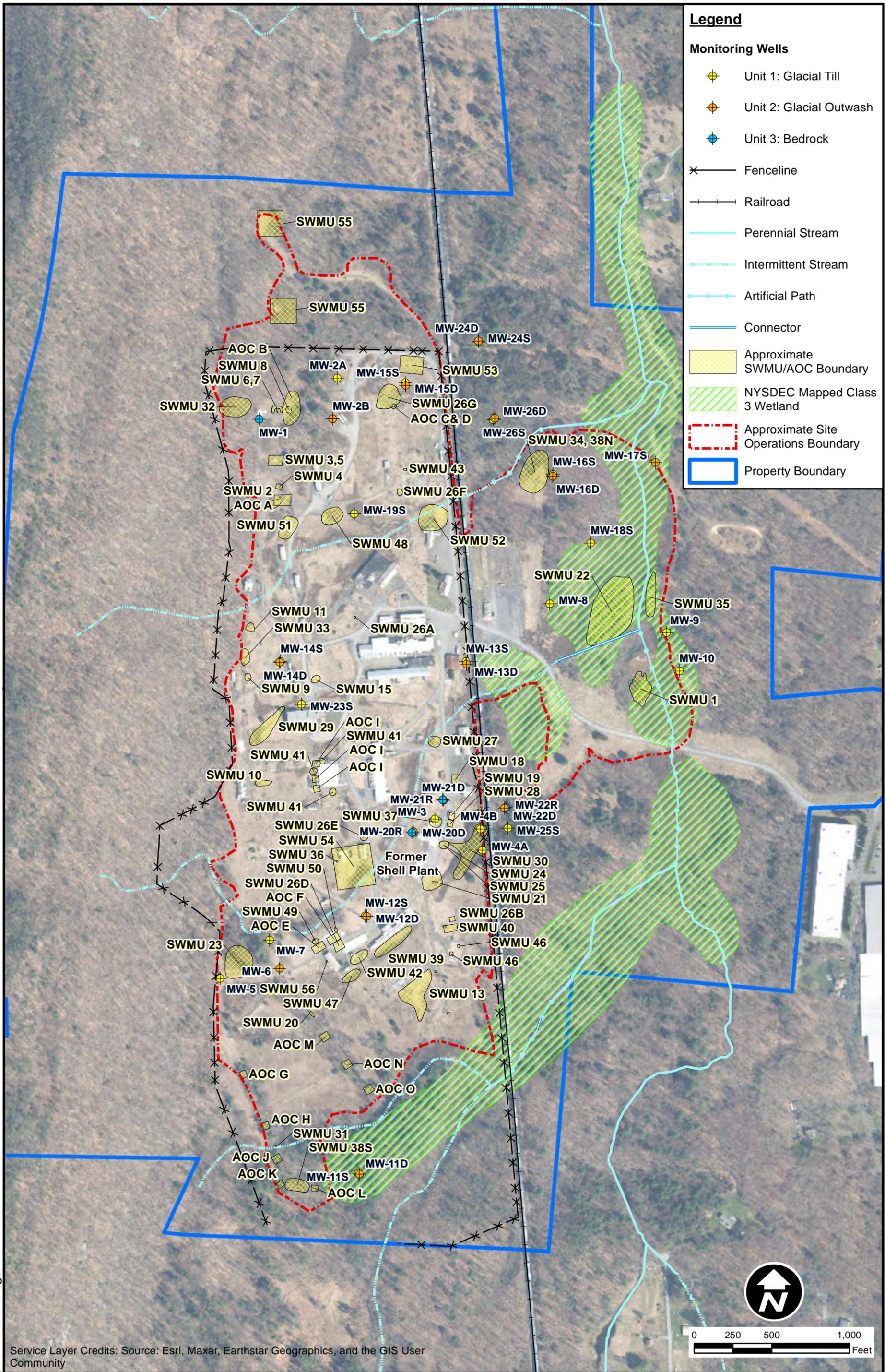
Service Layer Credits:



**HERCULES SITE
PORT EWEN, NEW YORK
REGISTRY NO. 356001**

SURFACE HYDROGEOLOGY/RECEPTOR SURVEY

FIGURE 8



Legend

- Monitoring Wells**
- Unit 1: Glacial Till
 - Unit 2: Glacial Outwash
 - Unit 3: Bedrock
- ✕ Fenceline
 - +— Railroad
 - Perennial Stream
 - - - Intermittent Stream
 - ⋯ Artificial Path
 - Connector
 - ⊞ Approximate SWMU/AOC Boundary
 - ▨ NYSDEC Mapped Class 3 Wetland
 - - - Approximate Site Operations Boundary
 - ▭ Property Boundary

Reviewed By: K. VanLandingham

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community



HERCULES SITE
PORT EWEN, NEW YORK
REGISTRY NO. 356001

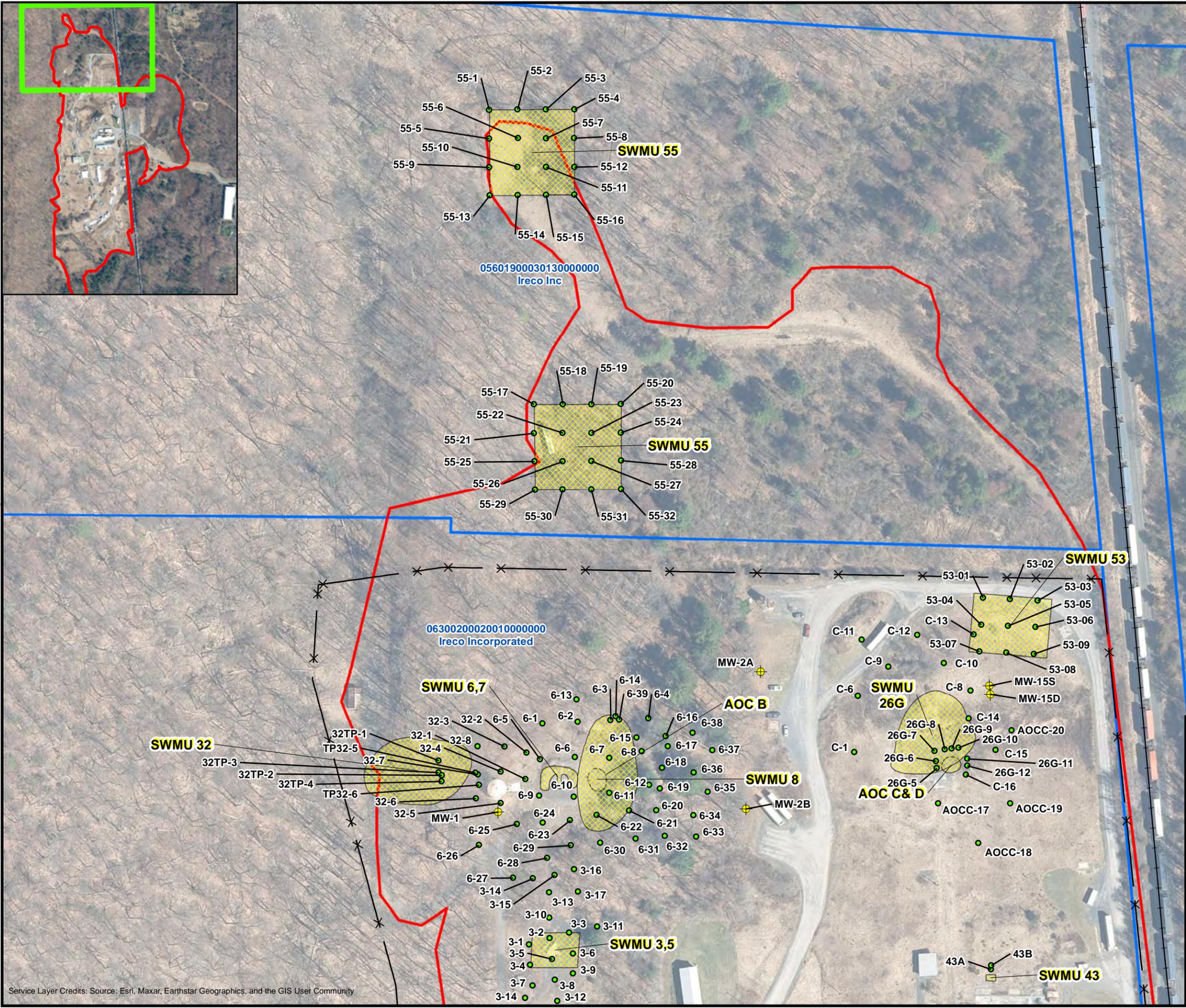
SWMUs/AOCs

FIGURE 9



Legend

- Sediment Sample Location
- ⊕ Well Location
- Soil Sample Location
- ✂ Fenceline
- Railroad
- ▨ SWMU/AOC
- ▭ Approximate Site Boundary
- ▭ DNI-Owned Property



MW-24D ⊕ MW-24S

05602000010060000000
Ireco Incorporated

180 90 0 180

Scale In Feet

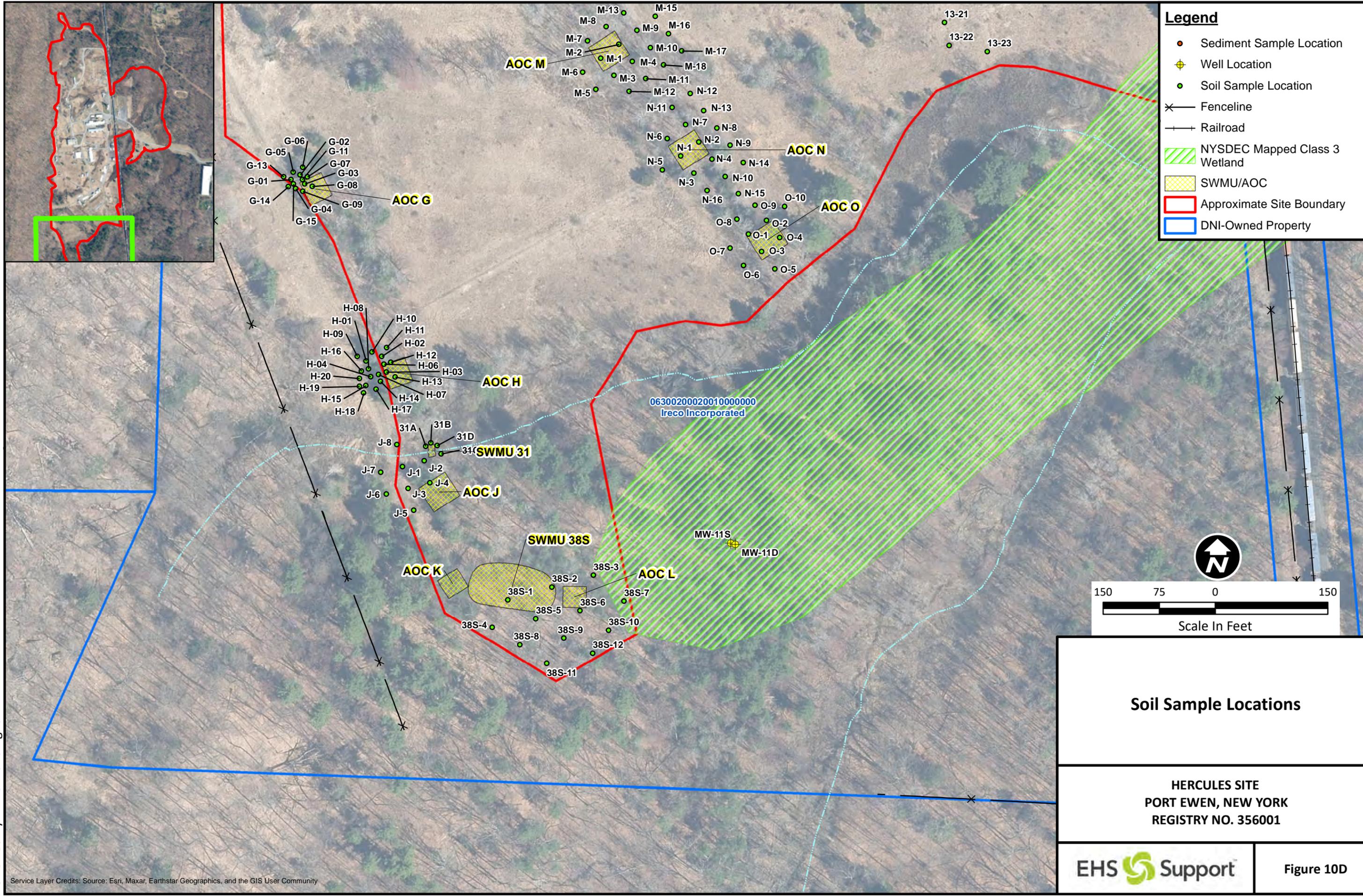
Soil Sample Locations

HERCULES SITE
PORT EWEN, NEW YORK
REGISTRY NO. 356001

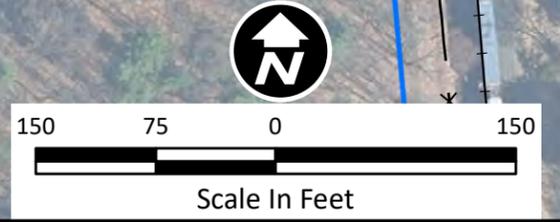
EHS Support

Figure 10A

Reviewed By: K. VanLandingham



- Legend**
- Sediment Sample Location
 - ⊕ Well Location
 - Soil Sample Location
 - ✂ Fenceline
 - Railroad
 - ▨ NYSDEC Mapped Class 3 Wetland
 - ▨ SWMU/AOC
 - ▭ Approximate Site Boundary
 - ▭ DNI-Owned Property



Soil Sample Locations

**HERCULES SITE
PORT EWEN, NEW YORK
REGISTRY NO. 356001**

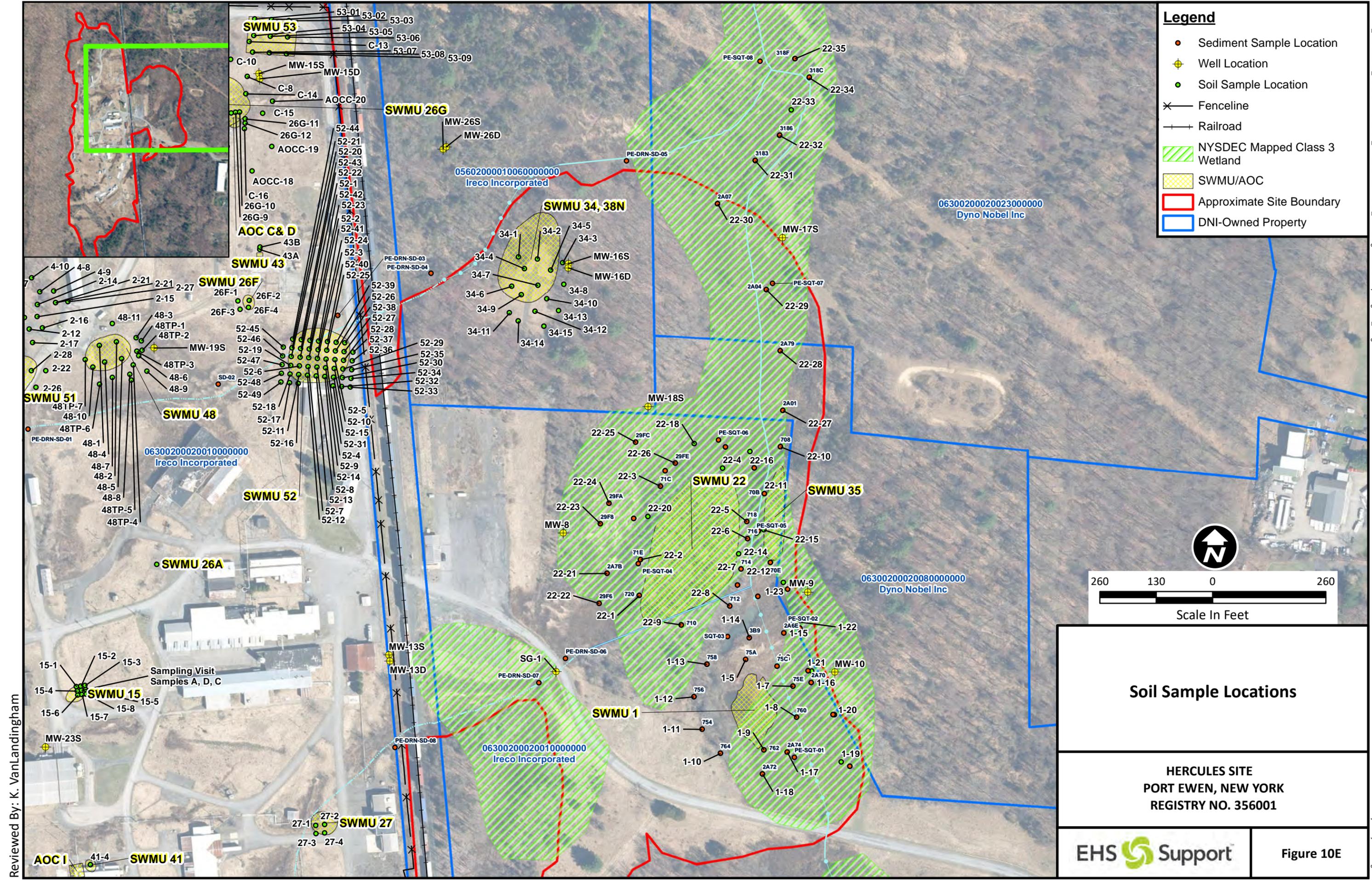
EHS Support

Figure 10D

Reviewed By: K. VanLandingham

Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

J:\EHSS_GIS\000363_AshlandPortEwen\01_ANALYSIS\2017\2019_OnSiteFigures\SoilSampleFigures_5PPages.mxd
Printed 5/16/2024 4:48:06 PM by Kaitlyn Burlington



- Legend**
- Sediment Sample Location
 - ⊕ Well Location
 - Soil Sample Location
 - ✕ Fenceline
 - Railroad
 - ▨ NYSDEC Mapped Class 3 Wetland
 - ▨ SWMU/AOC
 - ▭ Approximate Site Boundary
 - ▭ DNI-Owned Property



Soil Sample Locations

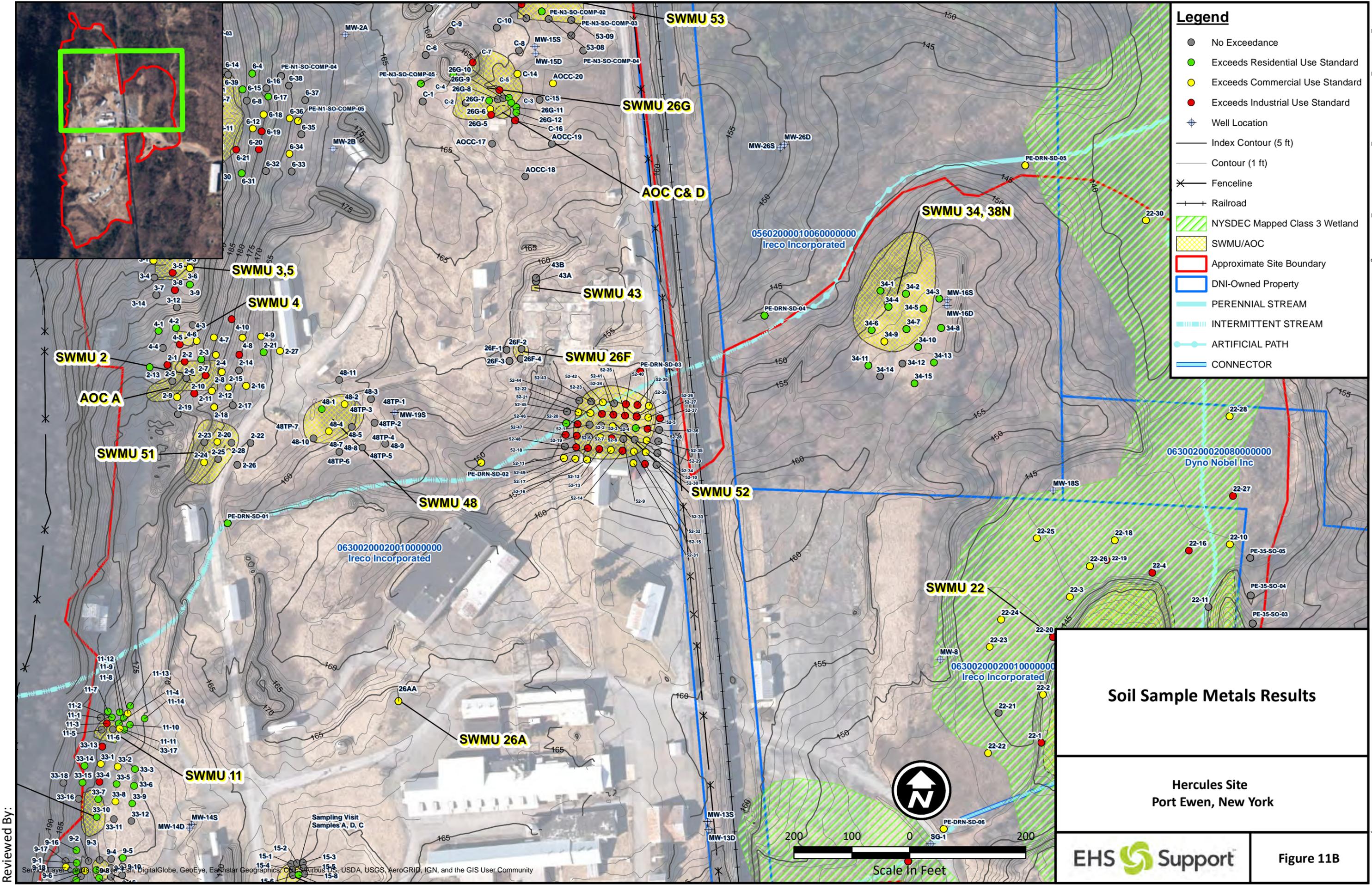
HERCULES SITE
PORT EWEN, NEW YORK
REGISTRY NO. 356001

EHS Support

Figure 10E

Reviewed By: K. VanLandingham

J:\EHSS_GIS\CO0363_AshlandPortEwen\01_ANALYSIS\SIS\20170209_OnSite\figures\SoilSampleFigures_5Pages.mxd Printed 5/28/2024 2:38:44 PM by Kaitlyn Burrington



- ### Legend
- No Exceedance
 - Exceeds Residential Use Standard
 - Exceeds Commercial Use Standard
 - Exceeds Industrial Use Standard
 - ⊕ Well Location
 - Index Contour (5 ft)
 - Contour (1 ft)
 - ✕ Fenceline
 - Railroad
 - ▨ NYSDEC Mapped Class 3 Wetland
 - ▨ SWMU/AOC
 - ▭ Approximate Site Boundary
 - ▭ DNI-Owned Property
 - PERENNIAL STREAM
 - INTERMITTENT STREAM
 - ARTIFICIAL PATH
 - CONNECTOR

Soil Sample Metals Results

**Hercules Site
Port Ewen, New York**

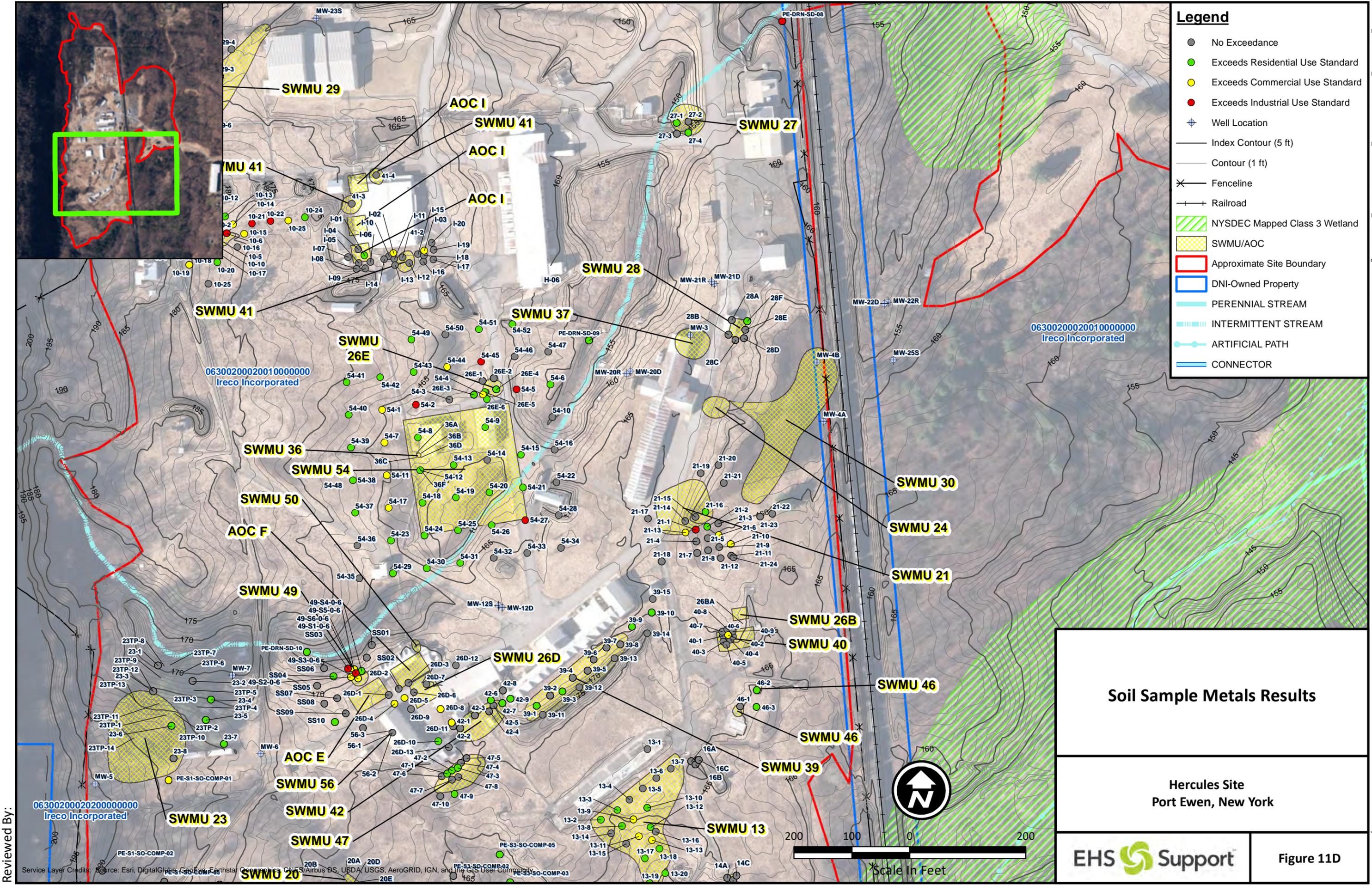


Figure 11B

Reviewed By:

Source: ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNR/Airbus, USDA, USGS, AeroGRID, IGN, and the GIS User Community

J:\EHSS_GIS\00363_AshlandPortEwen\01_ANALYSIS\20190319_SoilResults\Figures\SoilResults.mxd Printed 4/18/2019 3:58:03 PM by Justine Decker



- Legend**
- No Exceedance
 - Exceeds Residential Use Standard
 - Exceeds Commercial Use Standard
 - Exceeds Industrial Use Standard
 - ⊕ Well Location
 - Index Contour (5 ft)
 - Contour (1 ft)
 - ✕ Fenceline
 - +— Railroad
 - ▨ NYSDEC Mapped Class 3 Wetland
 - ▨ SWMU/AOC
 - ▭ Approximate Site Boundary
 - ▭ DNI-Owned Property
 - PERENNIAL STREAM
 - INTERMITTENT STREAM
 - ARTIFICIAL PATH
 - CONNECTOR

Soil Sample Metals Results

Hercules Site
Port Ewen, New York

EHS Support

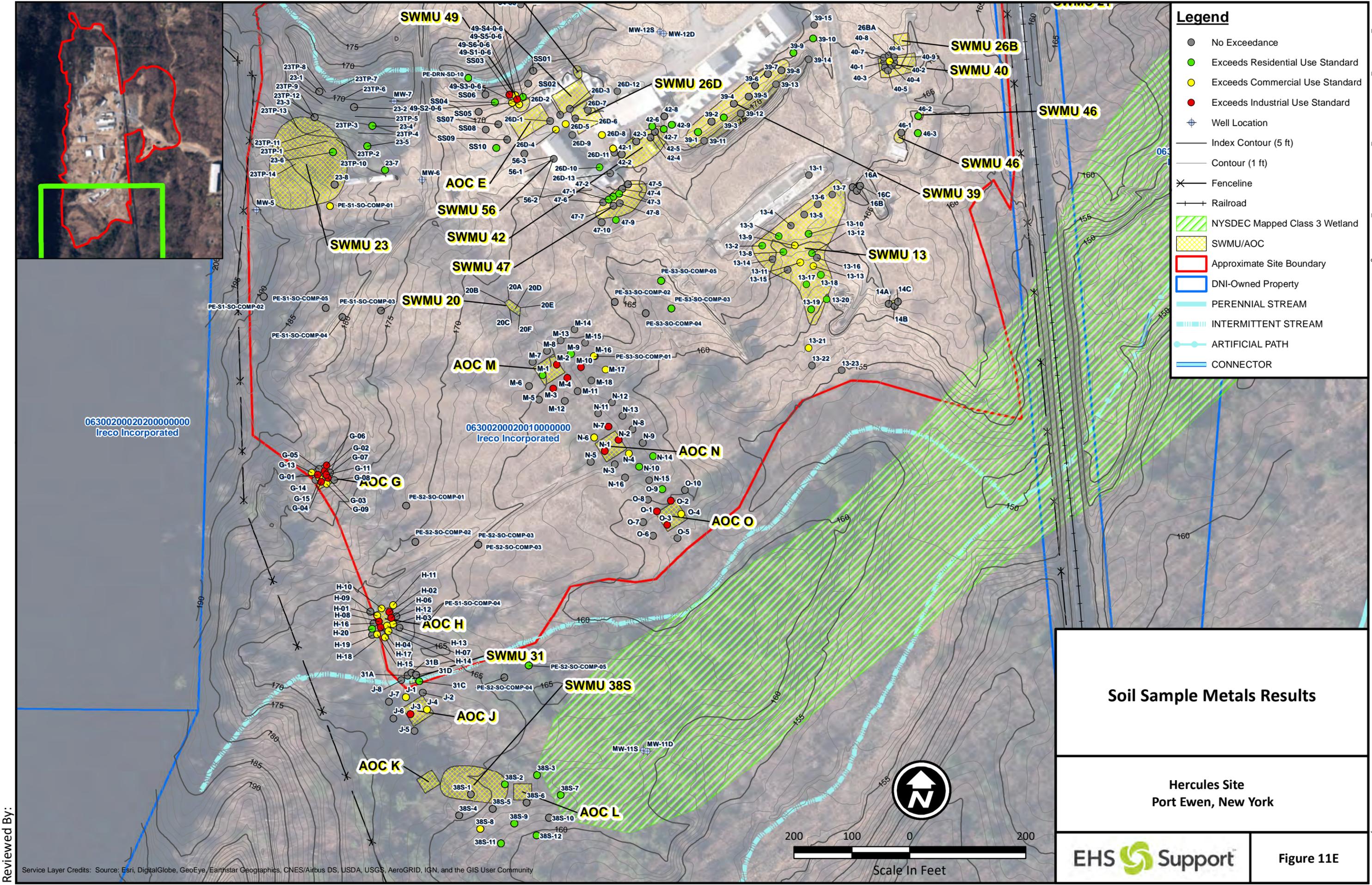
Figure 11D

Reviewed By:

06300200020200000000
Ireco Incorporated

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

J:\EHSS_GIS\000363_AshlandPortEwen\01_ANALYSIS\20190319_SoilResults\Figures\SoilResults.mxd
Printed 4/18/2019 3:58:29 PM by Justine Decker



- Legend**
- No Exceedance
 - Exceeds Residential Use Standard
 - Exceeds Commercial Use Standard
 - Exceeds Industrial Use Standard
 - ⊕ Well Location
 - Index Contour (5 ft)
 - Contour (1 ft)
 - ✕ Fenceline
 - Railroad
 - ▨ NYSDEC Mapped Class 3 Wetland
 - ▨ SWMU/AOC
 - ▭ Approximate Site Boundary
 - ▭ DNI-Owned Property
 - PERENNIAL STREAM
 - INTERMITTENT STREAM
 - ARTIFICIAL PATH
 - CONNECTOR

06300200020200000000
Ireco Incorporated

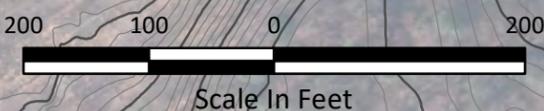
06300200020010000000
Ireco Incorporated

Soil Sample Metals Results

Hercules Site
Port Ewen, New York



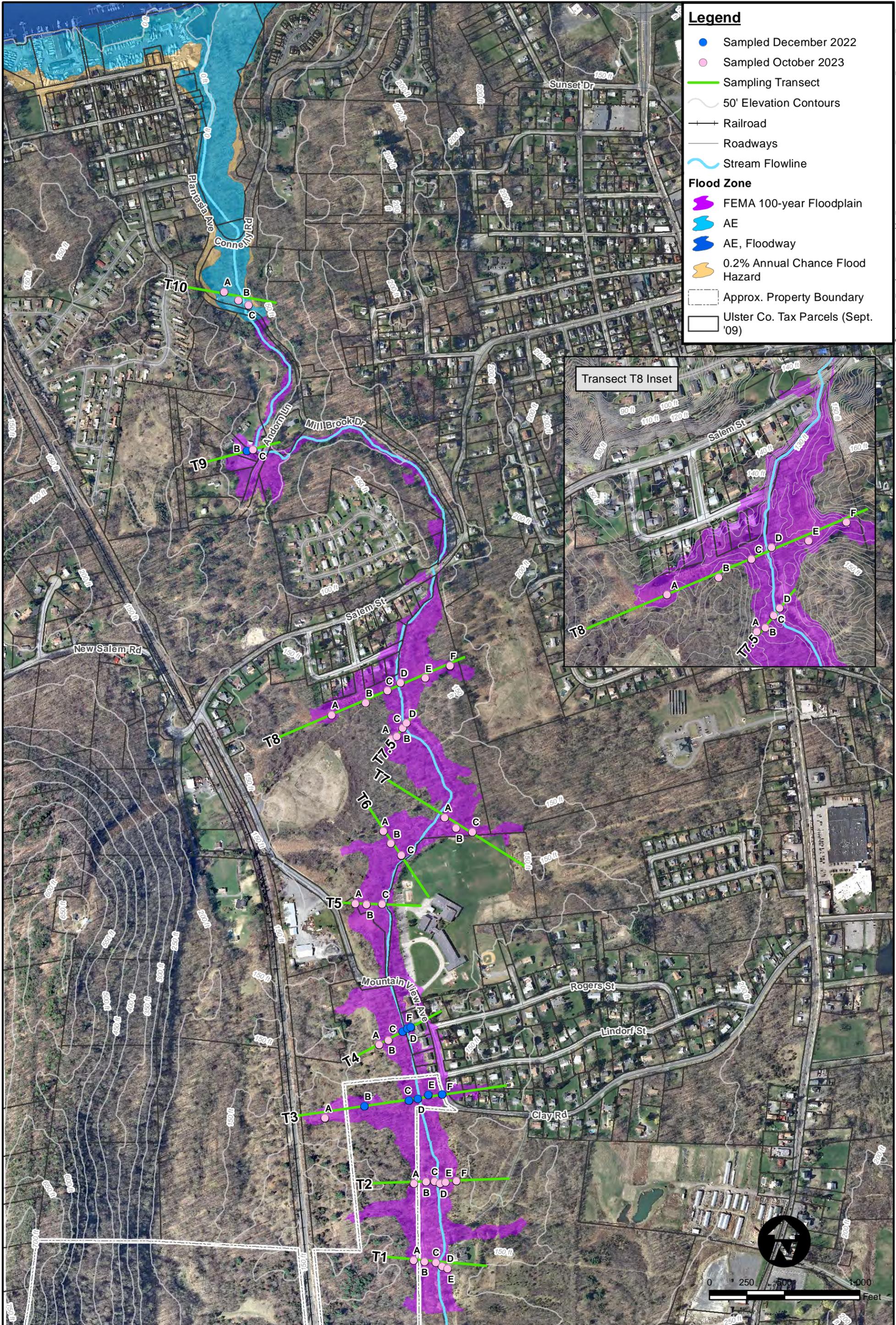
Figure 11E



Reviewed By:

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

J:\EHSS_GIS\000363_AshlandPortEwen\01_ANALYSIS\20190319_SoilResults\Figures\SoilResults.mxd
Printed 4/18/2019 3:58:41 PM by Justine Decker

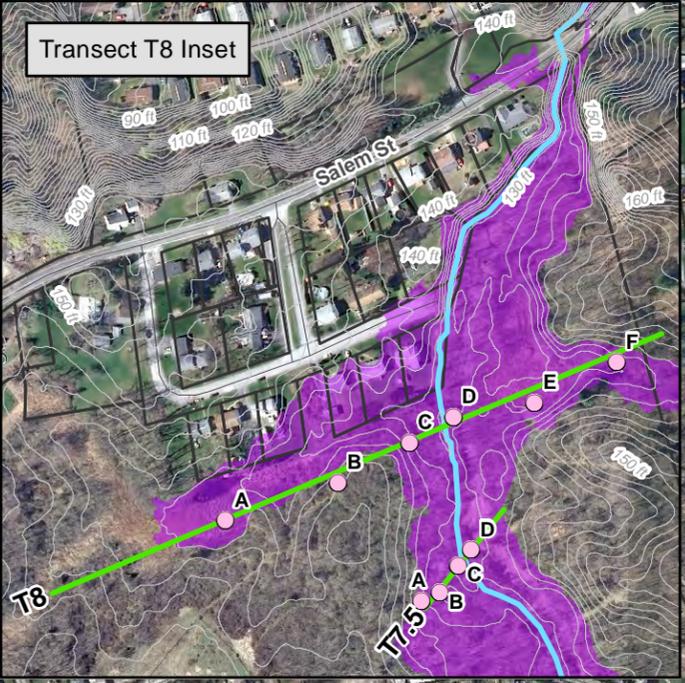


Legend

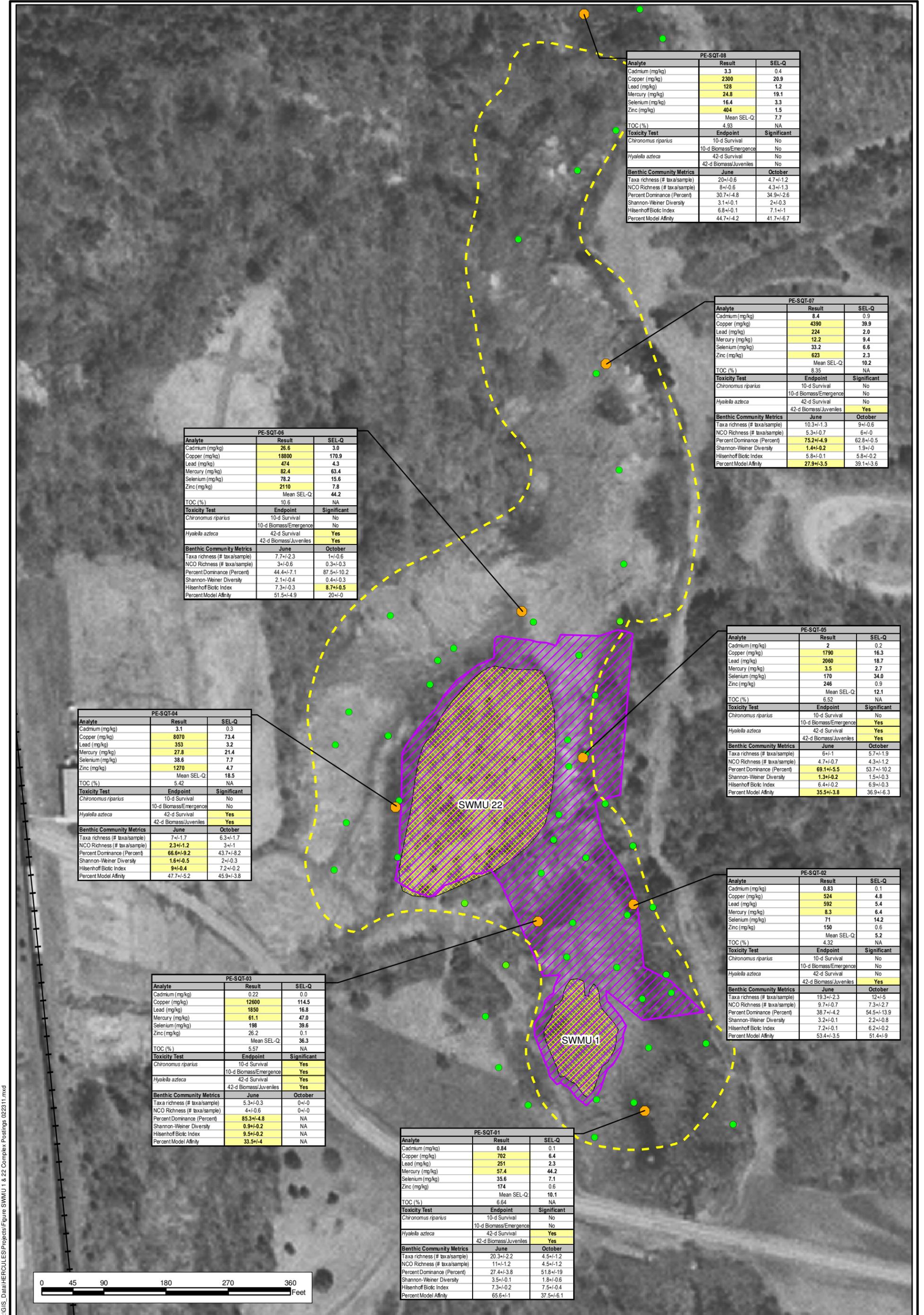
- Sampled December 2022
- Sampled October 2023
- Sampling Transect
- 50' Elevation Contours
- Railroad
- Roadways
- Stream Flowline

Flood Zone

- FEMA 100-year Floodplain
- AE
- AE, Floodway
- 0.2% Annual Chance Flood Hazard
- Approx. Property Boundary
- Ulster Co. Tax Parcels (Sept. '09)



J:\EHS\GIS\GIS00363_AshlandPortEwen\01_ANALYSIS\2024\417_Supplemental_Floodplain_Soil_Sampling\Set_Transect_Overview.mxd Printed 5/1/2024 8:54:35 AM by Cheibei Saranicki



PE-SQT-08		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	3.3	0.4
Copper (mg/kg)	2300	20.9
Lead (mg/kg)	128	1.2
Mercury (mg/kg)	24.8	19.1
Selenium (mg/kg)	16.4	3.3
Zinc (mg/kg)	404	1.5
	Mean SEL-Q:	7.7
TOC (%)	4.93	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	No
	10-d Biomass/Emergence	No
<i>Hyalella azteca</i>	42-d Survival	No
	42-d Biomass/Juveniles	No
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	20+/-0.6	4.7+/-1.2
NCO Richness (# taxa/sample)	8+/-0.6	4.3+/-1.3
Percent Dominance (Percent)	30.7+/-4.8	34.9+/-2.6
Shannon-Weiner Diversity	3.1+/-0.1	2+/-0.3
Hilsenhoff Biotic Index	6.8+/-0.1	7.1+/-1
Percent Model Affinity	44.7+/-4.2	41.7+/-6.7

PE-SQT-07		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	8.4	0.9
Copper (mg/kg)	4390	39.9
Lead (mg/kg)	224	2.0
Mercury (mg/kg)	12.2	9.4
Selenium (mg/kg)	33.2	6.6
Zinc (mg/kg)	623	2.3
	Mean SEL-Q:	10.2
TOC (%)	8.35	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	No
	10-d Biomass/Emergence	No
<i>Hyalella azteca</i>	42-d Survival	No
	42-d Biomass/Juveniles	Yes
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	10.3+/-1.3	9+/-0.6
NCO Richness (# taxa/sample)	5.3+/-0.7	6+/-0
Percent Dominance (Percent)	75.2+/-4.9	62.8+/-0.5
Shannon-Weiner Diversity	1.4+/-0.2	1.9+/-0
Hilsenhoff Biotic Index	5.8+/-0.1	5.8+/-0.2
Percent Model Affinity	27.9+/-3.5	39.1+/-3.6

PE-SQT-06		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	26.6	3.0
Copper (mg/kg)	18800	170.9
Lead (mg/kg)	474	4.3
Mercury (mg/kg)	82.4	63.4
Selenium (mg/kg)	78.2	15.6
Zinc (mg/kg)	2110	7.8
	Mean SEL-Q:	44.2
TOC (%)	10.6	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	No
	10-d Biomass/Emergence	No
<i>Hyalella azteca</i>	42-d Survival	Yes
	42-d Biomass/Juveniles	Yes
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	7.7+/-2.3	1+/-0.6
NCO Richness (# taxa/sample)	3+/-0.6	0.3+/-0.3
Percent Dominance (Percent)	44.4+/-7.1	87.5+/-10.2
Shannon-Weiner Diversity	2.1+/-0.4	0.4+/-0.3
Hilsenhoff Biotic Index	7.3+/-0.3	8.7+/-0.5
Percent Model Affinity	51.5+/-4.9	20+/-0

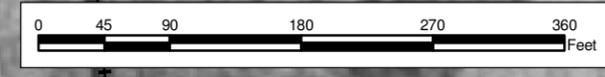
PE-SQT-05		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	2	0.2
Copper (mg/kg)	1790	16.3
Lead (mg/kg)	2060	18.7
Mercury (mg/kg)	3.5	2.7
Selenium (mg/kg)	170	34.0
Zinc (mg/kg)	246	0.9
	Mean SEL-Q:	12.1
TOC (%)	6.52	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	No
	10-d Biomass/Emergence	Yes
<i>Hyalella azteca</i>	42-d Survival	Yes
	42-d Biomass/Juveniles	Yes
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	6+/-1	5.7+/-1.9
NCO Richness (# taxa/sample)	4.7+/-0.7	4.3+/-1.2
Percent Dominance (Percent)	69.1+/-5.5	53.7+/-10.2
Shannon-Weiner Diversity	1.3+/-0.2	1.5+/-0.3
Hilsenhoff Biotic Index	6.4+/-0.2	6.9+/-0.3
Percent Model Affinity	35.5+/-3.8	36.9+/-6.3

PE-SQT-04		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	3.1	0.3
Copper (mg/kg)	8070	73.4
Lead (mg/kg)	353	3.2
Mercury (mg/kg)	27.8	21.4
Selenium (mg/kg)	38.6	7.7
Zinc (mg/kg)	1270	4.7
	Mean SEL-Q:	18.5
TOC (%)	5.42	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	No
	10-d Biomass/Emergence	No
<i>Hyalella azteca</i>	42-d Survival	Yes
	42-d Biomass/Juveniles	Yes
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	7+/-1.7	6.3+/-1.7
NCO Richness (# taxa/sample)	2.3+/-1.2	3+/-1
Percent Dominance (Percent)	66.6+/-9.2	43.7+/-8.2
Shannon-Weiner Diversity	1.6+/-0.5	2+/-0.3
Hilsenhoff Biotic Index	9+/-0.4	7.2+/-0.2
Percent Model Affinity	47.7+/-5.2	45.9+/-3.8

PE-SQT-02		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	0.83	0.1
Copper (mg/kg)	524	4.8
Lead (mg/kg)	592	5.4
Mercury (mg/kg)	8.3	6.4
Selenium (mg/kg)	71	14.2
Zinc (mg/kg)	150	0.6
	Mean SEL-Q:	5.2
TOC (%)	4.32	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	No
	10-d Biomass/Emergence	No
<i>Hyalella azteca</i>	42-d Survival	No
	42-d Biomass/Juveniles	Yes
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	19.3+/-2.3	12+/-5
NCO Richness (# taxa/sample)	9.7+/-0.7	7.3+/-2.7
Percent Dominance (Percent)	38.7+/-4.2	54.5+/-13.9
Shannon-Weiner Diversity	3.2+/-0.1	2.2+/-0.8
Hilsenhoff Biotic Index	7.2+/-0.1	6.2+/-0.2
Percent Model Affinity	53.4+/-3.5	51.4+/-9

PE-SQT-03		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	0.22	0.0
Copper (mg/kg)	12600	114.5
Lead (mg/kg)	1650	16.8
Mercury (mg/kg)	61.1	47.9
Selenium (mg/kg)	198	39.6
Zinc (mg/kg)	26.2	0.1
	Mean SEL-Q:	36.3
TOC (%)	5.57	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	Yes
	10-d Biomass/Emergence	Yes
<i>Hyalella azteca</i>	42-d Survival	Yes
	42-d Biomass/Juveniles	Yes
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	5.3+/-0.3	0+/-0
NCO Richness (# taxa/sample)	4+/-0.6	0+/-0
Percent Dominance (Percent)	85.3+/-4.8	NA
Shannon-Weiner Diversity	0.9+/-0.2	NA
Hilsenhoff Biotic Index	9.5+/-0.2	NA
Percent Model Affinity	33.5+/-4	NA

PE-SQT-01		
Analyte	Result	SEL-Q
Cadmium (mg/kg)	0.84	0.1
Copper (mg/kg)	702	6.4
Lead (mg/kg)	251	2.3
Mercury (mg/kg)	57.4	44.2
Selenium (mg/kg)	35.6	7.1
Zinc (mg/kg)	174	0.6
	Mean SEL-Q:	10.1
TOC (%)	6.64	NA
Toxicity Test	Endpoint	Significant
<i>Chironomus riparius</i>	10-d Survival	No
	10-d Biomass/Emergence	No
<i>Hyalella azteca</i>	42-d Survival	Yes
	42-d Biomass/Juveniles	Yes
Benthic Community Metrics	June	October
Taxa richness (# taxa/sample)	20.3+/-2.2	4.5+/-1.2
NCO Richness (# taxa/sample)	11+/-1.2	4.5+/-1.2
Percent Dominance (Percent)	27.4+/-3.8	51.8+/-19
Shannon-Weiner Diversity	3.5+/-0.1	1.8+/-0.6
Hilsenhoff Biotic Index	7.3+/-0.2	7.5+/-0.4
Percent Model Affinity	65.6+/-1	37.5+/-6.1



Legend

- SQT SEDIMENT SAMPLING STATION
- HISTORIC SEDIMENT SAMPLE LOCATION
- APPROXIMATE SWMU/AOC BOUNDARY
- APPROXIMATE EXTENT OF REMEDIAL BOUNDARY PROPOSED IN 2006 CMS
- SWMU 1/22 BOUNDARY



FIGURE 13
SEDIMENT QUALITY TRIAD SAMPLING LOCATIONS – SWMU 1/22 WETLAND COMPLEX
 FWIA STEP I/C INVESTIGATION
 HERCULES SITE
 PORT EWEN, NEW YORK

Map Source:
 Image: NYSGIS (2004)
 Boundaries: Site and property boundaries approximations were determined using available data from historical maps and CAD files.



C:\GIS_Data\HERCULES\Projects\Figure SWMU 1 & 22 Complex Postings 022311.mxd

Note: All concentrations are represented as mg/kg. Bold sediment concentrations indicate an exceedance of the LEL; shaded concentrations indicate an exceedance of the SEL; Shaded sediment toxicity testing and benthic community results indicate statistical significance relevant to reference stations.



PE-DRN-SD-02					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.57	0.37	0.37	0.13
Arsenic	MG/KG	7.4	6.4	6.4	3.9
Barium	MG/KG	156	121	196	159
Cadmium	MG/KG	7.5	3.9	1	0.41
Chromium	MG/KG	23.2	16.7	25.7	23.5
Cobalt	MG/KG	11.1	7.6	9.4	8.4
Copper	MG/KG	794	582	63.9	27.7
Lead	MG/KG	159	108	47.6	23.1
Mercury	MG/KG	5.7	9	1.3	0.39
Selenium	MG/KG	24.3	9.1	3.3	2.2
Silver	MG/KG	0.36	0.19	0.19	0.13
Zinc	MG/KG	156	111	94.6	67.9

PE-DRN-SD-03					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.17	0.45	0.38	0.27
Arsenic	MG/KG	5.6	72.6	26	12.3
Barium	MG/KG	36.3	79.4	89.4	133
Cadmium	MG/KG	0.67	2.2	2.4	1
Chromium	MG/KG	5.8	12.4	8.9	19.6
Cobalt	MG/KG	3.3	6.4	5.9	10.3
Copper	MG/KG	89.9	189	115	213
Lead	MG/KG	36.7	51.2	28	64.2
Mercury	MG/KG	2.2	2.2	1	29.4
Selenium	MG/KG	7.6	29.6	37.9	14.6
Silver	MG/KG	0.62	0.47	0.49	0.36
Zinc	MG/KG	107	1770	854	315

PE-DRN-SD-04					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.13	0.11	0.063	0.061
Arsenic	MG/KG	3.1	2.9	2.4	1.5
Barium	MG/KG	161	133	152	140
Cadmium	MG/KG	0.41	0.3	0.34	0.26
Chromium	MG/KG	25.8	21.9	22.3	20
Cobalt	MG/KG	10.7	9.7	8.8	8.8
Copper	MG/KG	44.2	69.8	23.7	36.9
Lead	MG/KG	21.1	18.4	18.3	17.9
Mercury	MG/KG	1.6	1.9	0.57	0.25
Selenium	MG/KG	2.2	1.9	2.2	1.1
Silver	MG/KG	0.18	0.26	0.16	0.16
Zinc	MG/KG	103	80.7	76.5	73.4

PE-DRN-SD-01					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.41	0.31	0.26	0.29
Arsenic	MG/KG	9.5	8.3	6.9	7.9
Barium	MG/KG	96.5	88.2	86.1	94.5
Cadmium	MG/KG	2.1	0.51	0.34	0.27
Chromium	MG/KG	18.6	19.6	19	20.4
Cobalt	MG/KG	16.4	15.2	13.9	13.8
Copper	MG/KG	125	99.2	72.7	53.1
Lead	MG/KG	48.5	40.2	91.3	30.3
Mercury	MG/KG	21.5	9.3	5.3	5.5
Selenium	MG/KG	2.2	1.4	0.94	0.76
Silver	MG/KG	0.054	0.046	0.039	0.04
Zinc	MG/KG	69.9	69.3	65.4	68.3

PE-DRN-SD-05					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.59	0.13	0.095	0.1
Arsenic	MG/KG	5.2	4	3.3	2.3
Barium	MG/KG	187	165	163	195
Cadmium	MG/KG	2.2	0.6	0.56	0.53
Chromium	MG/KG	23.8	24.6	22.7	24
Cobalt	MG/KG	10.4	9.8	9.1	9.4
Copper	MG/KG	349	42.5	31.6	35.3
Lead	MG/KG	71.6	22.9	21.1	21
Mercury	MG/KG	10.7	0.81	0.46	0.36
Selenium	MG/KG	26.5	3.3	3.3	3
Silver	MG/KG	27.1	0.87	1.1	1.3
Zinc	MG/KG	277	118	91.1	88

PE-DRN-SD-06					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.5	0.66	0.47	0.43
Arsenic	MG/KG	13.1	15.4	13.5	12.2
Barium	MG/KG	166	207	165	150
Cadmium	MG/KG	1.9	5.2	2	1.5
Chromium	MG/KG	19	20.1	17.7	16.1
Cobalt	MG/KG	10.4	12.7	10.6	9.3
Copper	MG/KG	2240	4870	2700	3660
Lead	MG/KG	209	356	212	211
Mercury	MG/KG	24.2	34.3	31.1	73.6
Selenium	MG/KG	9.3	16.1	9.6	9.3
Silver	MG/KG	0.31	0.56	0.3	0.25
Zinc	MG/KG	1030	1410	1200	874

PE-DRN-SD-09					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.091	0.12	0.19	0.19
Arsenic	MG/KG	1.3	2.9	5.7	8.4
Barium	MG/KG	101	83.2	97.8	82.6
Cadmium	MG/KG	0.21	0.23	0.31	0.27
Chromium	MG/KG	18.2	16.7	19.5	18.6
Cobalt	MG/KG	11.6	10.3	13.2	11.9
Copper	MG/KG	41.7	48	35.2	35.4
Lead	MG/KG	19	25.3	21.8	21.1
Mercury	MG/KG	8	4.6	1.4	1.3
Selenium	MG/KG	0.63	0.87	0.69	0.63
Silver	MG/KG	0.071	0.073	0.07	0.069
Zinc	MG/KG	65.8	69.7	74.6	74.9

PE-DRN-SD-07					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.5	0.86	1.5	0.44
Arsenic	MG/KG	18	15.4	15.5	10.3
Barium	MG/KG	394	382	307	172
Cadmium	MG/KG	4	4	4.1	1.6
Chromium	MG/KG	23.6	22.3	30.4	20.4
Cobalt	MG/KG	12.6	11.4	12.3	8.8
Copper	MG/KG	6660	6550	5360	6940
Lead	MG/KG	285	232	235	205
Mercury	MG/KG	22.7	18.8	15.4	27.3
Selenium	MG/KG	17.9	12.7	15.7	6.7
Silver	MG/KG	0.85	0.4	0.34	0.3
Zinc	MG/KG	1770	1370	1120	733

PE-DRN-SD-10					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.12	0.11	0.15	0.31
Arsenic	MG/KG	3.1	3.3	5.2	7.8
Barium	MG/KG	108	104	97.2	95.7
Cadmium	MG/KG	0.23	0.17	0.2	0.25
Chromium	MG/KG	16.8	16.7	20.7	22
Cobalt	MG/KG	8.7	10	12	13.9
Copper	MG/KG	15.8	14.5	24.1	26.5
Lead	MG/KG	23.8	17.4	16.1	19.5
Mercury	MG/KG	2.8	0.28	0.12	0.12
Selenium	MG/KG	0.99	0.65	0.49	0.56
Silver	MG/KG	0.057	0.049	0.063	0.07
Zinc	MG/KG	75.3	58.8	72.3	77.5

PE-DRN-SD-08					
Analyte	Units	0.0'-0.05'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'
Antimony	MG/KG	0.61	1.2	0.67	0.23
Arsenic	MG/KG	46.3	90.4	69.2	7.7
Barium	MG/KG	121	167	153	114
Cadmium	MG/KG	2.4	4.6	2.2	0.54
Chromium	MG/KG	20.3	19.9	22	22.9
Cobalt	MG/KG	9.4	13.6	19.9	31.5
Copper	MG/KG	284	335	309	67.5
Lead	MG/KG	185	137	176	38.3
Mercury	MG/KG	4.6	6.1	114	6.5
Selenium	MG/KG	9.8	10.5	6.8	1.7
Silver	MG/KG	0.42	0.22	0.11	0.075
Zinc	MG/KG	317	571	700	178

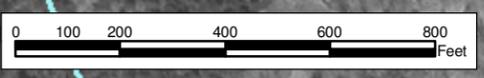
Legend

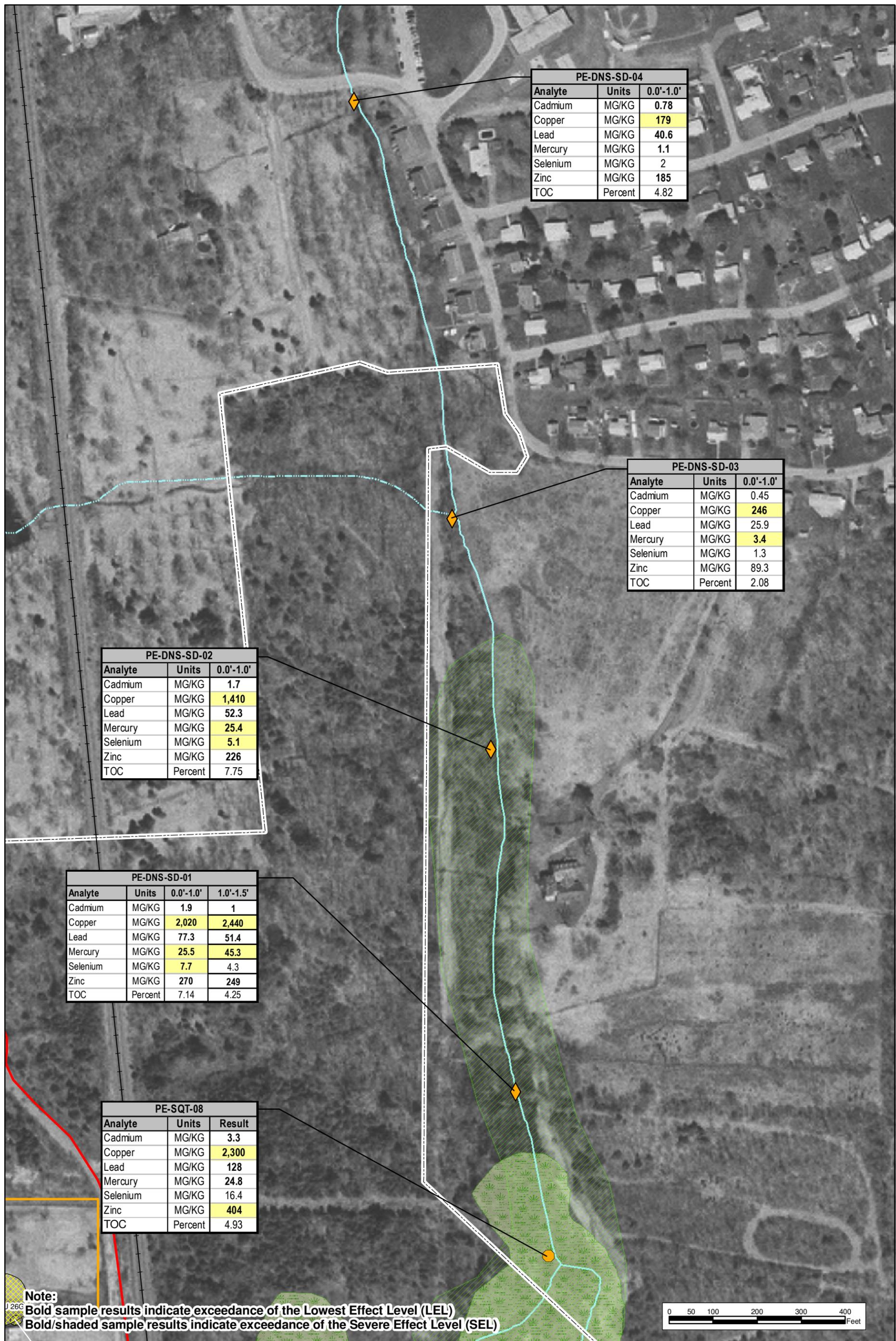
- SITE DRAINAGE SEDIMENT SAMPLES
- NYSDEC MAPPED CLASS 2 WETLANDS
- PERENNIAL STREAM
- APPROXIMATE PROPERTY BOUNDARY
- RAILROAD
- NYSDEC MAPPED CLASS 3 WETLANDS
- INTERMITTENT STREAM
- APPROXIMATE SWMU/AOC BOUNDARY
- SWAMP/MARSH
- ARTIFICIAL PATH
- SWMU 1/22 BOUNDARY
- CONNECTOR
- APPROXIMATE SITE BOUNDARY

FIGURE 14
SITE DRAINAGE FEATURES - SEDIMENT SAMPLING RESULTS
 FWIA STEP I/C INVESTIGATION
 HERCULES SITE
 PORT EWEN, NEW YORK

Map Source:
 Fresh water wetlands: New York State Department of Environmental Conservation
 Surface water: National Hydrography Dataset
 Courtesy: United States Department of Agriculture/Natural Resource Conservation Service
 National Cartography and Geospatial Center digital elevation models
 Boundaries: Site and property boundaries approximations were determined using available data from historical maps and CAD files.

URS
 Fort Washington, PA





PE-DNS-SD-04		
Analyte	Units	0.0'-1.0'
Cadmium	MG/KG	0.78
Copper	MG/KG	179
Lead	MG/KG	40.6
Mercury	MG/KG	1.1
Selenium	MG/KG	2
Zinc	MG/KG	185
TOC	Percent	4.82

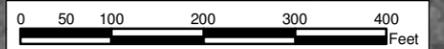
PE-DNS-SD-03		
Analyte	Units	0.0'-1.0'
Cadmium	MG/KG	0.45
Copper	MG/KG	246
Lead	MG/KG	25.9
Mercury	MG/KG	3.4
Selenium	MG/KG	1.3
Zinc	MG/KG	89.3
TOC	Percent	2.08

PE-DNS-SD-02		
Analyte	Units	0.0'-1.0'
Cadmium	MG/KG	1.7
Copper	MG/KG	1,410
Lead	MG/KG	52.3
Mercury	MG/KG	25.4
Selenium	MG/KG	5.1
Zinc	MG/KG	226
TOC	Percent	7.75

PE-DNS-SD-01			
Analyte	Units	0.0'-1.0'	1.0'-1.5'
Cadmium	MG/KG	1.9	1
Copper	MG/KG	2,020	2,440
Lead	MG/KG	77.3	51.4
Mercury	MG/KG	25.5	45.3
Selenium	MG/KG	7.7	4.3
Zinc	MG/KG	270	249
TOC	Percent	7.14	4.25

PE-SQT-08		
Analyte	Units	Result
Cadmium	MG/KG	3.3
Copper	MG/KG	2,300
Lead	MG/KG	128
Mercury	MG/KG	24.8
Selenium	MG/KG	16.4
Zinc	MG/KG	404
TOC	Percent	4.93

Note:
Bold sample results indicate exceedance of the Lowest Effect Level (LEL)
Bold/shaded sample results indicate exceedance of the Severe Effect Level (SEL)



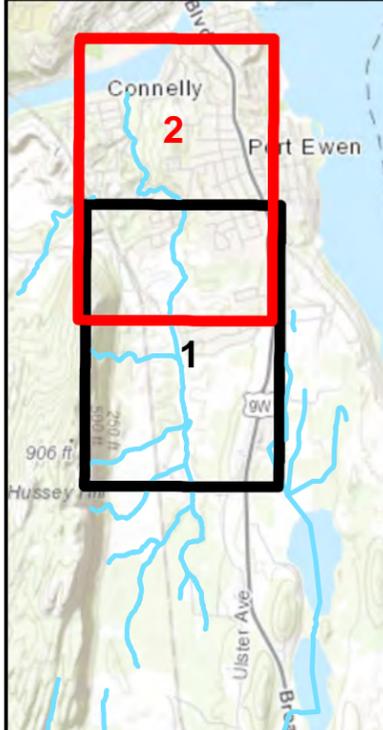
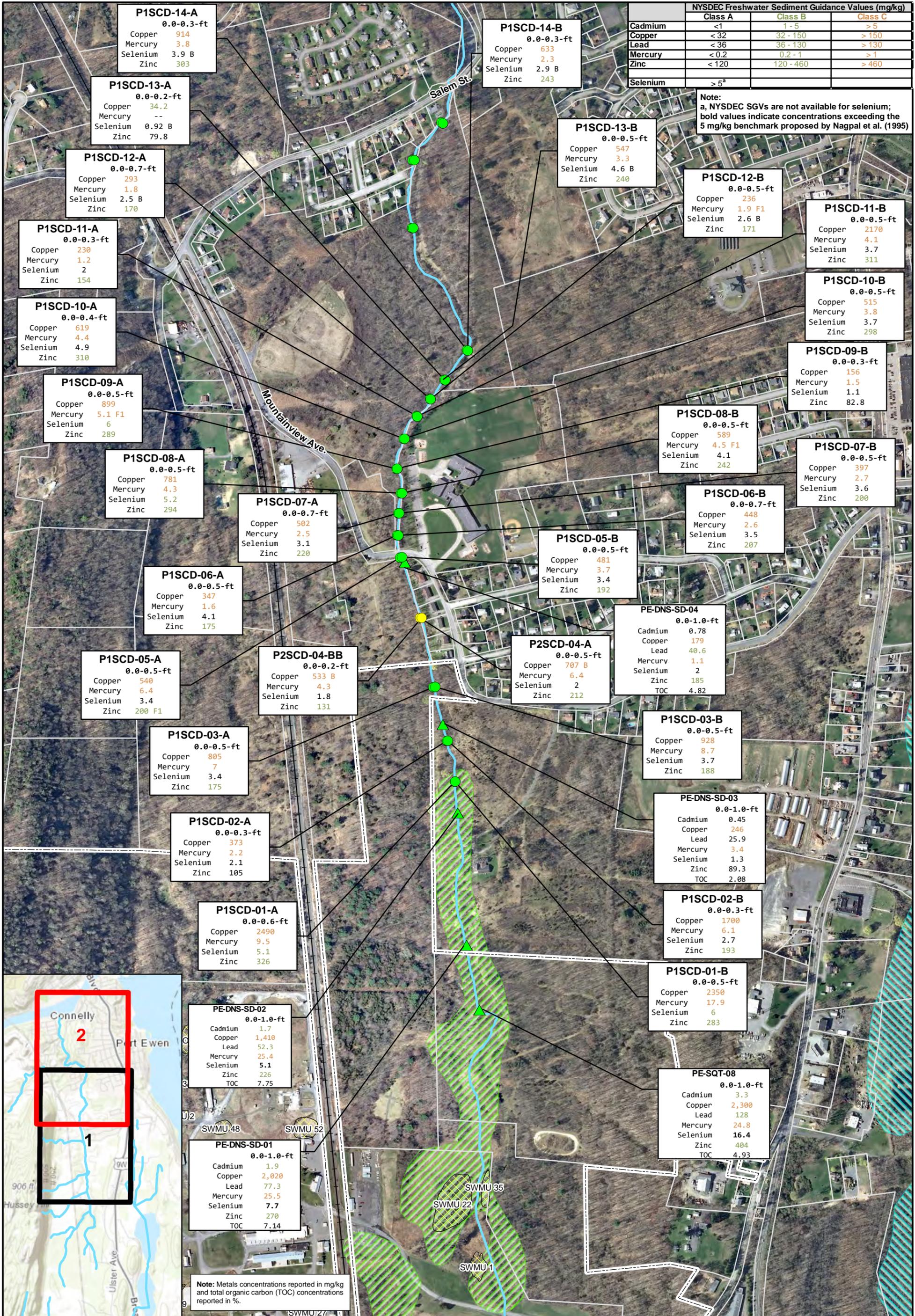
C:\GIS_Data\HERCULES\Projects\Figure 6 Active Plant Area Sample Postings.mxd

- Legend**
- DOWNSTREAM SEDIMENT SAMPLING STATION
 - SQT SEDIMENT SAMPLING STATION
 - RAILROAD
 - PERENNIAL STREAM
 - INTERMITTENT STREAM
 - SWAMP/MARSH
 - NYSDEC MAPPED CLASS 2 WETLANDS
 - NYSDEC MAPPED CLASS 3 WETLANDS
 - APPROXIMATE PROPERTY BOUNDARY

FIGURE 15
DOWNSTREAM SEDIMENT SAMPLING STATIONS - SWMU 1/22 WETLAND COMPLEX
 FWIA STEP I/C INVESTIGATION
 HERCULES SITE
 PORT EWEN, NEW YORK

Map Source:
 Fresh water wetlands: New York State Department of Environmental Conservation
 Surface water: National Hydrography Dataset
 Contours: United States Department of Agriculture/Natural Resource Conservation Service
 National Cartography and Geospatial Center digital elevation models
 Boundaries: Site and property boundaries approximations were determined using available data from historical maps and CAD files.





Legend

- ▲ 2010 FWRIA Sediment Sampling Station
- 2016 Phase 1/1A Sediment Delineation Station
- 2017 Phase 2 Sediment Delineation Station
- Railroad
- Stream Flowline
- NYSDEC Mapped Class 2 Wetland
- NYSDEC Mapped Class 3 Wetland
- Approximate SWMU/AOC Boundary
- Approx. Property Boundary
- Ulster Co. Tax Parcels (Sept. '09)

FIGURE 16A
 PLANTASIE CREEK SEDIMENT SAMPLING RESULTS
 SITE TO TRANSECT 14
 2016-2017 DOWNSTREAM SEDIMENT INVESTIGATION
 HERCULES SITE
 PORT EWEN, NEW YORK

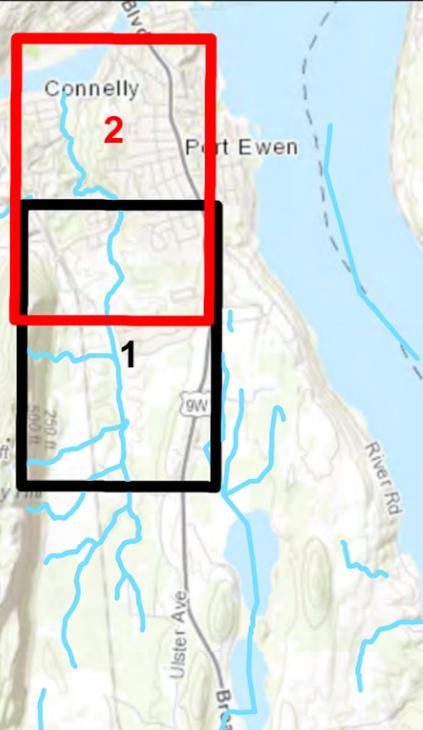
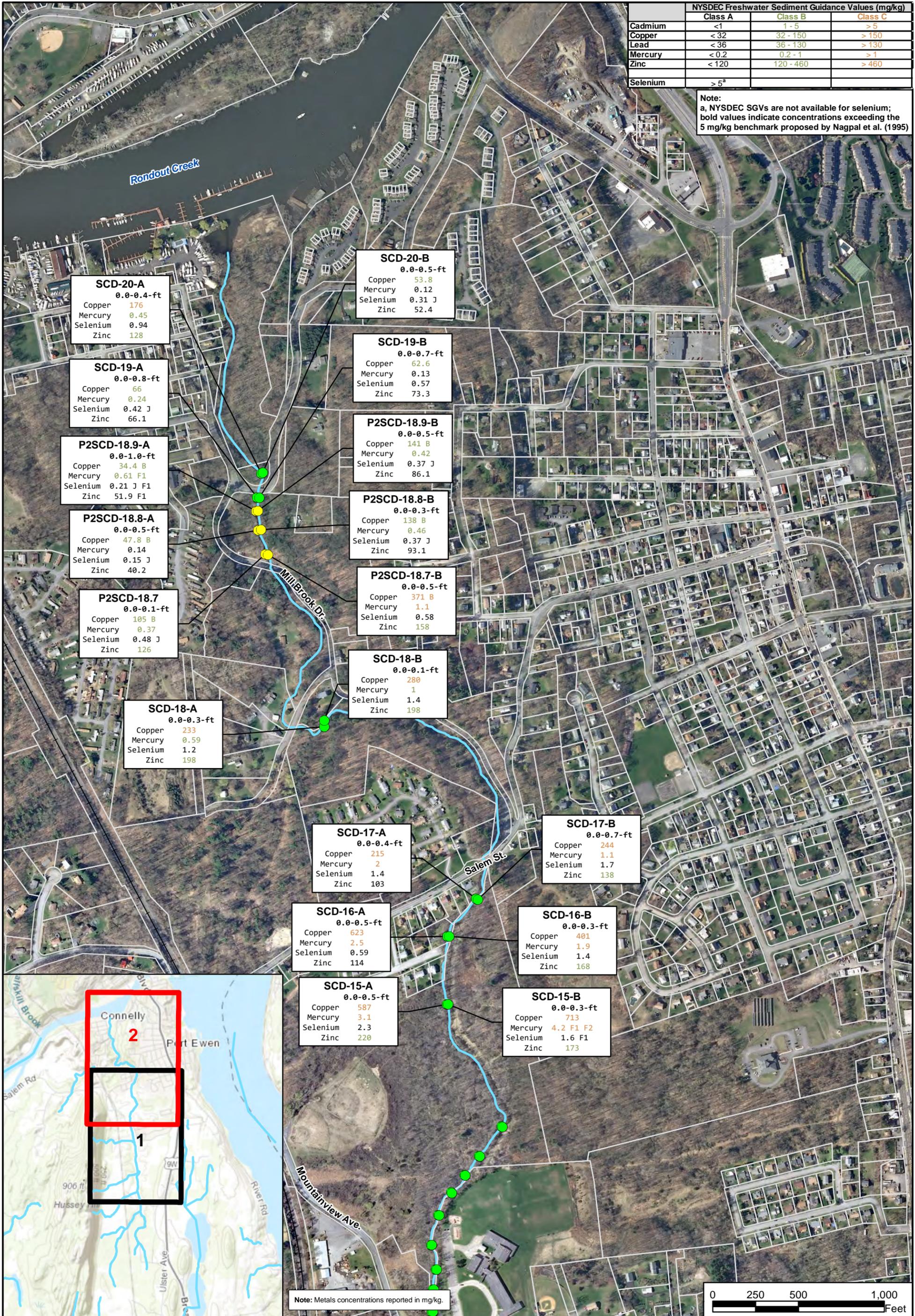
Map Source:
 Fresh water wetlands: New York State Department of Environmental Conservation
 Surface water: National Hydrography Dataset
 Boundaries: Site and property boundaries approximations were determined using available data from historical maps and CAD files.
 Imagery: 2013 Ortho Imagery - NYS Office of IT, GIS Services

EHS Support

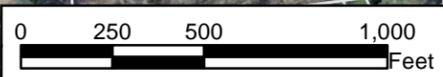
Document Path: J:\EHS_GIS\GIS\0603_AshlandPortEwen01_ANALYSIS\0170623_Sediment\PortEwen_SamplingPlan - Data Posting - Phil Posting - 1.mxd

NYSDEC Freshwater Sediment Guidance Values (mg/kg)			
	Class A	Class B	Class C
Cadmium	<1	1 - 5	> 5
Copper	< 32	32 - 150	> 150
Lead	< 36	36 - 130	> 130
Mercury	< 0.2	0.2 - 1	> 1
Zinc	< 120	120 - 460	> 460
Selenium	> 5 ^a		

Note:
a. NYSDEC SGVs are not available for selenium;
bold values indicate concentrations exceeding the
5 mg/kg benchmark proposed by Nagpal et al. (1995)



Note: Metals concentrations reported in mg/kg.



Sediment Sampling Phase

- ▲ 2010 FWRIA Sediment Sampling Station
- 2016 Phase 1/1A Sediment Delineation Station
- 2017 Phase 2 Sediment Delineation Station

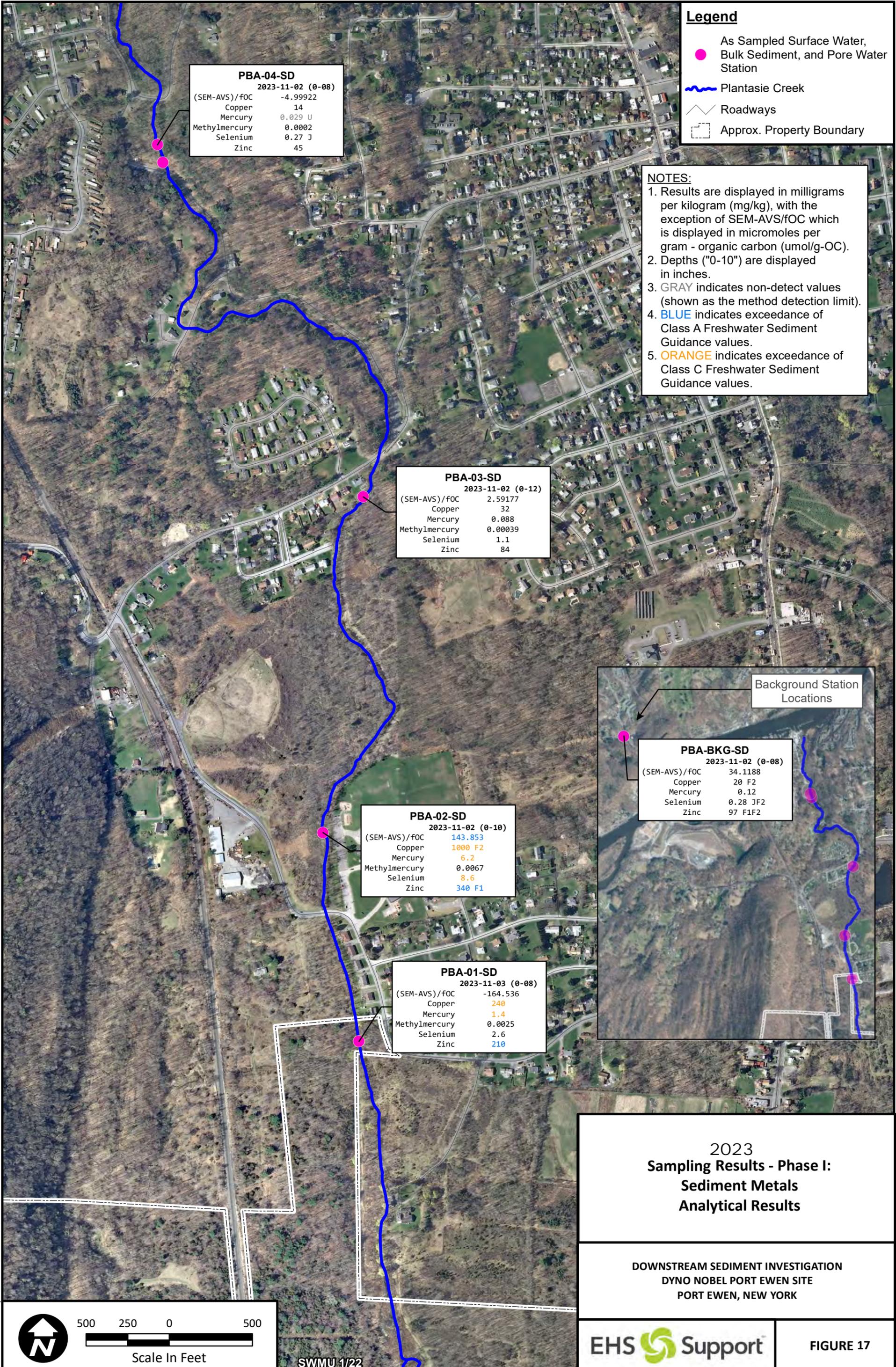
Legend

- Railroad
- Stream Flowline
- Approximate SWMU/AOC Boundary
- Approx. Property Boundary
- Ulster Co. Tax Parcels (Sept. '09)

FIGURE 16B
PLANTASIE CREEK SEDIMENT SAMPLING RESULTS
TRANSECT 15 TO RONDOUT CREEK
2016-2017 DOWNSTREAM SEDIMENT INVESTIGATION
HERCULES SITE
PORT EWEN, NEW YORK

Map Source:
Fresh water wetlands: New York State Department of Environmental Conservation
Surface water: National Hydrography Dataset
Boundaries: Site and property boundaries approximations were determined using available data from historical maps and CAD files.
Imagery: 2013 Ortho Imagery - NYS Office of IT, GIS Services

Document Path: J:\EHS_GIS\000363_Ashland\PortEwen\1 - Data Posting - Phil Posting - 2.mxd



Legend

- As Sampled Surface Water, Bulk Sediment, and Pore Water Station
- Plantasie Creek
- Roadways
- Approx. Property Boundary

NOTES:

1. Results are displayed in milligrams per kilogram (mg/kg), with the exception of SEM-AVS/fOC which is displayed in micromoles per gram - organic carbon (umol/g-OC).
2. Depths ("0-10") are displayed in inches.
3. GRAY indicates non-detect values (shown as the method detection limit).
4. BLUE indicates exceedance of Class A Freshwater Sediment Guidance values.
5. ORANGE indicates exceedance of Class C Freshwater Sediment Guidance values.

PBA-04-SD
2023-11-02 (0-08)

(SEM-AVS)/fOC	-4.99922
Copper	14
Mercury	0.029 U
Methylmercury	0.0002
Selenium	0.27 J
Zinc	45

PBA-03-SD
2023-11-02 (0-12)

(SEM-AVS)/fOC	2.59177
Copper	32
Mercury	0.088
Methylmercury	0.00039
Selenium	1.1
Zinc	84

PBA-02-SD
2023-11-02 (0-10)

(SEM-AVS)/fOC	143.853
Copper	1000 F2
Mercury	6.2
Methylmercury	0.0067
Selenium	8.6
Zinc	340 F1

PBA-01-SD
2023-11-03 (0-08)

(SEM-AVS)/fOC	-164.536
Copper	240
Mercury	1.4
Methylmercury	0.0025
Selenium	2.6
Zinc	210

Background Station Locations

PBA-BKG-SD
2023-11-02 (0-08)

(SEM-AVS)/fOC	34.1188
Copper	20 F2
Mercury	0.12
Selenium	0.28 JF2
Zinc	97 F1F2

**2023
Sampling Results - Phase I:
Sediment Metals
Analytical Results**

**DOWNSTREAM SEDIMENT INVESTIGATION
DYNO NOBEL PORT EWEN SITE
PORT EWEN, NEW YORK**

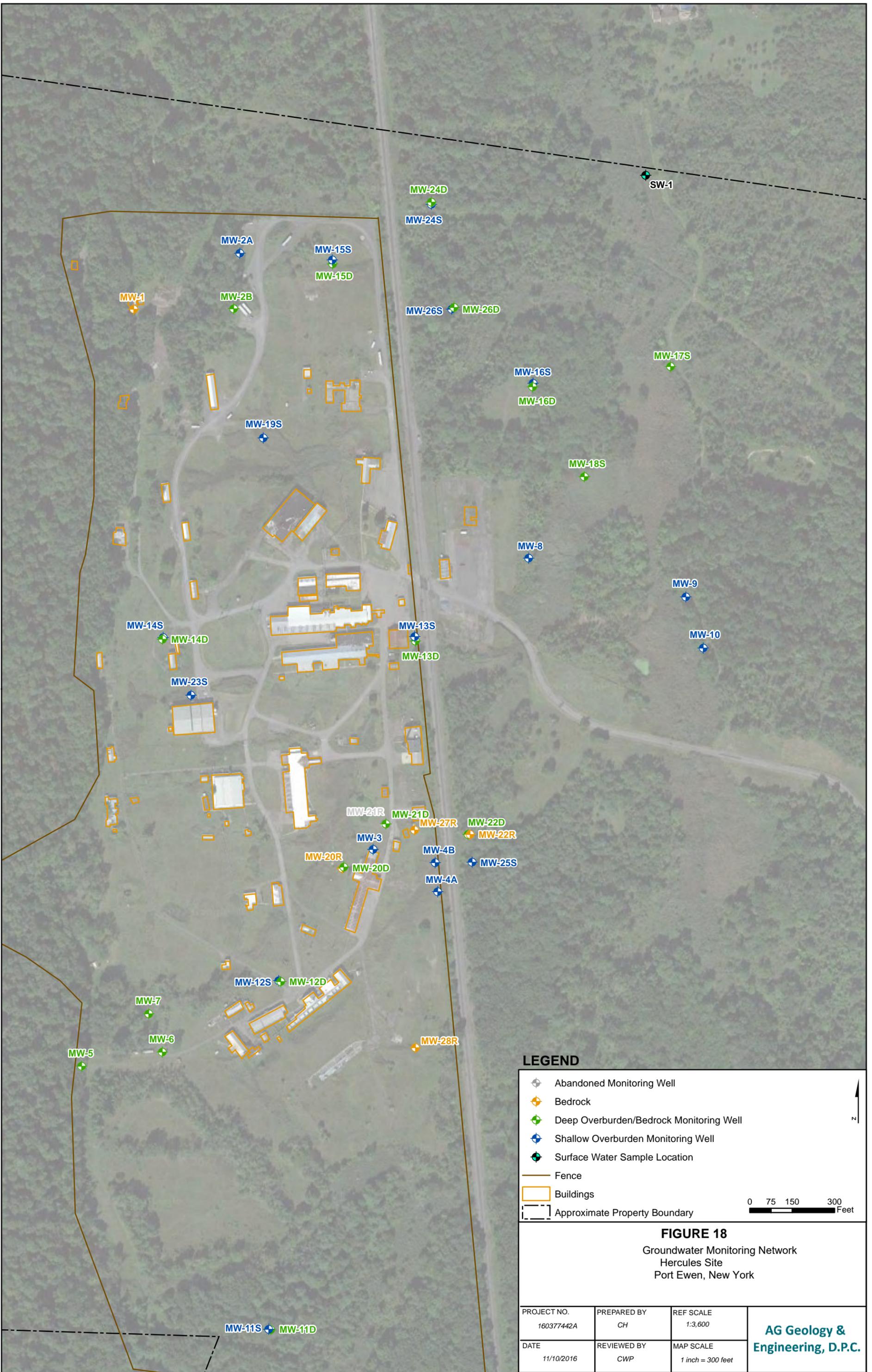
EHS Support

FIGURE 17

Reviewed By:

Scale In Feet

SWMU 1/22



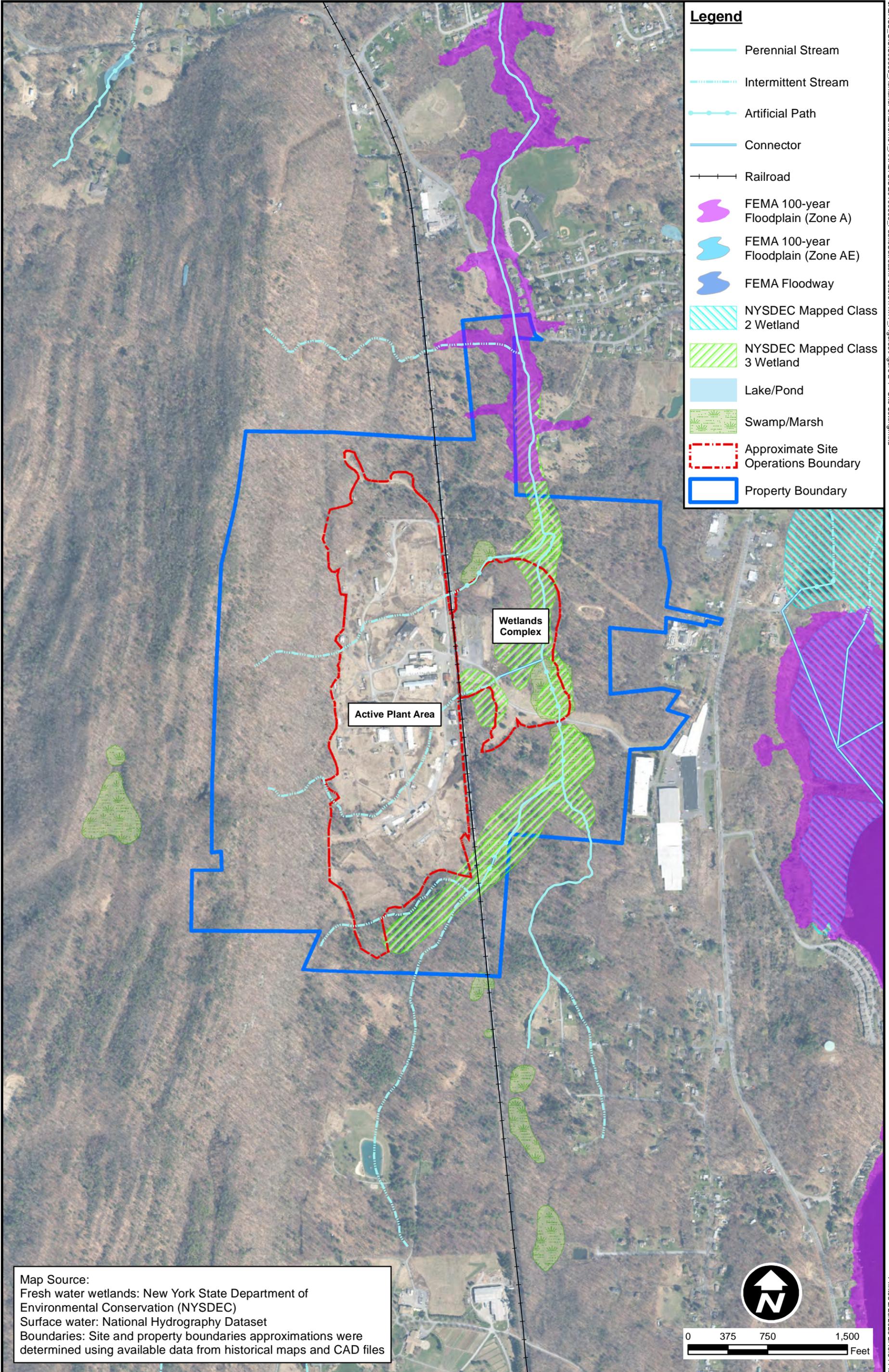
LEGEND

-  Abandoned Monitoring Well
-  Bedrock
-  Deep Overburden/Bedrock Monitoring Well
-  Shallow Overburden Monitoring Well
-  Surface Water Sample Location
-  Fence
-  Buildings
-  Approximate Property Boundary

0 75 150 300 Feet

FIGURE 18
 Groundwater Monitoring Network
 Hercules Site
 Port Ewen, New York

PROJECT NO. 160377442A	PREPARED BY CH	REF SCALE 1:3,600	AG Geology & Engineering, D.P.C.
DATE 11/10/2016	REVIEWED BY CWP	MAP SCALE 1 inch = 300 feet	



- Legend**
- Perennial Stream
 - Intermittent Stream
 - Artificial Path
 - Connector
 - Railroad
 - FEMA 100-year Floodplain (Zone A)
 - FEMA 100-year Floodplain (Zone AE)
 - FEMA Floodway
 - NYSDEC Mapped Class 2 Wetland
 - NYSDEC Mapped Class 3 Wetland
 - Lake/Pond
 - Swamp/Marsh
 - Approximate Site Operations Boundary
 - Property Boundary

Active Plant Area

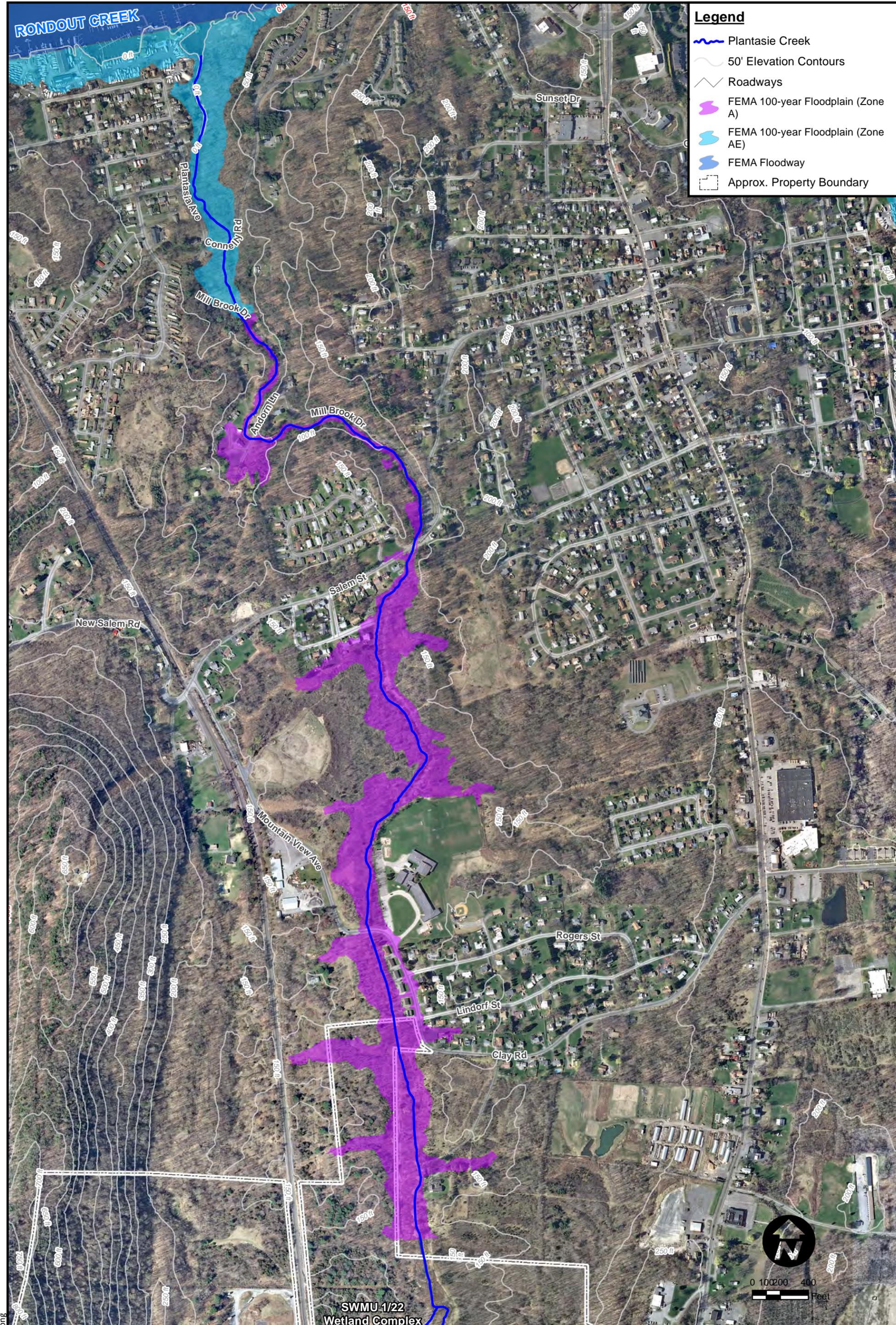
Wetlands Complex

Map Source:
 Fresh water wetlands: New York State Department of Environmental Conservation (NYSDEC)
 Surface water: National Hydrography Dataset
 Boundaries: Site and property boundaries approximations were determined using available data from historical maps and CAD files



0 375 750 1,500
 Feet

Reviewed By: K. VanLandingham



Legend

- Plantasie Creek
- 50' Elevation Contours
- Roadways
- FEMA 100-year Floodplain (Zone A)
- FEMA 100-year Floodplain (Zone AE)
- FEMA Floodway
- Approx. Property Boundary