

APPENDIX A

Photographic Log

Client Name: Dyno Nobel/Ashland		Site Location: Port Ewen, New York	Project No. 19998508.00002 19998509.00002
Photo No. 1	Date: 11/11/2010		
Direction Photo Taken: S			
<p>PE-DNS-SD-01</p> <p>View: Looking upstream from sampling location PE-DNS-SD-01</p> <p>PE-SQT-08 is approximately at far extent of view.</p>			

Photo No. 2	Date: 11/11/2010		
Direction Photo Taken: S			
<p>PE-DNS-SD-02</p> <p>View: Looking upstream from sampling location PE-DNS-SD-02</p>			

Client Name: Dyno Nobel/Ashland		Site Location: Port Ewen, New York	Project No. 19998508.00002 19998509.00002
Photo No. 3	Date: 11/11/2010		
Direction Photo Taken: S			
<p>PE-DNS-SD-03</p> <p>View: Looking upstream from sampling location PE-DNS-SD-03</p>			

Photo No. 4	Date: 10/28/2010	
Direction Photo Taken: S		
<p>PE-DNS-SD-04</p> <p>View: Looking upstream at sampling location from bridge at Mountain View Road</p>		

APPENDIX B

SWMU/AOC Descriptions

The SWMUs and AOCs to be addressed as part of this CMS revision are presented below. A description of the wastes handled at each unit is taken from the RFA.

SWMU No. 1: Shooting Pond - The unit managed off-specification PETN, DDNP, HMX, PBX, RDX, lead azide, lead styphnate, detonation caps and devices, and sump powder waste. Interim Corrective Measures at this unit did not find any explosives at reactive quantities. However, as reported in the Sampling Visit Report, metals concentrations were found in the pond sediment above the screening criteria.

SWMU No. 2: Burning Cage Incinerator - This unit managed approximately 1,200 to 2,500 pounds of explosive contaminated waste per burn with approximately 500 pounds of ash generated at each of two to four burns per week.

SWMU No. 3: Copper Wire Burning Area - This unit managed (burned) scrap copper wire covered with plastic insulation until July 1993. The waste usually included some blasting caps. The waste potentially contained, or has in the past contained, arsenic, copper, cadmium, lead, mercury, selenium, silver, and chromium.

SWMU No. 4: Iron Wire Burning Area - This unit managed (burned) scrap iron wire covered with plastic insulation. The waste usually included some blasting caps. The waste potentially contained arsenic, barium, cadmium, lead, mercury, selenium, silver, and chromium.

SWMU No. 5: Wire Burning Area III - Facility personnel were not able to identify what waste had been burned at the unit. The unit showed dark stains and was littered with bits of paper and wire.

SWMU Nos. 6 and 7: Open Burning Pads - These units managed up to 500 pounds at a time of reactive and ignitable wastes, which were not suitable for open detonation. The residual waste may have also contained arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, or tellurium.

SWMU No. 8: Former Burning Area - This unit managed reactive and ignitable wastes, which were not suitable for open detonation. The residual waste may have contained arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, or tellurium.

SWMU No. 9: Waste Powder Catch Basins - Building 2037 - This unit managed waste powder (unknown type) in water.

SWMU No. 10: Waste Powder Catch Basins - Building 2048 - This unit managed waste PETN, RDX, HMX, PBX, and DDNP powder in water.

SWMU No. 11: Waste Powder Catch Basins - Building 2049 - This unit managed waste DDNP powder (unknown type) in water.

SWMU No. 13: Former Waste Powder Catch Basins - Lead Azide Building - The unit managed waste lead azide powder in water (K046).

SWMU No. 21: Lead Recycling Unit Area - This unit managed waste ignition powders and blasting cap components containing lead and selenium.

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SWMU No. 13: Former Waste Powder Catch Basins - Lead Azide Building - The unit managed waste lead azide powder in water (K046).

SWMU No. 21: Lead Recycling Unit Area - This unit managed waste ignition powders and blasting cap components containing lead and selenium.

SWMU No. 22: Former Landfill - Potentially hazardous and non-hazardous wastes, including ash, flashed debris, and general building debris are reported to have been disposed in this unit.

SWMU No. 23: Former Dump - This unit managed used equipment, and used 55-gallon drums. This unit may also have potentially managed PCB-containing transformers.

SWMU No. 24: Former Wastewater Treatment Facility - This unit is known to have managed acidic wastewaters and waste degreaser solvents, and potentially explosive-containing process waters and explosive-containing waste oils.

SWMU No. 26: Burnable Waste Satellite Areas - These units consisted of open-topped metal dumpsters, which managed waste packaging materials possibly contaminated with explosive materials.

SWMU No. 29: Drainage Ditch (Downgradient of Building 2049) - This unit managed process wastewaters containing potentially explosive material and may have managed waste degreaser solvents.

SWMU No. 30: Drainage Ditch (Downgradient of Building 2036) - This unit managed acidic process wastewaters potentially containing explosive material and waste degreaser solvents.

SWMU No. 32: Old Dump (near water tower) - The wastes managed by this unit are unknown. Miscellaneous metal debris and the remains of old drums were observed during the second VSI.

SWMU No. 33: Mercury Fulminate Tanks Area - This unit formally consisted of wooden tanks, which managed a protective water bath that may have contained trace amounts of mercury fulminate.

SWMU No. 35: Stone Fence Dump - The wastes managed by this unit include metal drums and debris. It could not be determined if other materials have also been managed at the unit.

SWMU No. 37: Former Shell Plant Drum Storage Area - This unit managed waste degreaser solvents, including TCE and Freon, in drums stored directly on the ground.

SWMU No. 39: Former Wash Water Discharge Area (Building 2009) - This unit managed PETN and DDNP powders in water.

SWMU No. 40: Pilot Line Condensate Collection Sump - This unit managed steam condensate that contained trace amounts of lead styphnate.

SWMU No. 42: SAC Building Steam Collection Canisters - This unit managed steam condensate containing fuse powders and DDNP.

SWMU No. 46: Vacuum Line Condensate Collection Sump - Building 2059 - This unit managed steam condensate that potentially contained trace amounts of antimony sulfide, barium salts, boron, HMX, RDX, dibutylphthalate, diphenylamine, graphite, latex, lead azide, lead dioxide, lead styphnate, nitrocellulose, nitroglycerin, PETN, potassium nitrate, stearic acid, tetrazene, tetryl, viton, and zirconium.

SWMU No. 47: Building 2058 Fuse Room - This unit consisted of a wooden box which collected wash water with ignition and fuse powders containing lead and selenium.

SWMU No. 48: Mercury Fulminate Area - This unit consists of a fill area for construction and demolition debris from various projects throughout the facility. The presence of mercury fulminate has been documented in this area.

SWMU 52: Former Commercial Lab Shooting Area - This unit is located immediately adjacent to the training center. This unit currently consists of a vegetated area with obvious soil staining and evidence of shot debris and cap remnants. Available information indicates that this area was used for testing (shooting) commercial blasting caps for an unknown period of time ceasing in the early to mid-1990s. Additionally, shot debris accumulated in a water tank in the former commercial laboratory was spread on the grass and soil in this area.

SWMU 54: Former Historical Production Area – This unit is located in the central portion of the Site and consists of the north and south press areas, charge room and shell room. This area was in use when production began at the facility in 1912 and was phased out sometime before the mid-1930s.

SWMU 56 is identified as the Vent System for Static Security Testing Chamber

AOC A: Kerosene Tank Leak - This AOC contains soil stained with a small amount of kerosene, which has leaked from a storage tank.

AOC B: Open Burning Pads Area - This AOC is an area of soil to which waste explosive debris and kerosene has been released.

AOC C: Open Detonation Pit - This AOC consists of a metal-sided pit, which managed detonators and blasting caps produced at the facility.

AOC D: Detonation Test Building - This unit is used to test detonators and blasting caps produced at the facility.

AOC G: Former Drying House - All that remains of the original structure is debris consisting of bricks, concrete, piping, metal sheeting, and a section of boardwalk.

AOC H: Former Drying House – This unit is very similar to AOC G with regard to other types of debris present.

AOC I: Roof Drainage from Deto Building – This unit conveys shot debris from roof of Deto building (from permitted air emissions source) onto ground near down spout.

AOC J: Former Drying House - All that remains of the original structure is debris consisting of bricks, concrete, piping, and metal sheeting.

AOC M: Former Drying House - This unit is very similar to AOC G with regard to other types of debris present.

AOC N: Former Drying House - This unit is very similar to AOC G with regard to other types of debris present.

AOC O: Former Drying House - This unit is very similar to AOC G with regard to other types of debris present.

APPENDIX C

Mid-Point Delineation Figures

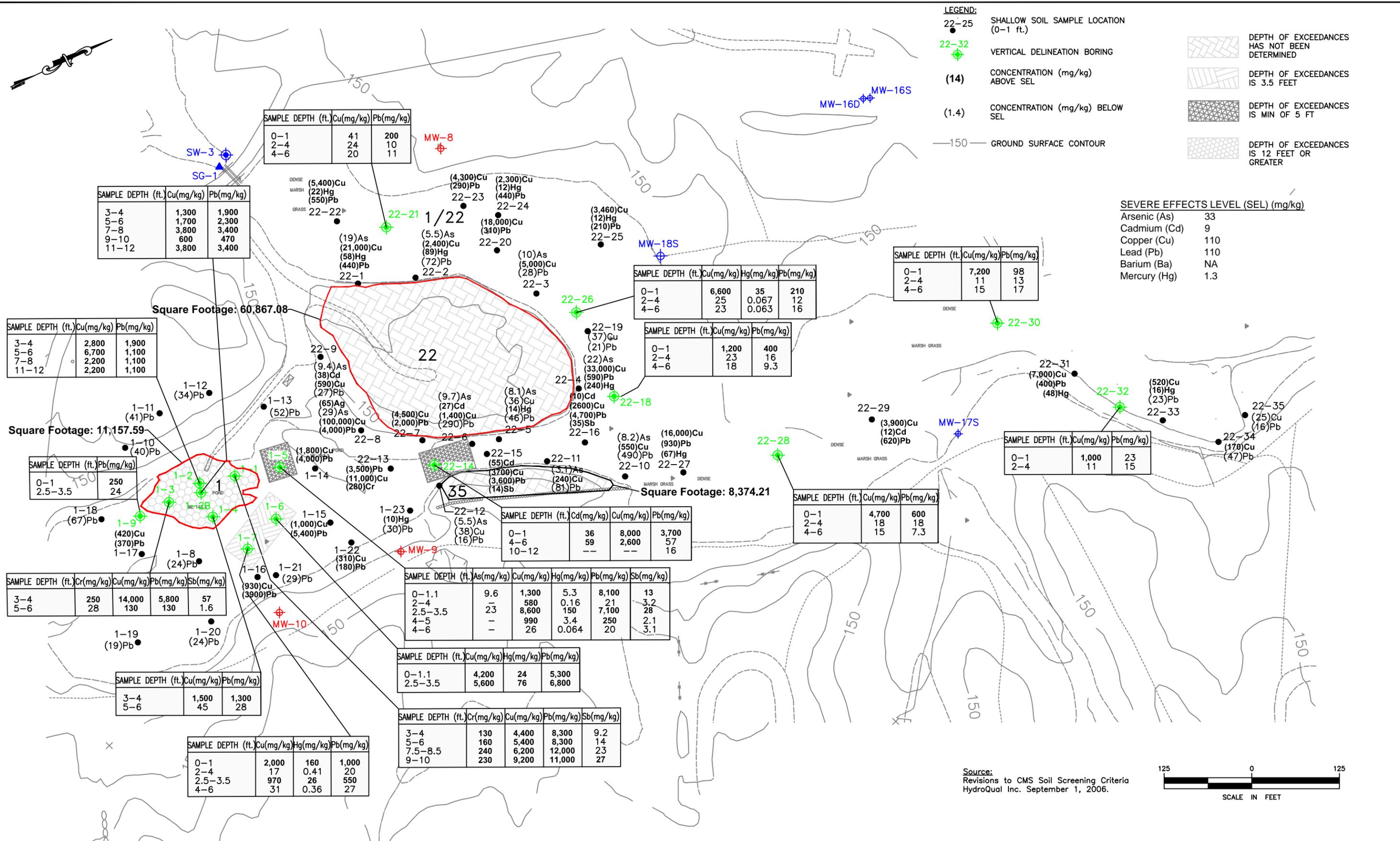


- LEGEND:**
- 22-25 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊕ 22-32 VERTICAL DELINEATION BORING
 - (14) CONCENTRATION (mg/kg) ABOVE SEL
 - (1.4) CONCENTRATION (mg/kg) BELOW SEL
 - 150— GROUND SURFACE CONTOUR

- DEPTH OF EXCEEDANCES HAS NOT BEEN DETERMINED
- DEPTH OF EXCEEDANCES IS 3.5 FEET
- DEPTH OF EXCEEDANCES IS MIN OF 5 FT
- DEPTH OF EXCEEDANCES IS 12 FEET OR GREATER

SEVERE EFFECTS LEVEL (SEL) (mg/kg)

Arsenic (As)	33
Cadmium (Cd)	9
Copper (Cu)	110
Lead (Pb)	110
Barium (Ba)	NA
Mercury (Hg)	1.3



Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



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PORT EWEN, NY.

FIGURE 17
SEVERE EFFECTS LEVEL (SEL) DELINEATION
SWMUs 1 AND 22

Drawn By:	BC	Date Drawn:	
Reviewed By:	KV	Date Reviewed:	
Scale:	1" = 125'	Plot Date:	
Project Number.:			

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)	Pb(mg/kg)
0-1	10	8.1	7,000	2,300*
4-6	--	6.5	16,000	1,100

SAMPLE DEPTH (ft.)	Cu(mg/kg)	Pb(mg/kg)	Cd(mg/kg)
0-1	770	30	0.33
2-4	250	23	0.31
4-6	33	21	0.31

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)	Pb(mg/kg)
0-1	--	0.85	11	4,800*
4-6	--	2.5	270	110
10-12	--	0.29	25	11

- LEGEND:**
- 2-3 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊕ 2-7 VERTICAL DELINEATION BORING
 - (12) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - (12) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (1.5) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - 175- GROUND SURFACE CONTOUR
 - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - ▨ DEPTH OF EXCEEDANCES IS 6 FEET

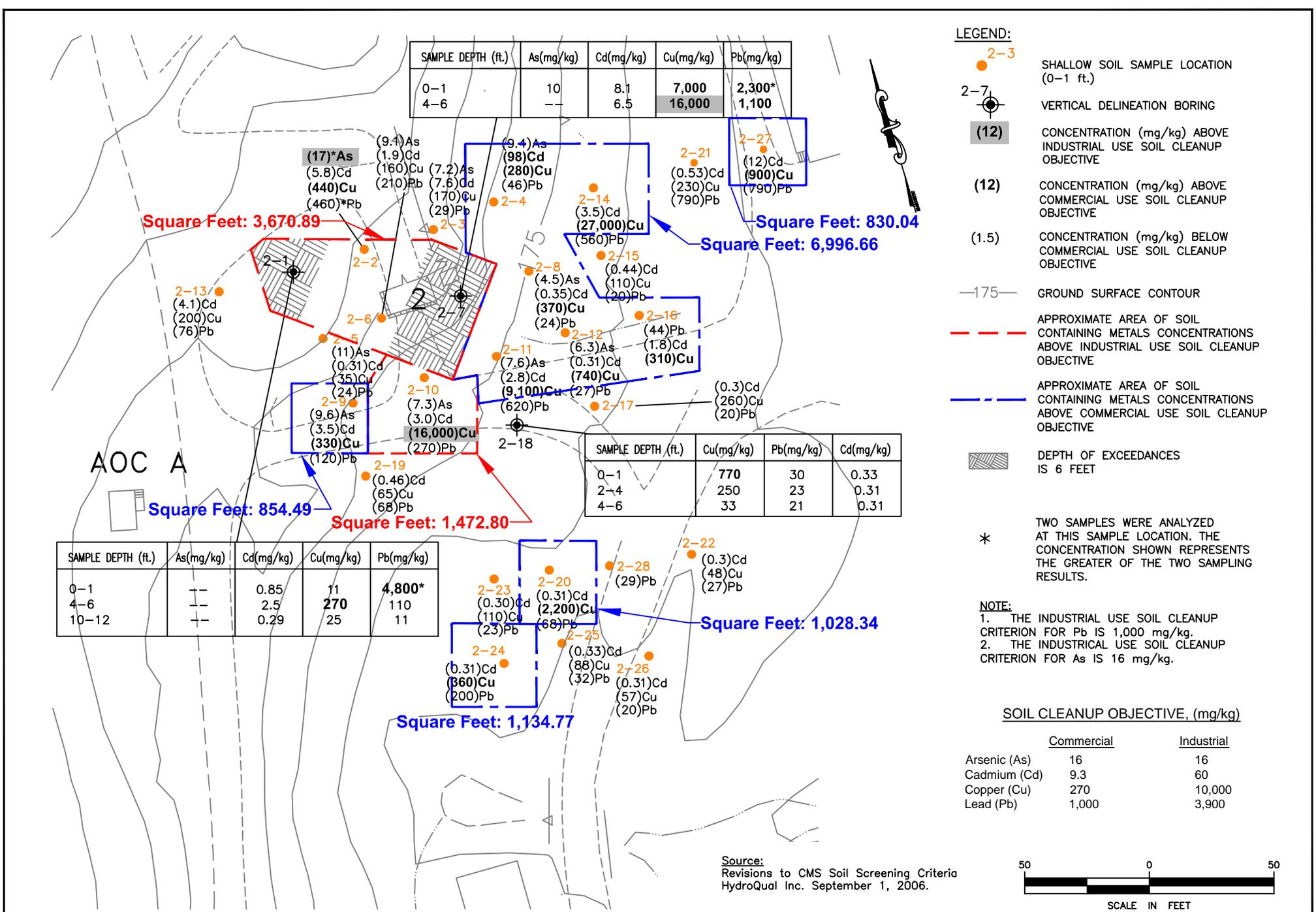
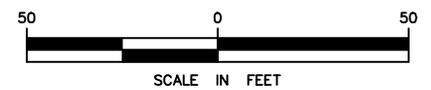
* TWO SAMPLES WERE ANALYZED AT THIS SAMPLE LOCATION. THE CONCENTRATION SHOWN REPRESENTS THE GREATER OF THE TWO SAMPLING RESULTS.

NOTE:
 1. THE INDUSTRIAL USE SOIL CLEANUP CRITERION FOR Pb IS 1,000 mg/kg.
 2. THE INDUSTRIAL USE SOIL CLEANUP CRITERION FOR As IS 16 mg/kg.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Cadmium (Cd)	9.3	60
Copper (Cu)	270	10,000
Lead (Pb)	1,000	3,900

Source:
 Revisions to CMS Soil Screening Criteria
 HydroQual Inc. September 1, 2006.



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FIGURE 18
 COMMERCIAL AND INDUSTRIAL USE SOIL
 CLEANUP OBJECTIVE DELINEATION
 SWMU 2 AND AOC A

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number.:			

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)	Pb(mg/kg)
0-1	49	860	78,000	380
2-4	10	2.2	190	25
4-6	6.1	9.5	180	20

- LEGEND:**
- 3-16 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊕ 3-2 VERTICAL DELINEATION BORING
 - (16) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL OBJECTIVE
 - (16) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL OBJECTIVE
 - (1.8) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL OBJECTIVE
 - 200 GROUND SURFACE CONTOUR
 - 226.1 GROUND SURFACE ELEVATION
 - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - * TWO SAMPLES WERE ANALYZED AT THIS SAMPLE LOCATION. THE CONCENTRATION SHOWN REPRESENTS THE GREATER OF THE TWO SAMPLING RESULTS.
 - ▨ DEPTH OF EXCEEDANCES IS 6 FEET MINIMUM

Square Feet: 3,842.21

3,5

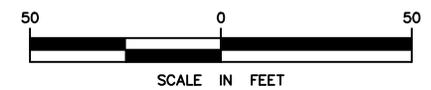
Square Feet: 13,753.06

SAMPLE DEPTH (ft.)	As(mg/kg)	Cu(mg/kg)	Pb(mg/kg)	Cd(mg/kg)
0-1	54*	100,000*	680*	690
4-6	2.1	3,300	5,200	43
8-10	15	190	30	0.43

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Cadmium (Cd)	9.3	60
Copper (Cu)	270	10,000
Lead (Pb)	1,000	3,900

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



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PORT EWEN, NY.

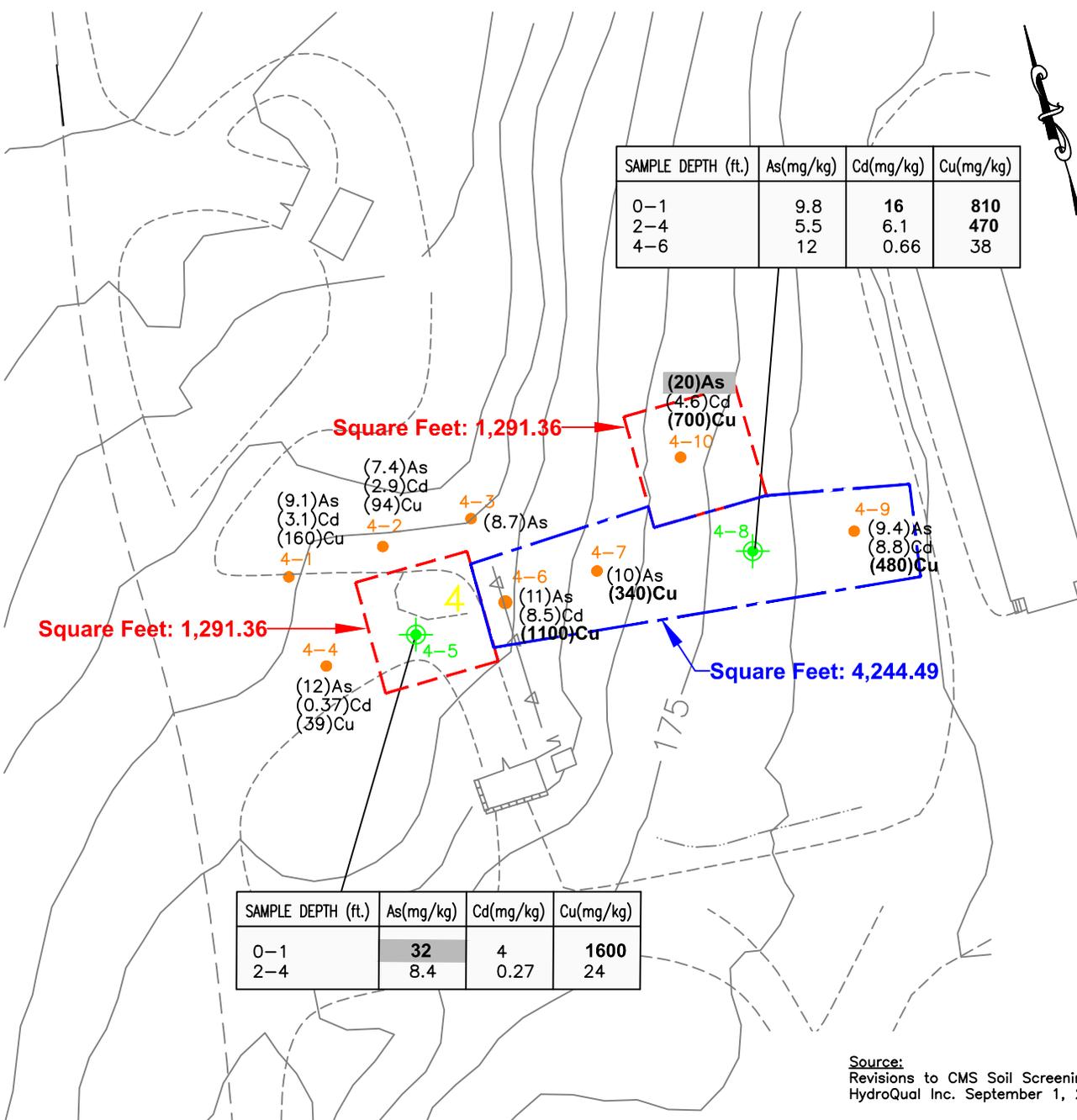
FIGURE 19
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 3 AND 5

Drawn By:	MDO	Date Drawn:	11/07/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number.:			

LEGEND:

- 11-1 SHALLOW SOIL SAMPLE LOCATION
- ⊕ 11-3 VERTICAL DELINEATION BORING
- (12) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (12) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (4.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- 181.6 X GROUND SURFACE ELEVATION
- 175— GROUND SURFACE CONTOUR
- — — APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- — — APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)
0-1	9.8	16	810
2-4	5.5	6.1	470
4-6	12	0.66	38

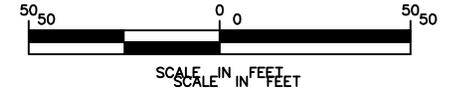


SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Cadmium (Cd)	9.3	60
Copper (Cu)	270	10,000

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)
0-1	32	4	1600
2-4	8.4	0.27	24

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



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FIGURE 20
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION
SWMU 4

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number.:			



SAMPLE DEPTH (ft.)	Ba(mg/kg)	Pb(mg/kg)	Se(mg/kg)
0-1	17,000	14,000*	7,900
2-4	770	440	260

SAMPLE DEPTH (ft.)	Pb(mg/kg)
0-1	36
4-6	18
6-8	24

SAMPLE DEPTH (ft.)	Ba(mg/kg)	Pb(mg/kg)	Se(mg/kg)
0-1	1,300	1,000	1.6
4-6	55	19	6.1

SAMPLE DEPTH (ft.)	Ba(mg/kg)	Pb(mg/kg)	Se(mg/kg)
0-1	620	780	240
2-4	1,200	8,000	1,700

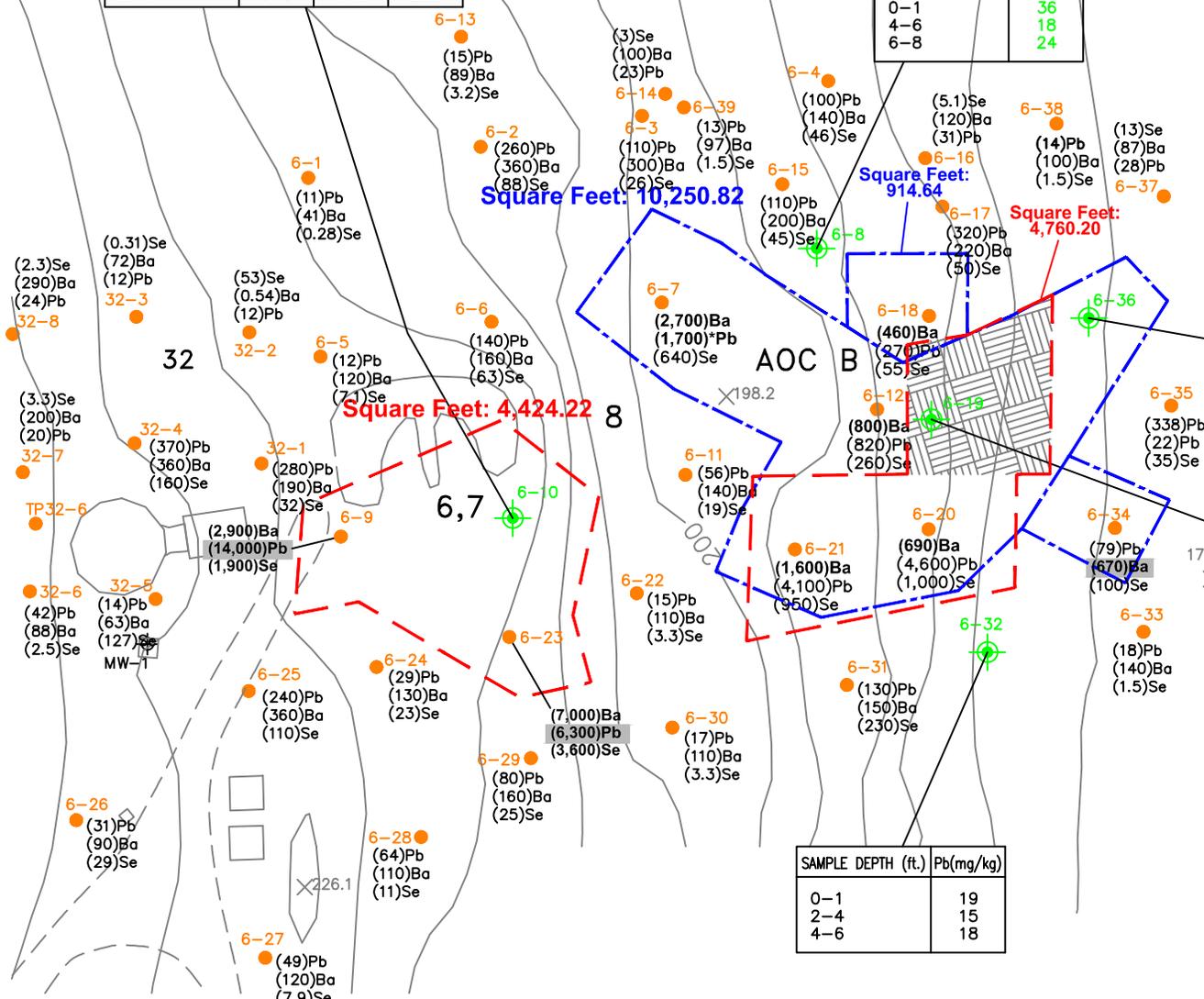
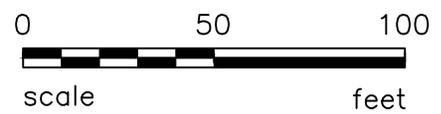
SAMPLE DEPTH (ft.)	Pb(mg/kg)
0-1	19
2-4	15
4-6	18

- LEGEND:**
- 6-4 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊕ 6-8 VERTICAL DELINEATION BORING
 - (1,000) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - (1,000) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (15) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - 200 — GROUND SURFACE CONTOUR
 - 172.5 GROUND SURFACE ELEVATION
 - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - — — APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - ▨ DEPTH OF EXCEEDANCES IS 4 FEET

* TWO SAMPLES WERE ANALYZED AT THIS SAMPLE LOCATION. THE CONCENTRATION SHOWN REPRESENTS THE GREATER OF THE TWO SAMPLING RESULTS.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Barium (Ba)	400	10,000
Lead (Pb)	1,000	3,900
Selenium (Se)	1,500	6,800



Source: Revisions to CMS Soil Screening Criteria HydroQual Inc. September 1, 2006.



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FIGURE 21
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION
SWMU NOS. 6, 7, 8, 32 & AOC B

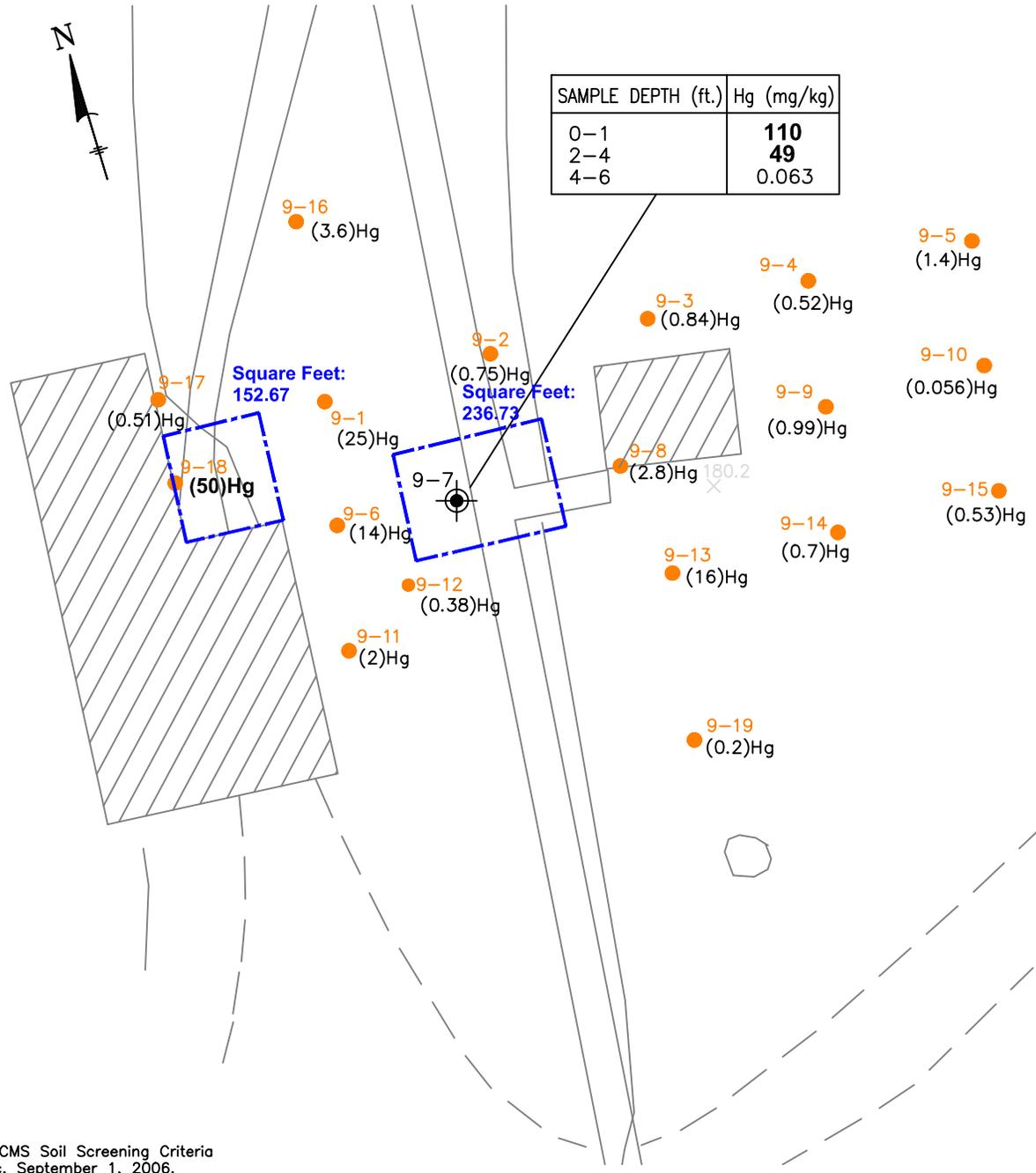
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Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number:			



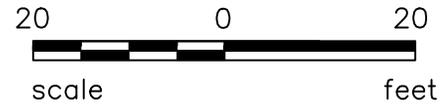
SAMPLE DEPTH (ft.)	Hg (mg/kg)
0-1	110
2-4	49
4-6	0.063

LEGEND:

- 9-3 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
- 9-7 VERTICAL DELINEATION BORING
- (16)** CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (1.4)** CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- 180.2 GROUND SURFACE ELEVATION
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP CRITERIA
- EXISTING STRUCTURE



SOIL CLEANUP OBJECTIVE, (mg/kg)		
	Commercial	Industrial
Mercury (Hg)	47	270



Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

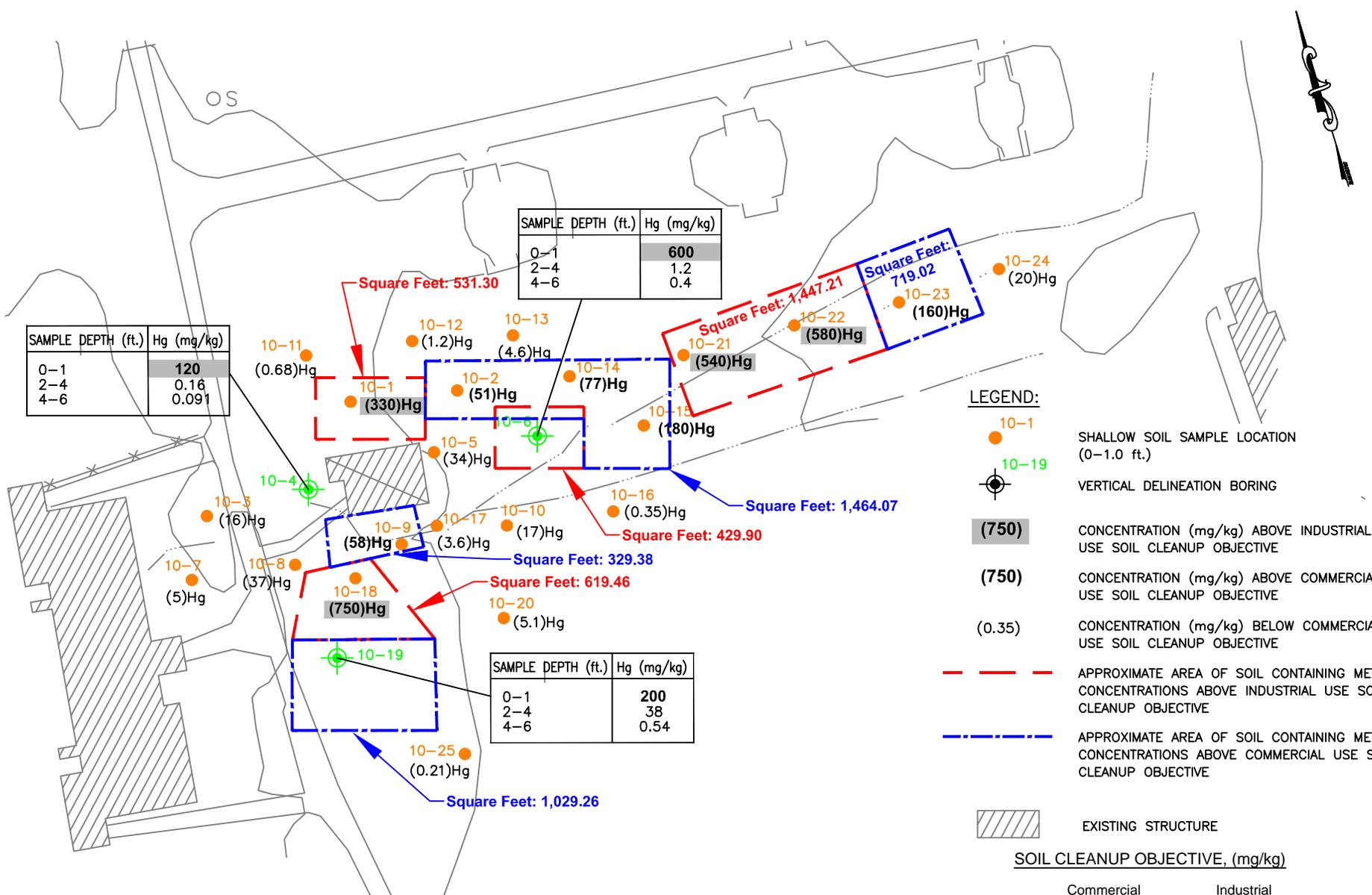


REVISIONS		
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PORT EWEN, NY.

FIGURE 22
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 9

Drawn By: MDO	Date Drawn: 11/16/2012
Reviewed By: MS	Date Reviewed: 11/2012
Scale: 1" = 50'	Plot Date: 11/2012
Project Number.:	



SAMPLE DEPTH (ft.)	Hg (mg/kg)
0-1	120
2-4	0.16
4-6	0.091

SAMPLE DEPTH (ft.)	Hg (mg/kg)
0-1	600
2-4	1.2
4-6	0.4

SAMPLE DEPTH (ft.)	Hg (mg/kg)
0-1	200
2-4	38
4-6	0.54

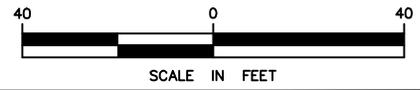
LEGEND:

- 10-1 SHALLOW SOIL SAMPLE LOCATION (0-1.0 ft.)
- 10-19 VERTICAL DELINEATION BORING
- (750) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (750) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (0.35) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Mercury (Hg)	47	220



Source: Revisions to CMS Soil Screening Criteria HydroQual Inc. September 1, 2006.



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FIGURE 23
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION: SWMU 10

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 40'	Plot Date:	11/2012
Project Number.:			

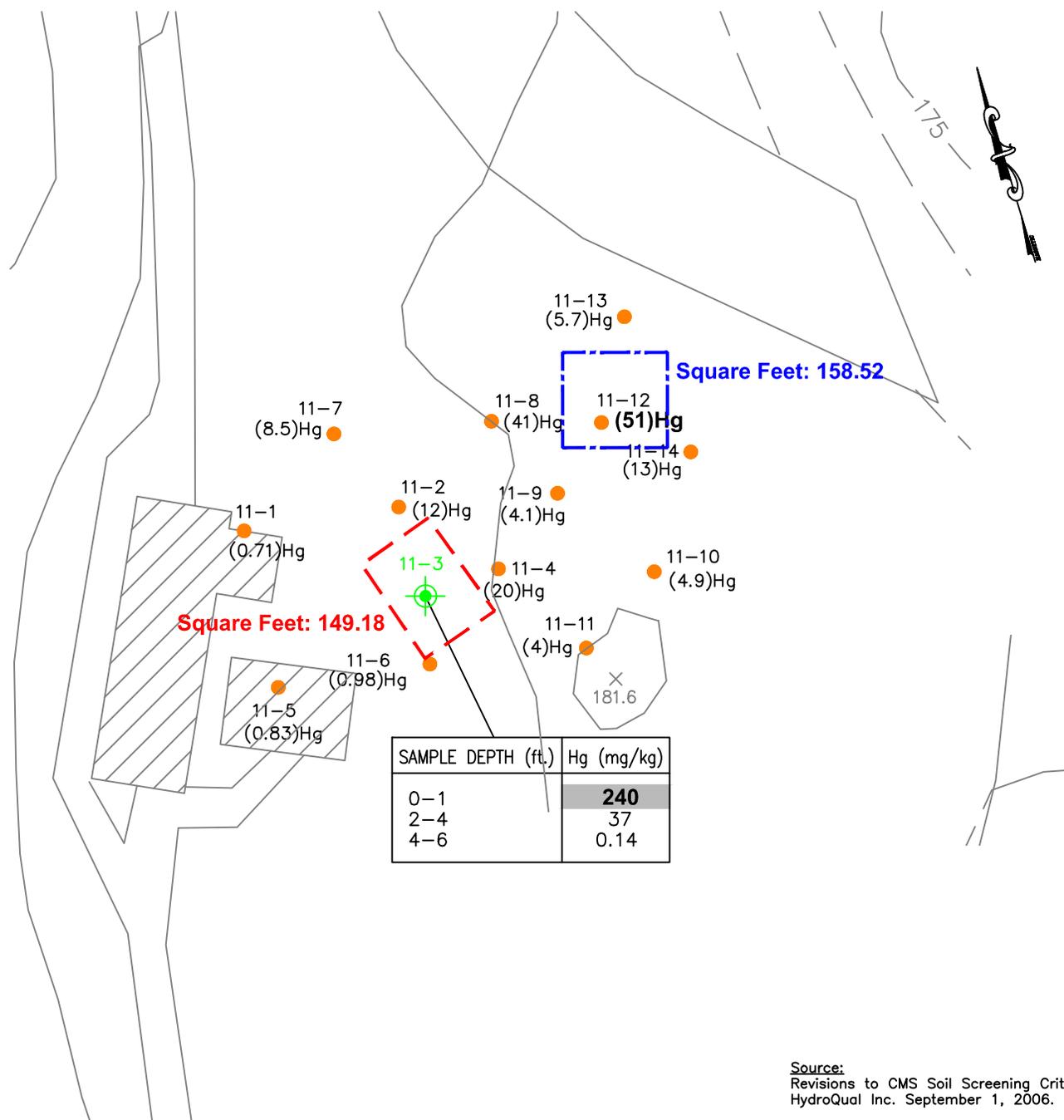
LEGEND:

- 11-1 SHALLOW SOIL SAMPLE LOCATION
- ⊕ 11-3 VERTICAL DELINEATION BORING
- (240) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (240)** CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (4.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- 181.6
X
GROUND SURFACE ELEVATION
- 175— GROUND SURFACE CONTOUR
- - - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- / / / / / EXISTING STRUCTURE

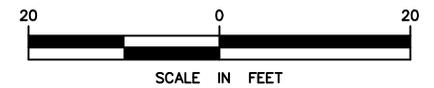
SOIL CLEANUP OBJECTIVE, (mg/kg)

	<u>Commercial</u>	<u>Industrial</u>
Mercury (Hg)	47	220

SAMPLE DEPTH (ft.)	Hg (mg/kg)
0-1	240
2-4	37
4-6	0.14



Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

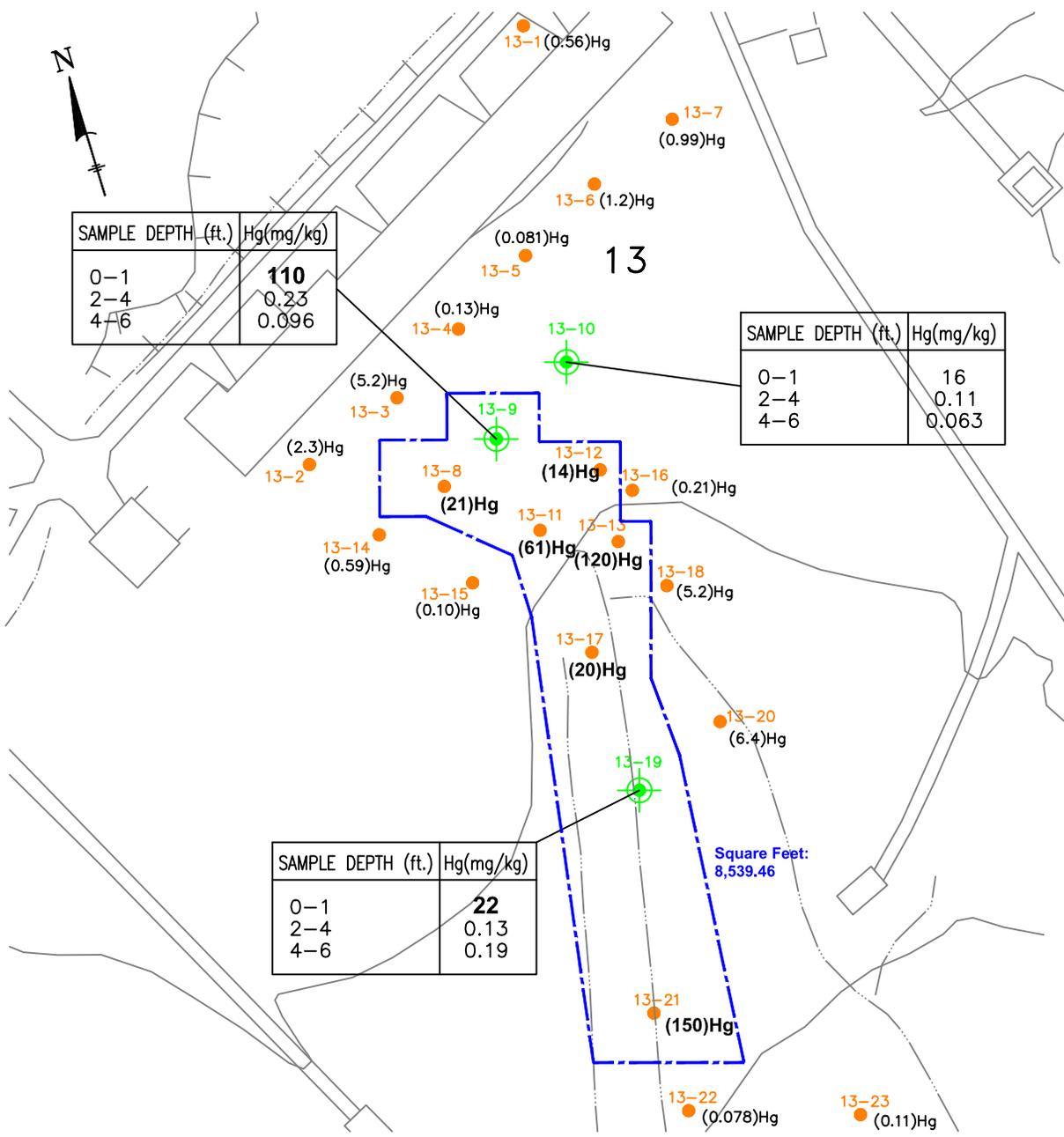


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PORT EWEN, NY.

FIGURE 24
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION: SWMU 11

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 20'	Plot Date:	11/2012
Project Number.:			



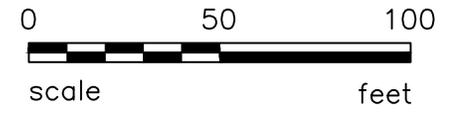
- LEGEND:**
- 13-3 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊙ 13-9 VERTICAL DELINEATION BORING
 - (110) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (1.2) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP CRITERIA

NOTE:
 1. THE UNRESTRICTED USE SOIL CLEANUP CRITERION FOR Hg IS 10 mg/kg.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Mercury (Hg)	47	270

Source:
 Revisions to CMS Soil Screening Criteria
 HydroQual Inc. September 1, 2006.

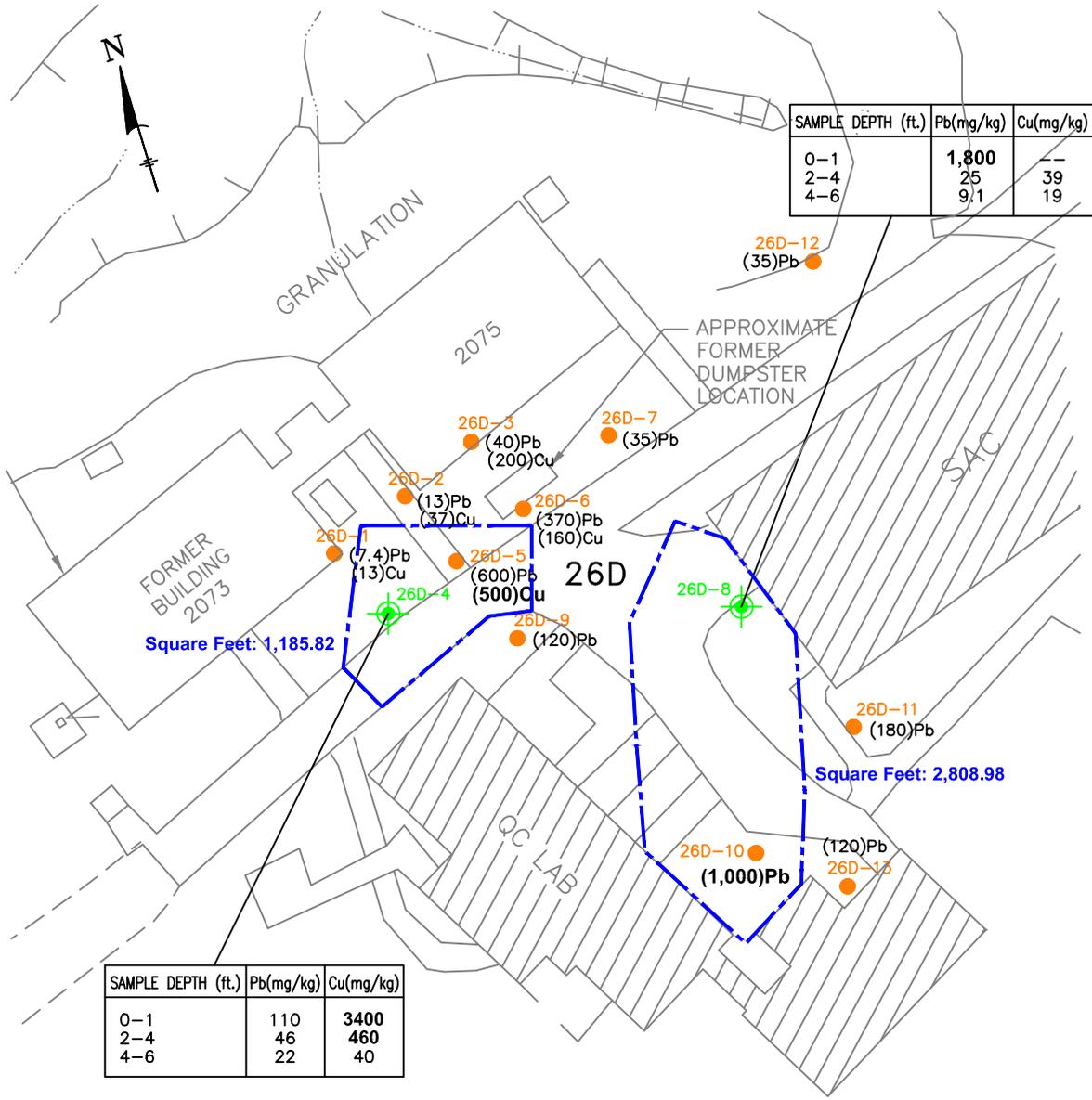


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FIGURE 25
 COMMERCIAL AND INDUSTRIAL USE SOIL
 CLEANUP OBJECTIVE DELINEATION:
 SWMU 13

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number.:			



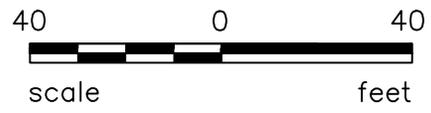
LEGEND:

- 26D-12 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
- 26D-8
- ⊕ VERTICAL DELINEATION BORING
- (1,800) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (7.4) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- ▨ EXISTING STRUCTURE

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

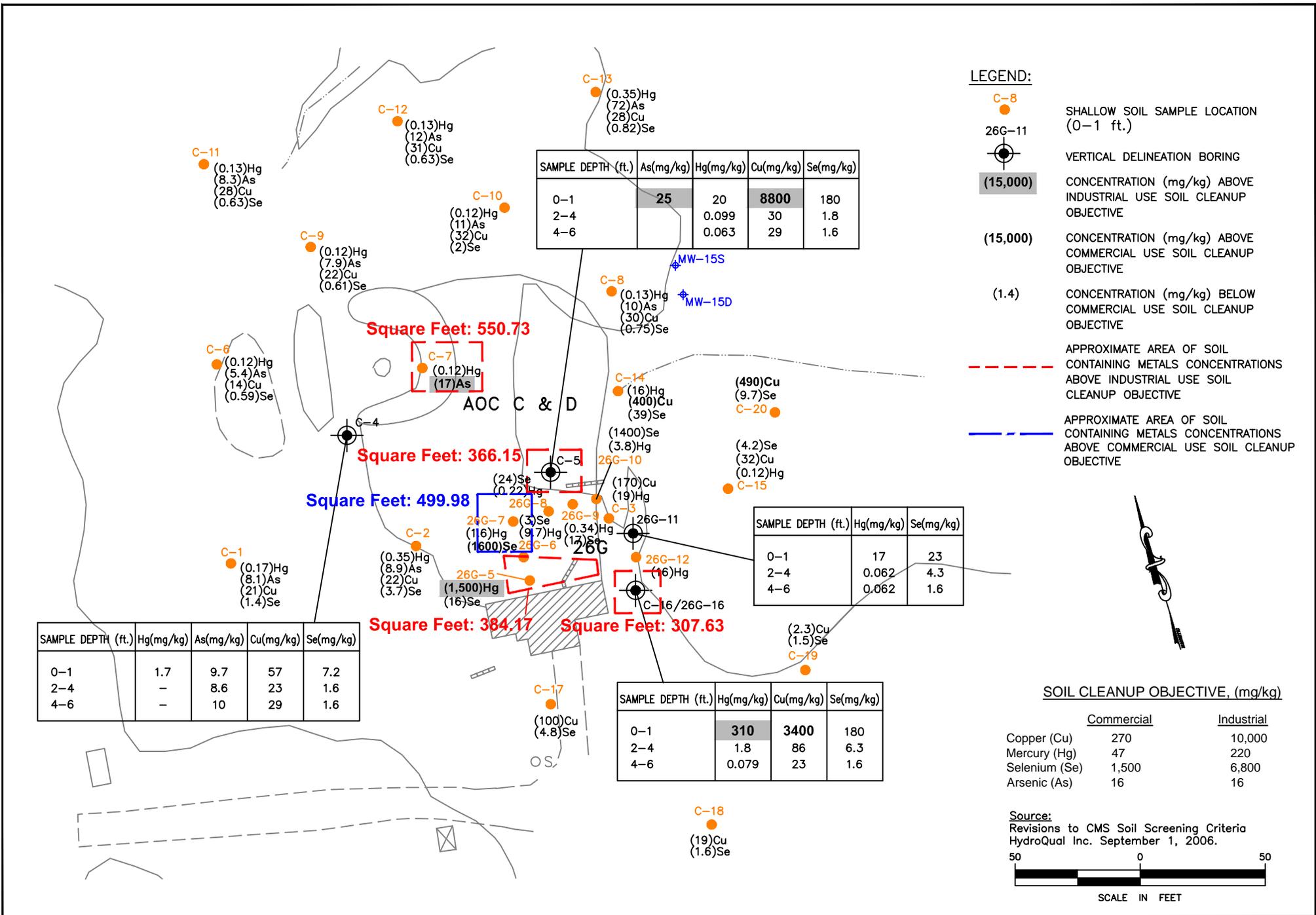


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DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 27
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 26D

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 40'	Plot Date:	11/2012
Project Number.:			



SAMPLE DEPTH (ft.)	As(mg/kg)	Hg(mg/kg)	Cu(mg/kg)	Se(mg/kg)
0-1	25	20	8800	180
2-4		0.099	30	1.8
4-6		0.063	29	1.6

SAMPLE DEPTH (ft.)	Hg(mg/kg)	Se(mg/kg)
0-1	17	23
2-4	0.062	4.3
4-6	0.062	1.6

SAMPLE DEPTH (ft.)	Hg(mg/kg)	Cu(mg/kg)	Se(mg/kg)
0-1	310	3400	180
2-4	1.8	86	6.3
4-6	0.079	23	1.6

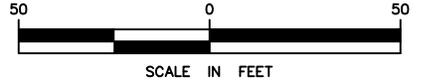
SAMPLE DEPTH (ft.)	Hg(mg/kg)	As(mg/kg)	Cu(mg/kg)	Se(mg/kg)
0-1	1.7	9.7	57	7.2
2-4	-	8.6	23	1.6
4-6	-	10	29	1.6

- LEGEND:**
- C-8 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - 26G-11
 - VERTICAL DELINEATION BORING
 - (15,000) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - (15,000) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (1.4) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Selenium (Se)	1,500	6,800
Arsenic (As)	16	16

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

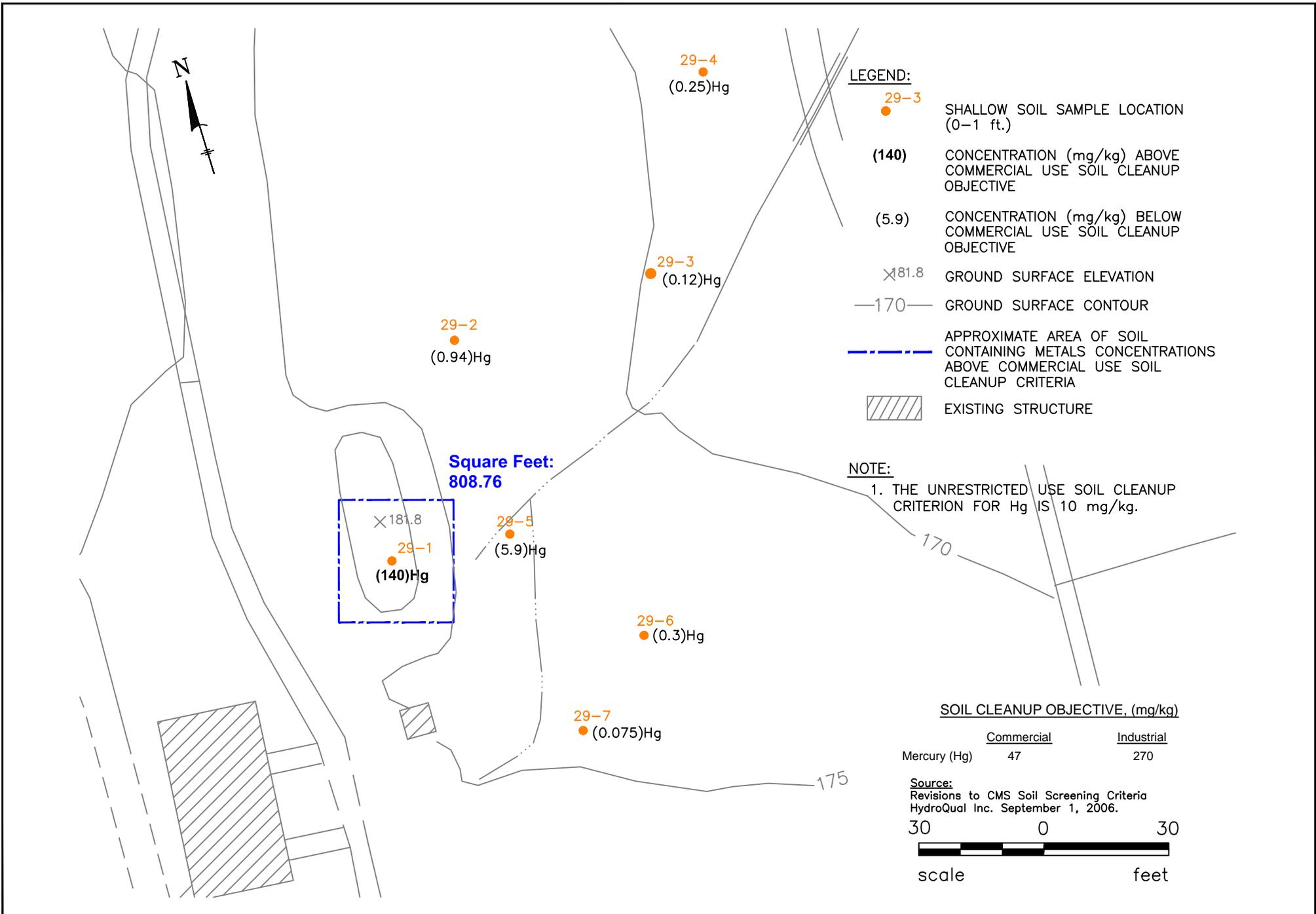


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DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 28
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION
SWMU 26G AND AOC C AND D

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number.:			

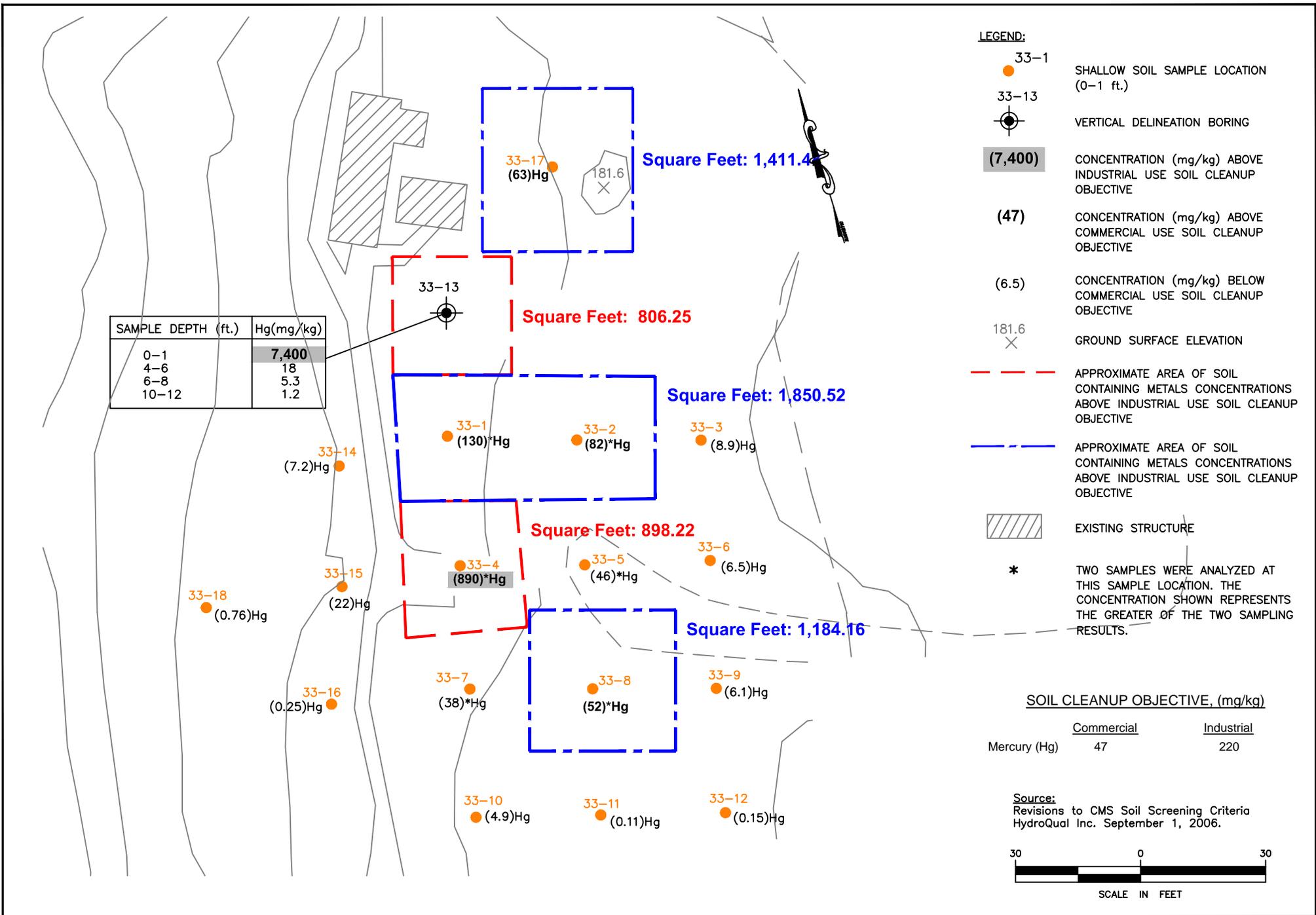


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DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 29
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 29

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number.:			



SAMPLE DEPTH (ft.)	Hg(mg/kg)
0-1	7,400
4-6	18
6-8	5.3
10-12	1.2

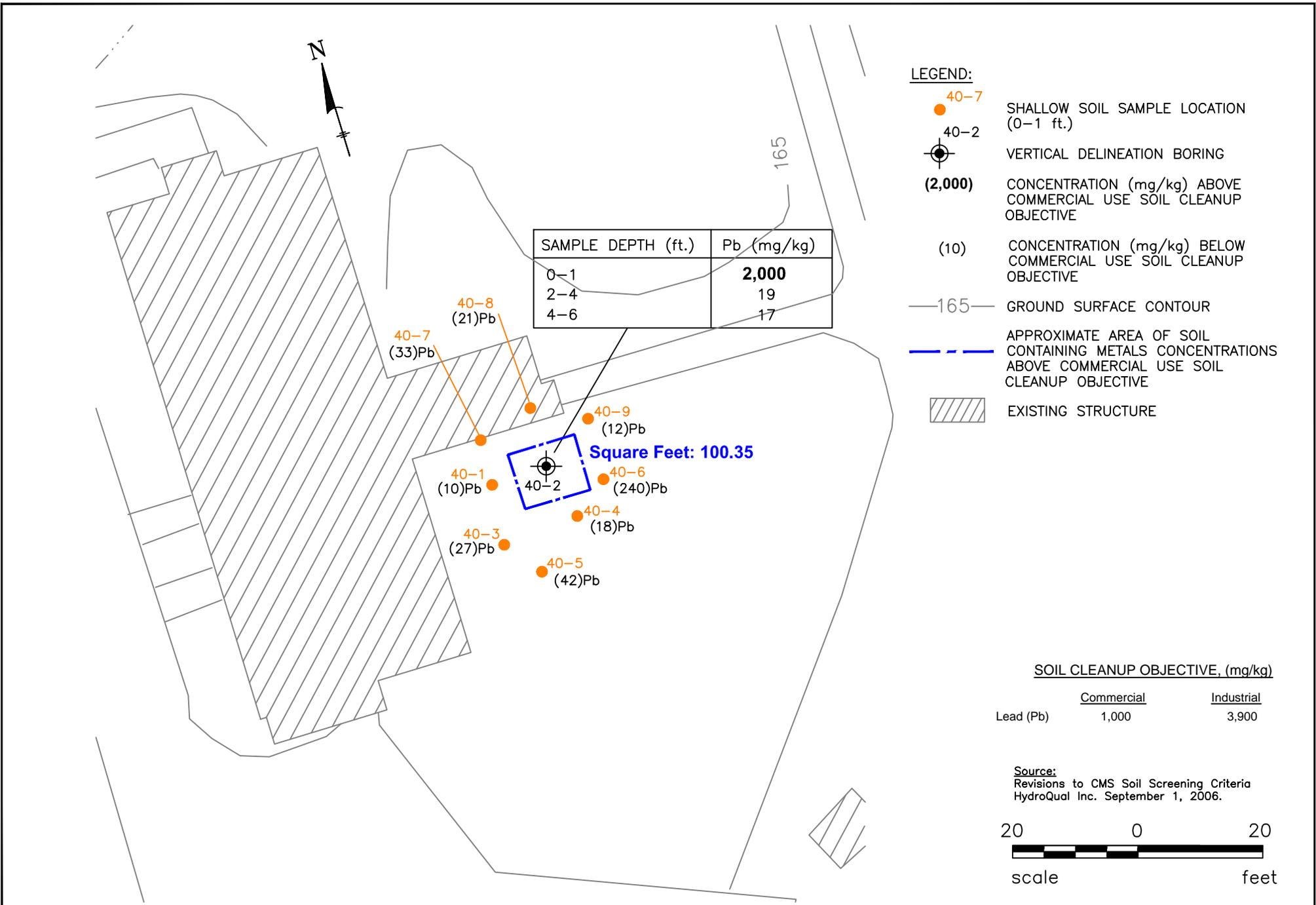


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DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 30
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 33

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 30'	Plot Date:	11/2012
Project Number.:			



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DYNO-NOBEL, INC.
PORT EWEN, NY.

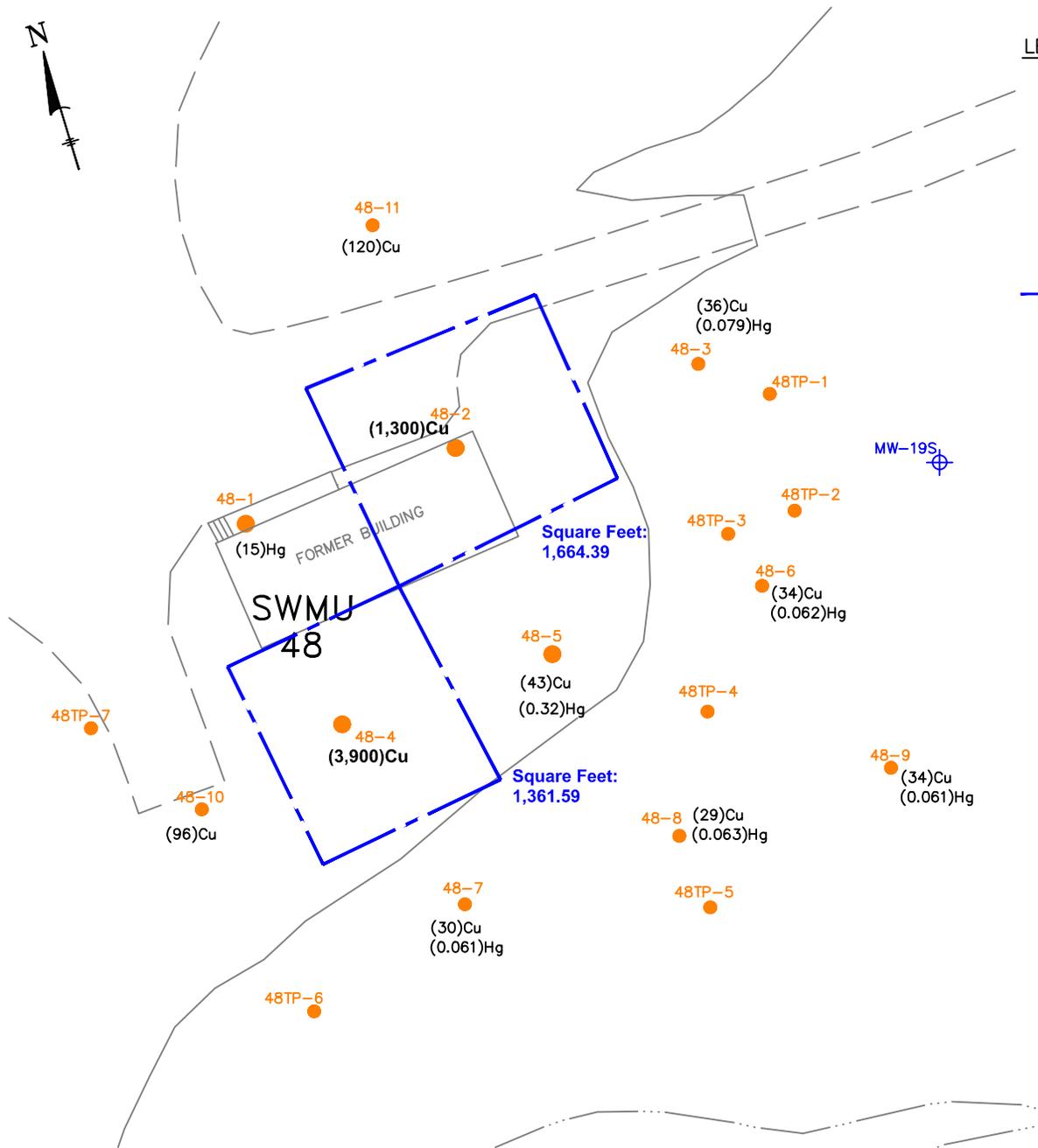
FIGURE 31
COMMERCIAL USE SOIL CLEANUP
OBJECTIVE DELINEATION
SWMU 40

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 20'	Plot Date:	11/2012
Project Number.:			



LEGEND:

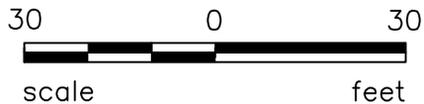
- 48-3 SHALLOW SOIL SAMPLE LOCATION
- (15) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (36) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP CRITERIA



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Copper (Cu)	270	10000
Mercury (Hg)	47	270

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

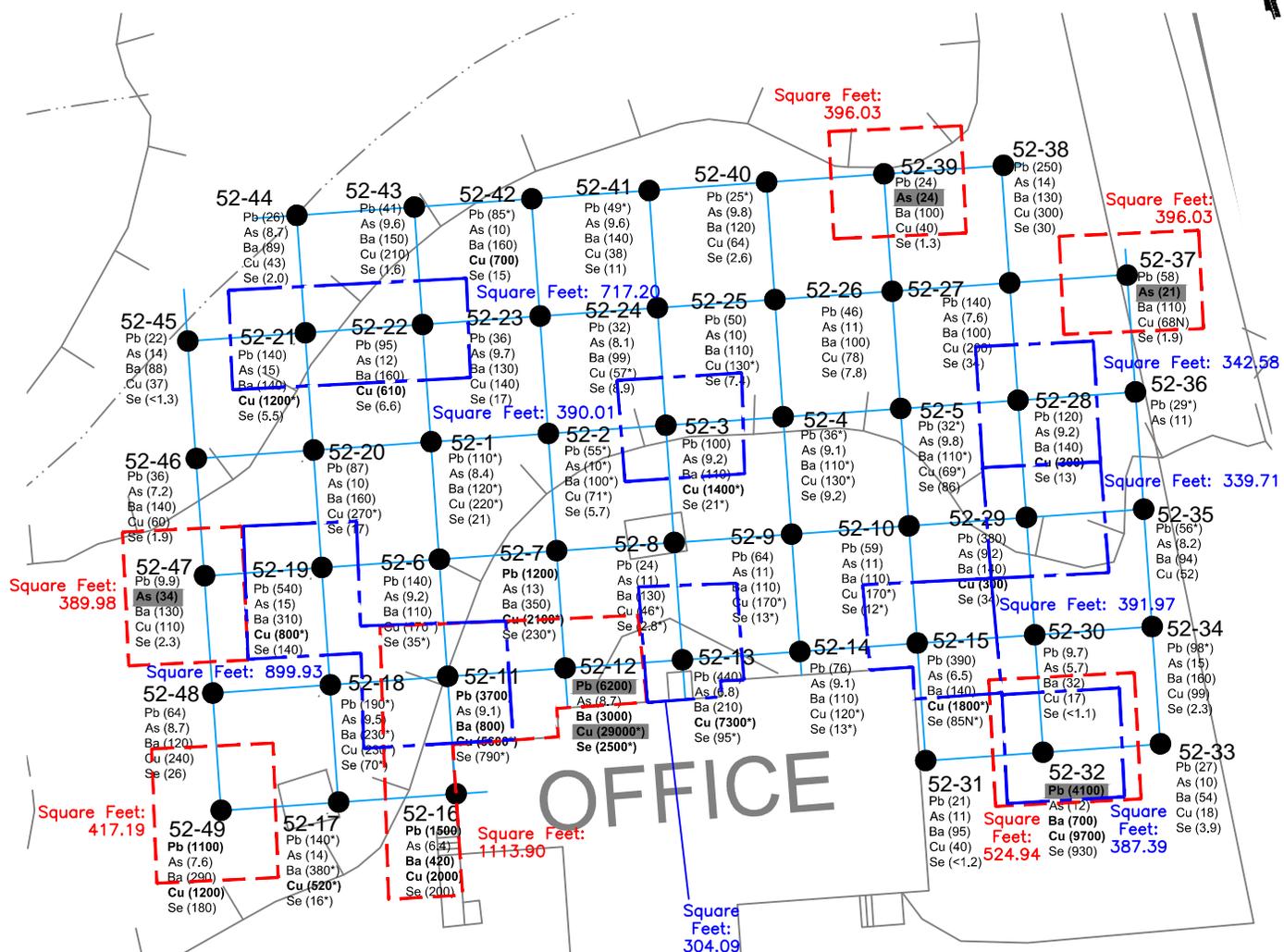


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DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 32
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 48

Drawn By:	MDO	Date Drawn:	11/16/2012
Reviewed By:	MS	Date Reviewed:	11/2012
Scale:	1" = 50'	Plot Date:	11/2012
Project Number.:			



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Selenium (Se)	1,500	6,800

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (420) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.



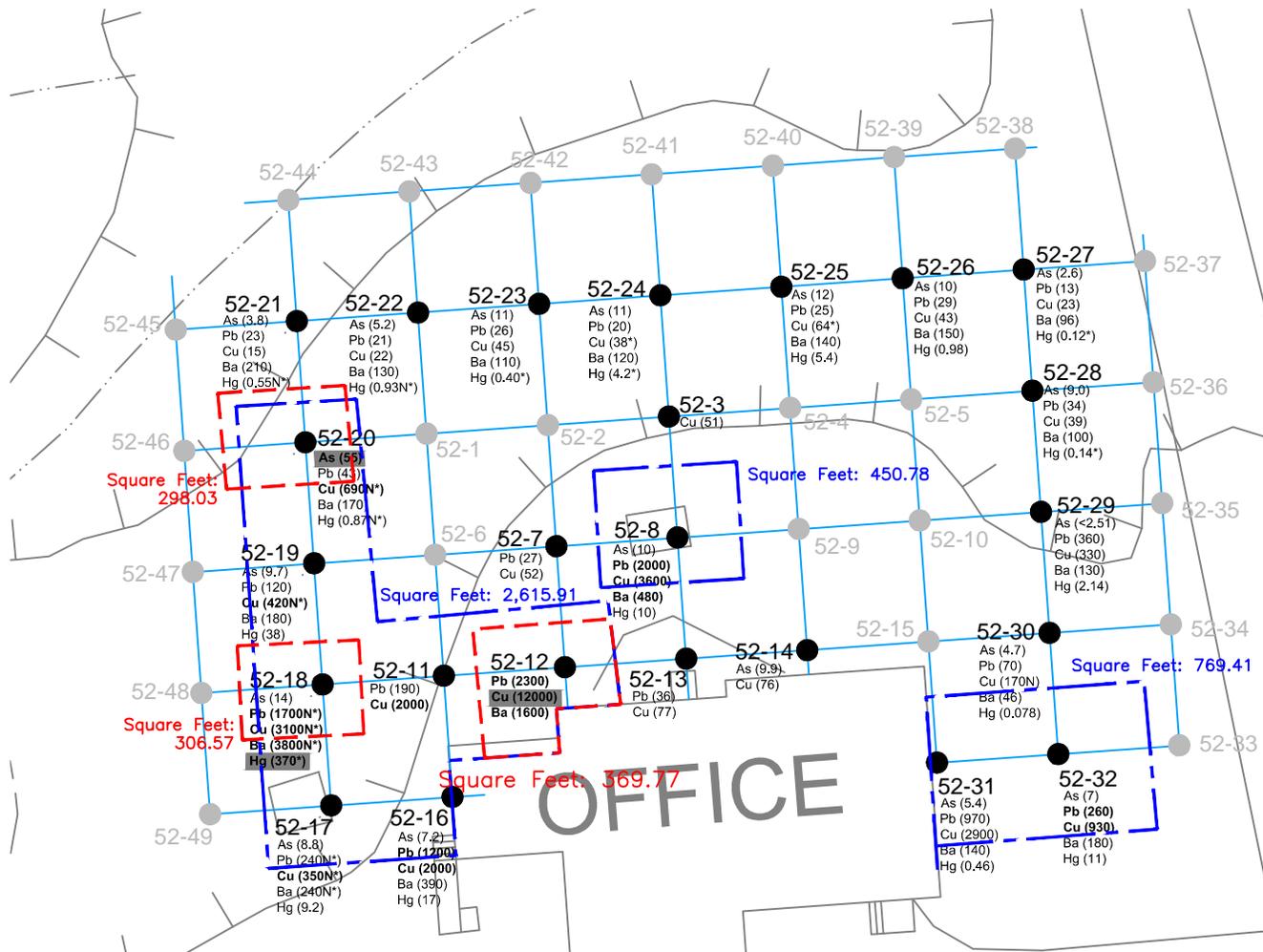
SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

FIGURE 33
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 SWMU 52: 0-1' INTERVAL

Drawn By: MDO	Date Drawn: 08/21/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	



DYNO-NOBEL, INC.
 PORT EWEN, NY.



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000
Barium (Ba)	400	10,000
Mercury (Hg)	47	220

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYN0 NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.

LEGEND

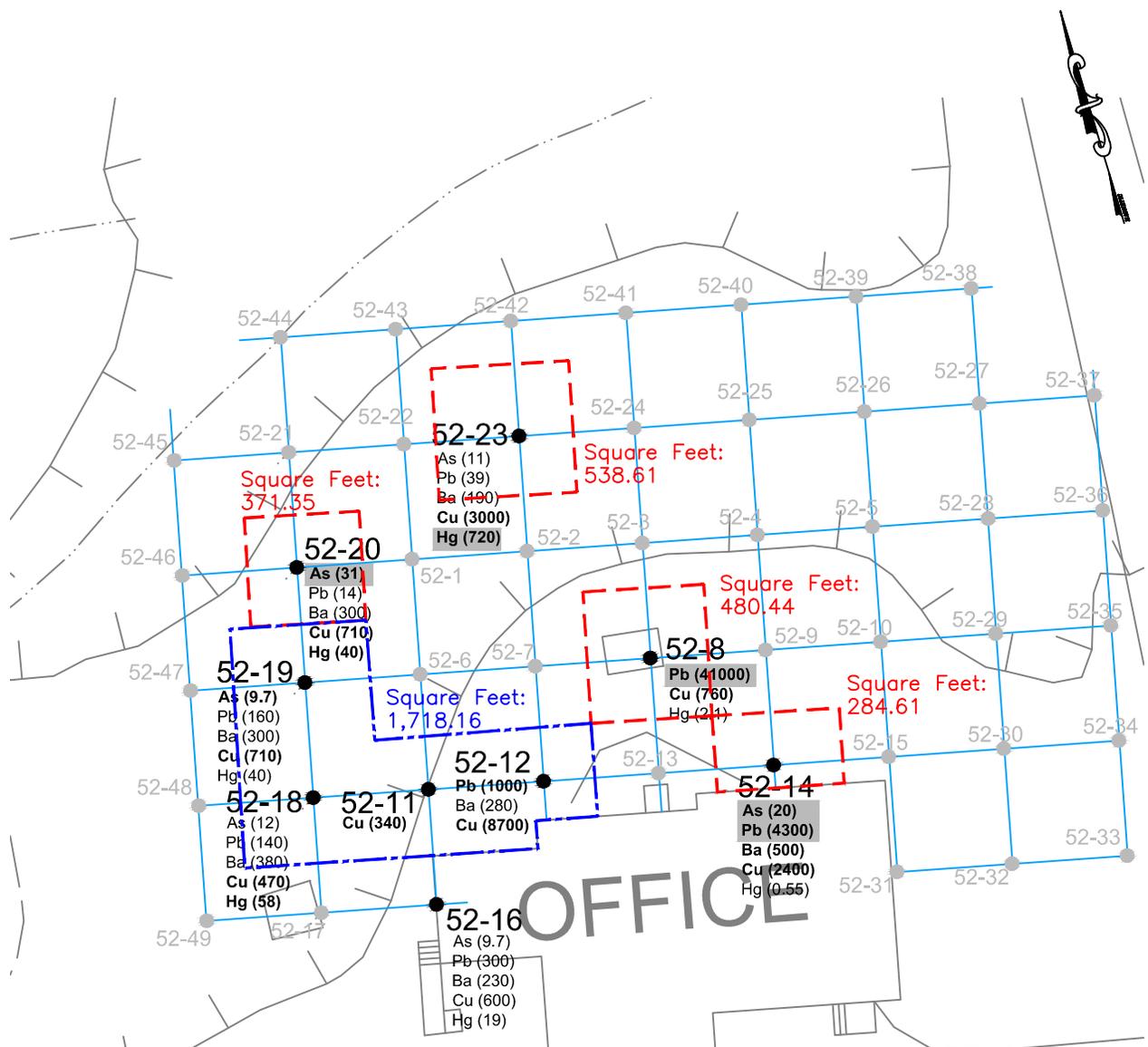
- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- (37.5) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (420) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE



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 PORT EWEN, NY.

FIGURE 34
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 SWMU 52: 1-2' INTERVAL

Drawn By: MDO	Date Drawn: 08/21/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Lead (Pb)	1,000	3,900

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.

SOURCE:

REVISION TO CMS SOIL SCREENING CRITERIA
 DYNOL NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-20 ● SHALLOW SOIL SAMPLE LOCATION
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

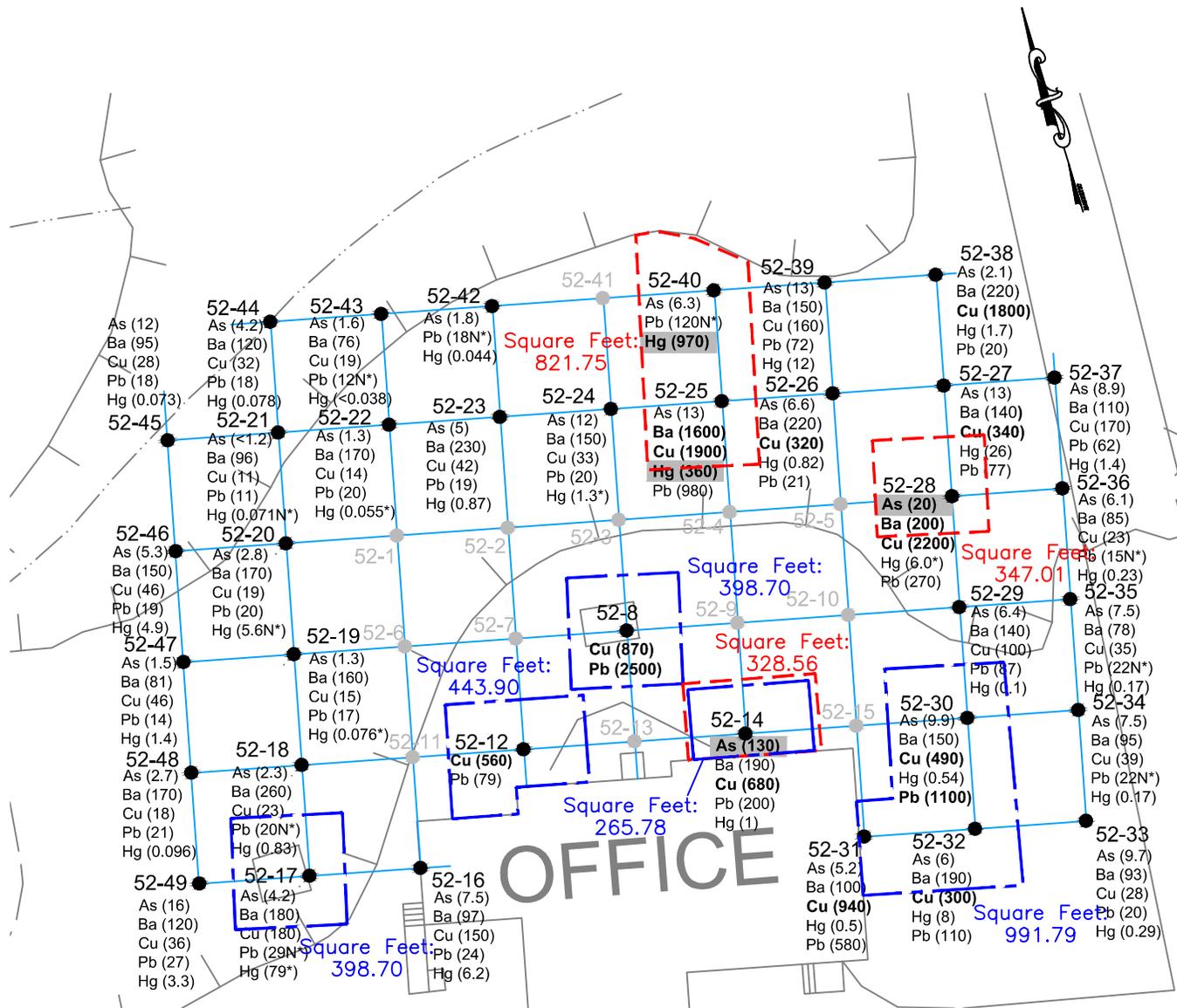


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 PORT EWEN, NY.

FIGURE 35
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 SWMU 52: 2-3' INTERVAL

Drawn By: MDO	Date Drawn: 08/22/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	





SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Lead (Pb)	1,000	3,900

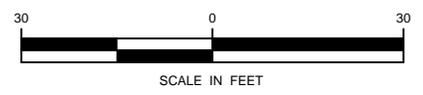
NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.

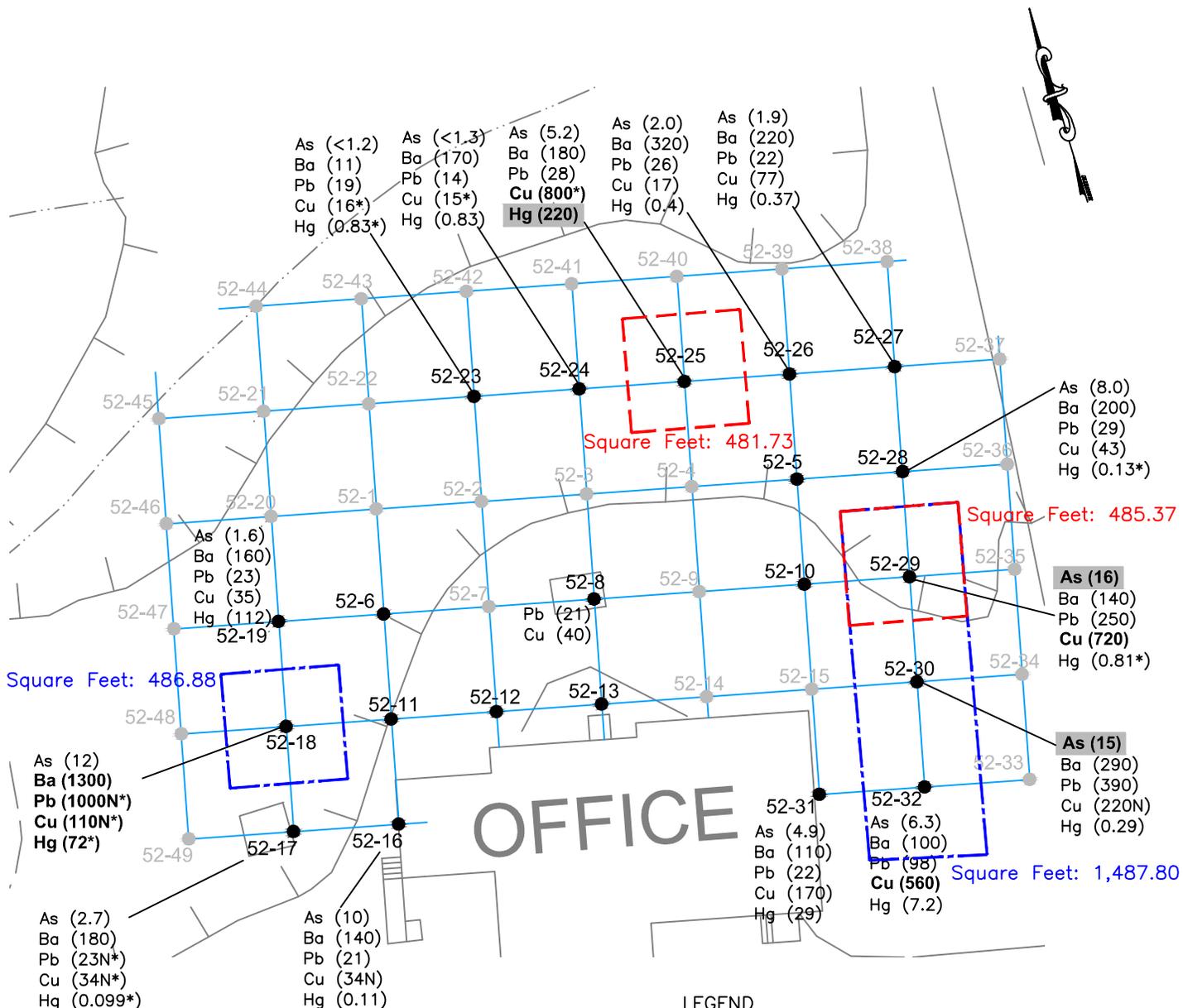
SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-11 ● SHALLOW SOIL SAMPLE LOCATION
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE



	DYNO-NOBEL, INC. PORT EWEN, NY.	FIGURE 36 INDUSTRIAL USE SOIL CLEANUP CRITERIA DELINEATION SWMU 52 - 3-4' INTERVAL	Drawn By: MDO	Date Drawn: 08/22/12
			Reviewed By: MB	Date Reviewed: 08/2012
			Scale: 1" = 30'	Plot Date: 08/2012
			Project Number.:	



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Lead (Pb)	1,000	3,900
Selenium (Se)	1,500	6,800

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.

SOURCE:

REVISION TO CMS SOIL SCREENING CRITERIA
 DYNOL NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-20 ● SHALLOW SOIL SAMPLE LOCATION
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

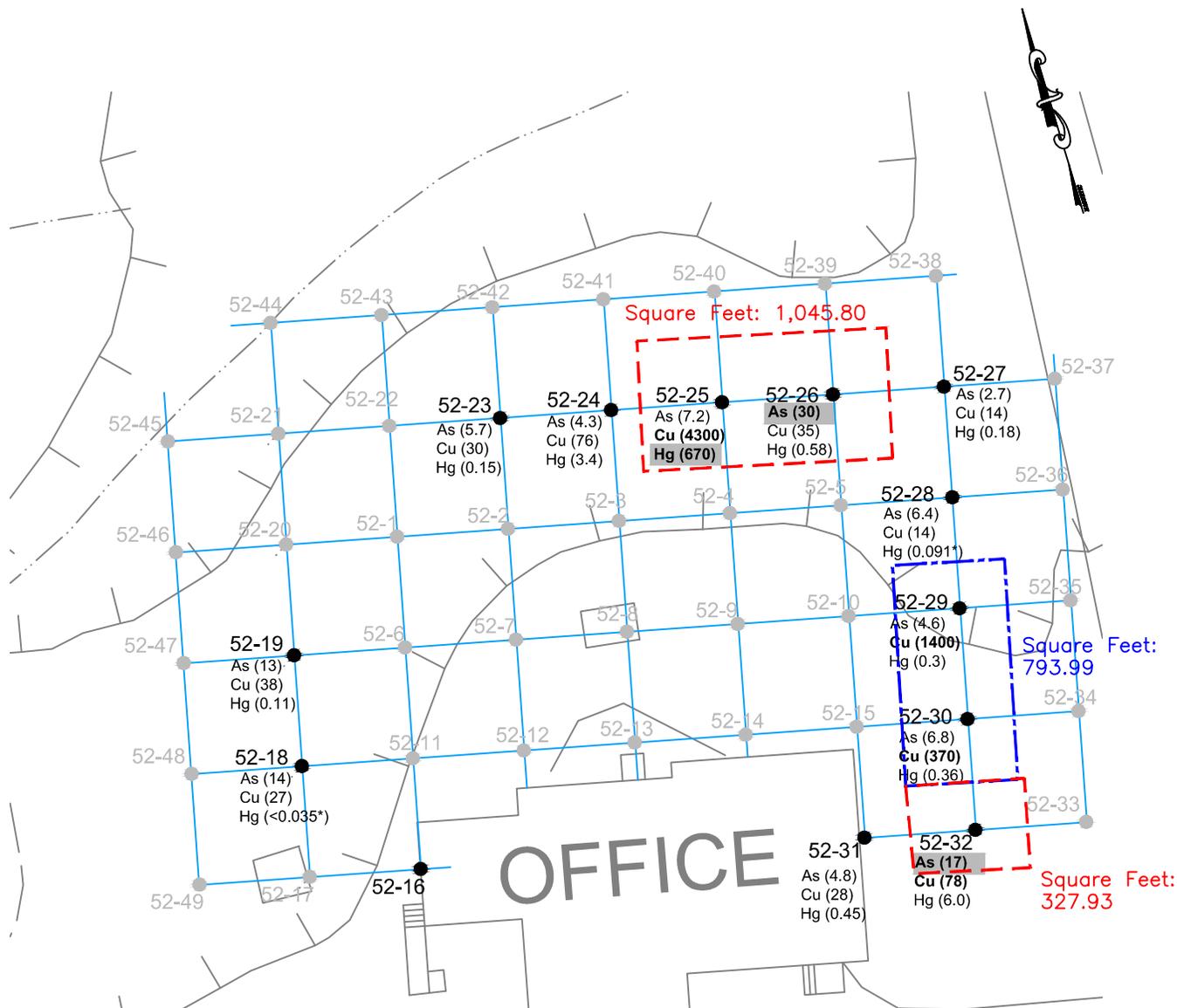


FIGURE 37
 COMMERCIAL AND INDUSTRIAL USE
 SOIL SCREENING CRITERIA DELINEATION
 SWMU 52 - 4'-5' INTERVAL

Drawn By: MDO	Date Drawn: 08/21/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	



DYNO-NOBEL, INC.
 PORT EWEN, NY.



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Copper (Cu)	270	10,000
Mercury (Hg)	47	220

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

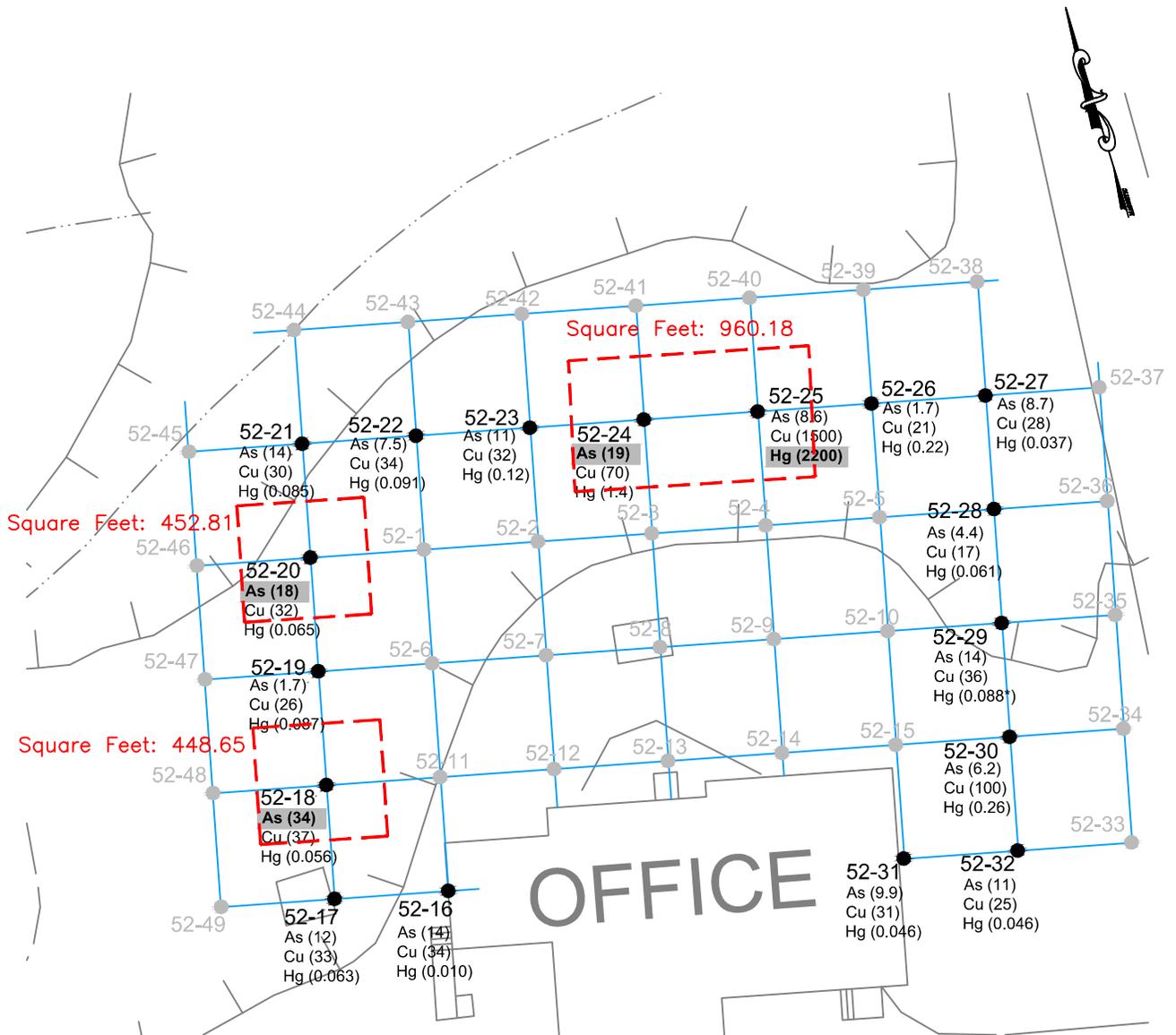


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FIGURE 38
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP CRITERIA DELINEATION
 SWMU 52 - 5'-6" INTERVAL

Drawn By: MDO	Date Drawn: 08/22/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	





SOIL CLEANUP OBJECTIVE, (mg/kg)

	<u>Commercial</u>	<u>Industrial</u>
Arsenic (As)	16	16
Copper (Cu)	270	10,000
Mercury (Hg)	47	220

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.

SOURCE:

REVISION TO CMS SOIL SCREENING CRITERIA
 DYN0 NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

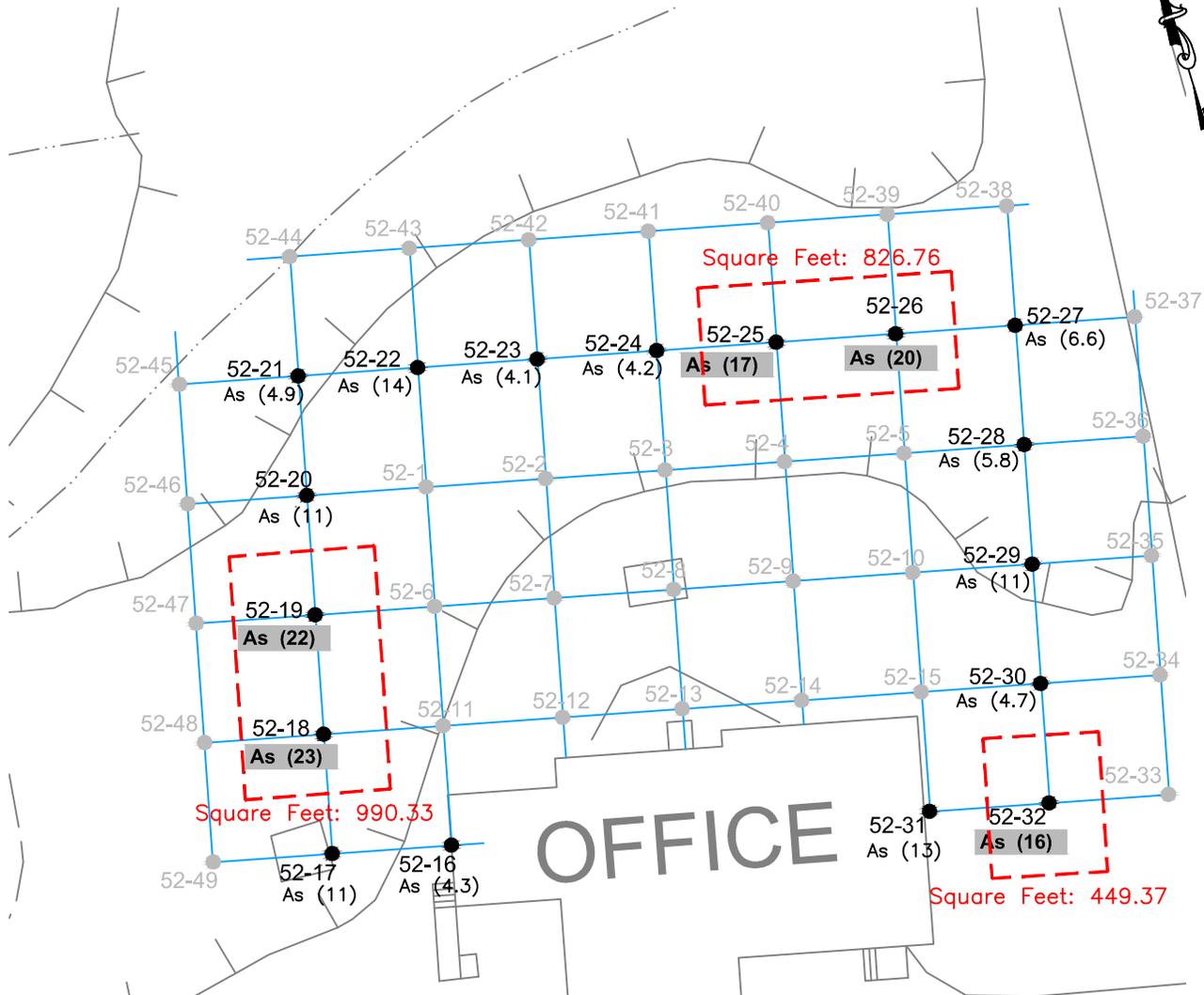
- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- (34.0)** CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (1500)** CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (32)** CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE



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PORT EWEN, NY.

FIGURE 39
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP CRITERIA DELINEATION
 SWMU 52 - 6-7' INTERVAL

Drawn By: MDO	Date Drawn: 08/22/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16

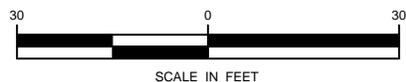
LEGEND

- 52-25 ● SHALLOW SOIL SAMPLE LOCATION
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.

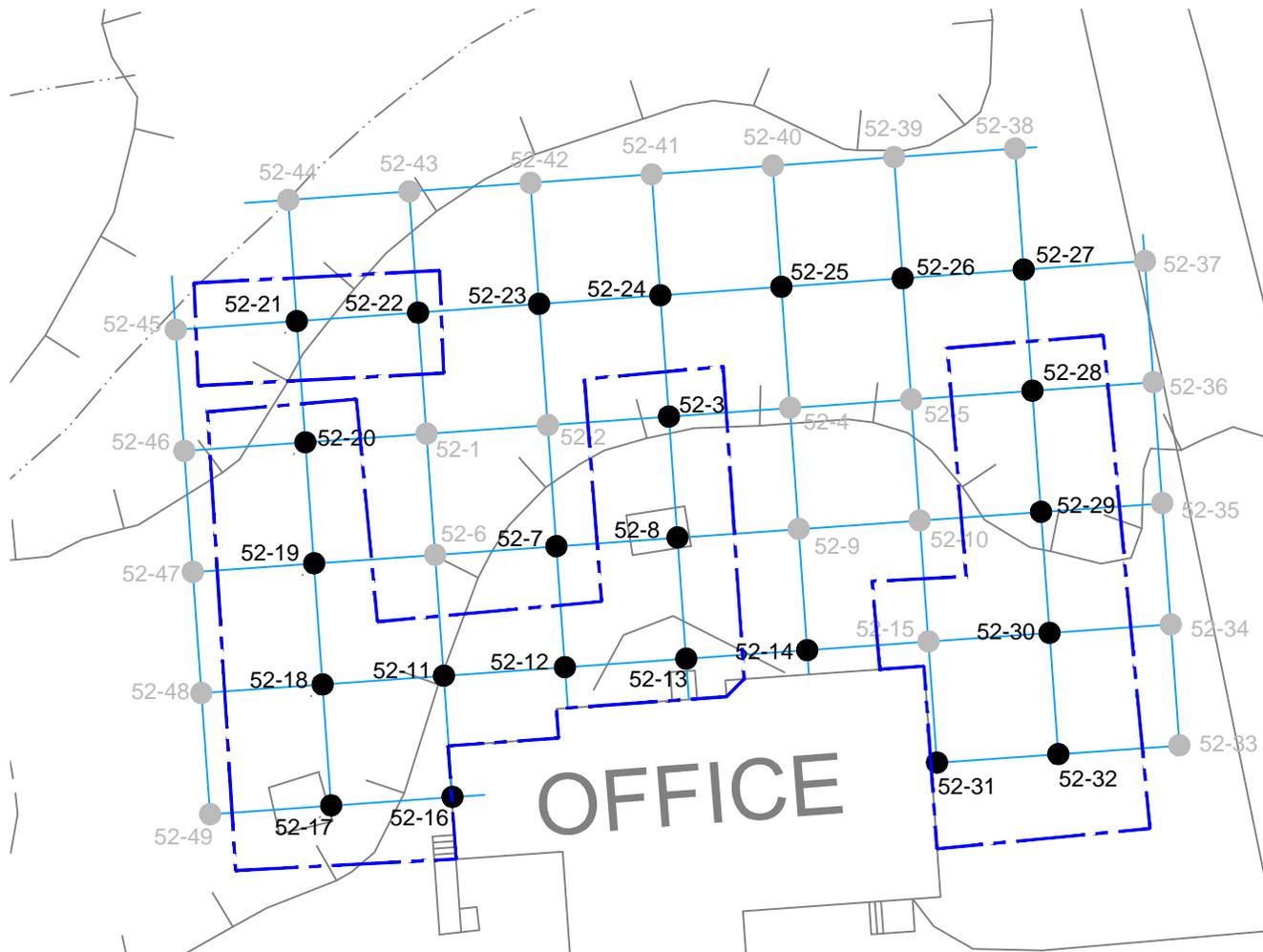
SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.



DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 40
 COMMERCIAL AND INDUSTRIAL USE
 SOIL SCREENING CRITERIA DELINEATION
 SWMU 52 - 7-8' INTERVAL

Drawn By: MDO	Date Drawn: 08/21/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000
Barium (Ba)	400	10,000
Mercury (Hg)	47	220

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (420) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

NOTES:

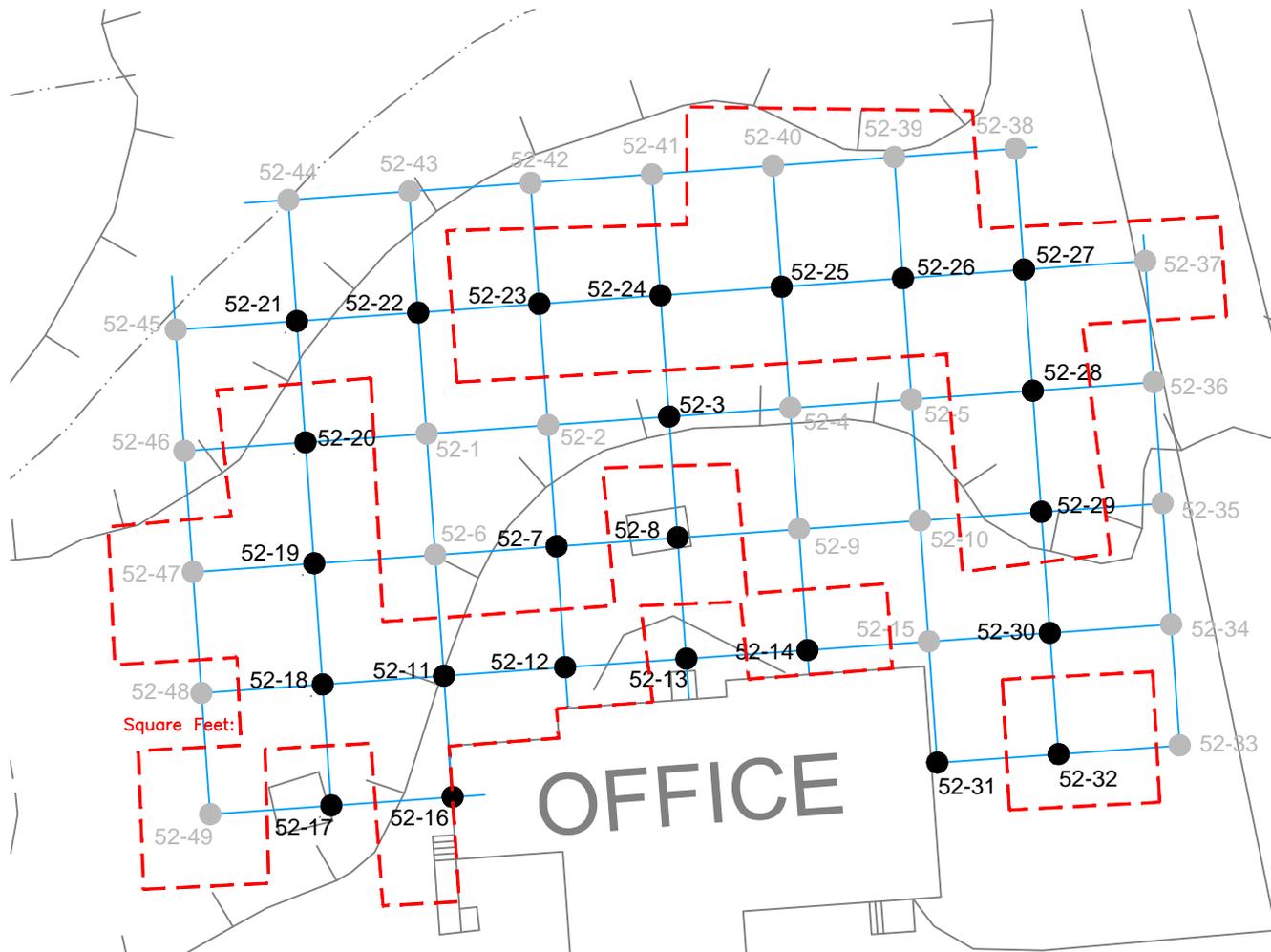
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.



DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 41
COMMERCIAL SOIL CLEANUP
OBJECTIVE DELINEATION
SWMU 52: COMPOSITE

Drawn By: MDO	Date Drawn: 08/21/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	



LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (420) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000
Barium (Ba)	400	10,000
Mercury (Hg)	47	220

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNONOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

NOTES:

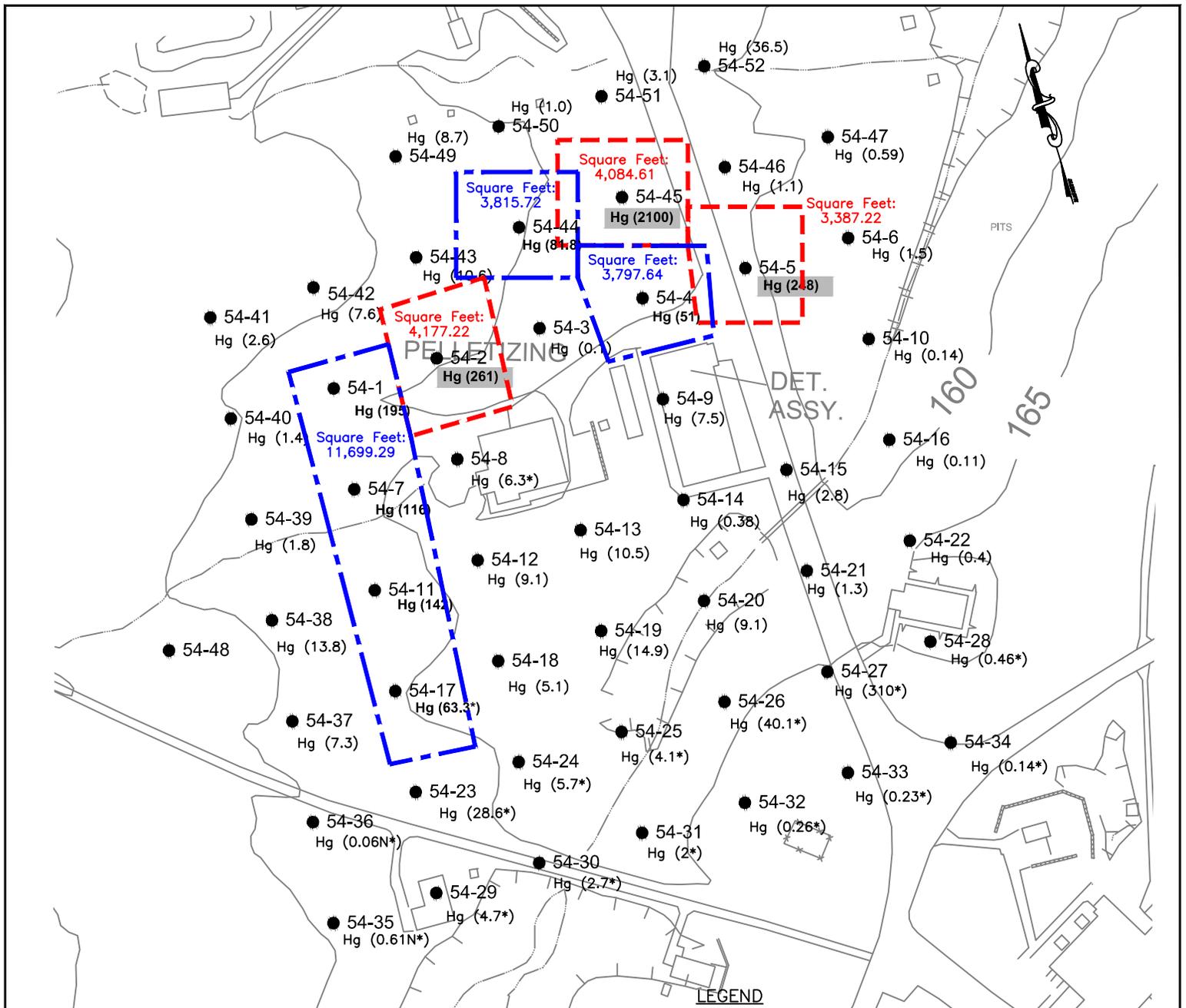
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.



DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 41A
 INDUSTRIAL USE SOIL CLEANUP
 OBJECTIVE DELINEATION
 SWMU 52: COMPOSITE

Drawn By: MDO	Date Drawn: 08/21/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 30'	Plot Date: 08/2012
Project Number.:	



SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Mercury (Hg)	47	220

QUALIFIERS:

- N - SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS
- E - ESTIMATED VALUE BECAUSE OF INTERFERENCE
- * - DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

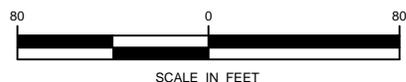
LEGEND

- 54-41 SHALLOW SOIL SAMPLE LOCATION
- (32.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

NOTES:

1. FOR DUPLICATE SAMPLES HIGHER VALUES OF TWO SHOWN.
2. CONCENTRATIONS IN SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs.

SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 24 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 SWMU 54 - 0-2' INTERVAL.



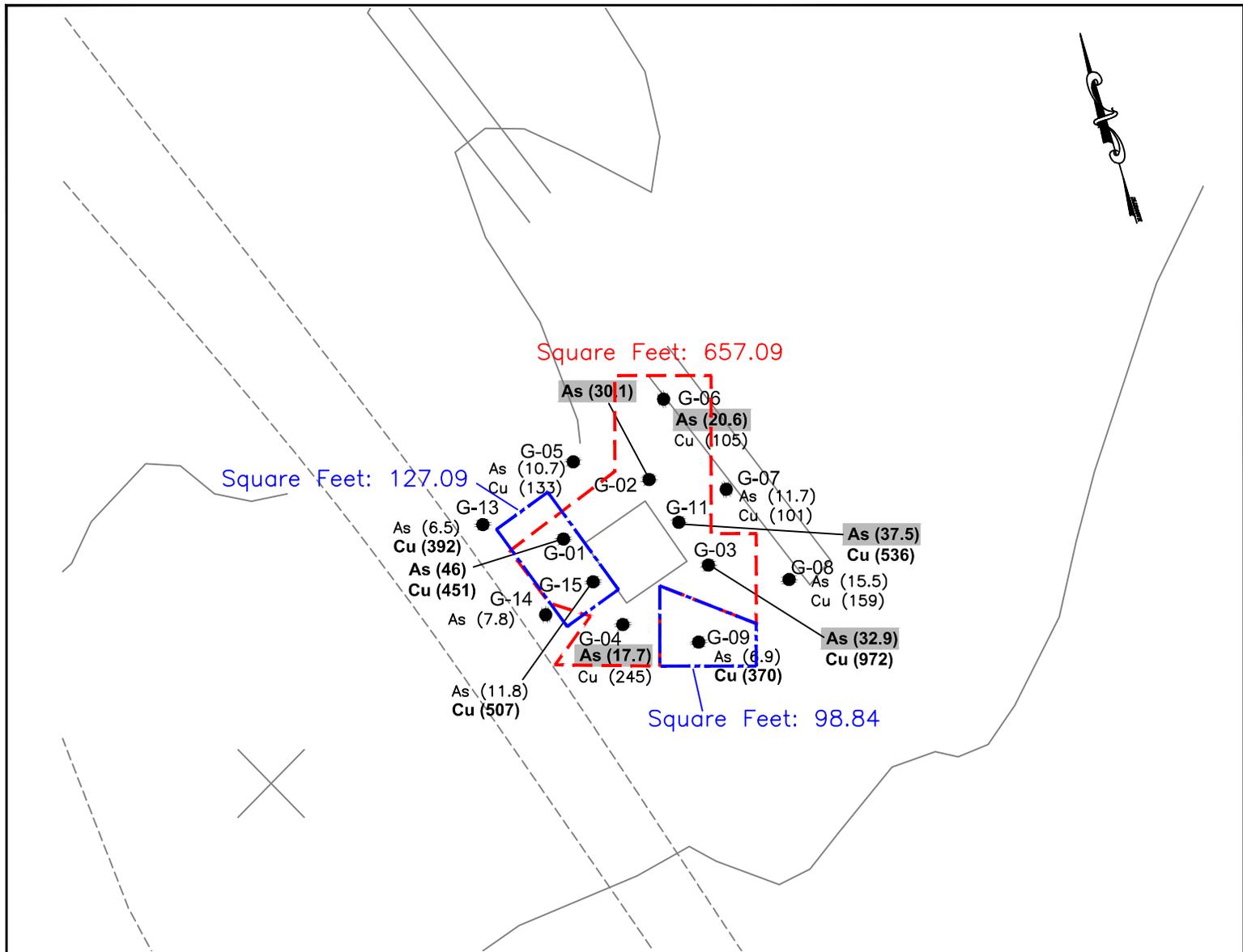
REVISIONS		
Rev.	By:	Date:



DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 42
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP CRITERIA DELINEATION
 SWMU 54 - 0-2' INTERVAL

Drawn By: MDO	Date Drawn: 11/16/12
Reviewed By: MB	Date Reviewed: 11/2012
Scale: 1" = 80'	Plot Date: 11/2012
Project Number.:	



Square Feet: 657.09

Square Feet: 127.09

Square Feet: 98.84

As (30.1)
 G-06
 As (20.6)
 Cu (105)
 G-05
 As (10.7)
 Cu (133)
 G-02
 G-07
 As (11.7)
 Cu (101)
 G-11
 As (37.5)
 Cu (536)
 G-03
 G-08
 As (15.5)
 Cu (159)
 As (32.9)
 Cu (972)
 G-13
 As (6.5)
 Cu (392)
 As (46)
 Cu (451)
 G-14
 G-15
 As (7.8)
 G-04
 As (17.7)
 Cu (245)
 G-09
 As (6.9)
 Cu (370)
 As (11.8)
 Cu (507)

LEGEND

- G-09 ● SHALLOW SOIL SAMPLE LOCATION
- (20.6) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (536) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

NOTES:

1. FOR DUPLICATE SAMPLES HIGHER VALUES OF TWO SHOWN.
2. SAMPLES G-10 AND G-12 NOT COLLECTED - CONCRETE SLAB.
3. CONCENTRATIONS IN SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCO'S.



SCALE IN FEET

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Copper (Cu)	270	10,000

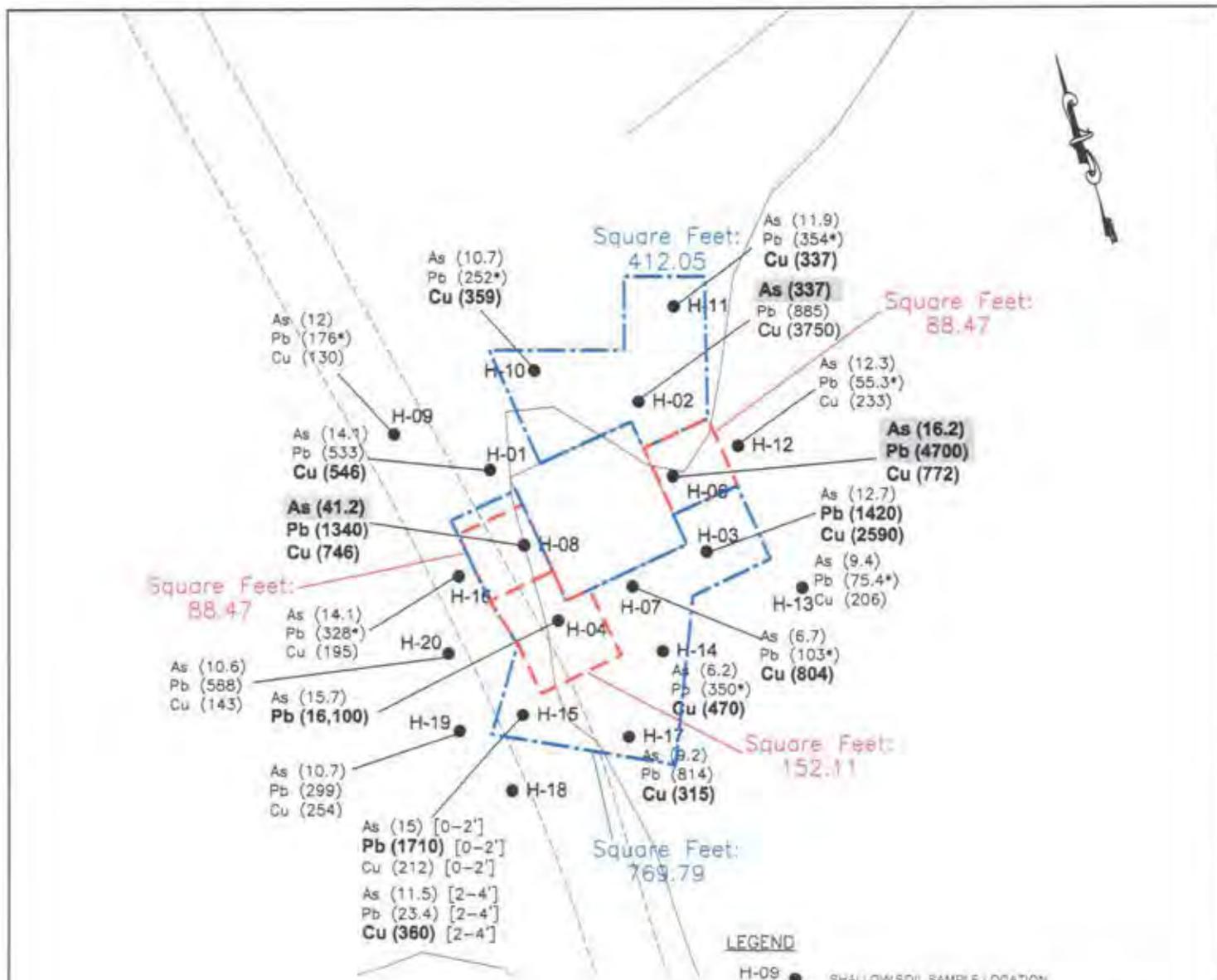
QUALIFIERS:

- N - SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS
- E - ESTIMATED VALUE BECAUSE OF INTERFERENCE
- * - DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

REVISIONS		
Rev.	By:	Date:

SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 25 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 AOC G - 0-2' INTERVAL.

	DYNO-NOBEL, INC. PORT EWEN, NY.	FIGURE 43 COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE DELINEATION AOC G - 0-2' INTERVAL	Drawn By: MDO	Date Drawn: 11/16/12
			Reviewed By: MS	Date Reviewed: 11/2012
			Scale: 1" = 20'	Plot Date: 11/2012
			Project Number.:	



SOIL CLEANUP OBJECTIVE (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

QUALIFIERS:

- N - SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS
- E - ESTIMATED VALUE BECAUSE OF INTERFERENCE
- * - DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

LEGEND

- H-09 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

NOTES:

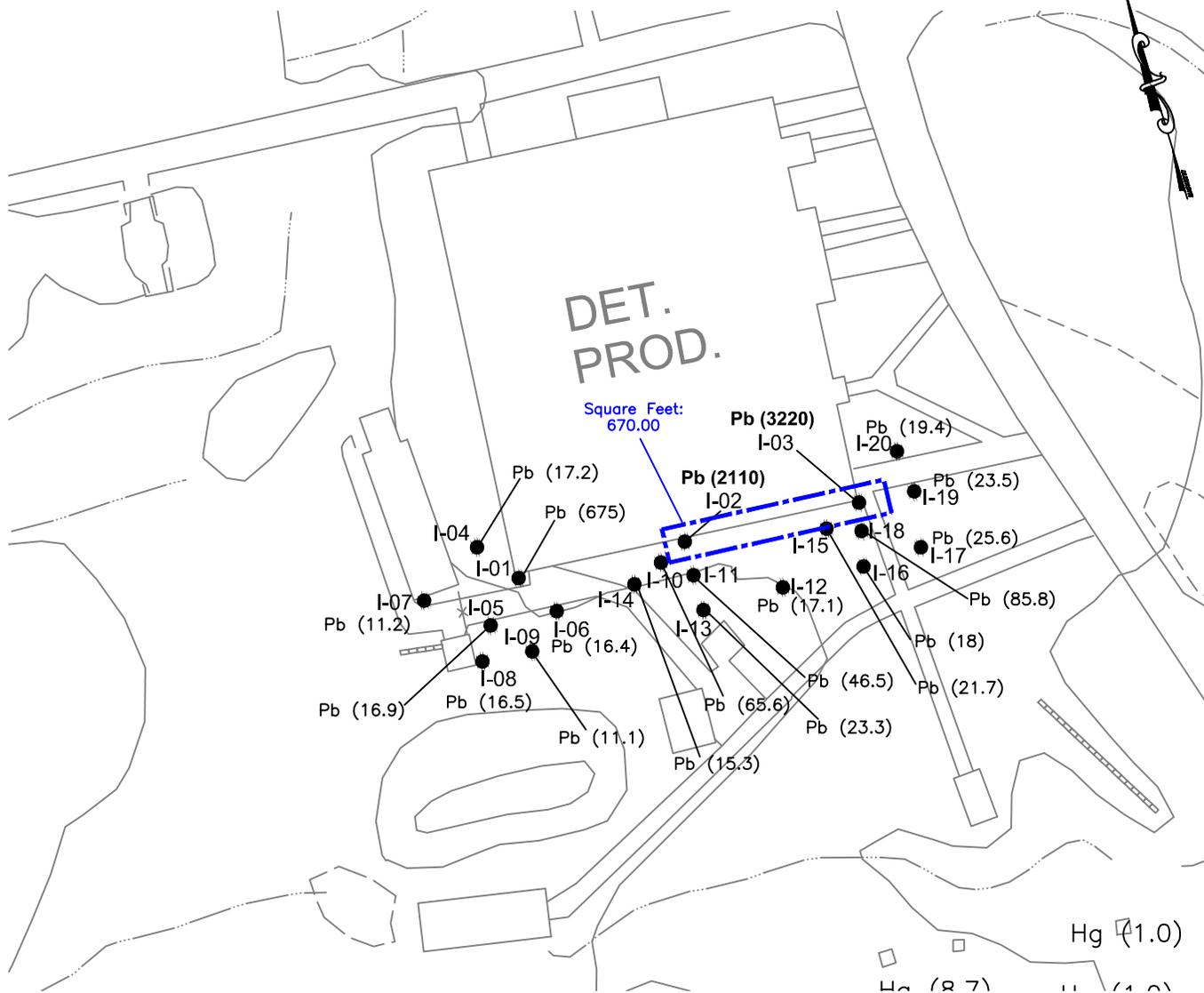
1. FOR DUPLICATE SAMPLES HIGHER VALUES OF TWO SHOWN.
2. SAMPLE H-05 NOT COLLECTED - CONCRETE SLAB.
3. CONCENTRATIONS IN SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs WITH THE EXCEPTION OF SAMPLE LOCATION H-15.
4. NO DATA POSTED FOR H-18.



REVISIONS		
Rev.	By:	Date:
Rev.	By:	Date:
Rev.	By:	Date:
Rev.	By:	Date:

SOURCE:
 HYDROQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 26 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 AOC H - 0-2' INTERVAL

	DYNO-NOBEL, INC. PORT EWEN, NY.	FIGURE 44 COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE DELINEATION AOC H - 0-2' INTERVAL	Drawn By: MDO	Date Drawn: 11/16/12
			Reviewed By: MS	Date Reviewed: 11/2012
			Scale: 1" = 20'	Plot Date: 11/2012
			Project Number: _____	



Square Feet:
670.00

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Lead (Pb)	1,000	3,900

QUALIFIERS:

- N - SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS
- E - ESTIMATED VALUE BECAUSE OF INTERFERENCE
- * - DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

LEGEND

- M-9 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0)** CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355)** CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

NOTE:

1. CONCENTRATIONS IN SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs.



REVISIONS		
Rev.	By:	Date:

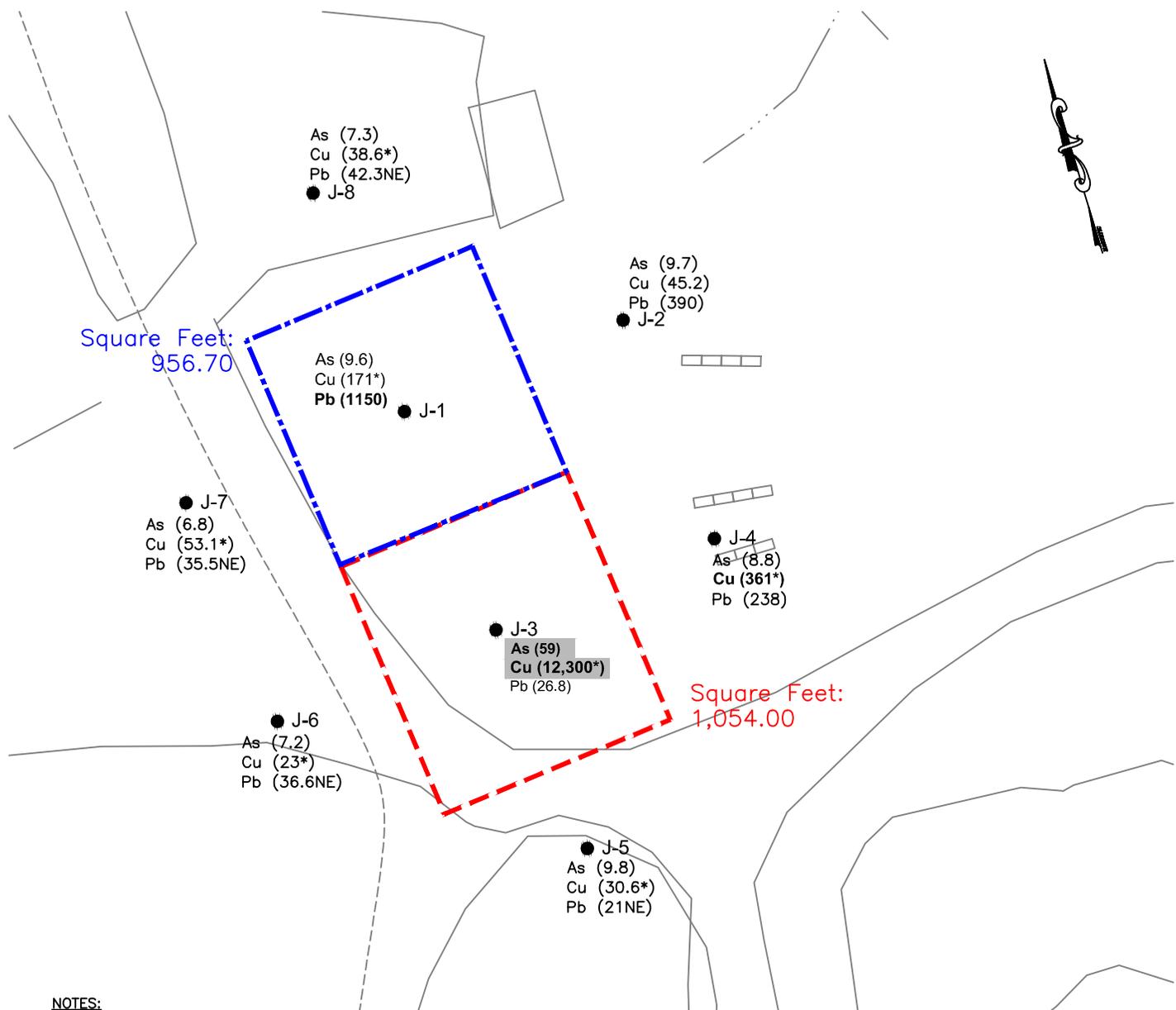
SOURCE:
HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
FIGURE 27 INDUSTRIAL USE SOIL CLEANUP
CRITERIA DELINEATION
AOC I - 0-2' INTERVAL.



DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 45
COMMERCIAL AND INDUSTRIAL USE
SOIL CLEANUP OBJECTIVE DELINEATION
AOC I - 0-2' INTERVAL

Drawn By: MDO	Date Drawn: 11/16/12
Reviewed By: MS	Date Reviewed: 11/2012
Scale: 1" = 50'	Plot Date: 11/2012
Project Number.:	



NOTES:

- FOR DUPLICATE SAMPLES HIGHER VALUES OF TWO SHOWN.
- NO VERTICAL SAMPLES WERE COLLECTED FROM AOC J.

LEGEND

- M-9 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0)** CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355)** CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

QUALIFIERS:

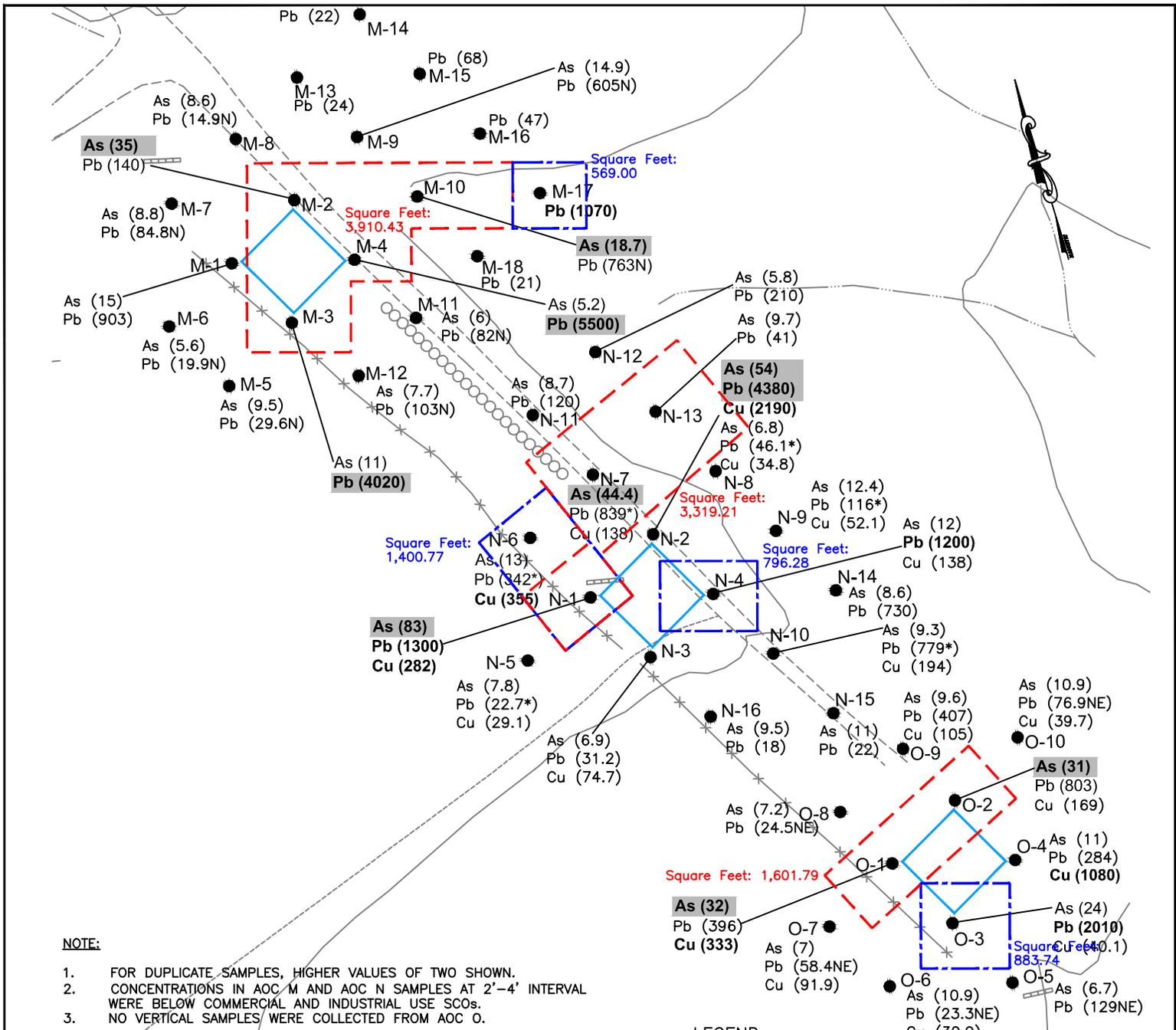
- N - SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS
- E - ESTIMATED VALUE BECAUSE OF INTERFERENCE
- * - DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

REVISIONS		
Rev.	By:	Date:

SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 28 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 AOC J - 0-2' INTERVAL.



	DYNO-NOBEL, INC. PORT EWEN, NY.	FIGURE 46 COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE DELINEATION AOC J - 0-2' INTERVAL	Drawn By: MDO	Date Drawn: 11/16/12
			Reviewed By: MS	Date Reviewed: 11/2012
			Scale: 1" = 50'	Plot Date: 11/2012
			Project Number.:	



NOTE:

1. FOR DUPLICATE SAMPLES, HIGHER VALUES OF TWO SHOWN.
2. CONCENTRATIONS IN AOC M AND AOC N SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOS.
3. NO VERTICAL SAMPLES WERE COLLECTED FROM AOC O.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

QUALIFIERS:

- N - SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS
- E - ESTIMATED VALUE BECAUSE OF INTERFERENCE
- * - DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS

LEGEND

- N-16 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE



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Rev.	By:	Date:

SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 29 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 AOC M,N,O - 0-2' INTERVAL.

DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 47
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP CRITERIA DELINEATION
 AOC M,N,O - 0-2' INTERVAL

Drawn By: MDO	Date Drawn: 08/22/12
Reviewed By: MB	Date Reviewed: 08/2012
Scale: 1" = 50'	Plot Date: 08/2012
Project Number.:	

APPENDIX D

Below SCO Delineation Figures

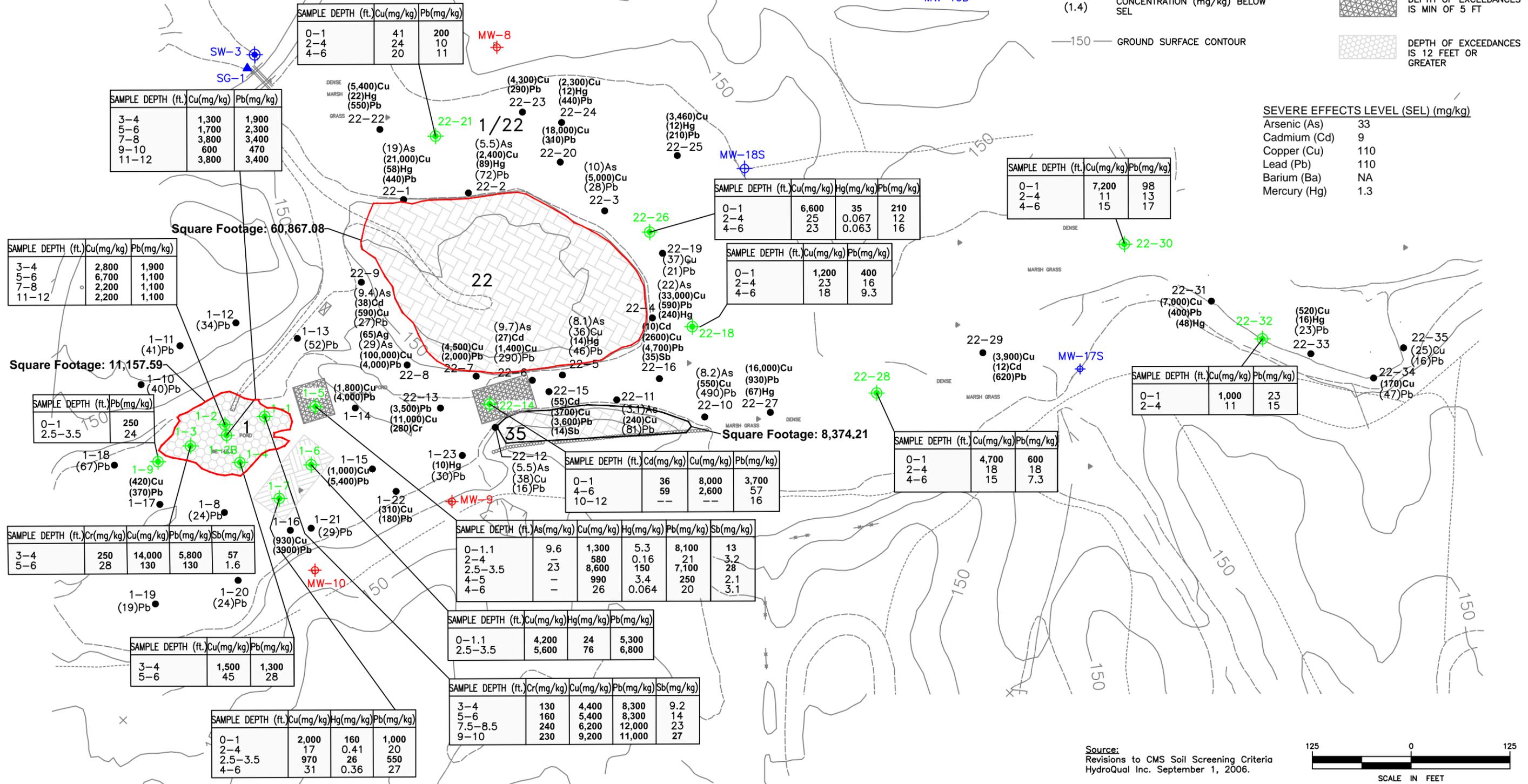


- LEGEND:**
- 22-25 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊕ 22-32 VERTICAL DELINEATION BORING
 - (14) CONCENTRATION (mg/kg) ABOVE SEL
 - (1.4) CONCENTRATION (mg/kg) BELOW SEL
 - 150— GROUND SURFACE CONTOUR

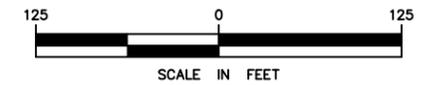
- DEPTH OF EXCEEDANCES HAS NOT BEEN DETERMINED
- DEPTH OF EXCEEDANCES IS 3.5 FEET
- DEPTH OF EXCEEDANCES IS MIN OF 5 FT
- DEPTH OF EXCEEDANCES IS 12 FEET OR GREATER

SEVERE EFFECTS LEVEL (SEL) (mg/kg)

Arsenic (As)	33
Cadmium (Cd)	9
Copper (Cu)	110
Lead (Pb)	110
Barium (Ba)	NA
Mercury (Hg)	1.3



Source: Revisions to CMS Soil Screening Criteria HydroQual Inc. September 1, 2006.



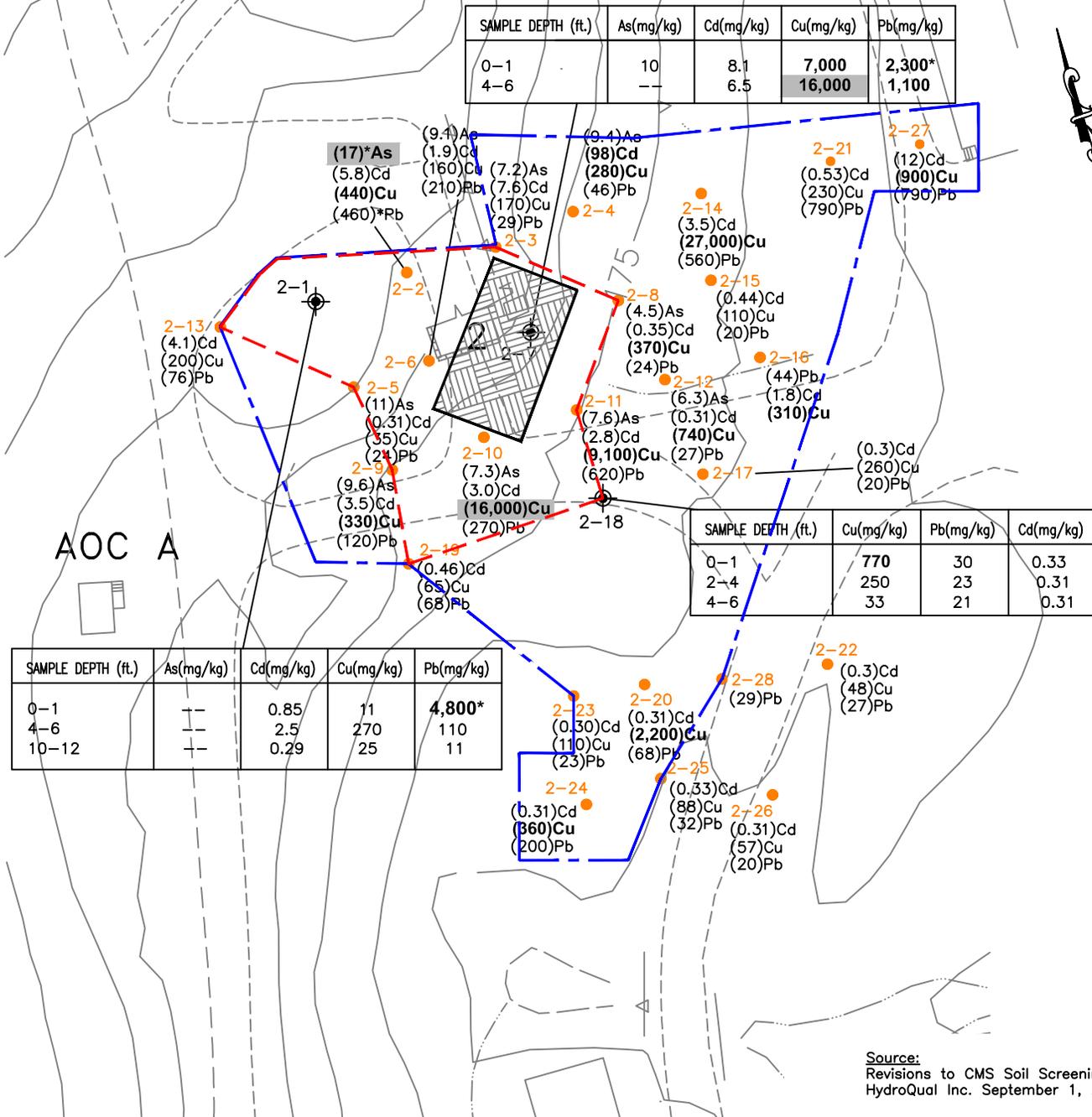
REVISIONS

Rev.	By:	Disc.:	Date:

DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 17
SEVERE EFFECTS LEVEL (SEL) DELINEATION
SWMUs 1 AND 22

Drawn By:	BC	Date Drawn:	
Reviewed By:	KV	Date Reviewed:	
Scale:	1" = 125'	Plot Date:	
Project Number.:			



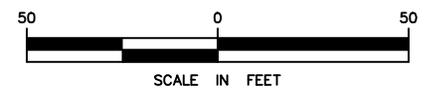
- LEGEND:**
- 2-3 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊕ 2-7 VERTICAL DELINEATION BORING
 - (12) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - (12) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (1.5) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - 175- GROUND SURFACE CONTOUR
 - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - ▨ DEPTH OF EXCEEDANCES IS 6 FEET
 - * TWO SAMPLES WERE ANALYZED AT THIS SAMPLE LOCATION. THE CONCENTRATION SHOWN REPRESENTS THE GREATER OF THE TWO SAMPLING RESULTS.

- NOTE:**
1. mg/kg = MILLIGRAMS PER KILOGRAM
 2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 7,144 SQ. FT.
 3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 27,328 SQ. FT.
 4. THE AREA EXCEEDING THE INDUSTRIAL AND COMMERCIAL SOIL CLEANUP OBJECTIVES TO A DEPTH OF 6 FT EQUALS 1,441 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Cadmium (Cd)	9.3	60
Copper (Cu)	270	10,000
Lead (Pb)	1,000	3,900

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



REVISIONS		
Rev.	By:	Date:

DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 18
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION
SWMU 2 AND AOC A

Drawn By:	BC	Date Drawn:	11/25/13
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 50'	Plot Date:	11/2013
Project Number.:			

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)	Pb(mg/kg)
0-1	49	860	78,000	380
2-4	10	2.2	190	25
4-6	6.1	9.5	180	20

LEGEND:

- 3-16 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
- 3-2 VERTICAL DELINEATION BORING
- (16) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL OBJECTIVE
- (16) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL OBJECTIVE
- (1.8) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL OBJECTIVE
- 200 — GROUND SURFACE CONTOUR
- 226.1 GROUND SURFACE ELEVATION
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- * TWO SAMPLES WERE ANALYZED AT THIS SAMPLE LOCATION. THE CONCENTRATION SHOWN REPRESENTS THE GREATER OF THE TWO SAMPLING RESULTS.

DEPTH OF EXCEEDANCES IS 6 FEET MINIMUM

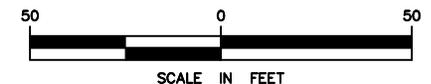
NOTE:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 8,363 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 18,153 SQ. FT.
4. THE AREA EXCEEDING THE INDUSTRIAL AND COMMERCIAL SOIL CLEANUP OBJECTIVES TO A DEPTH OF 6 FT EQUALS 1,059 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Cadmium (Cd)	9.3	60
Copper (Cu)	270	10,000
Lead (Pb)	1,000	3,900

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



SAMPLE DEPTH (ft.)	As(mg/kg)	Cu(mg/kg)	Pb(mg/kg)	Cd(mg/kg)
0-1	54*	100,000*	680*	690
4-6	2.1	3,300	5,200	43
8-10	15	190	30	0.43

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FIGURE 19
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 3 AND 5

Drawn By:	BC	Date Drawn:	11/25/13
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 50'	Plot Date:	11/2013
Project Number.:			



LEGEND:

- 11-1 SHALLOW SOIL SAMPLE LOCATION (0-1ft)
- ⊕ 11-3 VERTICAL DELINEATION BORING
- (12)** CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (12)** CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (4.9)** CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- 181.6 \times GROUND SURFACE ELEVATION
- 175— GROUND SURFACE CONTOUR
- — — APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- DEPTH OF EXCEEDANCES IS 4 FEET

NOTE:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 5,244 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 11,029 SQ. FT.
4. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVES TO A DEPTH OF 6 FT EQUALS 1,034 SQ. FT.

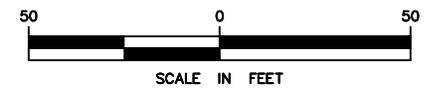
SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Cadmium (Cd)	9.3	60
Copper (Cu)	270	10,000

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)
0-1	9.8	16	810
2-4	5.5	6.1	470
4-6	12	0.66	38

SAMPLE DEPTH (ft.)	As(mg/kg)	Cd(mg/kg)	Cu(mg/kg)
0-1	32	4	1600
2-4	8.4	0.27	24

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



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FIGURE 20
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION: SWMU 4

Drawn By:	BC	Date Drawn:	11/25/2013
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 50'	Plot Date:	11/2013
Project Number.:			



SAMPLE DEPTH (ft.)	Ba(mg/kg)	Pb(mg/kg)	Se(mg/kg)
0-1	17,000	14,000*	7,900
2-4	770	440	260

SAMPLE DEPTH (ft.)	Pb(mg/kg)
0-1	36
4-6	18
6-8	24

SAMPLE DEPTH (ft.)	Ba(mg/kg)	Pb(mg/kg)	Se(mg/kg)
0-1	1,300	1,000	1.6
4-6	55	19	6.1

SAMPLE DEPTH (ft.)	Ba(mg/kg)	Pb(mg/kg)	Se(mg/kg)
0-1	620	780	240
2-4	1,200	8,000	1,700

SAMPLE DEPTH (ft.)	Pb(mg/kg)
0-1	19
2-4	15
4-6	18

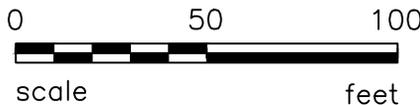
- LEGEND:**
- 6-4 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊕ 6-8 VERTICAL DELINEATION BORING
 - (1,000) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - (1,000) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (15) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - 200 — GROUND SURFACE CONTOUR
 - 172.5 × GROUND SURFACE ELEVATION
 - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - ▨ DEPTH OF EXCEEDANCES IS 4 FEET

* TWO SAMPLES WERE ANALYZED AT THIS SAMPLE LOCATION. THE CONCENTRATION SHOWN REPRESENTS THE GREATER OF THE TWO SAMPLING RESULTS.

- NOTE:**
1. mg/kg = MILLIGRAMS PER KILOGRAM
 2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 21,580 SQ. FT.
 3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 34,943 SQ. FT.
 4. THE AREA EXCEEDING THE INDUSTRIAL AND COMMERCIAL SOIL CLEANUP OBJECTIVES TO A DEPTH OF 6 FT EQUALS 1,809 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Barium (Ba)	400	10,000
Lead (Pb)	1,000	3,900
Selenium (Se)	1,500	6,800



Source: Revisions to CMS Soil Screening Criteria HydroQual Inc. September 1, 2006.

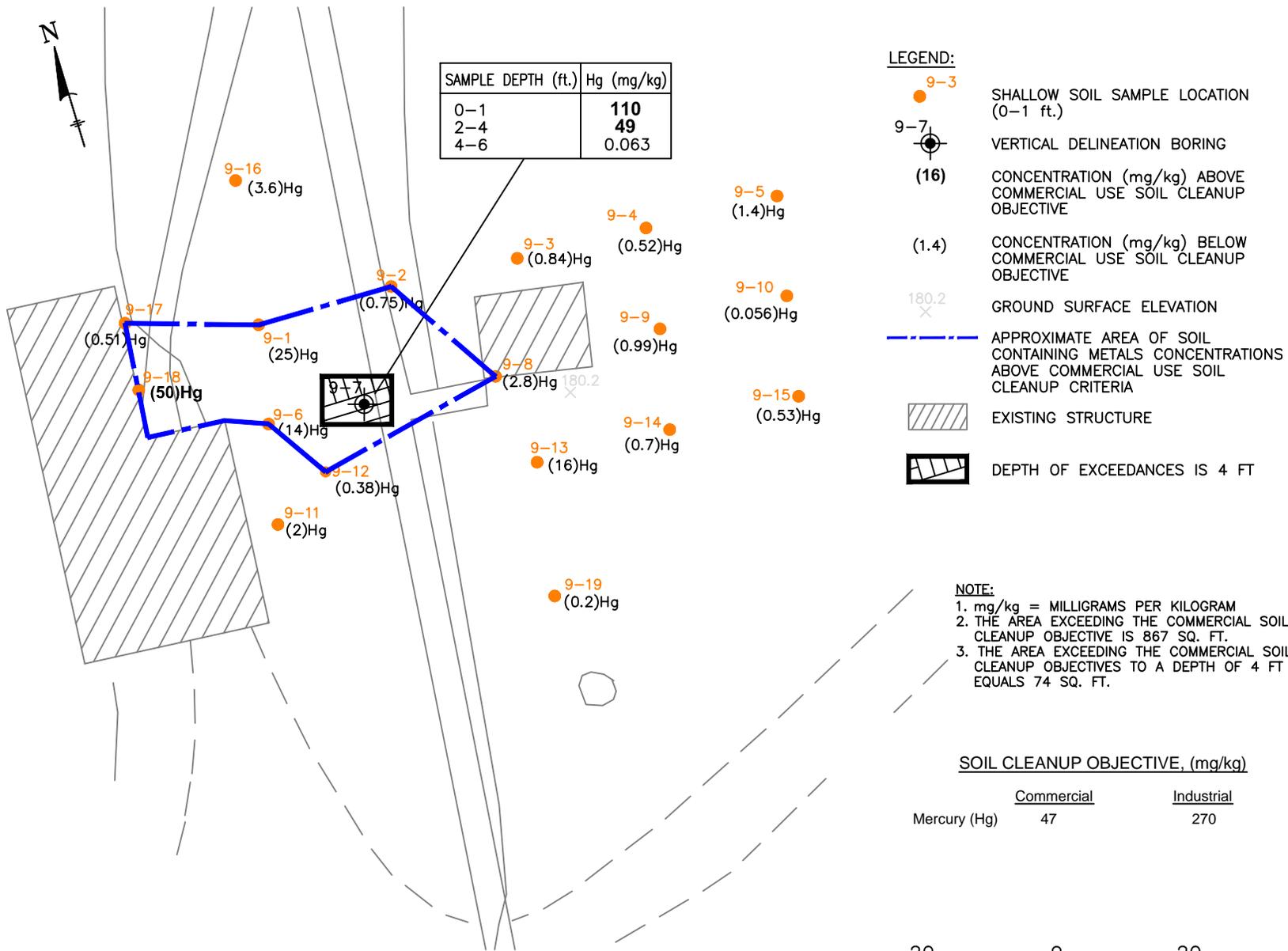


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FIGURE 21
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION
SWMU NOS. 6, 7, 8, 32 & AOC B

Drawn By:	BC	Date Drawn:	11/25/2013
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 50'	Plot Date:	11/2013
Project Number:			



Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

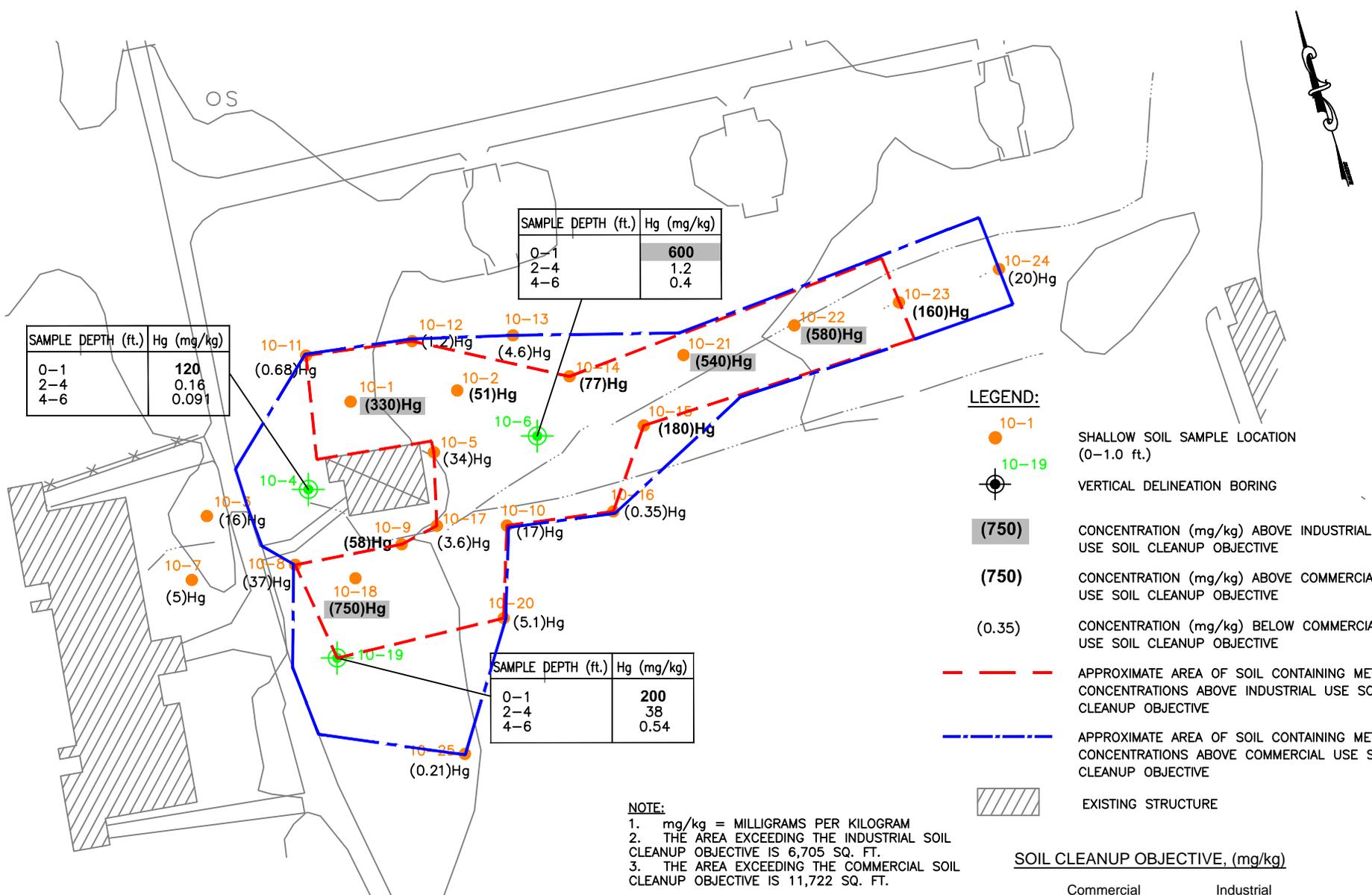


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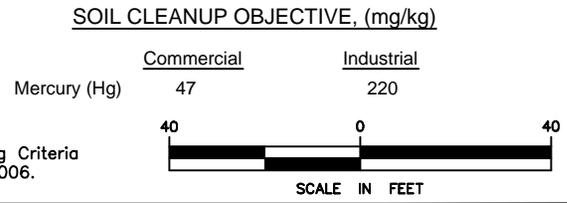
FIGURE 22
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 9

Drawn By:	BC	Date Drawn:	11/25/2013
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 50'	Plot Date:	11/2013
Project Number.:			



NOTE:
 1. mg/kg = MILLIGRAMS PER KILOGRAM
 2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 6,705 SQ. FT.
 3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 11,722 SQ. FT.

- LEGEND:**
- 10-1 SHALLOW SOIL SAMPLE LOCATION (0-1.0 ft.)
 - ⊕ 10-19 VERTICAL DELINEATION BORING
 - (750) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - (750) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (0.35) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - - - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
 - - - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - ▨ EXISTING STRUCTURE



Source:
 Revisions to CMS Soil Screening Criteria
 HydroQual Inc. September 1, 2006.



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FIGURE 23
 COMMERCIAL AND INDUSTRIAL USE SOIL
 CLEANUP OBJECTIVE DELINEATION: SWMU 10

Drawn By:	BC	Date Drawn:	11/25/2013
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 40'	Plot Date:	11/2013
Project Number.:			

LEGEND:

- 11-1 SHALLOW SOIL SAMPLE LOCATION (0-1.0 ft.)
- ⊕ 11-3 VERTICAL DELINEATION BORING
- (240) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (240) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (4.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- 181.6 × GROUND SURFACE ELEVATION
- 175— GROUND SURFACE CONTOUR
- - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- ▨ EXISTING STRUCTURE

NOTE:

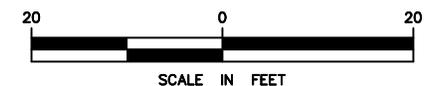
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 207 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 538 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Mercury (Hg)	47	220

SAMPLE DEPTH (ft.)	Hg (mg/kg)
0-1	240
2-4	37
4-6	0.14

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

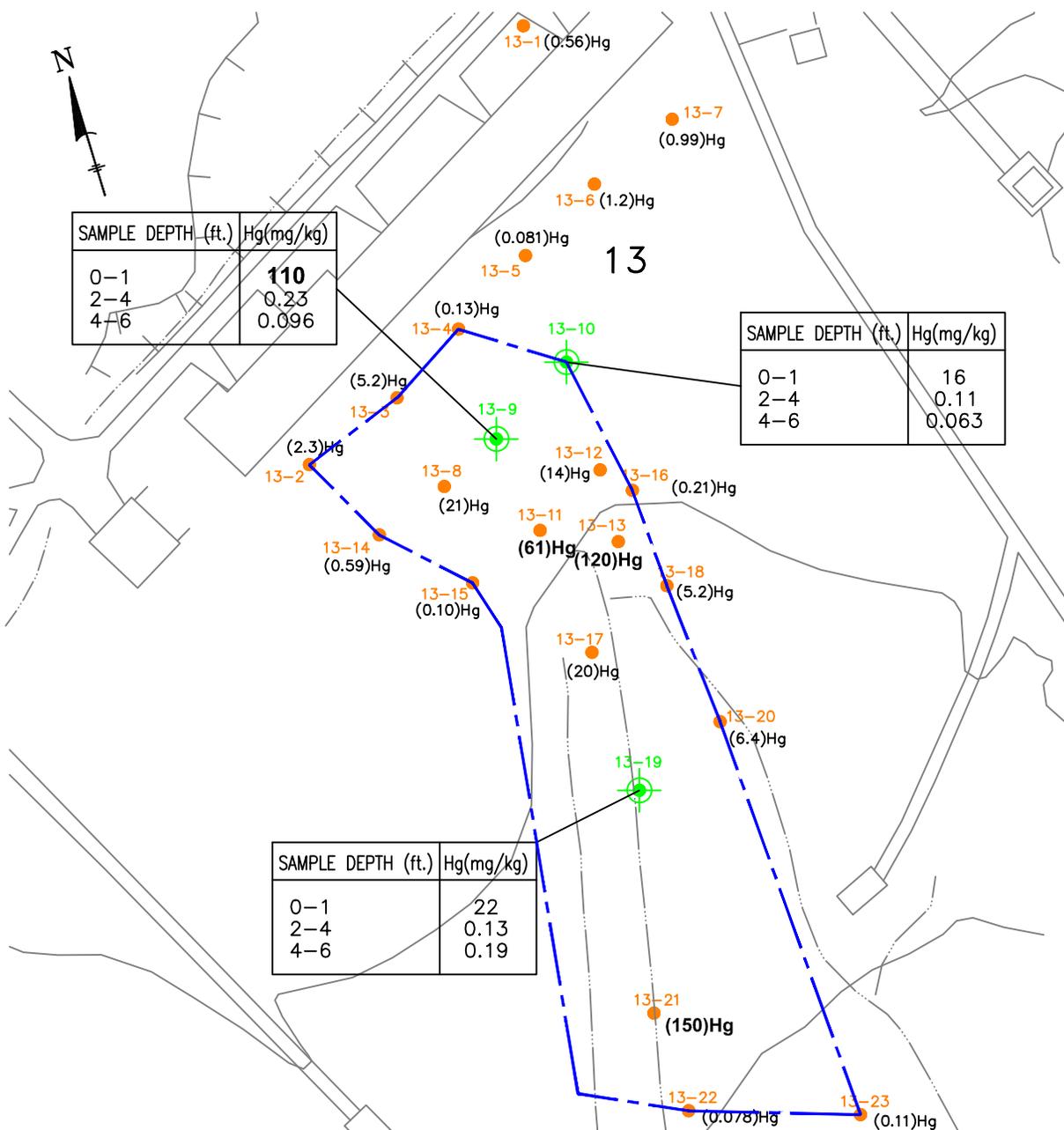


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DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 24
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION: SWMU 11

Drawn By:	BC	Date Drawn:	12/06/13
Reviewed By:	KV	Date Reviewed:	12/2013
Scale:	1" = 20'	Plot Date:	12/2013
Project Number.:			



SAMPLE DEPTH (ft.)	Hg(mg/kg)
0-1	110
2-4	0.23
4-6	0.096

SAMPLE DEPTH (ft.)	Hg(mg/kg)
0-1	16
2-4	0.11
4-6	0.063

SAMPLE DEPTH (ft.)	Hg(mg/kg)
0-1	22
2-4	0.13
4-6	0.19

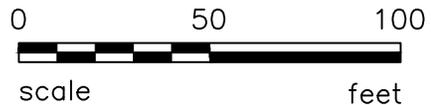
- LEGEND:**
- 13-3 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
 - ⊙ 13-9 VERTICAL DELINEATION BORING
 - (110) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - (1.2) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
 - APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP CRITERIA

NOTE:
 1. mg/kg = MILLIGRAMS PER KILOGRAM
 2. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 15,534 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Mercury (Hg)	47	270

Source:
 Revisions to CMS Soil Screening Criteria
 HydroQual Inc. September 1, 2006.

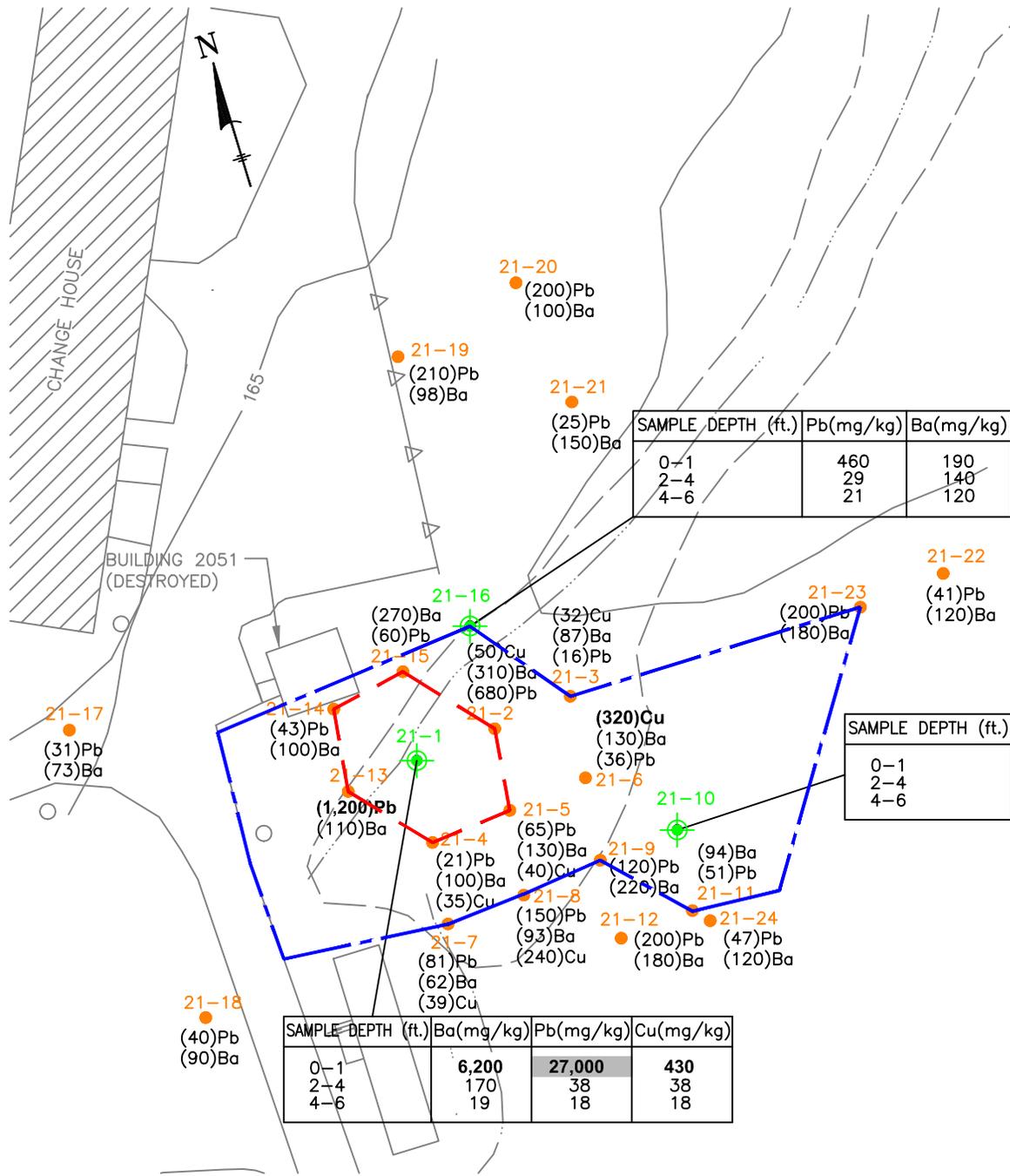


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FIGURE 25
 COMMERCIAL AND INDUSTRIAL USE SOIL
 CLEANUP OBJECTIVE DELINEATION:
 SWMU 13

Drawn By: BC	Date Drawn: 11/26/2013
Reviewed By: KV	Date Reviewed: 11/2013
Scale: 1" = 50'	Plot Date: 11/2013
Project Number.:	



LEGEND:

- 21-21 SHALLOW SOIL SAMPLE LOCATION (0-1.0 ft.)
- ⊕ 21-16 VERTICAL DELINEATION BORING
- (2,700) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (2,700) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (210) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVES
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVES
- 165 GROUND SURFACE CONTOUR
- EXISTING STRUCTURE

NOTE:

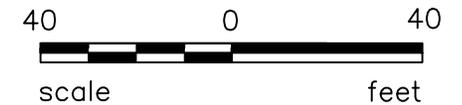
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 1,154.36 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 8,151.90 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Lead (Pb)	1,000	3,900

Source:

Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



SAMPLE DEPTH (ft.)	Ba(mg/kg)	Pb(mg/kg)	Cu(mg/kg)
0-1	6,200	27,000	430
2-4	170	38	38
4-6	19	18	18

SAMPLE DEPTH (ft.)	Pb(mg/kg)	Ba(mg/kg)
0-1	760	680
2-4	20	81
4-6	17	130

SAMPLE DEPTH (ft.)	Pb(mg/kg)	Ba(mg/kg)
0-1	460	190
2-4	29	140
4-6	21	120

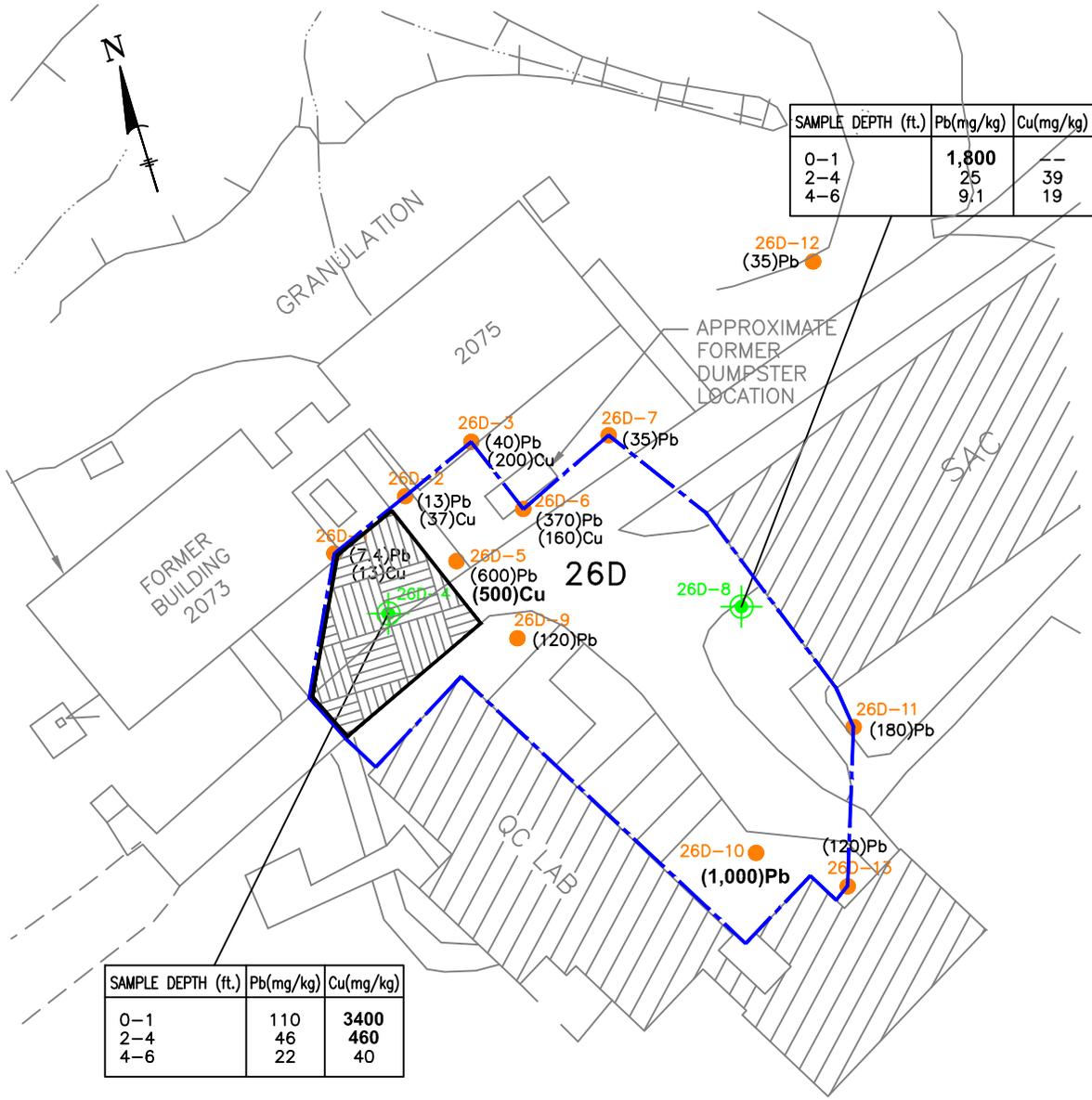


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FIGURE 26
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION: SWMU 21

Drawn By:	BC	Date Drawn:	11/26/2013
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 40'	Plot Date:	11/2013
Project Number.:			



SAMPLE DEPTH (ft.)	Pb(mg/kg)	Cu(mg/kg)
0-1	1,800	--
2-4	25	39
4-6	9,1	19

SAMPLE DEPTH (ft.)	Pb(mg/kg)	Cu(mg/kg)
0-1	110	3400
2-4	46	460
4-6	22	40

LEGEND:

- 26D-12 SHALLOW SOIL SAMPLE LOCATION (0-1 ft.)
- ⊙ 26D-8 VERTICAL DELINEATION BORING
- (1,800) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (7.4) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- ▨ EXISTING STRUCTURE
- ▩ DEPTH OF EXCEEDANCES IS 4 FEET MINIMUM

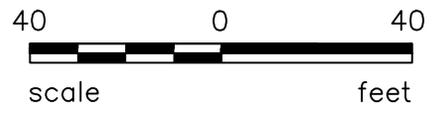
NOTE:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 7,741 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVES TO A DEPTH OF 4 FT EQUALS 1,051 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

Source:
Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.

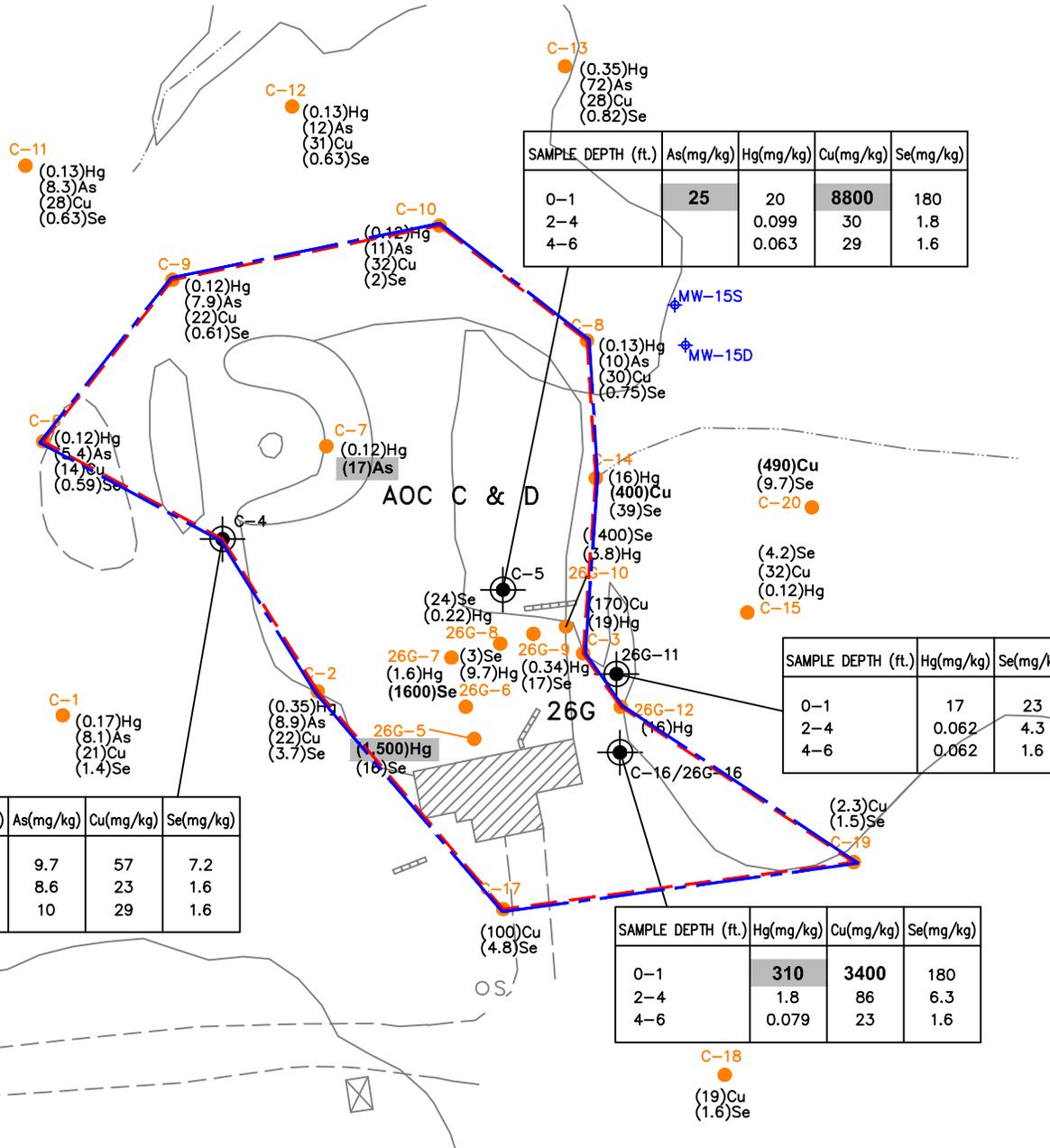


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PORT EWEN, NY.

FIGURE 27
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 26D

Drawn By:	BC	Date Drawn:	11/26/2013
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 40'	Plot Date:	11/2013
Project Number.:			



SAMPLE DEPTH (ft.)	As(mg/kg)	Hg(mg/kg)	Cu(mg/kg)	Se(mg/kg)
0-1	25	20	8800	180
2-4		0.099	30	1.8
4-6		0.063	29	1.6

SAMPLE DEPTH (ft.)	Hg(mg/kg)	Se(mg/kg)
0-1	17	23
2-4	0.062	4.3
4-6	0.062	1.6

SAMPLE DEPTH (ft.)	Hg(mg/kg)	As(mg/kg)	Cu(mg/kg)	Se(mg/kg)
0-1	1.7	9.7	57	7.2
2-4	-	8.6	23	1.6
4-6	-	10	29	1.6

SAMPLE DEPTH (ft.)	Hg(mg/kg)	Cu(mg/kg)	Se(mg/kg)
0-1	310	3400	180
2-4	1.8	86	6.3
4-6	0.079	23	1.6

LEGEND:

- C-8
26G-11
VERTICAL DELINEATION BORING
- (15,000) CONCENTRATION (mg/kg) ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (15,000) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (1.4) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

NOTE:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 21,049 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 21,049 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Selenium (Se)	1,500	6,800
Arsenic (As)	16	16

Source:

Revisions to CMS Soil Screening Criteria
HydroQual Inc. September 1, 2006.



SCALE IN FEET

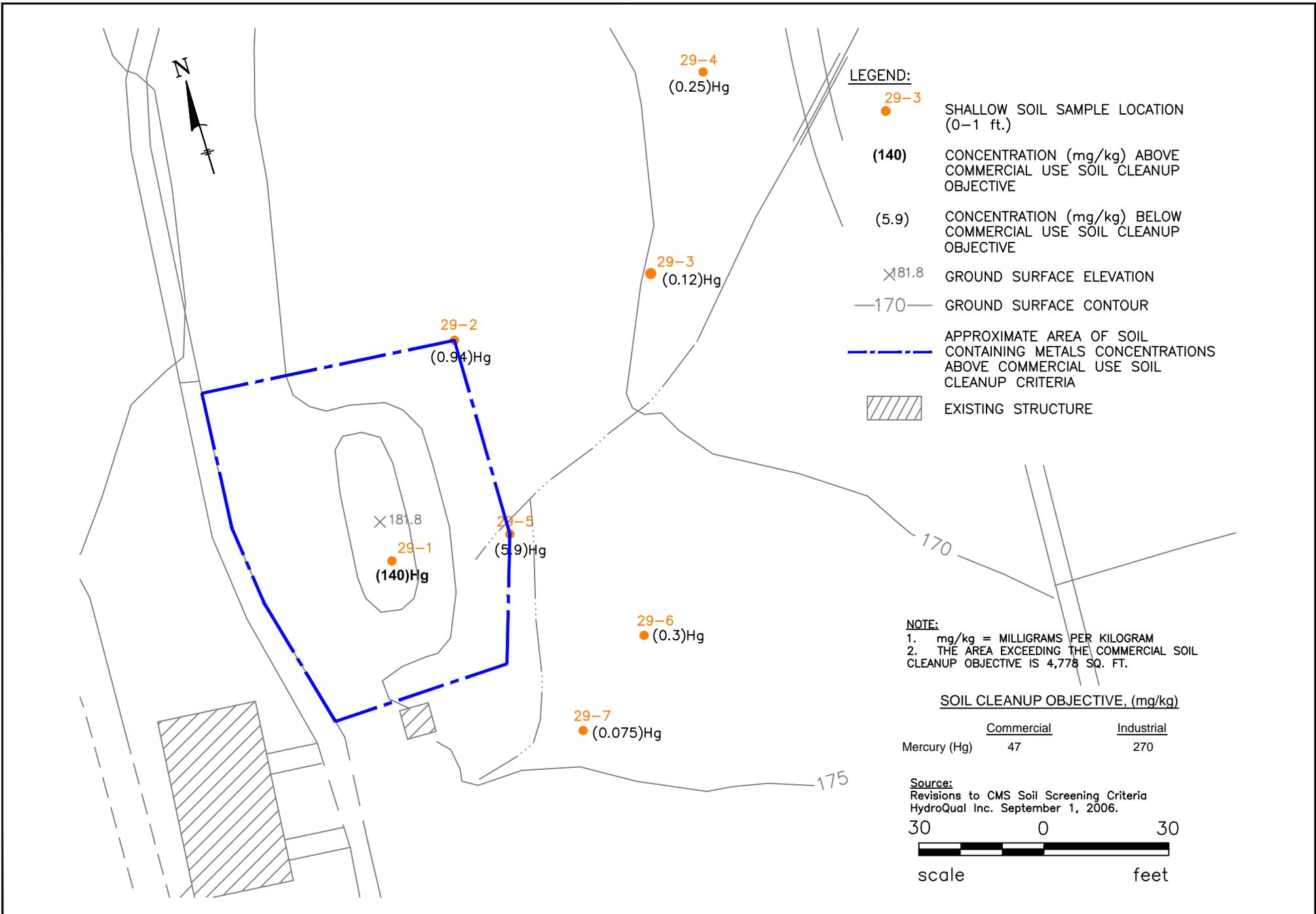


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DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 28
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION
SWMU 26G AND AOC C AND D

Drawn By:	BC	Date Drawn:	12/06/13
Reviewed By:	KV	Date Reviewed:	12/2013
Scale:	1" = 50'	Plot Date:	12/2013
Project Number.:			

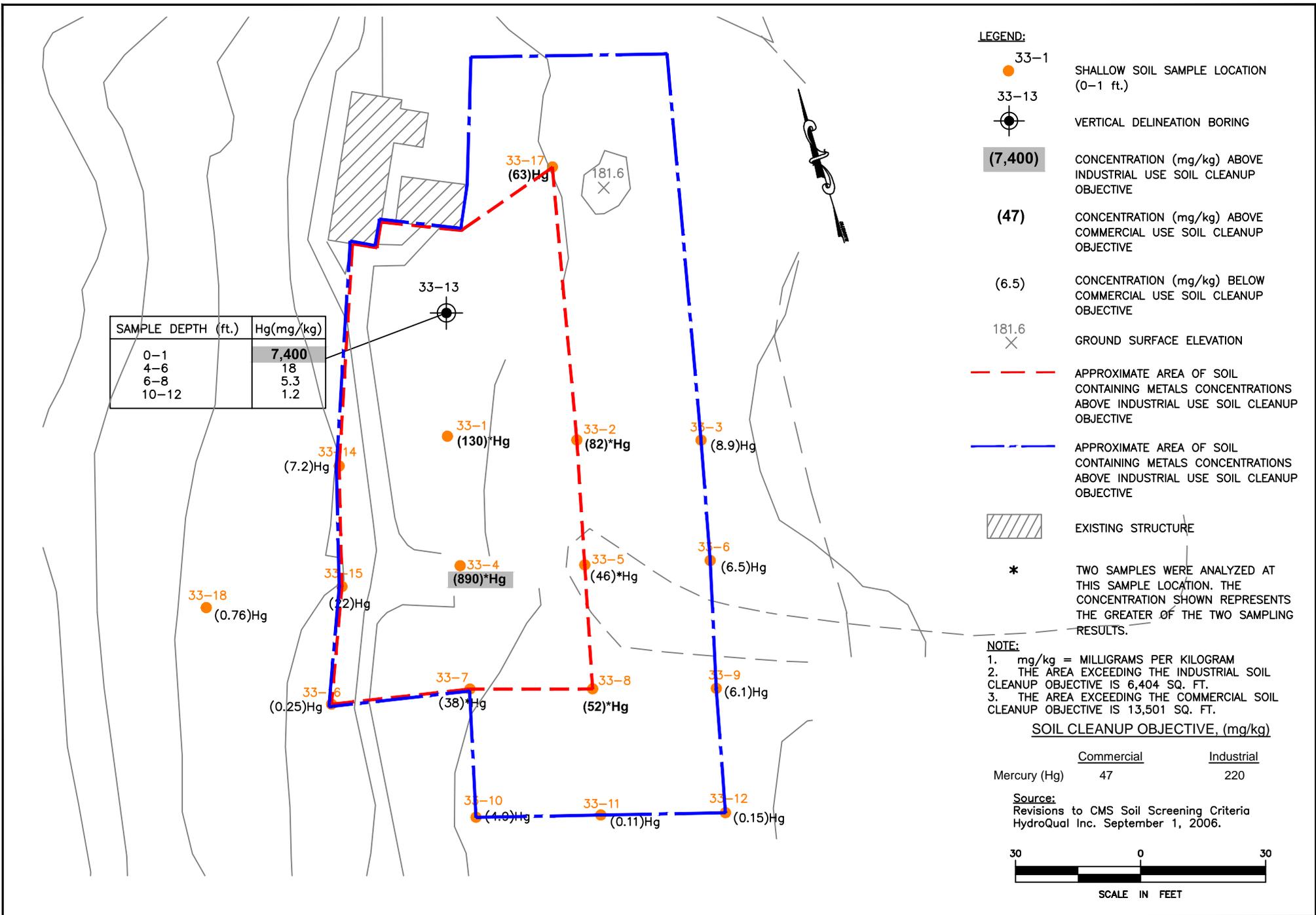


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PORT EWEN, NY.

FIGURE 29
COMMERCIAL AND INDUSTRIAL USE SOIL
CLEANUP OBJECTIVE DELINEATION:
SWMU 29

Drawn By:	BC	Date Drawn:	11/26/2013
Reviewed By:	KV	Date Reviewed:	11/2013
Scale:	1" = 50'	Plot Date:	11/2013
Project Number.:			

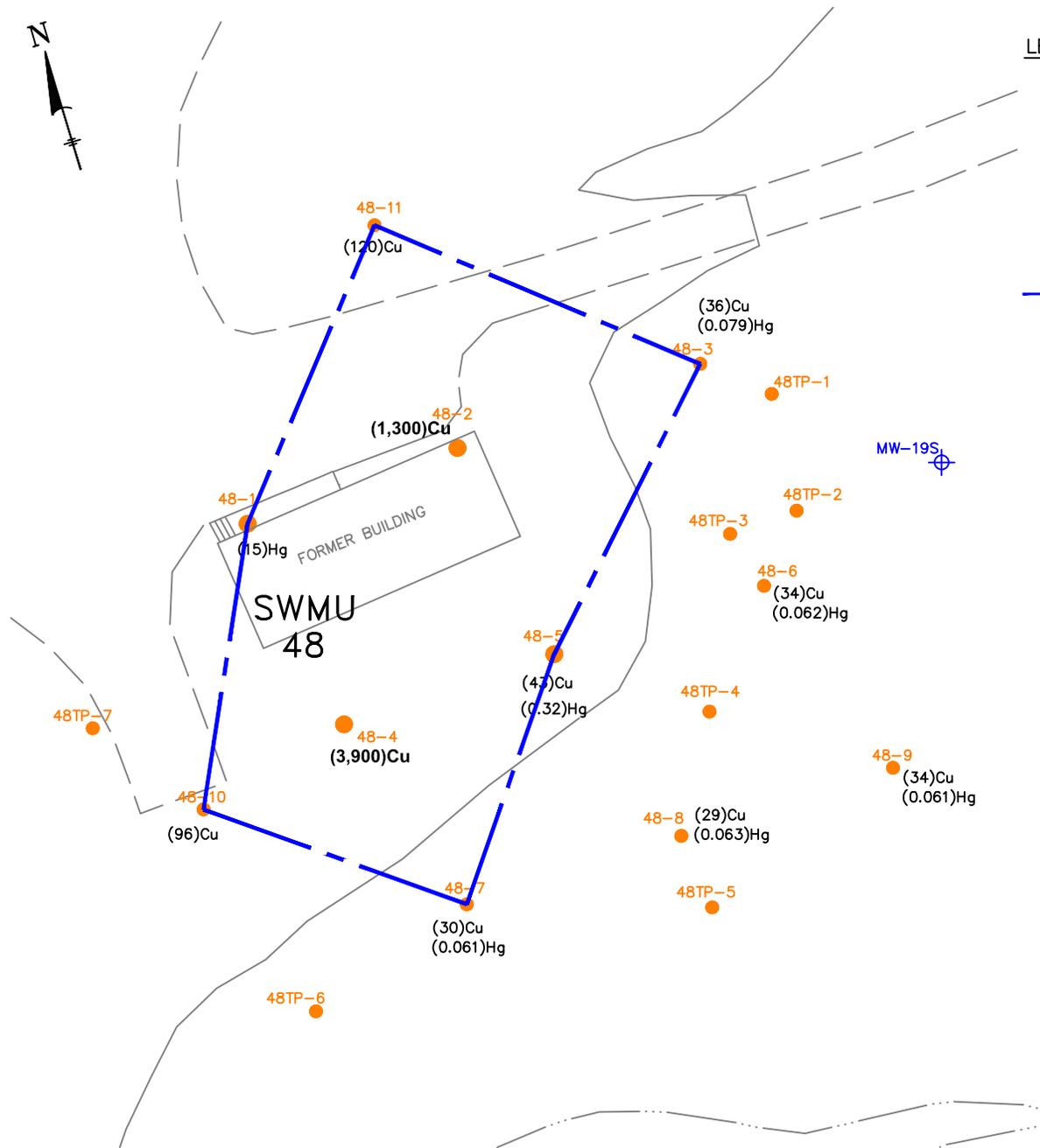




LEGEND:

- 48-3 SHALLOW SOIL SAMPLE LOCATION
- (15) CONCENTRATION (mg/kg) ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (36) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE

--- APPROXIMATE AREA OF SOIL CONTAINING METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP CRITERIA

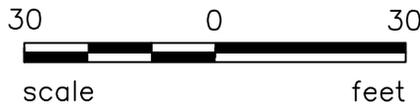


NOTE:
 1. mg/kg = MILLIGRAMS PER KILOGRAM
 2. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 6,299 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	<u>Commercial</u>	<u>Industrial</u>
Copper (Cu)	270	10000
Mercury (Hg)	47	270

Source:
 Revisions to CMS Soil Screening Criteria
 HydroQual Inc. September 1, 2006.

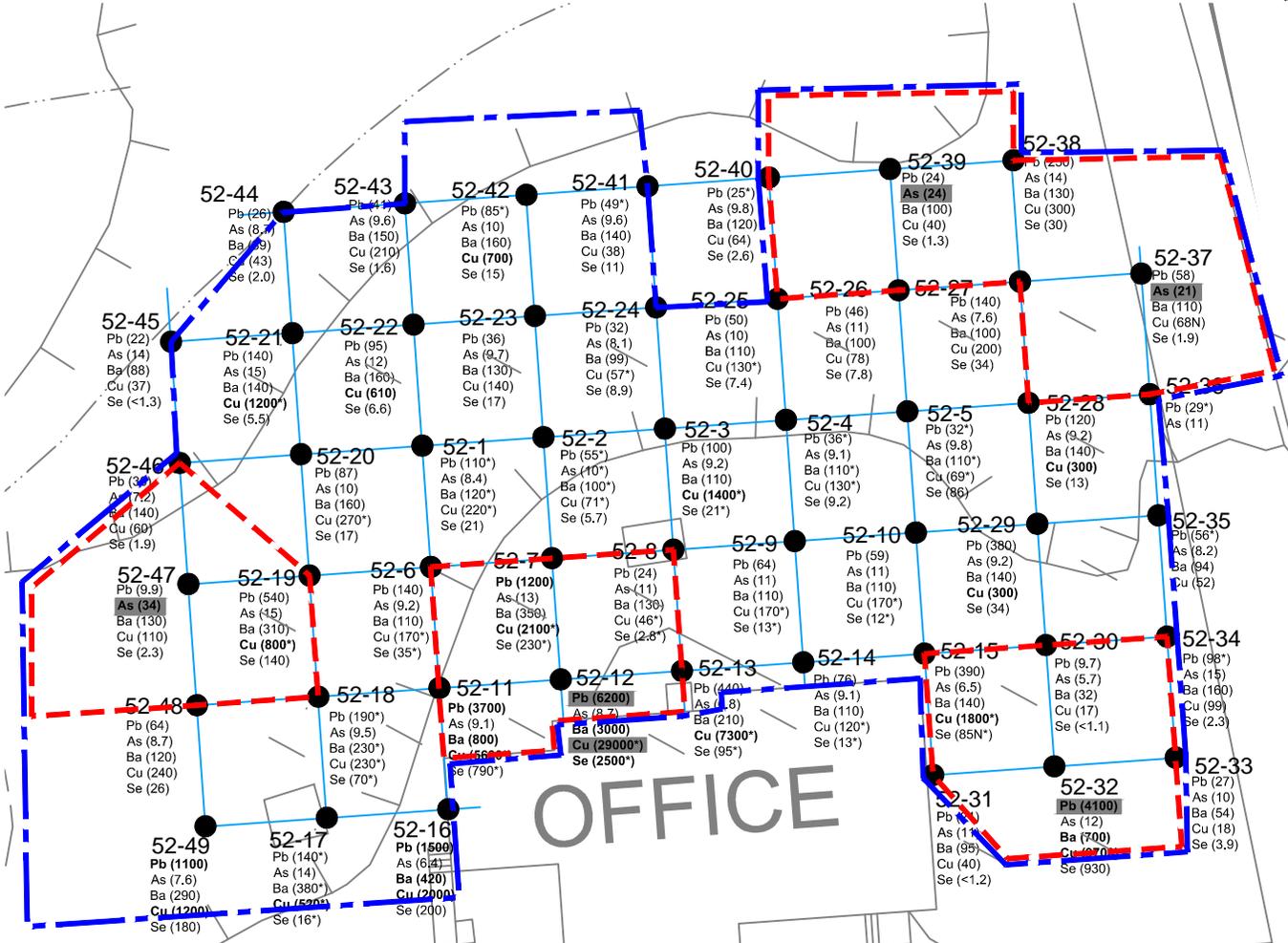


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DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 32
 COMMERCIAL AND INDUSTRIAL USE SOIL
 CLEANUP OBJECTIVE DELINEATION:
 SWMU 48

Drawn By: BC	Date Drawn: 11/27/2013
Reviewed By: KV	Date Reviewed: 11/2013
Scale: 1" = 50'	Plot Date: 11/2013
Project Number.:	



OFFICE

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 6,615 SQ. FT.
4. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 19,435 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Selenium (Se)	1,500	6,800

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION (0-1 ft)
- CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (420) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE



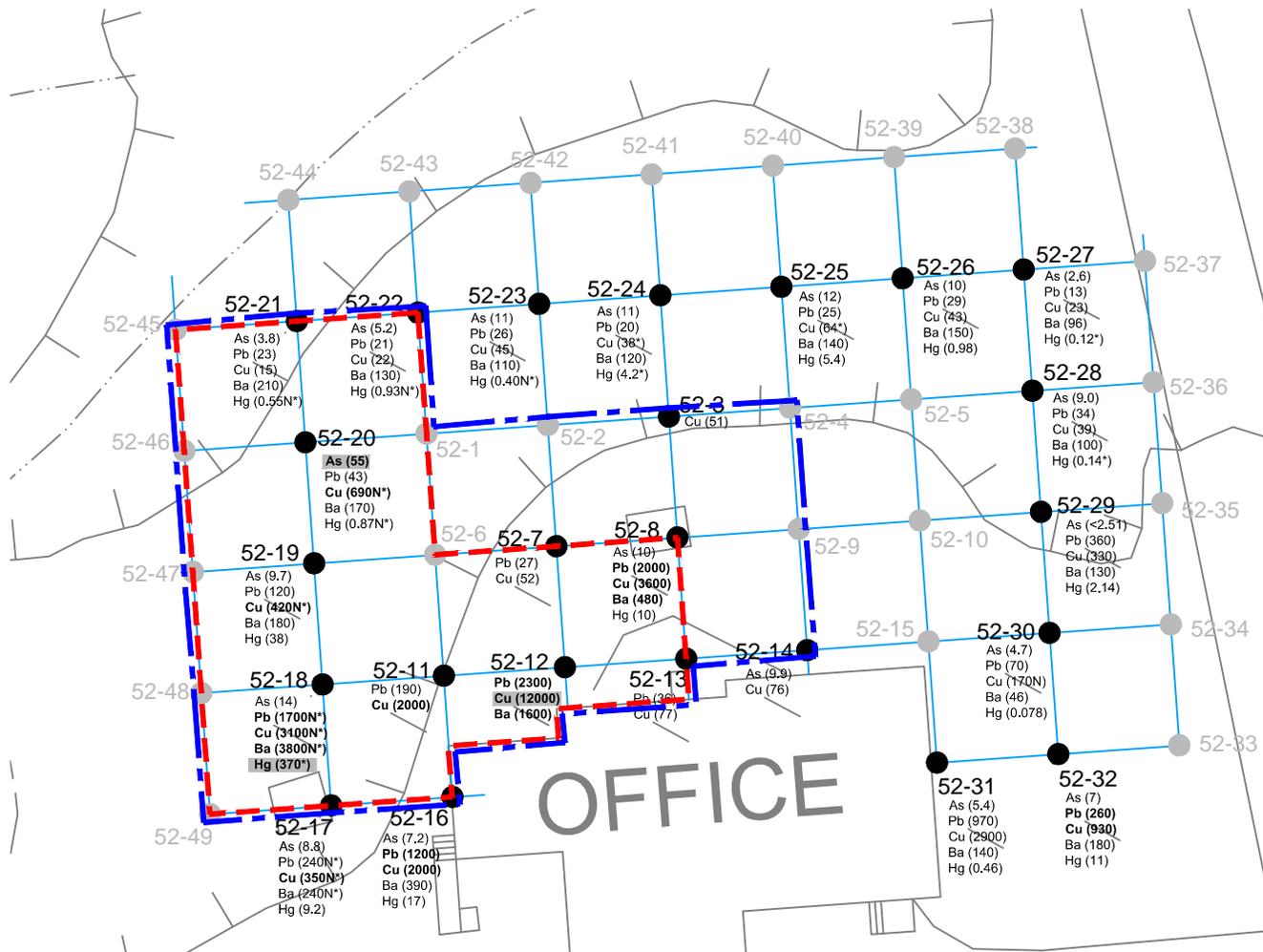
SCALE IN FEET



DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 33
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 SWMU 52: 0-1' INTERVAL

Drawn By: BC	Date Drawn: 12/03/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



OFFICE

NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 4,357 SQ. FT.
4. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 6,398 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000
Barium (Ba)	400	10,000
Mercury (Hg)	47	220

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION (0-1 ft)
- (37.5) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (420) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- . - . APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

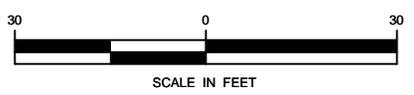
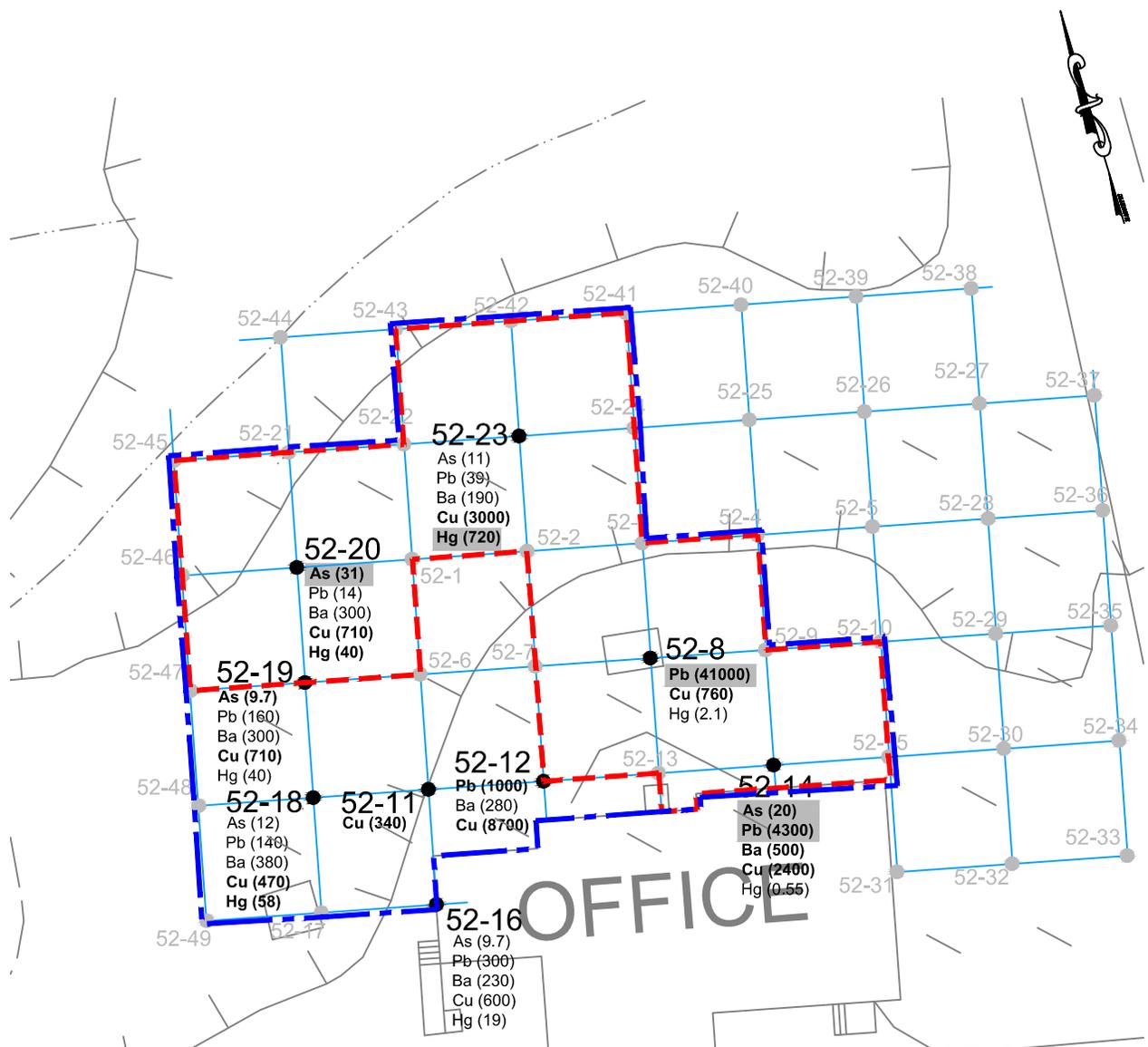


FIGURE 34
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 SWMU 52: 1-2' INTERVAL

Drawn By: BC	Date Drawn: 12/04/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



DYNO-NOBEL, INC.
 PORT EWEN, NY.



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 5,377 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 8,408 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Lead (Pb)	1,000	3,900

LEGEND

- 52-20 ● SHALLOW SOIL SAMPLE LOCATION
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

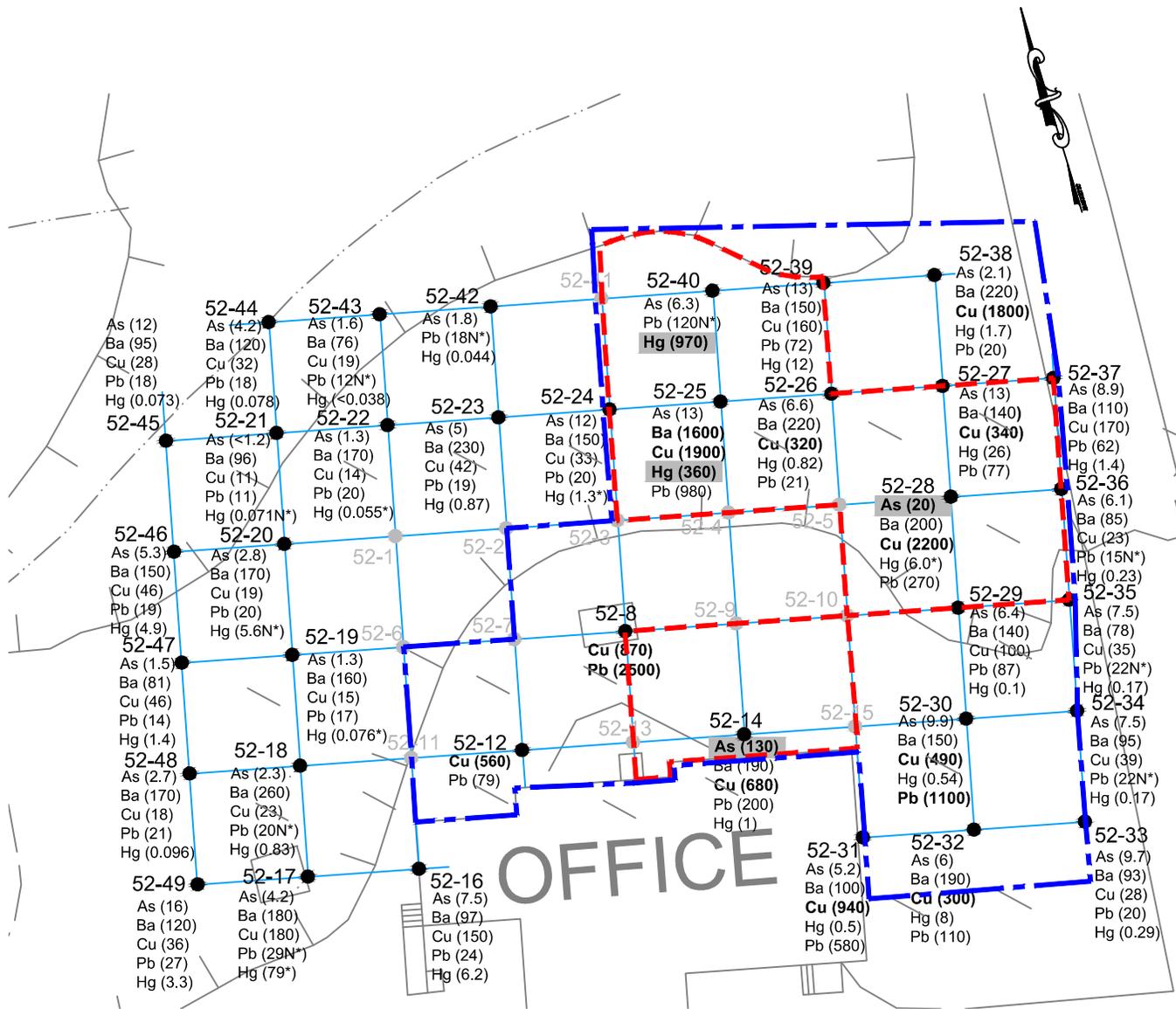
SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.



DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 35
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 SWMU 52: 2-3' INTERVAL

Drawn By: BC	Date Drawn: 12/03/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 4,463 SQ. FT.
4. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 10,334 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Lead (Pb)	1,000	3,900

LEGEND

- 52-11 ● SHALLOW SOIL SAMPLE LOCATION (0-1 ft)
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

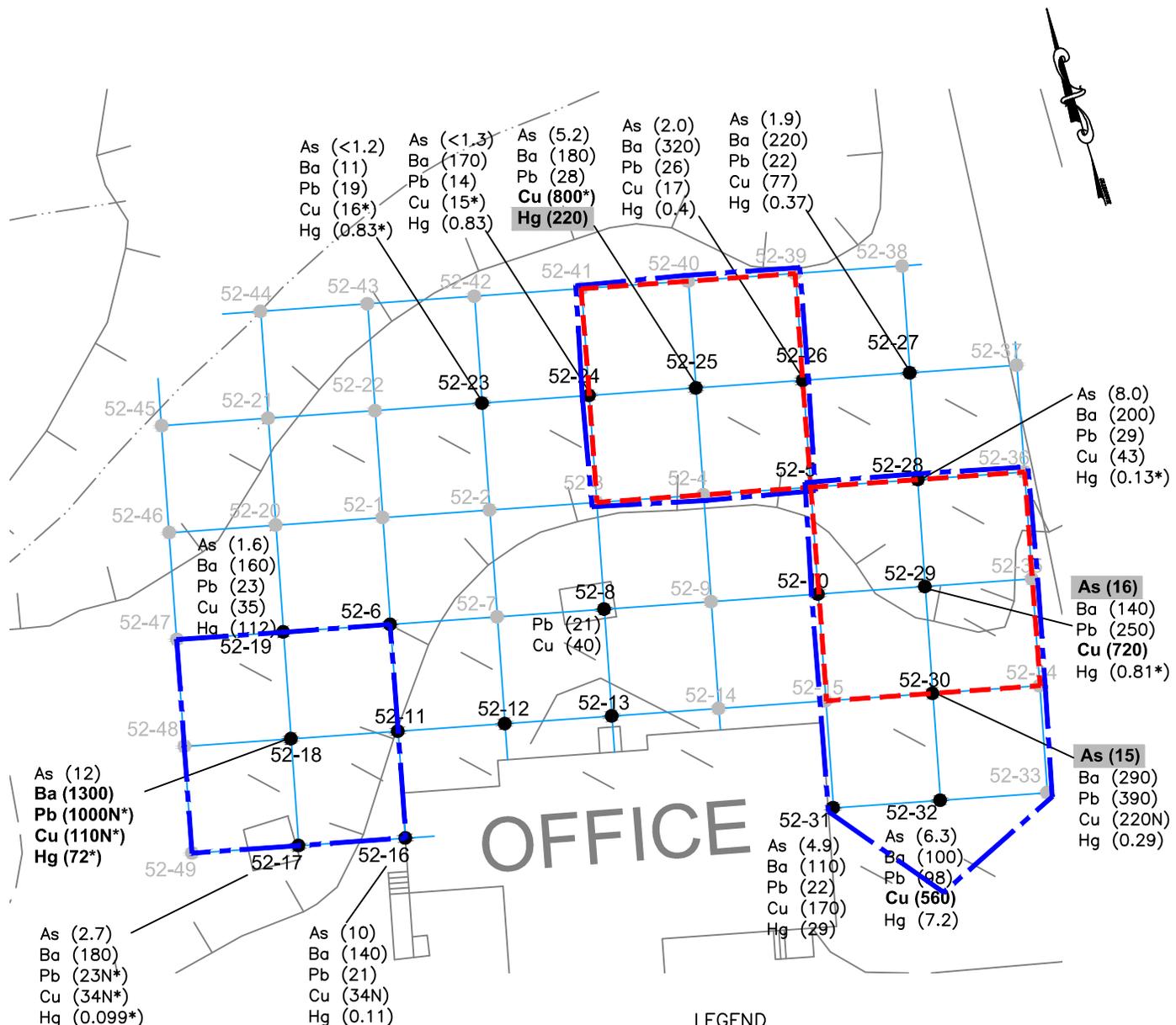
SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.



DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 36
 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 SWMU 52 - 3'-4" INTERVAL

Drawn By: BC	Date Drawn: 12/03/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 3,196 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 6,304 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Barium (Ba)	400	10,000
Copper (Cu)	270	10,000
Mercury (Hg)	47	220
Lead (Pb)	1,000	3,900
Selenium (Se)	1,500	6,800

LEGEND

- 52-20 ● SHALLOW SOIL SAMPLE LOCATION (0-1 ft)
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

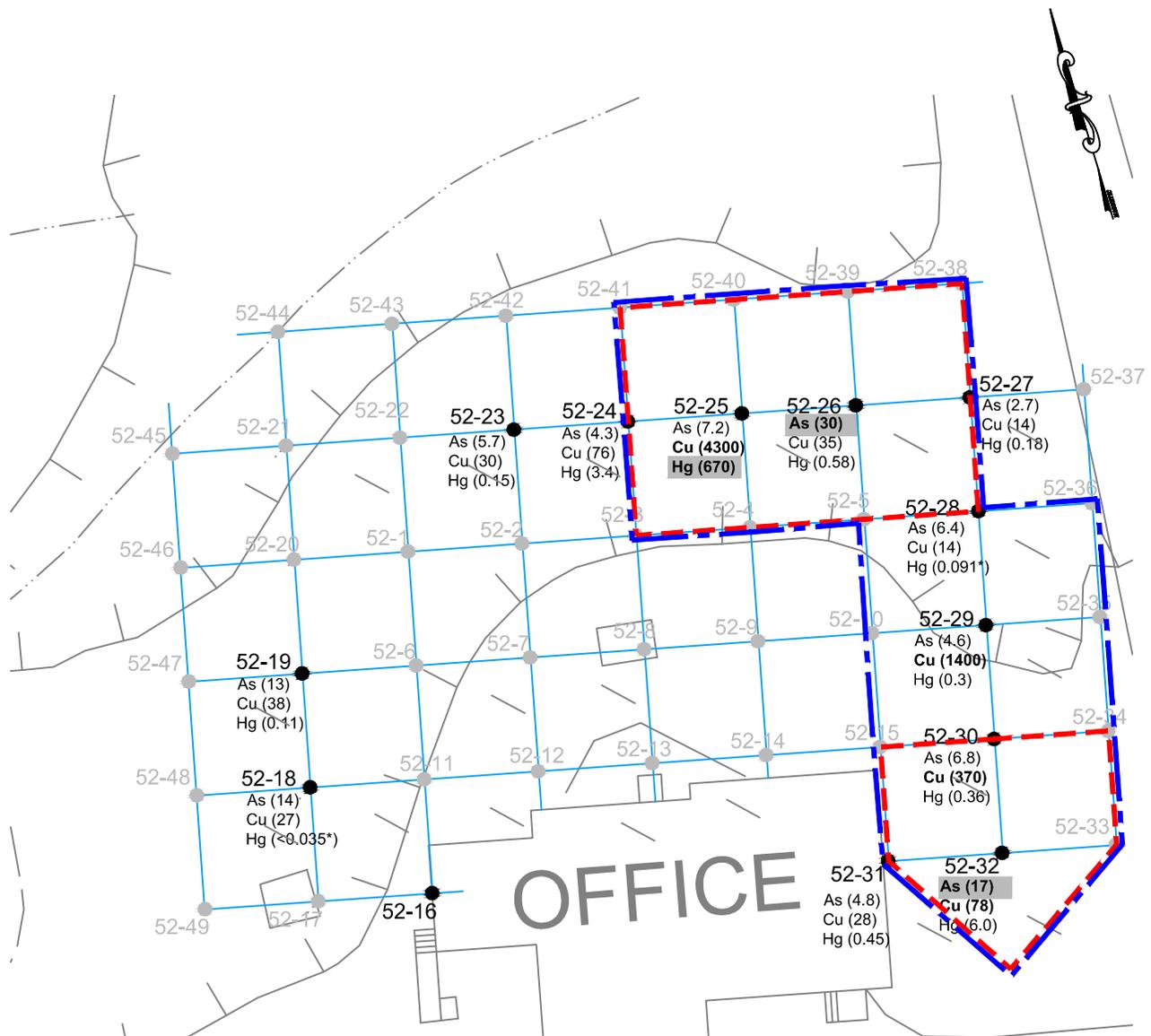


FIGURE 37
 COMMERCIAL AND INDUSTRIAL USE
 SOIL SCREENING CRITERIA DELINEATION
 SWMU 52 - 4'-5' INTERVAL

Drawn By: BC	Date Drawn: 12/03/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



DYNO-NOBEL, INC.
 PORT EWEN, NY.



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 3,609 SQ. FT.
4. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 5,566 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Copper (Cu)	270	10,000
Mercury (Hg)	47	220

SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNONOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION (0-1 ft)
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

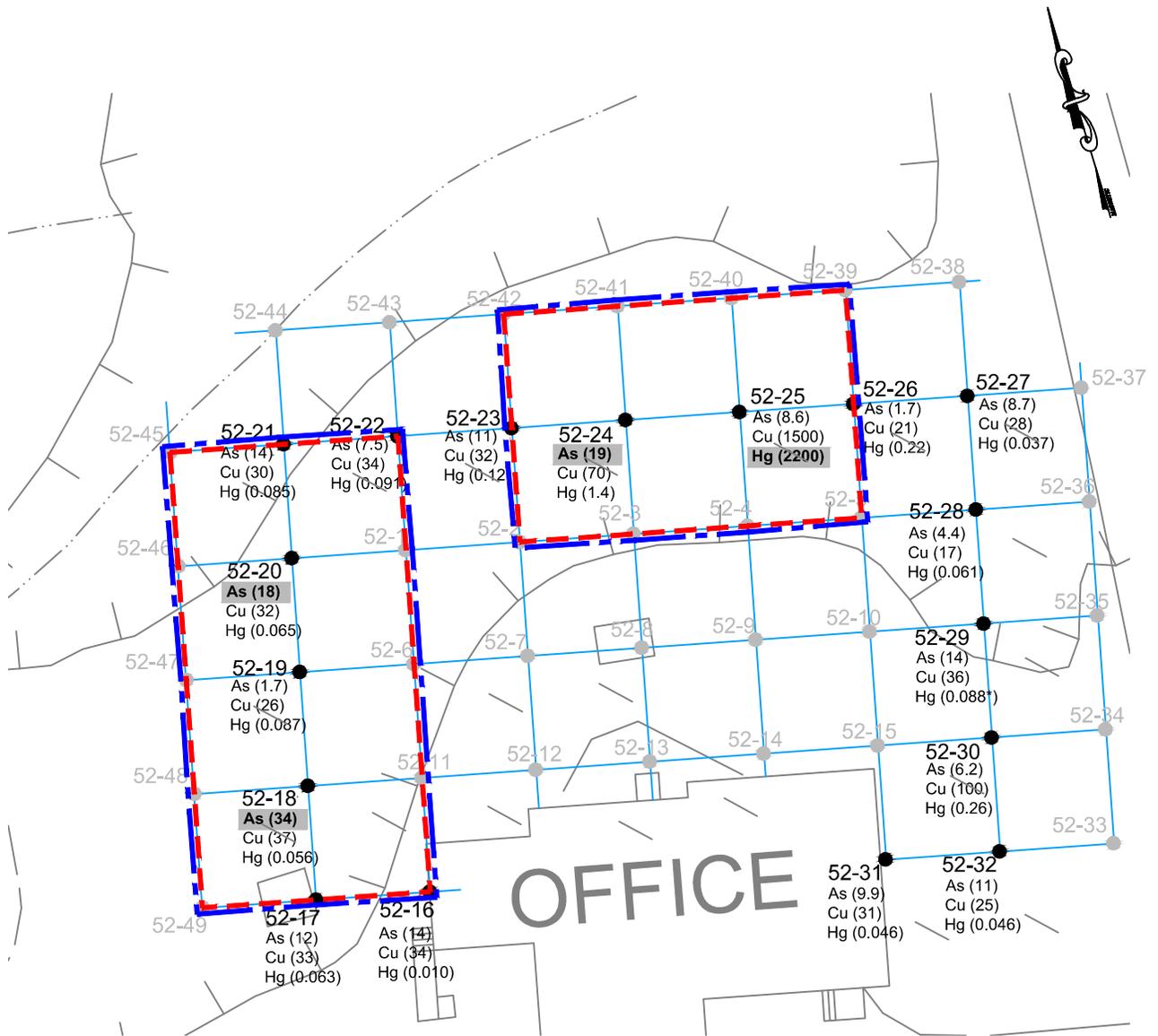


DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 38
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP CRITERIA DELINEATION
 SWMU 52 - 5'-6" INTERVAL

Drawn By: BC	Date Drawn: 12/03/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	





NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 6,068 SQ. FT.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 6,068 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Copper (Cu)	270	10,000
Mercury (Hg)	47	220

SOURCE:

REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION (0-1 ft)
- (34.0)** CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (1500)** CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (32)** CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

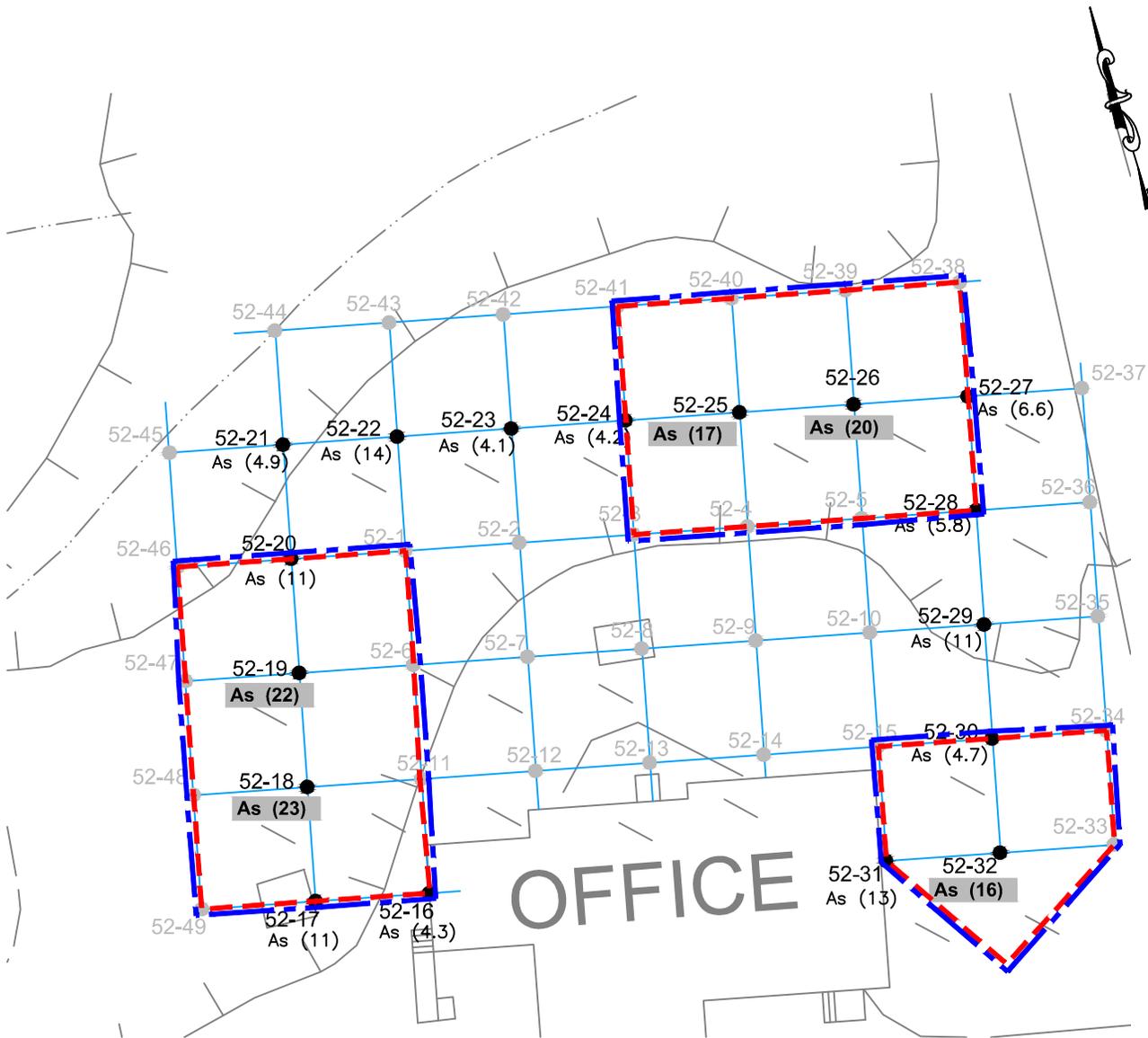


DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 39
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP CRITERIA DELINEATION
 SWMU 52 - 6'-7' INTERVAL

Drawn By: BC	Date Drawn: 12/03/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	





NOTES:

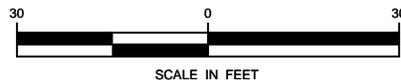
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 6,563 SQ. FT.
4. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 6,563 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16

LEGEND

- 52-25 ● SHALLOW SOIL SAMPLE LOCATION (0-1 ft)
- (20.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (340) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (9.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- . - . APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE



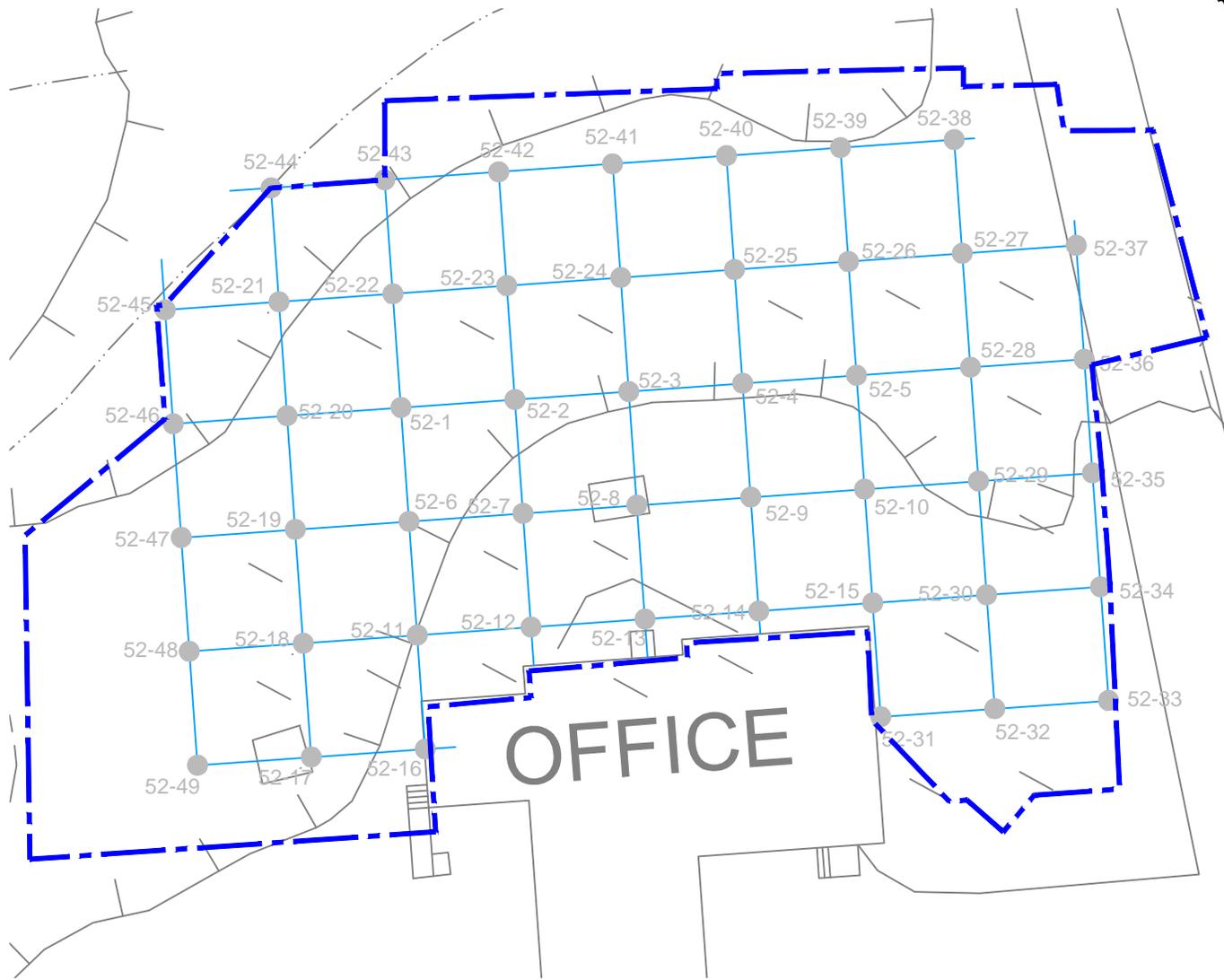
SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNOL NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.



DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 40
 COMMERCIAL AND INDUSTRIAL USE
 SOIL SCREENING CRITERIA DELINEATION
 SWMU 52 - 7-8' INTERVAL

Drawn By: BC	Date Drawn: 12/04/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 20,268 SQ. FT.

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING COMMERCIAL USE SOIL CLEANUP OBJECTIVE

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000
Barium (Ba)	400	10,000
Mercury (Hg)	47	220

SOURCE:

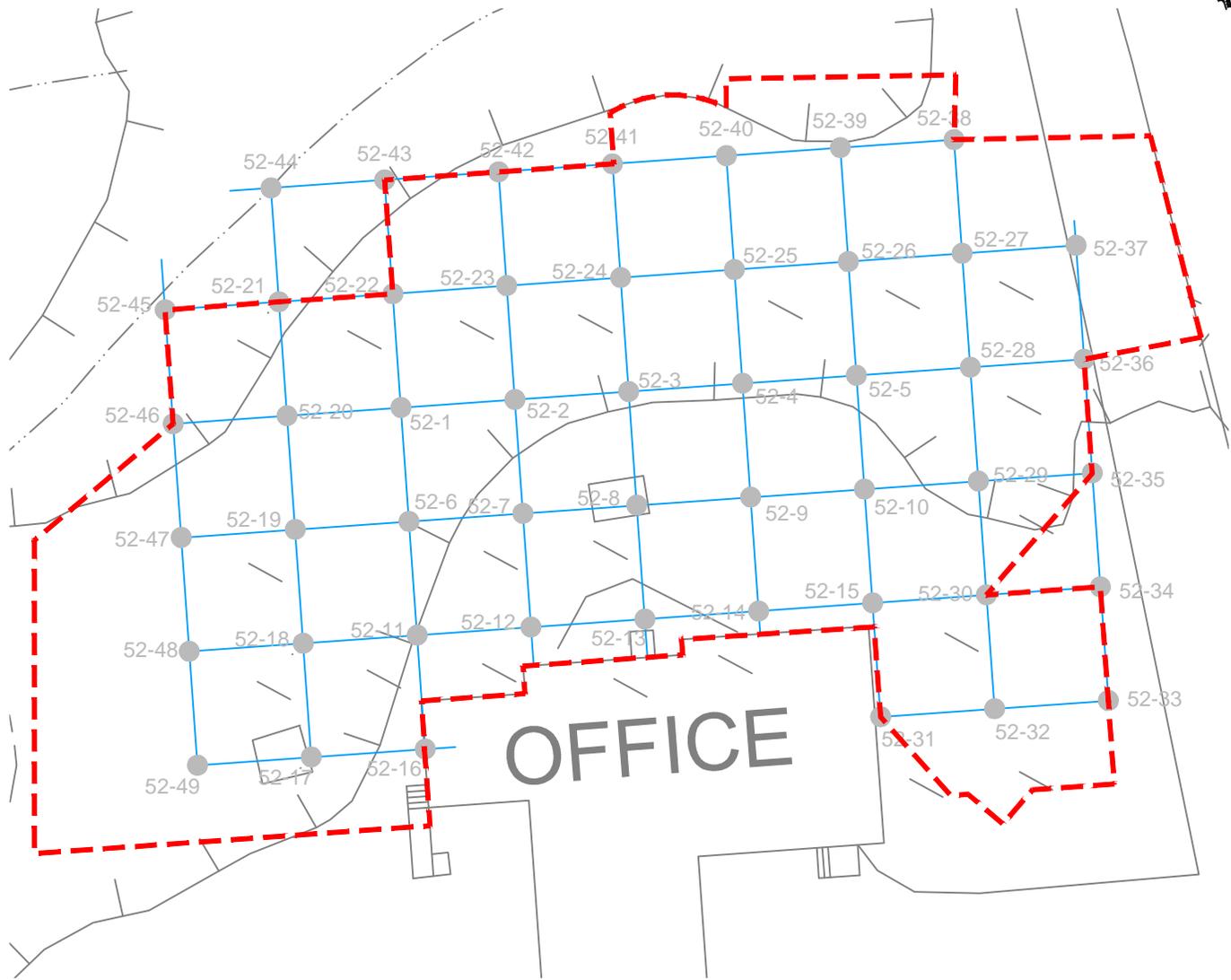
REVISION TO CMS SOIL SCREENING CRITERIA
 DYNOL NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.



DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 41
 COMMERCIAL SOIL CLEANUP
 OBJECTIVE DELINEATION
 SWMU 52: COMPOSITE

Drawn By: BC	Date Drawn: 12/04/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 18,121 SQ. FT.

LEGEND

- 52-1 ● SHALLOW SOIL SAMPLE LOCATION
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS EXCEEDING INDUSTRIAL USE SOIL CLEANUP OBJECTIVE

SOIL CLEANUP OBJECTIVE, (mg/kg)

	<u>Commercial</u>	<u>Industrial</u>
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000
Barium (Ba)	400	10,000
Mercury (Hg)	47	220

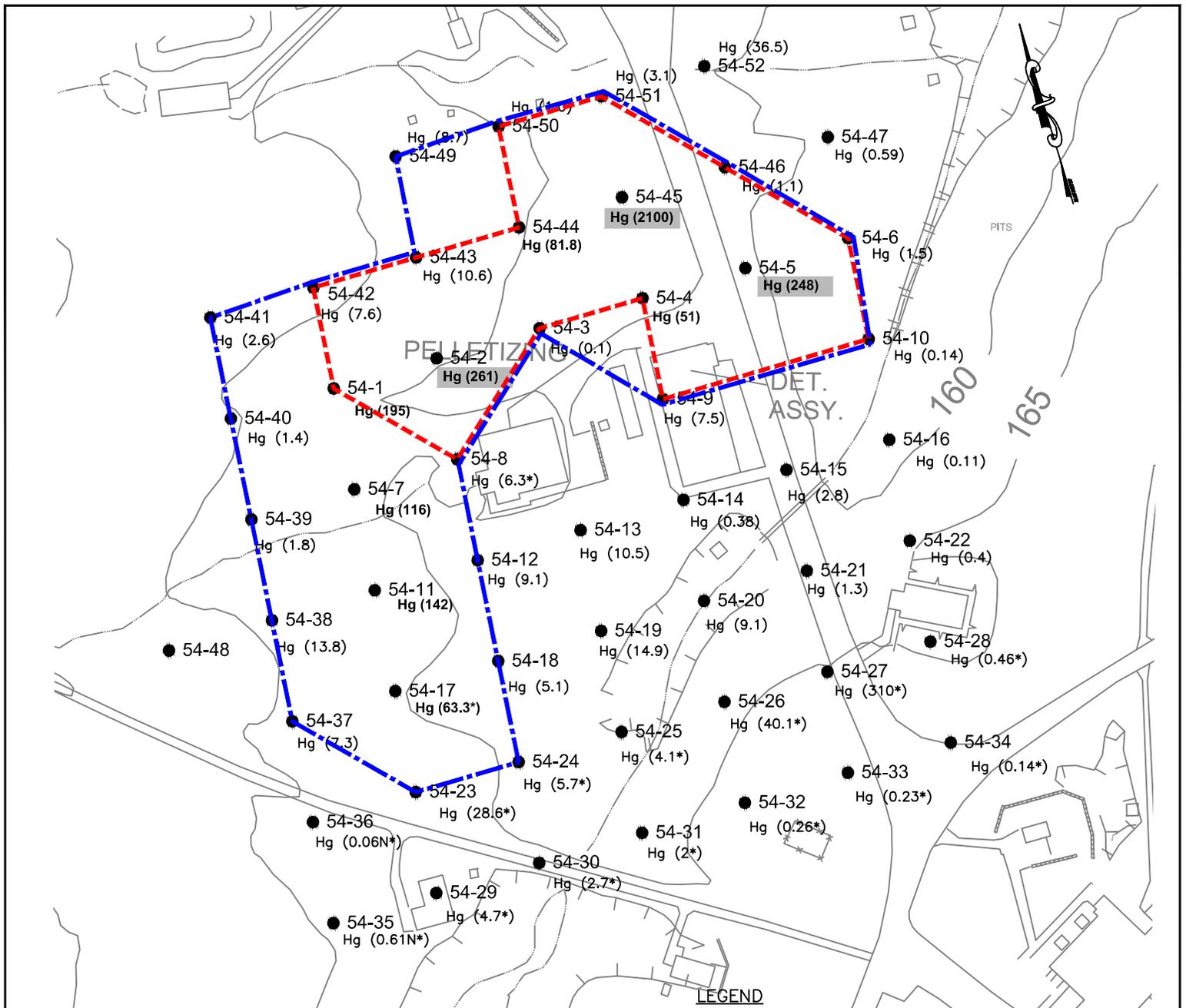
SOURCE:
 REVISION TO CMS SOIL SCREENING CRITERIA
 DYNO NOBEL SITE, PORT EWEN, NEW YORK
 HYDROQUAL INC., SEPTEMBER 1, 2006.



DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 41A
 INDUSTRIAL USE SOIL CLEANUP
 OBJECTIVE DELINEATION
 SWMU 52: COMPOSITE

Drawn By: BC	Date Drawn: 12/04/13
Reviewed By: KV	Date Reviewed: 12/2013
Scale: 1" = 30'	Plot Date: 12/2013
Project Number.:	



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. CONCENTRATIONS IN SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs.
4. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 29,413 SQ. FT.
5. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 62,216 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

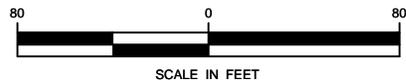
	Commercial	Industrial
Mercury (Hg)	47	220

LEGEND

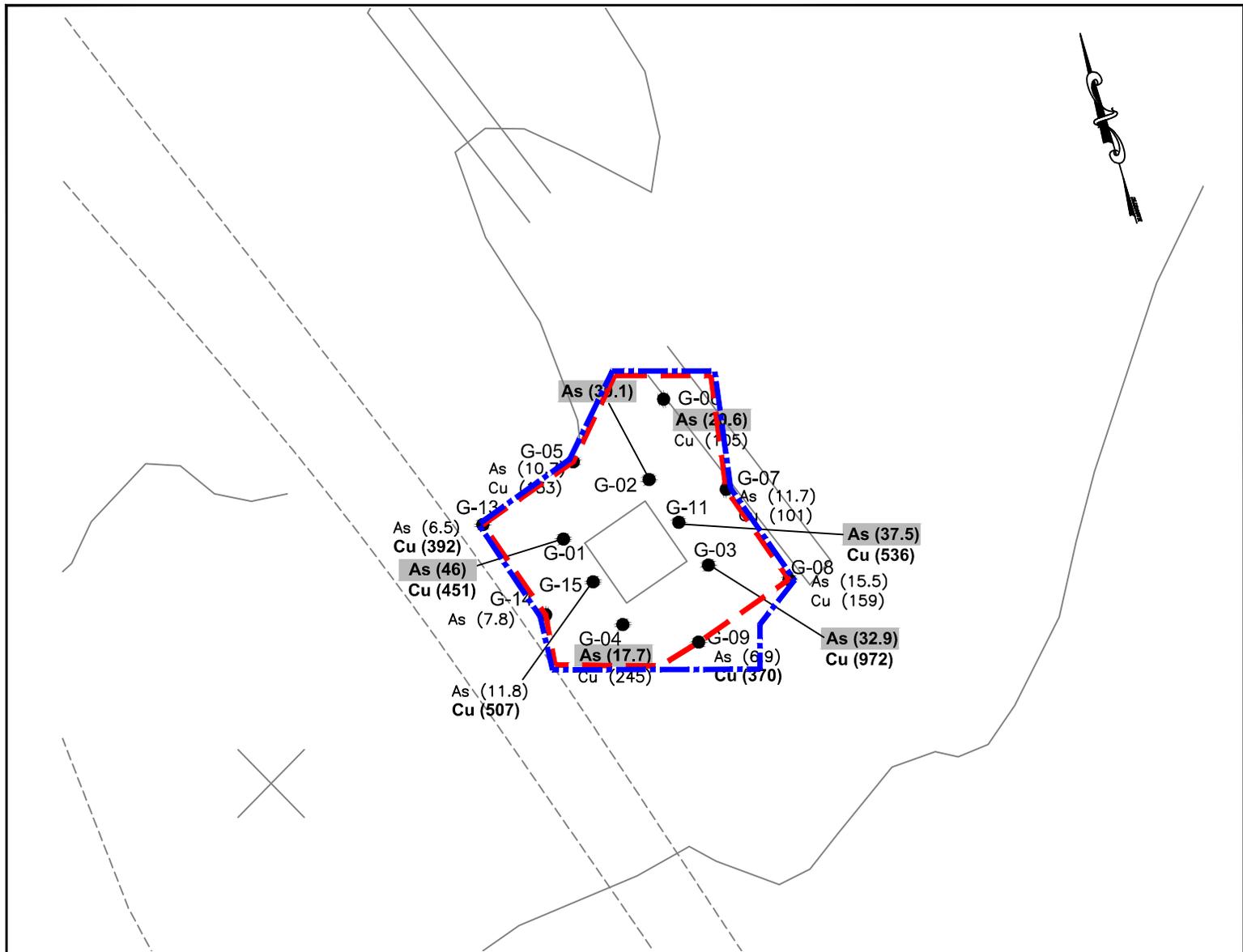
- 54-41 (32.0) SHALLOW SOIL SAMPLE LOCATION
- (32.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

REVISIONS		
Rev.	By:	Date:

SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 24 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 SWMU 54 - 0-2' INTERVAL.



	DYNO-NOBEL, INC. PORT EWEN, NY.	FIGURE 42 COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP CRITERIA DELINEATION SWMU 54 - 0-2' INTERVAL	Drawn By: BC Date Drawn: 12/03/13
			Reviewed By: KV Date Reviewed: 12/2013
			Scale: 1" = 80' Plot Date: 12/2013
			Project Number.:



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. FOR DUPLICATE SAMPLES HIGHER VALUES OF TWO SHOWN.
3. SAMPLES G-10 AND G-12 NOT COLLECTED - CONCRETE SLAB.
4. CONCENTRATIONS IN SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs.
5. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 902 SQ. FT.
6. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 1,026 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

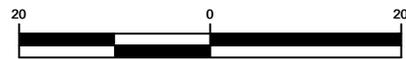
	Commercial	Industrial
Arsenic (As)	16	16
Copper (Cu)	270	10,000

LEGEND

- G-09 ● SHALLOW SOIL SAMPLE LOCATION
- (20.6) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (536) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.9) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

REVISIONS		
Rev.	By:	Date:

SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 25 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 AOC G - 0-2' INTERVAL.



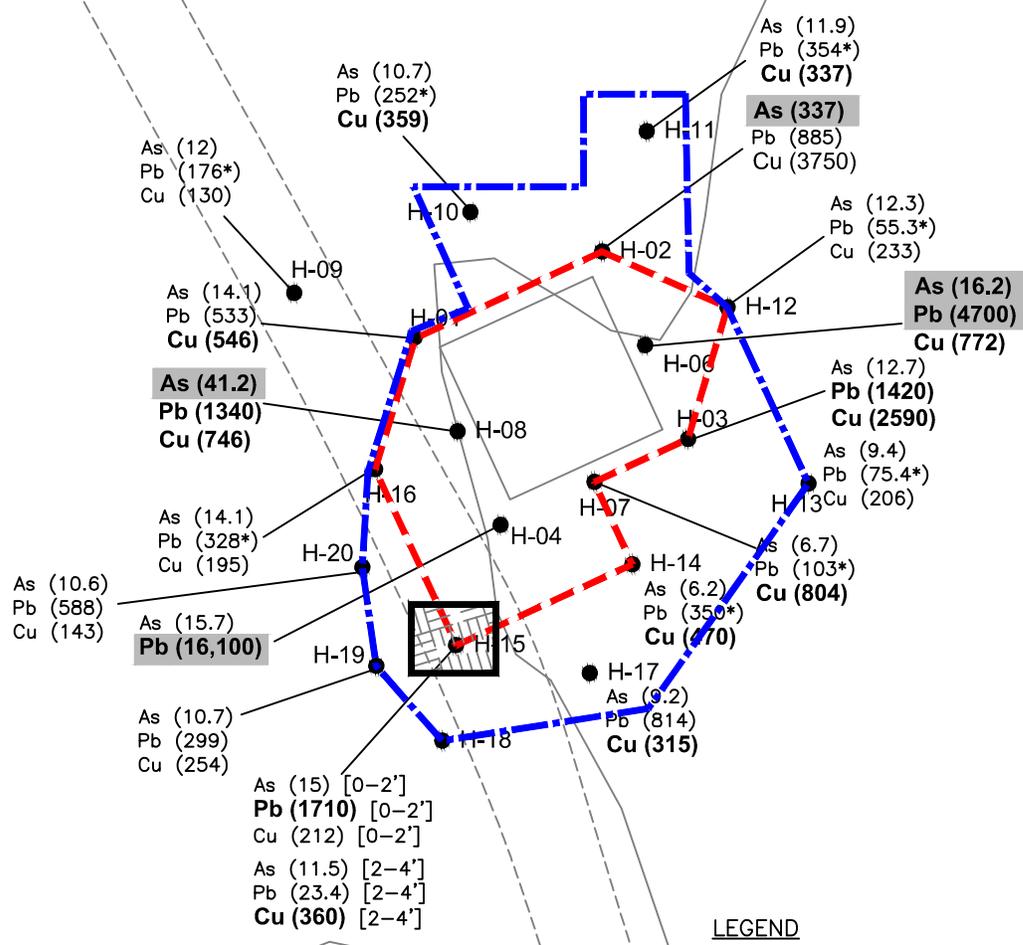
SCALE IN FEET

DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 43
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 AOC G - 0-2' INTERVAL

Drawn By: BC	Date Drawn: 11/26/13
Reviewed By: KV	Date Reviewed: 11/2013
Scale: 1" = 20'	Plot Date: 11/2013
Project Number.:	





LEGEND

- H-09 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

NOTES:

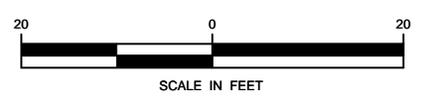
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. SAMPLE H-05 NOT COLLECTED - CONCRETE SLAB.
4. CONCENTRATIONS IN SAMPLES AT 2'-4" INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs WITH THE EXCEPTION OF SAMPLE LOCATION H-15.
5. NO DATA POSTED FOR H-18.
6. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 914 SQ. FT.
7. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 2,079 SQ. FT.
8. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVES TO A DEPTH OF 4 FT EQUALS 64 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

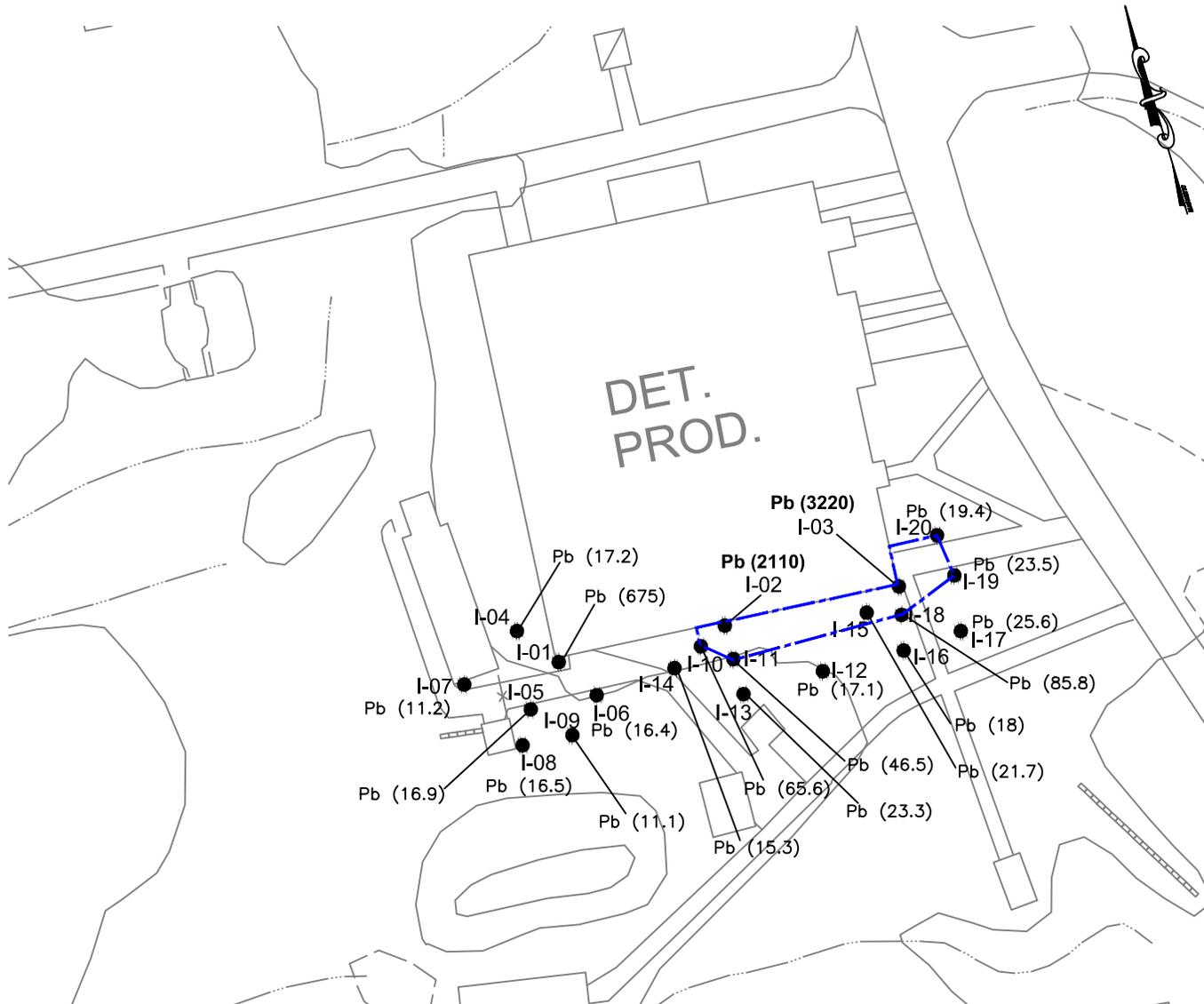
	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

REVISIONS		
Rev.	By:	Date:

SOURCE:
HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
FIGURE 26 INDUSTRIAL USE SOIL CLEANUP CRITERIA DELINEATION
AOC H - 0-2' INTERVAL.



	DYNO-NOBEL, INC. PORT EWEN, NY.	FIGURE 44 COMMERCIAL AND INDUSTRIAL USE SOIL CLEANUP OBJECTIVE DELINEATION AOC H - 0-2' INTERVAL	Drawn By: BC Date Drawn: 11/26/13
			Reviewed By: KV Date Reviewed: 11/2013
			Scale: 1" = 20' Plot Date: 11/2013
			Project Number.:



NOTES:

1. mg/kg = MILLIGRAMS PER KILOGRAM
2. CONCENTRATIONS IN SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs.
3. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 867 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	<u>Commercial</u>	<u>Industrial</u>
Lead (Pb)	1,000	3,900

LEGEND

- M-9 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0)** CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355)** CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE

REVISIONS		
Rev.	By:	Date:

SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 27 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 AOC I - 0-2' INTERVAL.

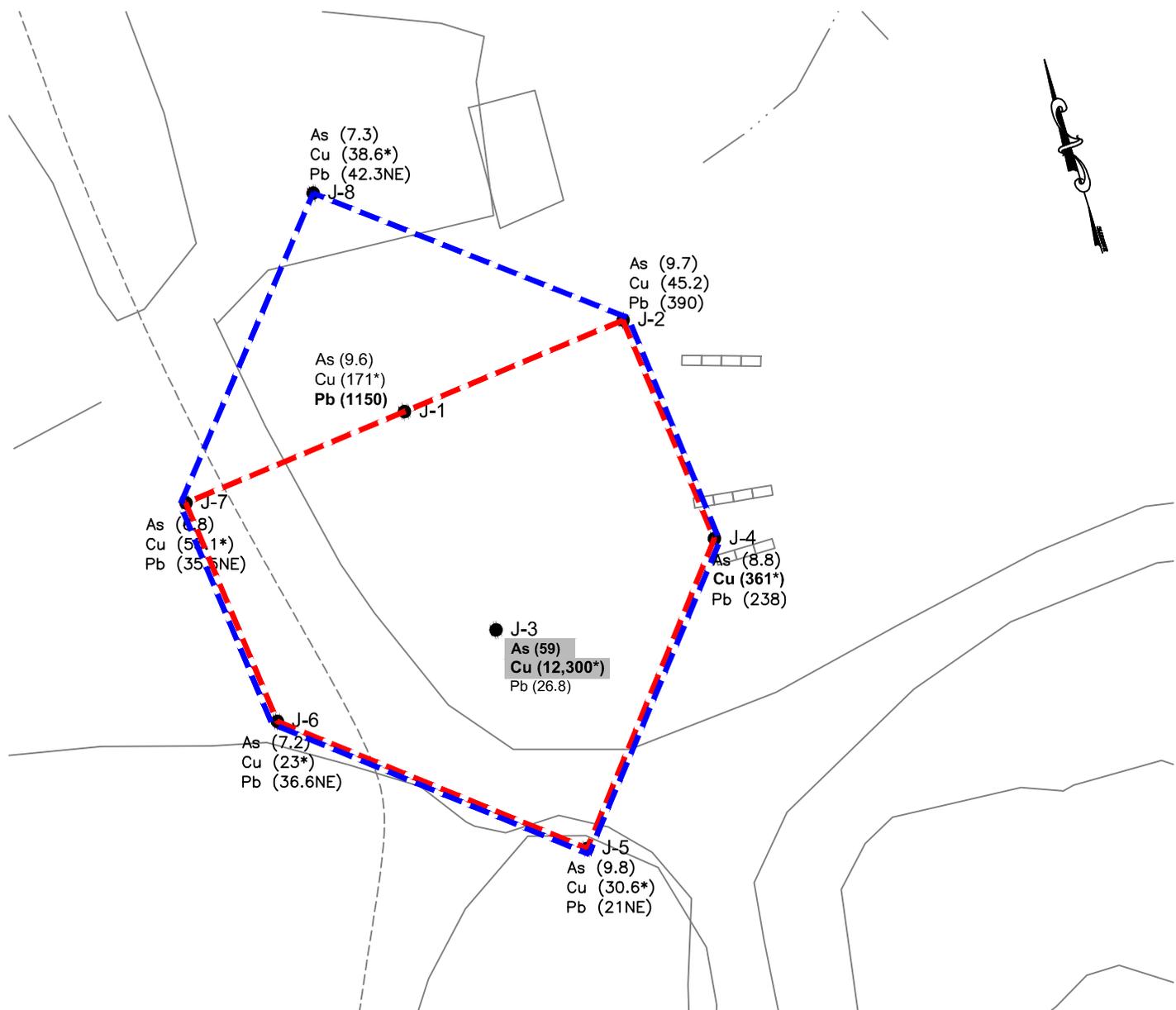


DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 45
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 AOC I - 0-2' INTERVAL

Drawn By: BC	Date Drawn: 11/26/13
Reviewed By: KV	Date Reviewed: 11/2013
Scale: 1" = 50'	Plot Date: 11/2013
Project Number.:	





NOTES:

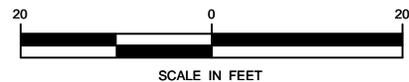
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. NO VERTICAL SAMPLES WERE COLLECTED FROM AOC J.
4. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 2,700 SQ. FT.
5. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 3,716 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

LEGEND

- M-9 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- · - · - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE



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Rev.	By:	Date:

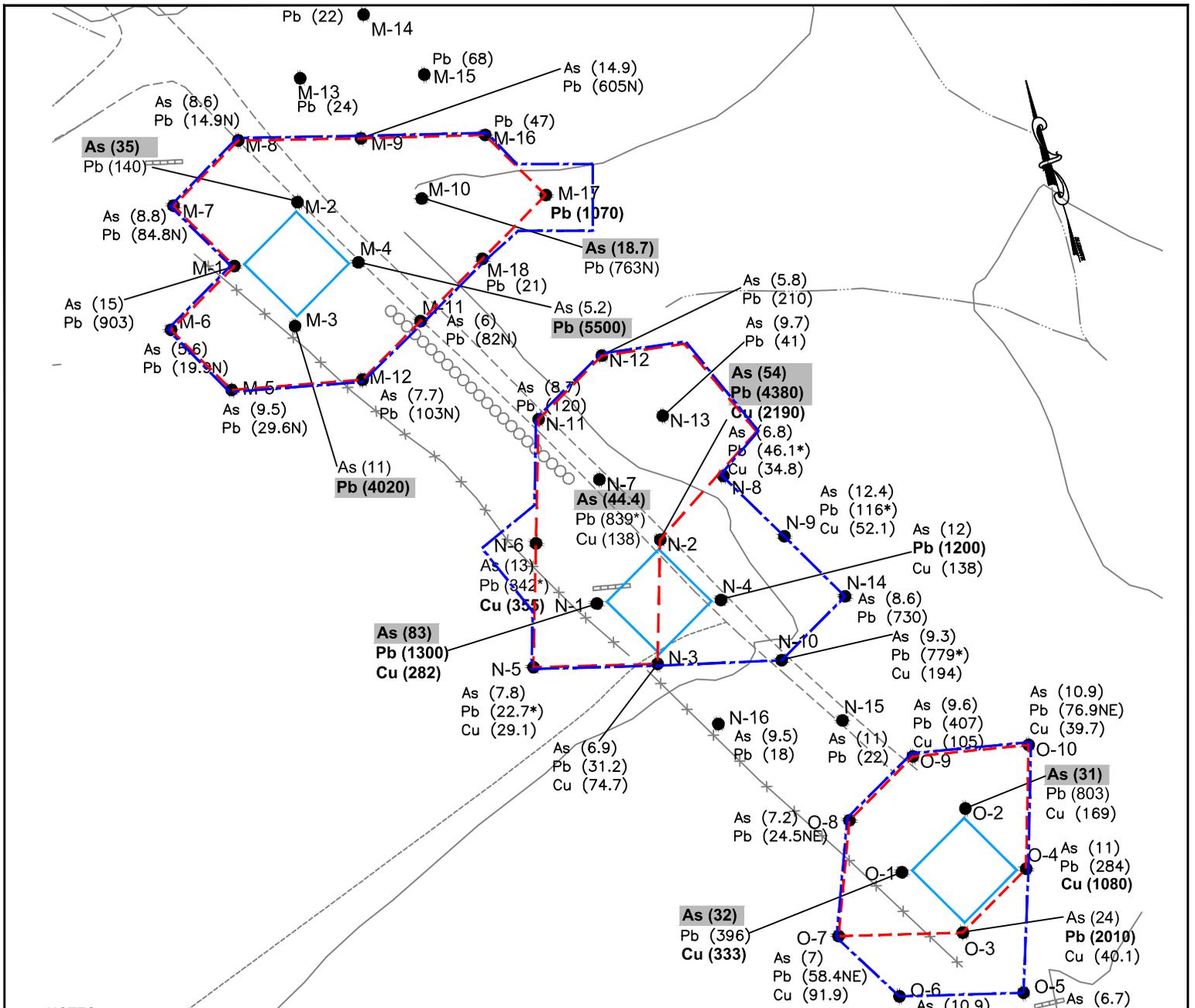
SOURCE:
 HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
 FIGURE 28 INDUSTRIAL USE SOIL CLEANUP
 CRITERIA DELINEATION
 AOC J - 0-2' INTERVAL.

DYNO-NOBEL, INC.
 PORT EWEN, NY.

FIGURE 46
 COMMERCIAL AND INDUSTRIAL USE
 SOIL CLEANUP OBJECTIVE DELINEATION
 AOC J - 0-2' INTERVAL

Drawn By: BC	Date Drawn: 11/26/13
Reviewed By: KV	Date Reviewed: 11/2013
Scale: 1" = 50'	Plot Date: 11/2013
Project Number.:	





NOTES:

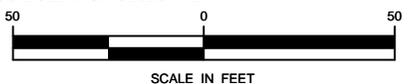
1. mg/kg = MILLIGRAMS PER KILOGRAM
2. * DENOTES A DUPLICATE SAMPLE. THE HIGHER CONCENTRATION IS SHOWN.
3. CONCENTRATIONS IN AOC M AND AOC N SAMPLES AT 2'-4' INTERVAL WERE BELOW COMMERCIAL AND INDUSTRIAL USE SCOs.
4. NO VERTICAL SAMPLES WERE COLLECTED FROM AOC O.
5. THE AREA EXCEEDING THE INDUSTRIAL SOIL CLEANUP OBJECTIVE IS 16,065 SQ. FT.
6. THE AREA EXCEEDING THE COMMERCIAL SOIL CLEANUP OBJECTIVE IS 21,469 SQ. FT.

SOIL CLEANUP OBJECTIVE, (mg/kg)

	Commercial	Industrial
Arsenic (As)	16	16
Lead (Pb)	1,000	3,900
Copper (Cu)	270	10,000

LEGEND

- N-16 ● SHALLOW SOIL SAMPLE LOCATION
- (32.0) CONCENTRATION (mg/kg) EXCEEDS INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- (355) CONCENTRATION (mg/kg) EXCEEDS COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- (6.7) CONCENTRATION (mg/kg) BELOW COMMERCIAL USE SOIL CLEANUP OBJECTIVE
- GROUND SURFACE CONTOUR
- - - - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE INDUSTRIAL USE SOIL CLEANUP OBJECTIVE
- · - · - APPROXIMATE AREA OF SOIL WITH METALS CONCENTRATIONS ABOVE COMMERCIAL USE SOIL CLEANUP OBJECTIVE



REVISIONS		
Rev.	By:	Date:
Rev.	By:	Date:
Rev.	By:	Date:

SOURCE:
HYDORQUAL ENVIRONMENTAL ENGINEERS AND SCIENTISTS, P.C.
FIGURE 29 INDUSTRIAL USE SOIL CLEANUP
CRITERIA DELINEATION
AOC M,N,O - 0-2' INTERVAL.

DYNO-NOBEL, INC.
PORT EWEN, NY.

FIGURE 47
COMMERCIAL AND INDUSTRIAL USE
SOIL CLEANUP CRITERIA DELINEATION
AOC M,N,O - 0-2' INTERVAL

Drawn By: BC	Date Drawn: 11/26/13
Reviewed By: KV	Date Reviewed: 11/2013
Scale: 1" = 50'	Plot Date: 11/2013
Project Number.:	



APPENDIX E

Soil Corrective Measures Cost Estimates based on Mid-Point Delineation Figures

AOC G
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	56	\$8	\$448	56	\$8	\$448	0	\$8	\$0	
13 Backfill material	cy	56	\$18	\$1,008	56	\$18	\$1,008	0	\$18	\$0	
14 Spread and Compact	cy	112	\$8	\$896	56	\$8	\$448	0	\$8	\$0	
15 Load (soil)	cy	56	\$3	\$168	56	\$3	\$168	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	56	\$3	\$168	112	\$3	\$336	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	240	\$1.5	\$360	240	\$1.5	\$360	240	\$1.5	\$360	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	756	\$0.2	\$151	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	42	\$16	\$672	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	14	\$21	\$294	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$85,807		\$85,527			\$63,736		
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$67	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	84	\$120	\$10,080	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$10,147			\$0		
Total Construction and Waste Disposal Costs				\$85,807		\$95,674			\$63,736		
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,290	\$4,290	1	\$4,276	\$4,276	1	\$3,187	\$3,187	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,581	\$8,581	1	\$8,553	\$8,553	1	\$6,374	\$6,374	
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,161	\$17,161	1	\$17,105	\$17,105	1	\$12,747	\$12,747	
Total Construction Services Costs				\$30,032		\$29,934			\$22,308		
TOTAL CAPITAL COSTS				\$115,839		\$125,608			\$86,044		
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.4	\$21	\$29.40	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0			\$189		
Total O&M Cost				years 30	\$0	\$0	30	\$0	30	\$189	\$5,682
O&M Total Expenditure, 30 years					\$0		\$0			\$6,588	
O&M Present Worth @ 7% discount, 1% inflation, 30 years					\$0		\$0			\$2,598	
Total cost				\$115,839		\$125,608			\$88,641		

AOC G
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
Dyno Nobel
Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	50	\$8	\$400	50	\$8	\$400	0	\$8	\$0
13 Backfill material	cy	50	\$18	\$900	50	\$18	\$900	0	\$18	\$0
14 Spread and Compact	cy	100	\$8	\$800	50	\$8	\$400	0	\$8	\$0
15 Load (soil)	cy	50	\$3	\$150	50	\$3	\$150	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	50	\$3	\$150	100	\$3	\$300	0	\$3	\$0
17 Silt Fence (sediment control)	lf	240	\$1.5	\$360	240	\$1.5	\$360	240	\$1.5	\$360
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	657	\$0.2	\$131
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	37	\$16	\$592
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	12	\$21	\$252
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$85,519			\$85,269			\$63,594
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$60	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	75	\$120	\$9,000	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$9,060			\$0
Total Construction and Waste Disposal Costs				\$85,519			\$94,329			\$63,594
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,276	\$4,276	1	\$4,263	\$4,263	1	\$3,180	\$3,180
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,552	\$8,552	1	\$8,527	\$8,527	1	\$6,359	\$6,359
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,104	\$17,104	1	\$17,054	\$17,054	1	\$12,719	\$12,719
Total Construction Services Costs				\$29,932			\$29,844			\$22,258
TOTAL CAPITAL COSTS				\$115,450			\$124,173			\$85,852
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.2	\$21	\$25.20
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$185
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$185	\$5,556
O&M Total Expenditure, 30 years				\$0			\$0			\$6,442
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,540
Total cost				\$115,450			\$124,173			\$88,392

AOC H
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	95	\$8	\$760	95	\$8	\$760	0	\$8	\$0
13 Backfill material	cy	95	\$18	\$1,710	95	\$18	\$1,710	0	\$18	\$0
14 Spread and Compact	cy	190	\$8	\$1,520	95	\$8	\$760	0	\$8	\$0
15 Load (soil)	cy	95	\$3	\$285	95	\$3	\$285	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	95	\$3	\$285	190	\$3	\$570	0	\$3	\$0
17 Silt Fence (sediment control)	lf	280	\$1.5	\$420	280	\$1.5	\$420	280	\$1.5	\$420
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	1271	\$0.2	\$254
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	71	\$16	\$1,136
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	24	\$21	\$504
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$87,739			\$87,264			\$64,573
33 Waste Characterization	ea	0.0	\$400	\$0	0.3	\$400	\$114	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	143	\$120	\$17,100	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$17,214			\$0
Total Construction and Waste Disposal Costs				\$87,739			\$104,478			\$64,573
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,387	\$4,387	1	\$4,363	\$4,363	1	\$3,229	\$3,229
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,774	\$8,774	1	\$8,726	\$8,726	1	\$6,457	\$6,457
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,548	\$17,548	1	\$17,453	\$17,453	1	\$12,915	\$12,915
Total Construction Services Costs				\$30,709			\$30,542			\$22,601
TOTAL CAPITAL COSTS				\$118,447			\$135,020			\$87,174
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	2.4	\$21	\$50.40
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$210
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$210	\$6,312
O&M Total Expenditure, 30 years				\$0			\$0			\$7,319
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,886
Total cost				\$118,447			\$135,020			\$90,059

AOC H
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	25	\$8	\$200	25	\$8	\$200	0	\$8	\$0
13 Backfill material	cy	25	\$18	\$450	25	\$18	\$450	0	\$18	\$0
14 Spread and Compact	cy	50	\$8	\$400	25	\$8	\$200	0	\$8	\$0
15 Load (soil)	cy	25	\$3	\$75	25	\$3	\$75	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	25	\$3	\$75	50	\$3	\$150	0	\$3	\$0
17 Silt Fence (sediment control)	lf	140	\$1.5	\$210	140	\$1.5	\$210	140	\$1.5	\$210
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	329	\$0.2	\$66
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	10	\$16	\$160
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	4	\$21	\$84
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$84,169			\$84,044			\$62,779
33 Waste Characterization	ea	0.0	\$400	\$0	0.1	\$400	\$30	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	38	\$120	\$4,500	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$4,530			\$0
Total Construction and Waste Disposal Costs				\$84,169			\$88,574			\$62,779
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,208	\$4,208	1	\$4,202	\$4,202	1	\$3,139	\$3,139
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,417	\$8,417	1	\$8,404	\$8,404	1	\$6,278	\$6,278
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,834	\$16,834	1	\$16,809	\$16,809	1	\$12,556	\$12,556
Total Construction Services Costs				\$29,459			\$29,415			\$21,973
TOTAL CAPITAL COSTS				\$113,628			\$117,989			\$84,751
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.4	\$21	\$8.40
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$168
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$168	\$5,052
O&M Total Expenditure, 30 years				\$0			\$0			\$5,858
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,310
Total cost				\$113,628			\$117,989			\$87,061

AOC I
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	50	\$8	\$400	50	\$8	\$400	0	\$8	\$0
13 Backfill material	cy	50	\$18	\$900	50	\$18	\$900	0	\$18	\$0
14 Spread and Compact	cy	100	\$8	\$800	50	\$8	\$400	0	\$8	\$0
15 Load (soil)	cy	50	\$3	\$150	50	\$3	\$150	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	50	\$3	\$150	100	\$3	\$300	0	\$3	\$0
17 Silt Fence (sediment control)	lf	280	\$1.5	\$420	280	\$1.5	\$420	280	\$1.5	\$420
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	670	\$0.2	\$134
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	37	\$16	\$592
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	12.5	\$21	\$263
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$85,579			\$85,329			\$63,667
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$60	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	75	\$120	\$9,000	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$9,060			\$0
Total Construction and Waste Disposal Costs				\$85,579			\$94,389			\$63,667
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,279	\$4,279	1	\$4,266	\$4,266	1	\$3,183	\$3,183
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,558	\$8,558	1	\$8,533	\$8,533	1	\$6,367	\$6,367
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,116	\$17,116	1	\$17,066	\$17,066	1	\$12,733	\$12,733
Total Construction Services Costs				\$29,953			\$29,865			\$22,284
TOTAL CAPITAL COSTS				\$115,531			\$124,254			\$85,951
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.25	\$21	\$26.25
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$186
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$186	\$5,588
O&M Total Expenditure, 30 years				\$0			\$0			\$6,479
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,555
Total cost				\$115,531			\$124,254			\$88,505

AOC J
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	149	\$8	\$1,192	149	\$8	\$1,192	0	\$8	\$0
13 Backfill material	cy	149	\$18	\$2,682	149	\$18	\$2,682	0	\$18	\$0
14 Spread and Compact	cy	298	\$8	\$2,384	149	\$8	\$1,192	0	\$8	\$0
15 Load (soil)	cy	149	\$3	\$447	149	\$3	\$447	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	149	\$3	\$447	298	\$3	\$894	0	\$3	\$0
17 Silt Fence (sediment control)	lf	260	\$1.5	\$390	260	\$1.5	\$390	260	\$1.5	\$390
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	2011	\$0.2	\$402
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	112	\$16	\$1,792
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	38	\$21	\$798
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$90,301		\$89,556			\$65,641	
33 Waste Characterization	ea	0.0	\$400	\$0	0.4	\$400	\$179	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	224	\$120	\$26,820	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$26,999			\$0	
Total Construction and Waste Disposal Costs				\$90,301		\$116,555			\$65,641	
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,515	\$4,515	1	\$4,478	\$4,478	1	\$3,282	\$3,282
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,030	\$9,030	1	\$8,956	\$8,956	1	\$6,564	\$6,564
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,060	\$18,060	1	\$17,911	\$17,911	1	\$13,128	\$13,128
Total Construction Services Costs				\$31,605		\$31,345			\$22,974	
TOTAL CAPITAL COSTS				\$121,906		\$147,899			\$88,615	
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	3.8	\$21	\$79.80
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0			\$240	
Total O&M Cost				years 30	\$0	\$0	\$0	30	\$240	\$7,194
O&M Total Expenditure, 30 years				\$0		\$0			\$8,341	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$3,289	
Total cost				\$121,906		\$147,899			\$91,904	

AOC J
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
Dyno Nobel
Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.25	\$200	\$50	0.25	\$200	\$50	0.25	\$200	\$50
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,029	\$1,029	1	\$1,029	\$1,029	1	\$1,029	\$1,029
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	78	\$8	\$624	78	\$8	\$624	0	\$8	\$0
13 Backfill material	cy	78	\$18	\$1,404	78	\$18	\$1,404	0	\$18	\$0
14 Spread and Compact	cy	156	\$8	\$1,248	78	\$8	\$624	0	\$8	\$0
15 Load (soil)	cy	78	\$3	\$234	78	\$3	\$234	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	78	\$3	\$234	156	\$3	\$468	0	\$3	\$0
17 Silt Fence (sediment control)	lf	130	\$1.5	\$195	130	\$1.5	\$195	130	\$1.5	\$195
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	1054	\$0.2	\$211
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	112	\$16	\$1,792
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	38	\$21	\$798
28 Seeding	acre	0.25	\$3,200	\$800	0.25	\$3,200	\$800	0.25	\$3,200	\$800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$84,818			\$84,428			\$63,375
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$94	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	117	\$120	\$14,040	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$14,134			\$0
Total Construction and Waste Disposal Costs				\$84,818			\$98,562			\$63,375
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,241	\$4,241	1	\$4,221	\$4,221	1	\$3,169	\$3,169
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,482	\$8,482	1	\$8,443	\$8,443	1	\$6,338	\$6,338
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,964	\$16,964	1	\$16,886	\$16,886	1	\$12,675	\$12,675
Total Construction Services Costs				\$29,686			\$29,550			\$22,181
TOTAL CAPITAL COSTS				\$114,505			\$128,112			\$85,557
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	3.8	\$21	\$79.80
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.025	\$3,200	\$80
Estimated Annual O&M Cost				\$0			\$0			\$160
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$160	\$4,794
O&M Total Expenditure, 30 years				\$0			\$0			\$5,559
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,192
Total cost				\$114,505			\$128,112			\$87,748

AOC M
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	332	\$8	\$2,656	332	\$8	\$2,656	0	\$8	\$0
13 Backfill material	cy	332	\$18	\$5,976	332	\$18	\$5,976	0	\$18	\$0
14 Spread and Compact	cy	664	\$8	\$5,312	332	\$8	\$2,656	0	\$8	\$0
15 Load (soil)	cy	332	\$3	\$996	332	\$3	\$996	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	332	\$3	\$996	664	\$3	\$1,992	0	\$3	\$0
17 Silt Fence (sediment control)	lf	520	\$1.5	\$780	520	\$1.5	\$780	520	\$1.5	\$780
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	4480	\$0.2	\$896
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	249	\$16	\$3,984
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	83	\$21	\$1,743
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$99,475			\$97,815			\$69,662
33 Waste Characterization	ea	0.0	\$400	\$0	1.0	\$400	\$398	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	498	\$120	\$59,760	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$60,158			\$0
Total Construction and Waste Disposal Costs				\$99,475			\$157,973			\$69,662
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,974	\$4,974	1	\$4,891	\$4,891	1	\$3,483	\$3,483
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,947	\$9,947	1	\$9,781	\$9,781	1	\$6,966	\$6,966
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,895	\$19,895	1	\$19,563	\$19,563	1	\$13,932	\$13,932
Total Construction Services Costs				\$34,816			\$34,235			\$24,382
TOTAL CAPITAL COSTS				\$134,291			\$192,208			\$94,043
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	8.3	\$21	\$174.30
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$334
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$334	\$10,029
O&M Total Expenditure, 30 years				\$0			\$0			\$11,629
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$4,585
Total cost				\$134,291			\$192,208			\$98,629

AOC M
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	290	\$8	\$2,320	290	\$8	\$2,320	0	\$8	\$0
13 Backfill material	cy	290	\$18	\$5,220	290	\$18	\$5,220	0	\$18	\$0
14 Spread and Compact	cy	580	\$8	\$4,640	290	\$8	\$2,320	0	\$8	\$0
15 Load (soil)	cy	290	\$3	\$870	290	\$3	\$870	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	290	\$3	\$870	580	\$3	\$1,740	0	\$3	\$0
17 Silt Fence (sediment control)	lf	520	\$1.5	\$780	520	\$1.5	\$780	520	\$1.5	\$780
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	3911	\$0.2	\$782
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	217	\$16	\$3,472
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	73	\$21	\$1,533
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$97,459			\$96,009			\$68,826
33 Waste Characterization	ea	0.0	\$400	\$0	0.9	\$400	\$348	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	435	\$120	\$52,200	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$52,548			\$0
Total Construction and Waste Disposal Costs				\$97,459			\$148,557			\$68,826
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,873	\$4,873	1	\$4,800	\$4,800	1	\$3,441	\$3,441
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,746	\$9,746	1	\$9,601	\$9,601	1	\$6,883	\$6,883
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,492	\$19,492	1	\$19,202	\$19,202	1	\$13,765	\$13,765
Total Construction Services Costs				\$34,111			\$33,603			\$24,089
TOTAL CAPITAL COSTS				\$131,569			\$182,160			\$92,915
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	7.3	\$21	\$153.30
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$313
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$313	\$9,399
O&M Total Expenditure, 30 years				\$0			\$0			\$10,898
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$4,297
Total cost				\$131,569			\$182,160			\$97,212

AOC N
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	364	\$8	\$2,912	364	\$8	\$2,912	0	\$8	\$0
13 Backfill material	cy	364	\$18	\$6,552	364	\$18	\$6,552	0	\$18	\$0
14 Spread and Compact	cy	728	\$8	\$5,824	364	\$8	\$2,912	0	\$8	\$0
15 Load (soil)	cy	364	\$3	\$1,092	364	\$3	\$1,092	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	364	\$3	\$1,092	728	\$3	\$2,184	0	\$3	\$0
17 Silt Fence (sediment control)	lf	480	\$1.5	\$720	480	\$1.5	\$720	480	\$1.5	\$720
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	4912	\$0.2	\$982
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	273	\$16	\$4,368
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	91	\$21	\$1,911
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$100,951			\$99,131			\$70,240
33 Waste Characterization	ea	0.0	\$400	\$0	1.1	\$400	\$437	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	546	\$120	\$65,520	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$65,957			\$0
Total Construction and Waste Disposal Costs				\$100,951			\$165,088			\$70,240
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,048	\$5,048	1	\$4,957	\$4,957	1	\$3,512	\$3,512
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,095	\$10,095	1	\$9,913	\$9,913	1	\$7,024	\$7,024
3 Contingency (20% of subtotal construction costs)	ls	1	\$20,190	\$20,190	1	\$19,826	\$19,826	1	\$14,048	\$14,048
Total Construction Services Costs				\$35,333			\$34,696			\$24,584
TOTAL CAPITAL COSTS				\$136,284			\$199,783			\$94,824
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	9.1	\$21	\$191.10
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$351
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$351	\$10,533
O&M Total Expenditure, 30 years				\$0			\$0			\$12,213
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$4,816
Total cost				\$136,284			\$199,783			\$99,640

AOC N
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	246	\$8	\$1,968	246	\$8	\$1,968	0	\$8	\$0
13 Backfill material	cy	246	\$18	\$4,428	246	\$18	\$4,428	0	\$18	\$0
14 Spread and Compact	cy	492	\$8	\$3,936	246	\$8	\$1,968	0	\$8	\$0
15 Load (soil)	cy	246	\$3	\$738	246	\$3	\$738	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	246	\$3	\$738	492	\$3	\$1,476	0	\$3	\$0
17 Silt Fence (sediment control)	lf	480	\$1.5	\$720	480	\$1.5	\$720	480	\$1.5	\$720
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	3320	\$0.2	\$664
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	185	\$16	\$2,960
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	62	\$21	\$1,302
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$95,287			\$94,057			\$67,905
33 Waste Characterization	ea	0.0	\$400	\$0	0.7	\$400	\$295	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	369	\$120	\$44,280	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$44,575			\$0
Total Construction and Waste Disposal Costs				\$95,287			\$138,632			\$67,905
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,764	\$4,764	1	\$4,703	\$4,703	1	\$3,395	\$3,395
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,529	\$9,529	1	\$9,406	\$9,406	1	\$6,790	\$6,790
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,057	\$19,057	1	\$18,811	\$18,811	1	\$13,581	\$13,581
Total Construction Services Costs				\$33,350			\$32,920			\$23,767
TOTAL CAPITAL COSTS				\$128,637			\$171,552			\$91,672
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	6.2	\$21	\$130.20
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$290
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$290	\$8,706
O&M Total Expenditure, 30 years				\$0			\$0			\$10,095
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$3,980
Total cost				\$128,637			\$171,552			\$95,652

AOC N
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	184	\$8	\$1,472	184	\$8	\$1,472	0	\$8	\$0
13 Backfill material	cy	184	\$18	\$3,312	184	\$18	\$3,312	0	\$18	\$0
14 Spread and Compact	cy	368	\$8	\$2,944	184	\$8	\$1,472	0	\$8	\$0
15 Load (soil)	cy	184	\$3	\$552	184	\$3	\$552	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	184	\$3	\$552	368	\$3	\$1,104	0	\$3	\$0
17 Silt Fence (sediment control)	lf	380	\$1.5	\$570	380	\$1.5	\$570	380	\$1.5	\$570
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	2486	\$0.2	\$497
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	138	\$16	\$2,208
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	46	\$21	\$966
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$92,161			\$91,241			\$66,500
33 Waste Characterization	ea	0.0	\$400	\$0	0.6	\$400	\$221	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	276	\$120	\$33,120	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$33,341			\$0
Total Construction and Waste Disposal Costs				\$92,161			\$124,582			\$66,500
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,608	\$4,608	1	\$4,562	\$4,562	1	\$3,325	\$3,325
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,216	\$9,216	1	\$9,124	\$9,124	1	\$6,650	\$6,650
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,432	\$18,432	1	\$18,248	\$18,248	1	\$13,300	\$13,300
Total Construction Services Costs				\$32,256			\$31,934			\$23,275
TOTAL CAPITAL COSTS				\$124,417			\$156,516			\$89,775
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	4.6	\$21	\$96.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$257
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$257	\$7,698
O&M Total Expenditure, 30 years				\$0			\$0			\$8,926
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$3,519
Total cost				\$124,417			\$156,516			\$93,294

SWMU 2 and AOC A
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	2.4	\$200	\$480	2.4	\$200	\$480	2.4	\$200	\$480
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$9,882	\$9,882	1	\$9,882	\$9,882	1	\$9,882	\$9,882
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	900	\$8	\$7,200	900	\$8	\$7,200	0	\$8	\$0
13 Backfill material	cy	900	\$18	\$16,200	900	\$18	\$16,200	0	\$18	\$0
14 Spread and Compact	cy	1,800	\$8	\$14,400	900	\$8	\$7,200	0	\$8	\$0
15 Load (soil)	cy	900	\$3	\$2,700	900	\$3	\$2,700	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	900	\$3	\$2,700	1,800	\$3	\$5,400	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,300	\$1.5	\$1,950	1,300	\$1.5	\$1,950	1,300	\$1.5	\$1,950
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	15988	\$0.2	\$3,198
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	888	\$16	\$14,208
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	592	\$21	\$12,432
28 Seeding	acre	2.4	\$3,200	\$7,680	2.4	\$3,200	\$7,680	2.4	\$3,200	\$7,680
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$142,192			\$137,692			\$108,330
33 Waste Characterization	ea	0.0	\$400	\$0	2.7	\$400	\$1,080	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,350	\$120	\$162,000	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$163,080			\$0
Total Construction and Waste Disposal Costs				\$142,192			\$300,772			\$108,330
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$7,110	\$7,110	1	\$6,885	\$6,885	1	\$5,416	\$5,416
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$14,219	\$14,219	1	\$13,769	\$13,769	1	\$10,833	\$10,833
3 Contingency (20% of subtotal construction costs)	ls	1	\$28,438	\$28,438	1	\$27,538	\$27,538	1	\$21,666	\$21,666
Total Construction Services Costs				\$49,767			\$48,192			\$37,915
TOTAL CAPITAL COSTS				\$191,960			\$348,965			\$146,245
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	59.2	\$21	\$1,243.20
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.24	\$3,200	\$768
Estimated Annual O&M Cost				\$0			\$0			\$2,011
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$2,011	\$60,336
O&M Total Expenditure, 30 years				\$0			\$0			\$69,959
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$27,585
Total cost				\$191,960			\$348,965			\$173,830

SWMU 2 and AOC A
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.5	\$200	\$100	0.5	\$200	\$100	0.5	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$9,882	\$9,882	1	\$9,882	\$9,882	1	\$9,882	\$9,882
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	447	\$8	\$3,576	447	\$8	\$3,576	0	\$8	\$0
13 Backfill material	cy	447	\$18	\$8,046	447	\$18	\$8,046	0	\$18	\$0
14 Spread and Compact	cy	894	\$8	\$7,152	447	\$8	\$3,576	0	\$8	\$0
15 Load (soil)	cy	447	\$3	\$1,341	447	\$3	\$1,341	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	447	\$3	\$1,341	894	\$3	\$2,682	0	\$3	\$0
17 Silt Fence (sediment control)	lf	460	\$1.5	\$690	460	\$1.5	\$690	460	\$1.5	\$690
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	5144	\$0.2	\$1,029
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	286	\$16	\$4,576
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	96	\$21	\$2,016
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$112,728			\$110,493			\$78,393
33 Waste Characterization	ea	0.0	\$400	\$0	1.3	\$400	\$536	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	671	\$120	\$80,460	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$80,996			\$0
Total Construction and Waste Disposal Costs				\$112,728			\$191,490			\$78,393
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,636	\$5,636	1	\$5,525	\$5,525	1	\$3,920	\$3,920
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$11,273	\$11,273	1	\$11,049	\$11,049	1	\$7,839	\$7,839
3 Contingency (20% of subtotal construction costs)	ls	1	\$22,546	\$22,546	1	\$22,099	\$22,099	1	\$15,679	\$15,679
Total Construction Services Costs				\$39,455			\$38,673			\$27,438
TOTAL CAPITAL COSTS				\$152,183			\$230,162			\$105,831
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	9.6	\$21	\$201.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$362
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$362	\$10,848
O&M Total Expenditure, 30 years				\$0			\$0			\$12,578
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$4,960
Total cost				\$152,183			\$230,162			\$110,790

SWMU 3 and 5
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.5	\$200	\$300	1.5	\$200	\$300	1.5	\$200	\$300
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$6,176	\$6,176	1	\$6,176	\$6,176	1	\$6,176	\$6,176
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	2,038	\$8	\$16,304	2,038	\$8	\$16,304	0	\$8	\$0
13 Backfill material	cy	2,038	\$18	\$36,684	2,038	\$18	\$36,684	0	\$18	\$0
14 Spread and Compact	cy	4,076	\$8	\$32,608	2,038	\$8	\$16,304	0	\$8	\$0
15 Load (soil)	cy	2,038	\$3	\$6,114	2,038	\$3	\$6,114	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	2,038	\$3	\$6,114	4,076	\$3	\$12,228	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,000	\$1.5	\$1,500	1,000	\$1.5	\$1,500	1,000	\$1.5	\$1,500
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	13753	\$0.2	\$2,751
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	764	\$16	\$12,224
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	255	\$21	\$5,355
28 Seeding	acre	1.5	\$3,200	\$4,800	1.5	\$3,200	\$4,800	1.5	\$3,200	\$4,800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$189,600			\$179,410			\$91,606
33 Waste Characterization	ea	0.0	\$400	\$0	6.1	\$400	\$2,446	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	3,057	\$120	\$366,840	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$369,286			\$0
Total Construction and Waste Disposal Costs				\$189,600			\$548,696			\$91,606
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$9,480	\$9,480	1	\$8,971	\$8,971	1	\$4,580	\$4,580
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$18,960	\$18,960	1	\$17,941	\$17,941	1	\$9,161	\$9,161
3 Contingency (20% of subtotal construction costs)	ls	1	\$37,920	\$37,920	1	\$35,882	\$35,882	1	\$18,321	\$18,321
Total Construction Services Costs				\$66,360			\$62,794			\$32,062
TOTAL CAPITAL COSTS				\$255,961			\$611,490			\$123,668
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	25.5	\$21	\$535.50
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.15	\$3,200	\$480
Estimated Annual O&M Cost				\$0			\$0			\$1,016
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,016	\$30,465
O&M Total Expenditure, 30 years				\$0			\$0			\$35,324
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$13,928
Total cost				\$255,961			\$611,490			\$137,596

SWMU 3 and 5
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.5	\$200	\$100	0.5	\$200	\$100	0.5	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	356	\$8	\$2,848	356	\$8	\$2,848	0	\$8	\$0	
13 Backfill material	cy	356	\$18	\$6,408	356	\$18	\$6,408	0	\$18	\$0	
14 Spread and Compact	cy	712	\$8	\$5,696	356	\$8	\$2,848	0	\$8	\$0	
15 Load (soil)	cy	356	\$3	\$1,068	356	\$3	\$1,068	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	356	\$3	\$1,068	712	\$3	\$2,136	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	360	\$1.5	\$540	360	\$1.5	\$540	360	\$1.5	\$540	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	3842	\$0.2	\$768	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	214	\$16	\$3,424	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	71	\$21	\$1,491	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$100,387		\$98,607			\$68,482		
33 Waste Characterization	ea	0.0	\$400	\$0	1.1	\$400	\$427	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	534	\$120	\$64,080	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$64,507			\$0		
Total Construction and Waste Disposal Costs				\$100,387		\$163,114			\$68,482		
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,019	\$5,019	1	\$4,930	\$4,930	1	\$3,424	\$3,424	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,039	\$10,039	1	\$9,861	\$9,861	1	\$6,848	\$6,848	
3 Contingency (20% of subtotal construction costs)	ls	1	\$20,077	\$20,077	1	\$19,721	\$19,721	1	\$13,696	\$13,696	
Total Construction Services Costs				\$35,135		\$34,512			\$23,969		
TOTAL CAPITAL COSTS				\$135,522		\$197,626			\$92,451		
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	7.1	\$21	\$149.10	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0			\$309		
Total O&M Cost				years 30	\$0	\$0	30	\$0	30	\$309	\$9,273
O&M Total Expenditure, 30 years				\$0		\$0			\$10,752		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$4,239		
Total cost				\$135,522		\$197,626			\$96,691		

SWMU 4
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	1,011	\$8	\$8,088	1,011	\$8	\$8,088	0	\$8	\$0
13 Backfill material	cy	1,011	\$18	\$18,198	1,011	\$18	\$18,198	0	\$18	\$0
14 Spread and Compact	cy	2,022	\$8	\$16,176	1,011	\$8	\$8,088	0	\$8	\$0
15 Load (soil)	cy	1,011	\$3	\$3,033	1,011	\$3	\$3,033	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	1,011	\$3	\$3,033	2,022	\$3	\$6,066	0	\$3	\$0
17 Silt Fence (sediment control)	lf	680	\$1.5	\$1,020	680	\$1.5	\$1,020	680	\$1.5	\$1,020
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	6827	\$0.2	\$1,365
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	379	\$16	\$6,064
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	127	\$21	\$2,667
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$134,186			\$129,131			\$75,255
33 Waste Characterization	ea	0.0	\$400	\$0	3.0	\$400	\$1,213	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,517	\$120	\$181,980	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$183,193			\$0
Total Construction and Waste Disposal Costs				\$134,186			\$312,324			\$75,255
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$6,709	\$6,709	1	\$6,457	\$6,457	1	\$3,763	\$3,763
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$13,419	\$13,419	1	\$12,913	\$12,913	1	\$7,525	\$7,525
3 Contingency (20% of subtotal construction costs)	ls	1	\$26,837	\$26,837	1	\$25,826	\$25,826	1	\$15,051	\$15,051
Total Construction Services Costs				\$46,965			\$45,196			\$26,339
TOTAL CAPITAL COSTS				\$181,151			\$357,520			\$101,594
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	12.7	\$21	\$266.70
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240
Estimated Annual O&M Cost				\$0			\$0			\$507
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$507	\$15,201
O&M Total Expenditure, 30 years				\$0			\$0			\$17,626
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$6,950
Total cost				\$181,151			\$357,520			\$108,543

SWMU 4
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	97	\$8	\$776	97	\$8	\$776	0	\$8	\$0
13 Backfill material	cy	97	\$18	\$1,746	97	\$18	\$1,746	0	\$18	\$0
14 Spread and Compact	cy	194	\$8	\$1,552	97	\$8	\$776	0	\$8	\$0
15 Load (soil)	cy	97	\$3	\$291	97	\$3	\$291	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	97	\$3	\$291	194	\$3	\$582	0	\$3	\$0
17 Silt Fence (sediment control)	lf	500	\$1.5	\$750	500	\$1.5	\$750	500	\$1.5	\$750
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	2583	\$0.2	\$517
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	144	\$16	\$2,304
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	48	\$21	\$1,008
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$88,165			\$87,680			\$66,837
33 Waste Characterization	ea	0.0	\$400	\$0	0.3	\$400	\$116	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	146	\$120	\$17,460	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$17,576			\$0
Total Construction and Waste Disposal Costs				\$88,165			\$105,256			\$66,837
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,408	\$4,408	1	\$4,384	\$4,384	1	\$3,342	\$3,342
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,816	\$8,816	1	\$8,768	\$8,768	1	\$6,684	\$6,684
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,633	\$17,633	1	\$17,536	\$17,536	1	\$13,367	\$13,367
Total Construction Services Costs				\$30,858			\$30,688			\$23,393
TOTAL CAPITAL COSTS				\$119,023			\$135,944			\$90,231
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	4.8	\$21	\$100.80
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$261
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$261	\$7,824
O&M Total Expenditure, 30 years				\$0			\$0			\$9,072
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$3,577
Total cost				\$119,023			\$135,944			\$93,808

SWMU 6, 7, 8 and AOC B
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.75	\$200	\$350	1.75	\$200	\$350	1.75	\$200	\$350
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$7,206	\$7,206	1	\$7,206	\$7,206	1	\$7,206	\$7,206
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	2,310	\$8	\$18,480	2,310	\$8	\$18,480	0	\$8	\$0
13 Backfill material	cy	2,310	\$18	\$41,580	2,310	\$18	\$41,580	0	\$18	\$0
14 Spread and Compact	cy	4,620	\$8	\$36,960	2,310	\$8	\$18,480	0	\$8	\$0
15 Load (soil)	cy	2,310	\$3	\$6,930	2,310	\$3	\$6,930	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	2,310	\$3	\$6,930	4,620	\$3	\$13,860	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,040	\$1.5	\$1,560	1,040	\$1.5	\$1,560	1,040	\$1.5	\$1,560
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	15590	\$0.2	\$3,118
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	866	\$16	\$13,856
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	289	\$21	\$6,069
28 Seeding	acre	1.75	\$3,200	\$5,600	1.75	\$3,200	\$5,600	1.75	\$3,200	\$5,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$204,596			\$193,046			\$96,259
33 Waste Characterization	ea	0.0	\$400	\$0	6.9	\$400	\$2,772	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	3,465	\$120	\$415,800	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$418,572			\$0
Total Construction and Waste Disposal Costs				\$204,596			\$611,618			\$96,259
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$10,230	\$10,230	1	\$9,652	\$9,652	1	\$4,813	\$4,813
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$20,460	\$20,460	1	\$19,305	\$19,305	1	\$9,626	\$9,626
3 Contingency (20% of subtotal construction costs)	ls	1	\$40,919	\$40,919	1	\$38,609	\$38,609	1	\$19,252	\$19,252
Total Construction Services Costs				\$71,609			\$67,566			\$33,691
TOTAL CAPITAL COSTS				\$276,204			\$679,184			\$129,949
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	28.9	\$21	\$606.90
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.175	\$3,200	\$560
Estimated Annual O&M Cost				\$0			\$0			\$1,167
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,167	\$35,007
O&M Total Expenditure, 30 years				\$0			\$0			\$40,590
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$16,005
Total cost				\$276,204			\$679,184			\$145,954

SWMU 6, 7, 8 and AOC B
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.00	\$200	\$200	1.00	\$200	\$200	1.00	\$200	\$200
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$4,118	\$4,118	1	\$4,118	\$4,118	1	\$4,118	\$4,118
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	1,457	\$8	\$11,656	1,457	\$8	\$11,656	0	\$8	\$0
13 Backfill material	cy	1,457	\$18	\$26,226	1,457	\$18	\$26,226	0	\$18	\$0
14 Spread and Compact	cy	2,914	\$8	\$23,312	1,457	\$8	\$11,656	0	\$8	\$0
15 Load (soil)	cy	1,457	\$3	\$4,371	1,457	\$3	\$4,371	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	1,457	\$3	\$4,371	2,914	\$3	\$8,742	0	\$3	\$0
17 Silt Fence (sediment control)	lf	760	\$1.5	\$1,140	760	\$1.5	\$1,140	760	\$1.5	\$1,140
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	9185	\$0.2	\$1,837
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	511	\$16	\$8,176
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	170	\$21	\$3,570
28 Seeding	acre	1	\$3,200	\$3,200	1	\$3,200	\$3,200	1	\$3,200	\$3,200
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$157,594			\$150,309			\$80,741
33 Waste Characterization	ea	0.0	\$400	\$0	4.4	\$400	\$1,748	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	2,186	\$120	\$262,260	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$264,008			\$0
Total Construction and Waste Disposal Costs				\$157,594			\$414,317			\$80,741
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$7,880	\$7,880	1	\$7,515	\$7,515	1	\$4,037	\$4,037
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$15,759	\$15,759	1	\$15,031	\$15,031	1	\$8,074	\$8,074
3 Contingency (20% of subtotal construction costs)	ls	1	\$31,519	\$31,519	1	\$30,062	\$30,062	1	\$16,148	\$16,148
Total Construction Services Costs				\$55,158			\$52,608			\$28,259
TOTAL CAPITAL COSTS				\$212,751			\$466,925			\$109,000
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	17	\$21	\$357.00
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.1	\$3,200	\$320
Estimated Annual O&M Cost				\$0			\$0			\$677
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$677	\$20,310
O&M Total Expenditure, 30 years				\$0			\$0			\$23,549
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$9,285
Total cost				\$212,751			\$466,925			\$118,285

SWMU 9
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	58	\$8	\$464	58	\$8	\$464	0	\$8	\$0
13 Backfill material	cy	58	\$18	\$1,044	58	\$18	\$1,044	0	\$18	\$0
14 Spread and Compact	cy	116	\$8	\$928	58	\$8	\$464	0	\$8	\$0
15 Load (soil)	cy	58	\$3	\$174	58	\$3	\$174	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	58	\$3	\$174	116	\$3	\$348	0	\$3	\$0
17 Silt Fence (sediment control)	lf	180	\$1.5	\$270	180	\$1.5	\$270	180	\$1.5	\$270
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	390	\$0.2	\$78
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	22	\$16	\$352
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	7.5	\$21	\$158
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$85,813			\$85,523			\$63,116
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$70	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	87	\$120	\$10,440	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$10,510			\$0
Total Construction and Waste Disposal Costs				\$85,813			\$96,032			\$63,116
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,291	\$4,291	1	\$4,276	\$4,276	1	\$3,156	\$3,156
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,581	\$8,581	1	\$8,552	\$8,552	1	\$6,312	\$6,312
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,163	\$17,163	1	\$17,105	\$17,105	1	\$12,623	\$12,623
Total Construction Services Costs				\$30,034			\$29,933			\$22,091
TOTAL CAPITAL COSTS				\$115,847			\$125,965			\$85,207
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.75	\$21	\$15.75
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$176
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$176	\$5,273
O&M Total Expenditure, 30 years				\$0			\$0			\$6,113
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,411
Total cost				\$115,847			\$125,965			\$87,618

SWMU 10
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.00	\$200	\$200	1.00	\$200	\$200	1.00	\$200	\$200
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$4,118	\$4,118	1	\$4,118	\$4,118	1	\$4,118	\$4,118
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	244	\$8	\$1,952	244	\$8	\$1,952	0	\$8	\$0
13 Backfill material	cy	244	\$18	\$4,392	244	\$18	\$4,392	0	\$18	\$0
14 Spread and Compact	cy	488	\$8	\$3,904	244	\$8	\$1,952	0	\$8	\$0
15 Load (soil)	cy	244	\$3	\$732	244	\$3	\$732	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	244	\$3	\$732	488	\$3	\$1,464	0	\$3	\$0
17 Silt Fence (sediment control)	lf	820	\$1.5	\$1,230	820	\$1.5	\$1,230	820	\$1.5	\$1,230
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	6570	\$0.2	\$1,314
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	365	\$16	\$5,840
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	122	\$21	\$2,562
28 Seeding	acre	1	\$3,200	\$3,200	1	\$3,200	\$3,200	1	\$3,200	\$3,200
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$99,460			\$98,240			\$76,964
33 Waste Characterization	ea	0.0	\$400	\$0	0.7	\$400	\$293	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	366	\$120	\$43,920	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$44,213			\$0
Total Construction and Waste Disposal Costs				\$99,460			\$142,452			\$76,964
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,973	\$4,973	1	\$4,912	\$4,912	1	\$3,848	\$3,848
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,946	\$9,946	1	\$9,824	\$9,824	1	\$7,696	\$7,696
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,892	\$19,892	1	\$19,648	\$19,648	1	\$15,393	\$15,393
Total Construction Services Costs				\$34,811			\$34,384			\$26,937
TOTAL CAPITAL COSTS				\$134,271			\$176,836			\$103,901
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	12.2	\$21	\$256.20
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.1	\$3,200	\$320
Estimated Annual O&M Cost				\$0			\$0			\$576
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$576	\$17,286
O&M Total Expenditure, 30 years				\$0			\$0			\$20,043
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$7,903
Total cost				\$134,271			\$176,836			\$111,804

SWMU 10
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	113	\$8	\$904	113	\$8	\$904	0	\$8	\$0
13 Backfill material	cy	113	\$18	\$2,034	113	\$18	\$2,034	0	\$18	\$0
14 Spread and Compact	cy	226	\$8	\$1,808	113	\$8	\$904	0	\$8	\$0
15 Load (soil)	cy	113	\$3	\$339	113	\$3	\$339	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	113	\$3	\$339	226	\$3	\$678	0	\$3	\$0
17 Silt Fence (sediment control)	lf	600	\$1.5	\$900	600	\$1.5	\$900	600	\$1.5	\$900
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	3028	\$0.2	\$606
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	168	\$16	\$2,688
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	56	\$21	\$1,176
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$89,083			\$88,518			\$67,628
33 Waste Characterization	ea	0.0	\$400	\$0	0.3	\$400	\$136	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	170	\$120	\$20,340	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$20,476			\$0
Total Construction and Waste Disposal Costs				\$89,083			\$108,993			\$67,628
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,454	\$4,454	1	\$4,426	\$4,426	1	\$3,381	\$3,381
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,908	\$8,908	1	\$8,852	\$8,852	1	\$6,763	\$6,763
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,817	\$17,817	1	\$17,704	\$17,704	1	\$13,526	\$13,526
Total Construction Services Costs				\$31,179			\$30,981			\$23,670
TOTAL CAPITAL COSTS				\$120,262			\$139,975			\$91,298
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	5.6	\$21	\$117.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$278
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$278	\$8,328
O&M Total Expenditure, 30 years				\$0			\$0			\$9,656
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$3,807
Total cost				\$120,262			\$139,975			\$95,106

SWMU 11
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	12	\$8	\$96	12	\$8	\$96	0	\$8	\$0
13 Backfill material	cy	12	\$18	\$216	12	\$18	\$216	0	\$18	\$0
14 Spread and Compact	cy	24	\$8	\$192	12	\$8	\$96	0	\$8	\$0
15 Load (soil)	cy	12	\$3	\$36	12	\$3	\$36	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	12	\$3	\$36	24	\$3	\$72	0	\$3	\$0
17 Silt Fence (sediment control)	lf	240	\$1.5	\$360	240	\$1.5	\$360	240	\$1.5	\$360
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	308	\$0.2	\$62
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	17	\$16	\$272
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	6	\$21	\$126
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$83,695			\$83,635			\$63,078
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$14	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	18	\$120	\$2,160	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$2,174			\$0
Total Construction and Waste Disposal Costs				\$83,695			\$85,809			\$63,078
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,185	\$4,185	1	\$4,182	\$4,182	1	\$3,154	\$3,154
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,369	\$8,369	1	\$8,363	\$8,363	1	\$6,308	\$6,308
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,739	\$16,739	1	\$16,727	\$16,727	1	\$12,616	\$12,616
Total Construction Services Costs				\$29,293			\$29,272			\$22,077
TOTAL CAPITAL COSTS				\$112,988			\$115,081			\$85,156
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.6	\$21	\$12.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$173
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$173	\$5,178
O&M Total Expenditure, 30 years				\$0			\$0			\$6,004
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,367
Total cost				\$112,988			\$115,081			\$87,523

SWMU 11
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	6	\$8	\$48	6	\$8	\$48	0	\$8	\$0
13 Backfill material	cy	6	\$18	\$108	6	\$18	\$108	0	\$18	\$0
14 Spread and Compact	cy	12	\$8	\$96	6	\$8	\$48	0	\$8	\$0
15 Load (soil)	cy	6	\$3	\$18	6	\$3	\$18	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	6	\$3	\$18	12	\$3	\$36	0	\$3	\$0
17 Silt Fence (sediment control)	lf	80	\$1.5	\$120	80	\$1.5	\$120	80	\$1.5	\$120
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	150	\$0.2	\$30
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	9	\$16	\$144
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	3	\$21	\$63
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$83,167			\$83,137			\$62,616
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$7	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	9	\$120	\$1,080	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$1,087			\$0
Total Construction and Waste Disposal Costs				\$83,167			\$84,224			\$62,616
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,158	\$4,158	1	\$4,157	\$4,157	1	\$3,131	\$3,131
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,317	\$8,317	1	\$8,314	\$8,314	1	\$6,262	\$6,262
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,633	\$16,633	1	\$16,627	\$16,627	1	\$12,523	\$12,523
Total Construction Services Costs				\$29,108			\$29,098			\$21,916
TOTAL CAPITAL COSTS				\$112,275			\$113,322			\$84,531
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.3	\$21	\$6.30
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$166
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$166	\$4,989
O&M Total Expenditure, 30 years				\$0			\$0			\$5,785
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,281
Total cost				\$112,275			\$113,322			\$86,812

SWMU 13
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	317	\$8	\$2,536	317	\$8	\$2,536	0	\$8	\$0
13 Backfill material	cy	317	\$18	\$5,706	317	\$18	\$5,706	0	\$18	\$0
14 Spread and Compact	cy	634	\$8	\$5,072	317	\$8	\$2,536	0	\$8	\$0
15 Load (soil)	cy	317	\$3	\$951	317	\$3	\$951	0	\$3	\$0
16 Haul/Handling of Soil (on-site)	cy	317	\$3	\$951	634	\$3	\$1,902	0	\$3	\$0
17 Silt Fence (sediment control)	lf	760	\$1.5	\$1,140	760	\$1.5	\$1,140	760	\$1.5	\$1,140
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	8540	\$0.2	\$1,708
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	18	\$16	\$288
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	6	\$21	\$126
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$100,994			\$99,409			\$67,400
33 Waste Characterization	ea	0.0	\$400	\$0	1.0	\$400	\$380	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	476	\$120	\$57,060	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$57,440			\$0
Total Construction and Waste Disposal Costs				\$100,994			\$156,850			\$67,400
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,050	\$5,050	1	\$4,970	\$4,970	1	\$3,370	\$3,370
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,099	\$10,099	1	\$9,941	\$9,941	1	\$6,740	\$6,740
3 Contingency (20% of subtotal construction costs)	ls	1	\$20,199	\$20,199	1	\$19,882	\$19,882	1	\$13,480	\$13,480
Total Construction Services Costs				\$35,348			\$34,793			\$23,590
TOTAL CAPITAL COSTS				\$136,342			\$191,643			\$90,990
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.6	\$21	\$12.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240
Estimated Annual O&M Cost				\$0			\$0			\$253
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$253	\$7,578
O&M Total Expenditure, 30 years				\$0			\$0			\$8,787
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$3,465
Total cost				\$136,342			\$191,643			\$94,455

SWMU 21
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	69	\$8	\$552	69	\$8	\$552	0	\$8	\$0
13 Backfill material	cy	69	\$18	\$1,242	69	\$18	\$1,242	0	\$18	\$0
14 Spread and Compact	cy	138	\$8	\$1,104	69	\$8	\$552	0	\$8	\$0
15 Load (soil)	cy	69	\$3	\$207	69	\$3	\$207	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	69	\$3	\$207	138	\$3	\$414	0	\$3	\$0
17 Silt Fence (sediment control)	lf	460	\$1.5	\$690	460	\$1.5	\$690	460	\$1.5	\$690
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	1859	\$0.2	\$372
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	103	\$16	\$1,648
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	35	\$21	\$735
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$86,761			\$86,416			\$65,704
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$83	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	104	\$120	\$12,420	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$12,503			\$0
Total Construction and Waste Disposal Costs				\$86,761			\$98,919			\$65,704
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,338	\$4,338	1	\$4,321	\$4,321	1	\$3,285	\$3,285
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,676	\$8,676	1	\$8,642	\$8,642	1	\$6,570	\$6,570
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,352	\$17,352	1	\$17,283	\$17,283	1	\$13,141	\$13,141
Total Construction Services Costs				\$30,366			\$30,246			\$22,996
TOTAL CAPITAL COSTS				\$117,127			\$129,164			\$88,700
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	3.5	\$21	\$73.50
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$234
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$234	\$7,005
O&M Total Expenditure, 30 years				\$0			\$0			\$8,122
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$3,203
Total cost				\$117,127			\$129,164			\$91,902

SWMU 21
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.25	\$200	\$50	0.25	\$200	\$50	0.25	\$200	\$50
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,029	\$1,029	1	\$1,029	\$1,029	1	\$1,029	\$1,029
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	13	\$8	\$104	13	\$8	\$104	0	\$8	\$0
13 Backfill material	cy	13	\$18	\$234	13	\$18	\$234	0	\$18	\$0
14 Spread and Compact	cy	26	\$8	\$208	13	\$8	\$104	0	\$8	\$0
15 Load (soil)	cy	13	\$3	\$39	13	\$3	\$39	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	13	\$3	\$39	26	\$3	\$78	0	\$3	\$0
17 Silt Fence (sediment control)	lf	120	\$1.5	\$180	120	\$1.5	\$180	120	\$1.5	\$180
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	327	\$0.2	\$65
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	18	\$16	\$288
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	6	\$21	\$126
28 Seeding	acre	0.25	\$3,200	\$800	0.25	\$3,200	\$800	0.25	\$3,200	\$800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$81,683			\$81,618			\$61,039
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$16	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	20	\$120	\$2,340	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$2,356			\$0
Total Construction and Waste Disposal Costs				\$81,683			\$83,974			\$61,039
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,084	\$4,084	1	\$4,081	\$4,081	1	\$3,052	\$3,052
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,168	\$8,168	1	\$8,162	\$8,162	1	\$6,104	\$6,104
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,337	\$16,337	1	\$16,324	\$16,324	1	\$12,208	\$12,208
Total Construction Services Costs				\$28,589			\$28,566			\$21,364
TOTAL CAPITAL COSTS				\$110,273			\$112,540			\$82,402
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.6	\$21	\$12.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.025	\$3,200	\$80
Estimated Annual O&M Cost				\$0			\$0			\$93
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$93	\$2,778
O&M Total Expenditure, 30 years				\$0			\$0			\$3,221
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$1,270
Total cost				\$110,273			\$112,540			\$83,672

SWMU 22
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	0	\$20,000	\$0	0	\$20,000	\$0	1	\$20,000	\$20,000
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	0	\$25,000	\$0	0	\$25,000	\$0	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.00	\$200	\$0	0.00	\$200	\$0	1.50	\$200	\$300
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	0	\$0	\$0	0	\$0	\$0	1	\$6,176	\$6,176
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
12 Excavation (soil)	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
15 Load (soil)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
16 Haul/Handling of Soils/Staging (on-site)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
17 Silt Fence (sediment control)	lf	0	\$1.5	\$0	0	\$1.5	\$0	1,000	\$1.5	\$1,500
18 Equipment Decontamination	ea	0	\$250	\$0	0	\$250	\$0	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	0	\$1	\$0	0	\$1	\$0	0	\$1	\$0
20 Ambient Air Monitoring	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	60867	\$0.2	\$12,173
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	3382	\$16	\$54,112
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	1128	\$21	\$23,688
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	1.5	\$3,200	\$4,800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	0	\$6,500	\$0	0	\$6,500	\$0	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$75,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	0	\$5,000	\$0	0	\$5,000	\$0	1	\$5,000	\$5,000
Subtotal Construction Costs				\$0		\$0	\$0			\$161,250
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$0	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$0	\$0			\$0
Total Construction and Waste Disposal Costs				\$0		\$0	\$0			\$161,250
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$8,062	\$8,062
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$16,125	\$16,125
3 Contingency (20% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$32,250	\$32,250
Total Construction Services Costs				\$0		\$0	\$0			\$56,437
TOTAL CAPITAL COSTS				\$0		\$0	\$0			\$217,687
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	112.8	\$21	\$2,368.80
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.15	\$3,200	\$480
Estimated Annual O&M Cost				\$0		\$0	\$0			\$2,849
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$2,849	\$85,464
O&M Total Expenditure, 30 years				\$0		\$0	\$0			\$99,095
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0	\$0			\$39,073
Total cost				\$0		\$0	\$0			\$256,760

SWMU 23
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	0	\$20,000	\$0	0	\$20,000	\$0	1	\$20,000	\$20,000
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	0	\$25,000	\$0	0	\$25,000	\$0	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.00	\$200	\$0	0.00	\$200	\$0	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	0	\$0	\$0	0	\$0	\$0	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
12 Excavation (soil)	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
15 Load (soil)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
16 Haul/Handling of Soils/Staging (on-site)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
17 Silt Fence (sediment control)	lf	0	\$1.5	\$0	0	\$1.5	\$0	600	\$1.5	\$900
18 Equipment Decontamination	ea	0	\$250	\$0	0	\$250	\$0	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	0	\$1	\$0	0	\$1	\$0	0	\$1	\$0
20 Ambient Air Monitoring	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	20358	\$0.2	\$4,072
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1131	\$16	\$18,096
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	377	\$21	\$7,917
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	0	\$6,500	\$0	0	\$6,500	\$0	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$75,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	0	\$5,000	\$0	0	\$5,000	\$0	1	\$5,000	\$5,000
Subtotal Construction Costs				\$0		\$0	\$0			\$93,243
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$0	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$0	\$0			\$0
Total Construction and Waste Disposal Costs				\$0		\$0	\$0			\$93,243
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$4,662	\$4,662
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$9,324	\$9,324
3 Contingency (20% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$18,649	\$18,649
Total Construction Services Costs				\$0		\$0	\$0			\$32,635
TOTAL CAPITAL COSTS				\$0		\$0	\$0			\$125,879
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	37.7	\$21	\$791.70
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0	\$0			\$952
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$952	\$28,551
O&M Total Expenditure, 30 years				\$0		\$0	\$0			\$33,105
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0	\$0			\$13,053
Total cost				\$0		\$0	\$0			\$138,932

SWMU 26D
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	280	\$8	\$2,240	280	\$8	\$2,240	0	\$8	\$0
13 Backfill material	cy	280	\$18	\$5,040	280	\$18	\$5,040	0	\$18	\$0
14 Spread and Compact	cy	560	\$8	\$4,480	280	\$8	\$2,240	0	\$8	\$0
15 Load (soil)	cy	280	\$3	\$840	280	\$3	\$840	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	280	\$3	\$840	560	\$3	\$1,680	0	\$3	\$0
17 Silt Fence (sediment control)	lf	440	\$1.5	\$660	440	\$1.5	\$660	440	\$1.5	\$660
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	395	\$0.2	\$79
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	222	\$16	\$3,552
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	74	\$21	\$1,554
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$96,859			\$95,459			\$68,104
33 Waste Characterization	ea	0.0	\$400	\$0	0.8	\$400	\$336	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	420	\$120	\$50,400	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$50,736			\$0
Total Construction and Waste Disposal Costs				\$96,859			\$146,195			\$68,104
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,843	\$4,843	1	\$4,773	\$4,773	1	\$3,405	\$3,405
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,686	\$9,686	1	\$9,546	\$9,546	1	\$6,810	\$6,810
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,372	\$19,372	1	\$19,092	\$19,092	1	\$13,621	\$13,621
Total Construction Services Costs				\$33,901			\$33,411			\$23,836
TOTAL CAPITAL COSTS				\$130,759			\$179,605			\$91,940
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	7.4	\$21	\$155.40
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$315
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$315	\$9,462
O&M Total Expenditure, 30 years				\$0			\$0			\$10,971
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$4,326
Total cost				\$130,759			\$179,605			\$96,266

SWMU 26G and AOC C and D
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	78	\$8	\$624	78	\$8	\$624	0	\$8	\$0	
13 Backfill material	cy	78	\$18	\$1,404	78	\$18	\$1,404	0	\$18	\$0	
14 Spread and Compact	cy	156	\$8	\$1,248	78	\$8	\$624	0	\$8	\$0	
15 Load (soil)	cy	78	\$3	\$234	78	\$3	\$234	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	78	\$3	\$234	156	\$3	\$468	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	640	\$1.5	\$960	640	\$1.5	\$960	640	\$1.5	\$960	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	2109	\$0.2	\$422	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	117	\$16	\$1,872	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	39	\$21	\$819	
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$89,342		\$88,952			\$68,211		
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$94	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	117	\$120	\$14,040	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$14,134			\$0		
Total Construction and Waste Disposal Costs				\$89,342		\$103,086			\$68,211		
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,467	\$4,467	1	\$4,448	\$4,448	1	\$3,411	\$3,411	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,934	\$8,934	1	\$8,895	\$8,895	1	\$6,821	\$6,821	
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,868	\$17,868	1	\$17,790	\$17,790	1	\$13,642	\$13,642	
Total Construction Services Costs				\$31,270		\$31,133			\$23,874		
TOTAL CAPITAL COSTS				\$120,612		\$134,219			\$92,085		
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	3.9	\$21	\$81.90	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240	
Estimated Annual O&M Cost				\$0		\$0			\$322		
Total O&M Cost				years 30	\$0	\$0	30	\$0	30	\$322	\$9,657
O&M Total Expenditure, 30 years				\$0		\$0			\$11,197		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$4,415		
Total cost				\$120,612		\$134,219			\$96,500		

SWMU 26G and AOC C and D
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	60	\$8	\$480	60	\$8	\$480	0	\$8	\$0
13 Backfill material	cy	60	\$18	\$1,080	60	\$18	\$1,080	0	\$18	\$0
14 Spread and Compact	cy	120	\$8	\$960	60	\$8	\$480	0	\$8	\$0
15 Load (soil)	cy	60	\$3	\$180	60	\$3	\$180	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	60	\$3	\$180	120	\$3	\$360	0	\$3	\$0
17 Silt Fence (sediment control)	lf	640	\$1.5	\$960	640	\$1.5	\$960	640	\$1.5	\$960
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	1609	\$0.2	\$322
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	90	\$16	\$1,440
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	30	\$21	\$630
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$88,478			\$88,178			\$67,490
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$72	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	90	\$120	\$10,800	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$10,872			\$0
Total Construction and Waste Disposal Costs				\$88,478			\$99,050			\$67,490
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,424	\$4,424	1	\$4,409	\$4,409	1	\$3,375	\$3,375
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,848	\$8,848	1	\$8,818	\$8,818	1	\$6,749	\$6,749
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,696	\$17,696	1	\$17,636	\$17,636	1	\$13,498	\$13,498
Total Construction Services Costs				\$30,967			\$30,862			\$23,622
TOTAL CAPITAL COSTS				\$119,446			\$129,913			\$91,112
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	3	\$21	\$63.00
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240
Estimated Annual O&M Cost				\$0			\$0			\$303
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$303	\$9,090
O&M Total Expenditure, 30 years				\$0			\$0			\$10,540
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$4,156
Total cost				\$119,446			\$129,913			\$95,267

SWMU 29
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	30	\$8	\$240	30	\$8	\$240	0	\$8	\$0
13 Backfill material	cy	30	\$18	\$540	30	\$18	\$540	0	\$18	\$0
14 Spread and Compact	cy	60	\$8	\$480	30	\$8	\$240	0	\$8	\$0
15 Load (soil)	cy	30	\$3	\$90	30	\$3	\$90	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	30	\$3	\$90	60	\$3	\$180	0	\$3	\$0
17 Silt Fence (sediment control)	lf	200	\$1.5	\$300	200	\$1.5	\$300	200	\$1.5	\$300
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	809	\$0.2	\$162
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	45	\$16	\$720
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	15	\$21	\$315
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$84,499			\$84,349			\$63,756
33 Waste Characterization	ea	0.0	\$400	\$0	0.1	\$400	\$36	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	45	\$120	\$5,400	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$5,436			\$0
Total Construction and Waste Disposal Costs				\$84,499			\$89,785			\$63,756
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,225	\$4,225	1	\$4,217	\$4,217	1	\$3,188	\$3,188
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,450	\$8,450	1	\$8,435	\$8,435	1	\$6,376	\$6,376
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,900	\$16,900	1	\$16,870	\$16,870	1	\$12,751	\$12,751
Total Construction Services Costs				\$29,575			\$29,522			\$22,314
TOTAL CAPITAL COSTS				\$114,073			\$119,307			\$86,070
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.5	\$21	\$31.50
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$192
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$192	\$5,745
O&M Total Expenditure, 30 years				\$0			\$0			\$6,661
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,627
Total cost				\$114,073			\$119,307			\$88,697

SWMU 32
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	0	\$20,000	\$0	0	\$20,000	\$0	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	0	\$25,000	\$0	0	\$25,000	\$0	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.00	\$200	\$0	0.00	\$200	\$0	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	0	\$0	\$0	0	\$0	\$0	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0	
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0	
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0	
15 Load (soil)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
16 Haul/Handling of Soils/Staging (on-site)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	0	\$1.5	\$0	0	\$1.5	\$0	500	\$1.5	\$750	
18 Equipment Decontamination	ea	0	\$250	\$0	0	\$250	\$0	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	0	\$1	\$0	0	\$1	\$0	0	\$1	\$0	
20 Ambient Air Monitoring	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	11556	\$0.2	\$2,311	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	642	\$16	\$10,272	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	214	\$21	\$4,494	
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	0	\$6,500	\$0	0	\$6,500	\$0	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$75,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	0	\$5,000	\$0	0	\$5,000	\$0	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$0		\$0				\$80,086	
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$0	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$0				\$0	
Total Construction and Waste Disposal Costs				\$0		\$0				\$80,086	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$4,004	\$4,004	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$8,009	\$8,009	
3 Contingency (20% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$16,017	\$16,017	
Total Construction Services Costs				\$0		\$0				\$28,030	
TOTAL CAPITAL COSTS				\$0		\$0				\$108,116	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover		Cost captured in wetlands estimate			Cost captured in wetlands estimate						
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	21.4	\$21	\$449.40	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0				\$609	
Total O&M Cost				years 30	\$0	\$0	30	\$0	30	\$609	\$18,282
O&M Total Expenditure, 30 years						\$0				\$21,198	
O&M Present Worth @ 7% discount, 1% inflation, 30 years						\$0				\$8,358	
Total cost						\$0				\$116,474	

SWMU 33
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	228	\$8	\$1,824	228	\$8	\$1,824	0	\$8	\$0
13 Backfill material	cy	228	\$18	\$4,104	228	\$18	\$4,104	0	\$18	\$0
14 Spread and Compact	cy	456	\$8	\$3,648	228	\$8	\$1,824	0	\$8	\$0
15 Load (soil)	cy	228	\$3	\$684	228	\$3	\$684	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	228	\$3	\$684	456	\$3	\$1,368	0	\$3	\$0
17 Silt Fence (sediment control)	lf	560	\$1.5	\$840	560	\$1.5	\$840	560	\$1.5	\$840
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	6151	\$0.2	\$1,230
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	342	\$16	\$5,472
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	114	\$21	\$2,394
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$94,543			\$93,403			\$72,195
33 Waste Characterization	ea	0.0	\$400	\$0	0.7	\$400	\$274	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	342	\$120	\$41,040	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$41,314			\$0
Total Construction and Waste Disposal Costs				\$94,543			\$134,716			\$72,195
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,727	\$4,727	1	\$4,670	\$4,670	1	\$3,610	\$3,610
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,454	\$9,454	1	\$9,340	\$9,340	1	\$7,220	\$7,220
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,909	\$18,909	1	\$18,681	\$18,681	1	\$14,439	\$14,439
Total Construction Services Costs				\$33,090			\$32,691			\$25,268
TOTAL CAPITAL COSTS				\$127,633			\$167,407			\$97,463
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	11.4	\$21	\$239.40
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$399
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$399	\$11,982
O&M Total Expenditure, 30 years				\$0			\$0			\$13,893
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$5,478
Total cost				\$127,633			\$167,407			\$102,941

SWMU 33
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.25	\$200	\$50	0.25	\$200	\$50	0.25	\$200	\$50
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,029	\$1,029	1	\$1,029	\$1,029	1	\$1,029	\$1,029
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	64	\$8	\$512	64	\$8	\$512	0	\$8	\$0
13 Backfill material	cy	64	\$18	\$1,152	64	\$18	\$1,152	0	\$18	\$0
14 Spread and Compact	cy	128	\$8	\$1,024	64	\$8	\$512	0	\$8	\$0
15 Load (soil)	cy	64	\$3	\$192	64	\$3	\$192	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	64	\$3	\$192	128	\$3	\$384	0	\$3	\$0
17 Silt Fence (sediment control)	lf	280	\$1.5	\$420	280	\$1.5	\$420	280	\$1.5	\$420
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	1705	\$0.2	\$341
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	95	\$16	\$1,520
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	32	\$21	\$672
28 Seeding	acre	0.25	\$3,200	\$800	0.25	\$3,200	\$800	0.25	\$3,200	\$800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$84,371		\$84,051			\$63,332	
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$77	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	96	\$120	\$11,520	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$11,597			\$0	
Total Construction and Waste Disposal Costs				\$84,371		\$95,648			\$63,332	
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,219	\$4,219	1	\$4,203	\$4,203	1	\$3,167	\$3,167
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,437	\$8,437	1	\$8,405	\$8,405	1	\$6,333	\$6,333
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,874	\$16,874	1	\$16,810	\$16,810	1	\$12,666	\$12,666
Total Construction Services Costs				\$29,530		\$29,418			\$22,166	
TOTAL CAPITAL COSTS				\$113,901		\$125,066			\$85,499	
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	3.2	\$21	\$67.20
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.025	\$3,200	\$80
Estimated Annual O&M Cost				\$0		\$0			\$147	
Total O&M Cost				\$0		\$0			\$4,416	
O&M Total Expenditure, 30 years				\$0		\$0			\$5,120	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$2,019	
Total cost				\$113,901		\$125,066			\$87,518	

SWMU 35
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	0	\$20,000	\$0	0	\$20,000	\$0	1	\$20,000	\$20,000
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	0	\$25,000	\$0	0	\$25,000	\$0	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.00	\$200	\$0	0.00	\$200	\$0	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	0	\$0	\$0	0	\$0	\$0	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
12 Excavation (soil)	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
15 Load (soil)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
16 Haul/Handling of Soils/Staging (on-site)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
17 Silt Fence (sediment control)	lf	0	\$1.5	\$0	0	\$1.5	\$0	500	\$1.5	\$750
18 Equipment Decontamination	ea	0	\$250	\$0	0	\$250	\$0	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	0	\$1	\$0	0	\$1	\$0	0	\$1	\$0
20 Ambient Air Monitoring	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	10062	\$0.2	\$2,012
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	559	\$16	\$8,944
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	186	\$21	\$3,906
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	0	\$6,500	\$0	0	\$6,500	\$0	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$75,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	0	\$5,000	\$0	0	\$5,000	\$0	1	\$5,000	\$5,000
Subtotal Construction Costs				\$0		\$0	\$0			\$77,871
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$0	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$0	\$0			\$0
Total Construction and Waste Disposal Costs				\$0		\$0	\$0			\$77,871
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$3,894	\$3,894
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$7,787	\$7,787
3 Contingency (20% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$15,574	\$15,574
Total Construction Services Costs				\$0		\$0	\$0			\$27,255
TOTAL CAPITAL COSTS				\$0		\$0	\$0			\$105,126
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	18.6	\$21	\$390.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0	\$0			\$551
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$551	\$16,518
O&M Total Expenditure, 30 years				\$0		\$0	\$0			\$19,153
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0	\$0			\$7,552
Total cost				\$0		\$0	\$0			\$112,678

SWMU 40
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	4	\$8	\$32	4	\$8	\$32	0	\$8	\$0
13 Backfill material	cy	4	\$18	\$72	4	\$18	\$72	0	\$18	\$0
14 Spread and Compact	cy	8	\$8	\$64	4	\$8	\$32	0	\$8	\$0
15 Load (soil)	cy	4	\$3	\$12	4	\$3	\$12	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	4	\$3	\$12	8	\$3	\$24	0	\$3	\$0
17 Silt Fence (sediment control)	lf	120	\$1.5	\$180	120	\$1.5	\$180	120	\$1.5	\$180
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	101	\$0.2	\$20
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	6	\$16	\$96
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	2	\$21	\$42
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$83,131			\$83,111			\$62,597
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$5	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	6	\$120	\$720	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$725			\$0
Total Construction and Waste Disposal Costs				\$83,131			\$83,836			\$62,597
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,157	\$4,157	1	\$4,156	\$4,156	1	\$3,130	\$3,130
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,313	\$8,313	1	\$8,311	\$8,311	1	\$6,260	\$6,260
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,626	\$16,626	1	\$16,622	\$16,622	1	\$12,519	\$12,519
Total Construction Services Costs				\$29,096			\$29,089			\$21,909
TOTAL CAPITAL COSTS				\$112,227			\$112,924			\$84,506
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.2	\$21	\$4.20
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$164
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$164	\$4,926
O&M Total Expenditure, 30 years				\$0			\$0			\$5,712
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,252
Total cost				\$112,227			\$112,924			\$86,758

SWMU 48
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	112	\$8	\$896	112	\$8	\$896	0	\$8	\$0
13 Backfill material	cy	112	\$18	\$2,016	112	\$18	\$2,016	0	\$18	\$0
14 Spread and Compact	cy	224	\$8	\$1,792	112	\$8	\$896	0	\$8	\$0
15 Load (soil)	cy	112	\$3	\$336	112	\$3	\$336	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	112	\$3	\$336	224	\$3	\$672	0	\$3	\$0
17 Silt Fence (sediment control)	lf	440	\$1.5	\$660	440	\$1.5	\$660	440	\$1.5	\$660
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	3026	\$0.2	\$605
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	168	\$16	\$2,688
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	56	\$21	\$1,176
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$88,795			\$88,235			\$67,388
33 Waste Characterization	ea	0.0	\$400	\$0	0.3	\$400	\$134	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	168	\$120	\$20,160	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$20,294			\$0
Total Construction and Waste Disposal Costs				\$88,795			\$108,529			\$67,388
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,440	\$4,440	1	\$4,412	\$4,412	1	\$3,369	\$3,369
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,879	\$8,879	1	\$8,823	\$8,823	1	\$6,739	\$6,739
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,759	\$17,759	1	\$17,647	\$17,647	1	\$13,478	\$13,478
Total Construction Services Costs				\$31,078			\$30,882			\$23,586
TOTAL CAPITAL COSTS				\$119,873			\$139,411			\$90,974
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	5.6	\$21	\$117.60
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$278
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$278	\$8,328
O&M Total Expenditure, 30 years				\$0			\$0			\$9,656
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$3,807
Total cost				\$119,873			\$139,411			\$94,781

SWMU 52
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	1,022	\$8	\$8,176	1,022	\$8	\$8,176	0	\$8	\$0
13 Backfill material	cy	1,022	\$18	\$18,396	1,022	\$18	\$18,396	0	\$18	\$0
14 Spread and Compact	cy	2,044	\$8	\$16,352	1,022	\$8	\$8,176	0	\$8	\$0
15 Load (soil)	cy	1,022	\$3	\$3,066	1,022	\$3	\$3,066	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	1,022	\$3	\$3,066	2,044	\$3	\$6,132	0	\$3	\$0
17 Silt Fence (sediment control)	lf	600	\$1.5	\$900	600	\$1.5	\$900	600	\$1.5	\$900
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	27593	\$0.2	\$5,519
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1533	\$16	\$24,528
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	511	\$21	\$10,731
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$134,594			\$129,484			\$105,816
33 Waste Characterization	ea	0.0	\$400	\$0	3.1	\$400	\$1,226	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,533	\$120	\$183,960	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$185,186			\$0
Total Construction and Waste Disposal Costs				\$134,594			\$314,671			\$105,816
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$6,730	\$6,730	1	\$6,474	\$6,474	1	\$5,291	\$5,291
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$13,459	\$13,459	1	\$12,948	\$12,948	1	\$10,582	\$10,582
3 Contingency (20% of subtotal construction costs)	ls	1	\$26,919	\$26,919	1	\$25,897	\$25,897	1	\$21,163	\$21,163
Total Construction Services Costs				\$47,108			\$45,319			\$37,036
TOTAL CAPITAL COSTS				\$181,702			\$359,990			\$142,851
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	51.1	\$21	\$1,073.10
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240
Estimated Annual O&M Cost				\$0			\$0			\$1,313
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,313	\$39,393
O&M Total Expenditure, 30 years				\$0			\$0			\$45,676
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$18,010
Total cost				\$181,702			\$359,990			\$160,861

SWMU 52
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	515	\$8	\$4,120	515	\$8	\$4,120	0	\$8	\$0
13 Backfill material	cy	515	\$18	\$9,270	515	\$18	\$9,270	0	\$18	\$0
14 Spread and Compact	cy	1,030	\$8	\$8,240	515	\$8	\$4,120	0	\$8	\$0
15 Load (soil)	cy	515	\$3	\$1,545	515	\$3	\$1,545	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	515	\$3	\$1,545	1,030	\$3	\$3,090	0	\$3	\$0
17 Silt Fence (sediment control)	lf	600	\$1.5	\$900	600	\$1.5	\$900	600	\$1.5	\$900
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	13856	\$0.2	\$2,771
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	770	\$16	\$12,320
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	257	\$21	\$5,397
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$110,258			\$107,683			\$85,526
33 Waste Characterization	ea	0.0	\$400	\$0	1.5	\$400	\$618	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	773	\$120	\$92,700	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$93,318			\$0
Total Construction and Waste Disposal Costs				\$110,258			\$201,001			\$85,526
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,513	\$5,513	1	\$5,384	\$5,384	1	\$4,276	\$4,276
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$11,026	\$11,026	1	\$10,768	\$10,768	1	\$8,553	\$8,553
3 Contingency (20% of subtotal construction costs)	ls	1	\$22,052	\$22,052	1	\$21,537	\$21,537	1	\$17,105	\$17,105
Total Construction Services Costs				\$38,590			\$37,689			\$29,934
TOTAL CAPITAL COSTS				\$148,849			\$238,690			\$115,461
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	25.7	\$21	\$539.70
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240
Estimated Annual O&M Cost				\$0			\$0			\$780
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$780	\$23,391
O&M Total Expenditure, 30 years				\$0			\$0			\$27,122
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$10,694
Total cost				\$148,849			\$238,690			\$126,155

SWMU 54
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	3.50	\$200	\$700	3.50	\$200	\$700	3.50	\$200	\$700
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$14,412	\$14,412	1	\$14,412	\$14,412	1	\$14,412	\$14,412
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	2,294	\$8	\$18,352	2,294	\$8	\$18,352	0	\$8	\$0
13 Backfill material	cy	2,294	\$18	\$41,292	2,294	\$18	\$41,292	0	\$18	\$0
14 Spread and Compact	cy	4,588	\$8	\$36,704	2,294	\$8	\$18,352	0	\$8	\$0
15 Load (soil)	cy	2,294	\$3	\$6,882	2,294	\$3	\$6,882	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	2,294	\$3	\$6,882	4,588	\$3	\$13,764	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1720	\$16	\$27,520
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	574	\$21	\$12,054
28 Seeding	acre	3.5	\$3,200	\$11,200	3.5	\$3,200	\$11,200	3.5	\$3,200	\$11,200
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$217,704			\$206,234			\$126,666
33 Waste Characterization	ea	0.0	\$400	\$0	6.9	\$400	\$2,753	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	3,441	\$120	\$412,920	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$415,673			\$0
Total Construction and Waste Disposal Costs				\$217,704			\$621,907			\$126,666
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$10,885	\$10,885	1	\$10,312	\$10,312	1	\$6,333	\$6,333
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$21,770	\$21,770	1	\$20,623	\$20,623	1	\$12,667	\$12,667
3 Contingency (20% of subtotal construction costs)	ls	1	\$43,541	\$43,541	1	\$41,247	\$41,247	1	\$25,333	\$25,333
Total Construction Services Costs				\$76,196			\$72,182			\$44,333
TOTAL CAPITAL COSTS				\$293,900			\$694,088			\$170,999
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	57.4	\$21	\$1,205.40
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.35	\$3,200	\$1,120
Estimated Annual O&M Cost				\$0			\$0			\$2,325
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$2,325	\$69,762
O&M Total Expenditure, 30 years				\$0			\$0			\$80,889
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$31,894
Total cost				\$293,900			\$694,088			\$202,893

SWMU 54
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.27	\$200	\$53	0.27	\$200	\$53	0.27	\$200	\$53
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,101	\$1,101	1	\$1,101	\$1,101	1	\$1,101	\$1,101
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	863	\$8	\$6,904	863	\$8	\$6,904	0	\$8	\$0
13 Backfill material	cy	863	\$18	\$15,534	863	\$18	\$15,534	0	\$18	\$0
14 Spread and Compact	cy	1,726	\$8	\$13,808	863	\$8	\$6,904	0	\$8	\$0
15 Load (soil)	cy	863	\$3	\$2,589	863	\$3	\$2,589	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	863	\$3	\$2,589	1,726	\$3	\$5,178	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	11649	\$0.2	\$2,330
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1720	\$16	\$27,520
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	574	\$21	\$12,054
28 Seeding	acre	0.27	\$3,200	\$856	0.27	\$3,200	\$856	0.27	\$3,200	\$856
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$124,714			\$120,399			\$104,694
33 Waste Characterization	ea	0.0	\$400	\$0	2.6	\$400	\$1,036	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,295	\$120	\$155,340	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$156,376			\$0
Total Construction and Waste Disposal Costs				\$124,714			\$276,775			\$104,694
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$6,236	\$6,236	1	\$6,020	\$6,020	1	\$5,235	\$5,235
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$12,471	\$12,471	1	\$12,040	\$12,040	1	\$10,469	\$10,469
3 Contingency (20% of subtotal construction costs)	ls	1	\$24,943	\$24,943	1	\$24,080	\$24,080	1	\$20,939	\$20,939
Total Construction Services Costs				\$43,650			\$42,140			\$36,643
TOTAL CAPITAL COSTS				\$168,364			\$318,915			\$141,337
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	57.4	\$21	\$1,205.40
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.03	\$3,200	\$86
Estimated Annual O&M Cost				\$0			\$0			\$1,291
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,291	\$38,729
O&M Total Expenditure, 30 years				\$0			\$0			\$44,906
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$17,707
Total cost				\$168,364			\$318,915			\$159,044

APPENDIX F

Soil Corrective Measures Cost Estimates based on Below SCO Delineation Figures

AOC G
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	76	\$8	\$608	76	\$8	\$608	0	\$8	\$0	
13 Backfill material	cy	76	\$18	\$1,368	76	\$18	\$1,368	0	\$18	\$0	
14 Spread and Compact	cy	152	\$8	\$1,216	76	\$8	\$608	0	\$8	\$0	
15 Load (soil)	cy	76	\$3	\$228	76	\$3	\$228	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	76	\$3	\$228	152	\$3	\$456	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	240	\$1.5	\$360	240	\$1.5	\$360	240	\$1.5	\$360	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	1026	\$0.2	\$205	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	57	\$16	\$912	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	19	\$21	\$399	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$86,767		\$86,387		\$64,135			
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$91	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	114	\$120	\$13,680	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$13,771		\$0			
Total Construction and Waste Disposal Costs				\$86,767		\$100,158		\$64,135			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,338	\$4,338	1	\$4,319	\$4,319	1	\$3,207	\$3,207	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,677	\$8,677	1	\$8,639	\$8,639	1	\$6,414	\$6,414	
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,353	\$17,353	1	\$17,277	\$17,277	1	\$12,827	\$12,827	
Total Construction Services Costs				\$30,368		\$30,235		\$22,447			
TOTAL CAPITAL COSTS				\$117,135		\$130,393		\$86,582			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.9	\$21	\$39.90	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$200			
Total O&M Cost				\$0		\$0		\$5,997			
O&M Total Expenditure, 30 years				\$0		\$0		\$6,953			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$2,742			
Total cost				\$117,135		\$130,393		\$89,324			

AOC G
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	ls	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	67	\$8	\$536	67	\$8	\$536	0	\$8	\$0
13 Backfill material	cy	67	\$18	\$1,206	67	\$18	\$1,206	0	\$18	\$0
14 Spread and Compact	cy	134	\$8	\$1,072	67	\$8	\$536	0	\$8	\$0
15 Load (soil)	cy	67	\$3	\$201	67	\$3	\$201	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	67	\$3	\$201	134	\$3	\$402	0	\$3	\$0
17 Silt Fence (sediment control)	lf	240	\$1.5	\$360	240	\$1.5	\$360	240	\$1.5	\$360
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	902	\$0.2	\$180
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	50	\$16	\$802
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	17	\$21	\$351
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$86,335		\$86,000			\$63,952	
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$80	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	101	\$120	\$12,060	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$12,140			\$0	
Total Construction and Waste Disposal Costs				\$86,335		\$98,140			\$63,952	
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,317	\$4,317	1	\$4,300	\$4,300	1	\$3,198	\$3,198
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,633	\$8,633	1	\$8,600	\$8,600	1	\$6,395	\$6,395
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,267	\$17,267	1	\$17,200	\$17,200	1	\$12,790	\$12,790
Total Construction Services Costs				\$30,217		\$30,100			\$22,383	
TOTAL CAPITAL COSTS				\$116,552		\$128,240			\$86,335	
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.7	\$21	\$35.08
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0			\$195	
Total O&M Cost				30	\$0	30	\$0	30	\$195	\$5,852
O&M Total Expenditure, 30 years				\$0		\$0			\$6,786	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$2,676	
Total cost				\$116,552		\$128,240			\$89,011	

AOC H
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	159	\$8	\$1,272	159	\$8	\$1,272	0	\$8	\$0	
13 Backfill material	cy	159	\$18	\$2,862	159	\$18	\$2,862	0	\$18	\$0	
14 Spread and Compact	cy	318	\$8	\$2,544	159	\$8	\$1,272	0	\$8	\$0	
15 Load (soil)	cy	159	\$3	\$477	159	\$3	\$477	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	159	\$3	\$477	318	\$3	\$954	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	280	\$1.5	\$420	280	\$1.5	\$420	280	\$1.5	\$420	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	2079	\$0.2	\$416	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	\$116	\$16	\$1,848	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	\$39	\$21	\$809	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$90,811		\$90,016		\$65,751			
33 Waste Characterization	ea	0.0	\$400	\$0	0.5	\$400	\$191	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	239	\$120	\$28,620	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$28,811		\$0			
Total Construction and Waste Disposal Costs				\$90,811		\$118,827		\$65,751			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,541	\$4,541	1	\$4,501	\$4,501	1	\$3,288	\$3,288	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,081	\$9,081	1	\$9,002	\$9,002	1	\$6,575	\$6,575	
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,162	\$18,162	1	\$18,003	\$18,003	1	\$13,150	\$13,150	
Total Construction Services Costs				\$31,784		\$31,506		\$23,013			
TOTAL CAPITAL COSTS				\$122,595		\$150,332		\$88,764			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	3.9	\$21	\$80.85	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$241			
Total O&M Cost				\$0		\$0		\$7,226			
O&M Total Expenditure, 30 years				\$0		\$0		\$8,378			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$3,303			
Total cost				\$122,595		\$150,332		\$92,067			

AOC H
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	68	\$8	\$544	68	\$8	\$544	0	\$8	\$0
13 Backfill material	cy	68	\$18	\$1,224	68	\$18	\$1,224	0	\$18	\$0
14 Spread and Compact	cy	136	\$8	\$1,088	68	\$8	\$544	0	\$8	\$0
15 Load (soil)	cy	68	\$3	\$204	68	\$3	\$204	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	68	\$3	\$204	136	\$3	\$408	0	\$3	\$0
17 Silt Fence (sediment control)	lf	140	\$1.5	\$210	140	\$1.5	\$210	140	\$1.5	\$210
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	914	\$0.2	\$183
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	51	\$16	\$812
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	17	\$21	\$355
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$86,233		\$85,893			\$63,820	
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$82	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	102	\$120	\$12,240	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$12,322			\$0	
Total Construction and Waste Disposal Costs				\$86,233		\$98,214			\$63,820	
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,312	\$4,312	1	\$4,295	\$4,295	1	\$3,191	\$3,191
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,623	\$8,623	1	\$8,589	\$8,589	1	\$6,382	\$6,382
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,247	\$17,247	1	\$17,179	\$17,179	1	\$12,764	\$12,764
Total Construction Services Costs				\$30,181		\$30,062			\$22,337	
TOTAL CAPITAL COSTS				\$116,414		\$128,277			\$86,156	
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.7	\$21	\$35.54
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0			\$196	
Total O&M Cost				\$0		\$0		30	\$196	\$5,866
O&M Total Expenditure, 30 years				\$0		\$0			\$6,802	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$2,682	
Total cost				\$116,414		\$128,277			\$88,838	

AOC I
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	65	\$8	\$520	65	\$8	\$520	0	\$8	\$0
13 Backfill material	cy	65	\$18	\$1,170	65	\$18	\$1,170	0	\$18	\$0
14 Spread and Compact	cy	130	\$8	\$1,040	65	\$8	\$520	0	\$8	\$0
15 Load (soil)	cy	65	\$3	\$195	65	\$3	\$195	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	65	\$3	\$195	130	\$3	\$390	0	\$3	\$0
17 Silt Fence (sediment control)	lf	280	\$1.5	\$420	280	\$1.5	\$420	280	\$1.5	\$420
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	867	\$0.2	\$173
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	48	\$16	\$771
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	16	\$21	\$337
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$86,299			\$85,974			\$63,960
33 Waste Characterization	ea	0.0	\$400	\$0	0.2	\$400	\$78	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	98	\$120	\$11,700	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$11,778			\$0
Total Construction and Waste Disposal Costs				\$86,299			\$97,752			\$63,960
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,315	\$4,315	1	\$4,299	\$4,299	1	\$3,198	\$3,198
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,630	\$8,630	1	\$8,597	\$8,597	1	\$6,396	\$6,396
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,260	\$17,260	1	\$17,195	\$17,195	1	\$12,792	\$12,792
Total Construction Services Costs				\$30,205			\$30,091			\$22,386
TOTAL CAPITAL COSTS				\$116,503			\$127,843			\$86,346
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1.6	\$21	\$33.72
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$194
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$194	\$5,812
O&M Total Expenditure, 30 years				\$0			\$0			\$6,738
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,657
Total cost				\$116,503			\$127,843			\$89,003

AOC J
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	276	\$8	\$2,208	276	\$8	\$2,208	0	\$8	\$0	
13 Backfill material	cy	276	\$18	\$4,968	276	\$18	\$4,968	0	\$18	\$0	
14 Spread and Compact	cy	552	\$8	\$4,416	276	\$8	\$2,208	0	\$8	\$0	
15 Load (soil)	cy	276	\$3	\$828	276	\$3	\$828	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	276	\$3	\$828	552	\$3	\$1,656	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	260	\$1.5	\$390	260	\$1.5	\$390	260	\$1.5	\$390	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	3716	\$0.2	\$743	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	206	\$16	\$3,303	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	69	\$21	\$1,445	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$96,397		\$95,017		\$68,140			
33 Waste Characterization	ea	0.0	\$400	\$0	0.8	\$400	\$331	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	414	\$120	\$49,680	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$50,011		\$0			
Total Construction and Waste Disposal Costs				\$96,397		\$145,028		\$68,140			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,820	\$4,820	1	\$4,751	\$4,751	1	\$3,407	\$3,407	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,640	\$9,640	1	\$9,502	\$9,502	1	\$6,814	\$6,814	
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,279	\$19,279	1	\$19,003	\$19,003	1	\$13,628	\$13,628	
Total Construction Services Costs				\$33,739		\$33,256		\$23,849			
TOTAL CAPITAL COSTS				\$130,136		\$178,284		\$91,989			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	7	\$21	\$144.51	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$305			
Total O&M Cost				\$0		\$0		\$9,135			
O&M Total Expenditure, 30 years				\$0		\$0		\$10,592			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$4,177			
Total cost				\$130,136		\$178,284		\$96,166			

AOC J
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.25	\$200	\$50	0.25	\$200	\$50	0.25	\$200	\$50
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,029	\$1,029	1	\$1,029	\$1,029	1	\$1,029	\$1,029
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	200	\$8	\$1,600	200	\$8	\$1,600	0	\$8	\$0
13 Backfill material	cy	200	\$18	\$3,600	200	\$18	\$3,600	0	\$18	\$0
14 Spread and Compact	cy	400	\$8	\$3,200	200	\$8	\$1,600	0	\$8	\$0
15 Load (soil)	cy	200	\$3	\$600	200	\$3	\$600	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	200	\$3	\$600	400	\$3	\$1,200	0	\$3	\$0
17 Silt Fence (sediment control)	lf	130	\$1.5	\$195	130	\$1.5	\$195	130	\$1.5	\$195
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	2700	\$0.2	\$540
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	150	\$16	\$2,400
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	50	\$21	\$1,050
28 Seeding	acre	0.25	\$3,200	\$800	0.25	\$3,200	\$800	0.25	\$3,200	\$800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$90,674			\$89,674			\$64,564
33 Waste Characterization	ea	0.0	\$400	\$0	0.6	\$400	\$240	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	300	\$120	\$36,000	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$36,240			\$0
Total Construction and Waste Disposal Costs				\$90,674			\$125,914			\$64,564
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,534	\$4,534	1	\$4,484	\$4,484	1	\$3,228	\$3,228
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,067	\$9,067	1	\$8,967	\$8,967	1	\$6,456	\$6,456
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,135	\$18,135	1	\$17,935	\$17,935	1	\$12,913	\$12,913
Total Construction Services Costs				\$31,736			\$31,386			\$22,598
TOTAL CAPITAL COSTS				\$122,410			\$157,300			\$87,162
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	5	\$21	\$105.00
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.025	\$3,200	\$80
Estimated Annual O&M Cost				\$0			\$0			\$185
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$185	\$5,550
O&M Total Expenditure, 30 years				\$0			\$0			\$6,435
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,537
Total cost				\$122,410			\$157,300			\$89,699

AOC M
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	608	\$8	\$4,864	608	\$8	\$4,864	0	\$8	\$0	
13 Backfill material	cy	608	\$18	\$10,944	608	\$18	\$10,944	0	\$18	\$0	
14 Spread and Compact	cy	1,216	\$8	\$9,728	608	\$8	\$4,864	0	\$8	\$0	
15 Load (soil)	cy	608	\$3	\$1,824	608	\$3	\$1,824	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	608	\$3	\$1,824	1,216	\$3	\$3,648	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	520	\$1.5	\$780	520	\$1.5	\$780	520	\$1.5	\$780	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	8204	\$0.2	\$1,641	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	456	\$16	\$7,292	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	152	\$21	\$3,190	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$112,723		\$109,683		\$75,163			
33 Waste Characterization	ea	0.0	\$400	\$0	1.8	\$400	\$730	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	912	\$120	\$109,440	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$110,170		\$0			
Total Construction and Waste Disposal Costs				\$112,723		\$219,852		\$75,163			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,636	\$5,636	1	\$5,484	\$5,484	1	\$3,758	\$3,758	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$11,272	\$11,272	1	\$10,968	\$10,968	1	\$7,516	\$7,516	
3 Contingency (20% of subtotal construction costs)	ls	1	\$22,545	\$22,545	1	\$21,937	\$21,937	1	\$15,033	\$15,033	
Total Construction Services Costs				\$39,453		\$38,389		\$26,307			
TOTAL CAPITAL COSTS				\$152,176		\$258,241		\$101,469			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	15	\$21	\$319.04	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$479			
Total O&M Cost				\$0		\$0		\$14,371			
O&M Total Expenditure, 30 years				\$0		\$0		\$16,664			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$6,570			
Total cost				\$152,176		\$258,241		\$108,040			

AOC M
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	551	\$8	\$4,408	551	\$8	\$4,408	0	\$8	\$0	
13 Backfill material	cy	551	\$18	\$9,918	551	\$18	\$9,918	0	\$18	\$0	
14 Spread and Compact	cy	1,102	\$8	\$8,816	551	\$8	\$4,408	0	\$8	\$0	
15 Load (soil)	cy	551	\$3	\$1,653	551	\$3	\$1,653	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	551	\$3	\$1,653	1,102	\$3	\$3,306	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	520	\$1.5	\$780	520	\$1.5	\$780	520	\$1.5	\$780	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	7435	\$0.2	\$1,487	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	413	\$16	\$6,609	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	138	\$21	\$2,891	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$109,987		\$107,232		\$74,026			
33 Waste Characterization	ea	0.0	\$400	\$0	1.7	\$400	\$661	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	827	\$120	\$99,180	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$99,841		\$0			
Total Construction and Waste Disposal Costs				\$109,987		\$207,073		\$74,026			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,499	\$5,499	1	\$5,362	\$5,362	1	\$3,701	\$3,701	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,999	\$10,999	1	\$10,723	\$10,723	1	\$7,403	\$7,403	
3 Contingency (20% of subtotal construction costs)	ls	1	\$21,997	\$21,997	1	\$21,446	\$21,446	1	\$14,805	\$14,805	
Total Construction Services Costs				\$38,495		\$37,531		\$25,909			
TOTAL CAPITAL COSTS				\$148,482		\$244,604		\$99,935			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	14	\$21	\$289.14	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$449			
Total O&M Cost				\$0		\$0		\$13,474			
O&M Total Expenditure, 30 years				\$0		\$0		\$15,623			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$6,160			
Total cost				\$148,482		\$244,604		\$106,095			

AOC N
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	631	\$8	\$5,048	631	\$8	\$5,048	0	\$8	\$0
13 Backfill material	cy	631	\$18	\$11,358	631	\$18	\$11,358	0	\$18	\$0
14 Spread and Compact	cy	1,262	\$8	\$10,096	631	\$8	\$5,048	0	\$8	\$0
15 Load (soil)	cy	631	\$3	\$1,893	631	\$3	\$1,893	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	631	\$3	\$1,893	1,262	\$3	\$3,786	0	\$3	\$0
17 Silt Fence (sediment control)	lf	480	\$1.5	\$720	480	\$1.5	\$720	480	\$1.5	\$720
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	8506	\$0.2	\$1,701
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	473	\$16	\$7,561
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	158	\$21	\$3,308
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$113,767			\$110,612			\$75,549
33 Waste Characterization	ea	0.0	\$400	\$0	1.9	\$400	\$757	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	947	\$120	\$113,580	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$114,337			\$0
Total Construction and Waste Disposal Costs				\$113,767			\$224,949			\$75,549
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,688	\$5,688	1	\$5,531	\$5,531	1	\$3,777	\$3,777
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$11,377	\$11,377	1	\$11,061	\$11,061	1	\$7,555	\$7,555
3 Contingency (20% of subtotal construction costs)	ls	1	\$22,753	\$22,753	1	\$22,122	\$22,122	1	\$15,110	\$15,110
Total Construction Services Costs				\$39,818			\$38,714			\$26,442
TOTAL CAPITAL COSTS				\$153,585			\$263,663			\$101,991
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	16	\$21	\$330.79
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$491
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$491	\$14,724
O&M Total Expenditure, 30 years				\$0			\$0			\$17,072
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$6,731
Total cost				\$153,585			\$263,663			\$108,722

AOC N
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	397	\$8	\$3,176	397	\$8	\$3,176	0	\$8	\$0	
13 Backfill material	cy	397	\$18	\$7,146	397	\$18	\$7,146	0	\$18	\$0	
14 Spread and Compact	cy	794	\$8	\$6,352	397	\$8	\$3,176	0	\$8	\$0	
15 Load (soil)	cy	397	\$3	\$1,191	397	\$3	\$1,191	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	397	\$3	\$1,191	794	\$3	\$2,382	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	480	\$1.5	\$720	480	\$1.5	\$720	480	\$1.5	\$720	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	5353	\$0.2	\$1,071	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	297	\$16	\$4,758	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	99	\$21	\$2,082	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$102,535		\$100,550		\$70,889			
33 Waste Characterization	ea	0.0	\$400	\$0	1.2	\$400	\$476	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	596	\$120	\$71,460	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$71,936		\$0			
Total Construction and Waste Disposal Costs				\$102,535		\$172,486		\$70,889			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,127	\$5,127	1	\$5,027	\$5,027	1	\$3,544	\$3,544	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,253	\$10,253	1	\$10,055	\$10,055	1	\$7,089	\$7,089	
3 Contingency (20% of subtotal construction costs)	ls	1	\$20,507	\$20,507	1	\$20,110	\$20,110	1	\$14,178	\$14,178	
Total Construction Services Costs				\$35,887		\$35,192		\$24,811			
TOTAL CAPITAL COSTS				\$138,422		\$207,679		\$95,701			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	10	\$21	\$208.17	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$368			
Total O&M Cost				\$0		\$0		\$11,045			
O&M Total Expenditure, 30 years				\$0		\$0		\$12,807			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$5,050			
Total cost				\$138,422		\$207,679		\$100,750			

AOC N
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	353	\$8	\$2,824	353	\$8	\$2,824	0	\$8	\$0	
13 Backfill material	cy	353	\$18	\$6,354	353	\$18	\$6,354	0	\$18	\$0	
14 Spread and Compact	cy	706	\$8	\$5,648	353	\$8	\$2,824	0	\$8	\$0	
15 Load (soil)	cy	353	\$3	\$1,059	353	\$3	\$1,059	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	353	\$3	\$1,059	706	\$3	\$2,118	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	380	\$1.5	\$570	380	\$1.5	\$570	380	\$1.5	\$570	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	4759	\$0.2	\$952	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	264	\$16	\$4,230	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	88	\$21	\$1,851	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$100,273		\$98,508		\$69,862			
33 Waste Characterization	ea	0.0	\$400	\$0	1.1	\$400	\$424	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	530	\$120	\$63,540	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$63,964		\$0			
Total Construction and Waste Disposal Costs				\$100,273		\$162,471		\$69,862			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,014	\$5,014	1	\$4,925	\$4,925	1	\$3,493	\$3,493	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,027	\$10,027	1	\$9,851	\$9,851	1	\$6,986	\$6,986	
3 Contingency (20% of subtotal construction costs)	ls	1	\$20,055	\$20,055	1	\$19,702	\$19,702	1	\$13,972	\$13,972	
Total Construction Services Costs				\$35,095		\$34,478		\$24,452			
TOTAL CAPITAL COSTS				\$135,368		\$196,949		\$94,313			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	9	\$21	\$185.07	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$345			
Total O&M Cost				\$0		\$0		\$10,352			
O&M Total Expenditure, 30 years				\$0		\$0		\$12,003			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$4,733			
Total cost				\$135,368		\$196,949		\$99,046			

AOC N
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	243	\$8	\$1,944	243	\$8	\$1,944	0	\$8	\$0	
13 Backfill material	cy	243	\$18	\$4,374	243	\$18	\$4,374	0	\$18	\$0	
14 Spread and Compact	cy	486	\$8	\$3,888	243	\$8	\$1,944	0	\$8	\$0	
15 Load (soil)	cy	243	\$3	\$729	243	\$3	\$729	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	243	\$3	\$729	486	\$3	\$1,458	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	380	\$1.5	\$570	380	\$1.5	\$570	380	\$1.5	\$570	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	3277	\$0.2	\$655	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	182	\$16	\$2,913	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	61	\$21	\$1,274	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$94,993		\$93,778		\$67,672			
33 Waste Characterization	ea	0.0	\$400	\$0	0.7	\$400	\$292	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	365	\$120	\$43,740	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$44,032		\$0			
Total Construction and Waste Disposal Costs				\$94,993		\$137,809		\$67,672			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,750	\$4,750	1	\$4,689	\$4,689	1	\$3,384	\$3,384	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,499	\$9,499	1	\$9,378	\$9,378	1	\$6,767	\$6,767	
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,999	\$18,999	1	\$18,756	\$18,756	1	\$13,534	\$13,534	
Total Construction Services Costs				\$33,247		\$32,822		\$23,685			
TOTAL CAPITAL COSTS				\$128,240		\$170,632		\$91,357			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	6	\$21	\$127.44	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$287			
Total O&M Cost				\$0		\$0		\$287		\$8,623	
O&M Total Expenditure, 30 years				\$0		\$0		\$9,999			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$3,942			
Total cost				\$128,240		\$170,632		\$95,299			

SWMU 2 and AOC A
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	1.0	\$200	\$200	1.0	\$200	\$200	1.0	\$200	\$200	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$4,118	\$4,118	1	\$4,118	\$4,118	1	\$4,118	\$4,118	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	1,279	\$8	\$10,232	1,279	\$8	\$10,232	0	\$8	\$0	
13 Backfill material	cy	1,279	\$18	\$23,022	1,279	\$18	\$23,022	0	\$18	\$0	
14 Spread and Compact	cy	2,558	\$8	\$20,464	1,279	\$8	\$10,232	0	\$8	\$0	
15 Load (soil)	cy	1,279	\$3	\$3,837	1,279	\$3	\$3,837	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	1,279	\$3	\$3,837	1,800	\$3	\$5,400	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	1,300	\$1.5	\$1,950	1,300	\$1.5	\$1,950	1,300	\$1.5	\$1,950	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	27328	\$0.2	\$5,466	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1518	\$16	\$24,292	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	506	\$21	\$10,628	
28 Seeding	acre	1.0	\$3,200	\$3,200	1.0	\$3,200	\$3,200	1.0	\$3,200	\$3,200	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$149,860			\$141,191			\$108,352	
33 Waste Characterization	ea	0.0	\$400	\$0	3.8	\$400	\$1,535	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,919	\$120	\$230,220	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0			\$231,755			\$0	
Total Construction and Waste Disposal Costs				\$149,860			\$372,945			\$108,352	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$7,493	\$7,493	1	\$7,060	\$7,060	1	\$5,418	\$5,418	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$14,986	\$14,986	1	\$14,119	\$14,119	1	\$10,835	\$10,835	
3 Contingency (20% of subtotal construction costs)	ls	1	\$29,972	\$29,972	1	\$28,238	\$28,238	1	\$21,670	\$21,670	
Total Construction Services Costs				\$52,451			\$49,417			\$37,923	
TOTAL CAPITAL COSTS											
				\$202,311			\$422,362			\$146,276	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	51	\$21	\$1,062.76	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.1	\$3,200	\$320	
Estimated Annual O&M Cost				\$0			\$0			\$1,383	
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,383	\$41,483	
O&M Total Expenditure, 30 years				\$0			\$0			\$48,099	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$18,965	
Total cost				\$202,311			\$422,362			\$165,241	

SWMU 2 and AOC A
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.3	\$200	\$66	0.3	\$200	\$66	0.3	\$200	\$66
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$9,882	\$9,882	1	\$9,882	\$9,882	1	\$9,882	\$9,882
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	531	\$8	\$4,248	531	\$8	\$4,248	0	\$8	\$0
13 Backfill material	cy	531	\$18	\$9,558	531	\$18	\$9,558	0	\$18	\$0
14 Spread and Compact	cy	1,062	\$8	\$8,496	531	\$8	\$4,248	0	\$8	\$0
15 Load (soil)	cy	531	\$3	\$1,593	531	\$3	\$1,593	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	531	\$3	\$1,593	1,062	\$3	\$3,186	0	\$3	\$0
17 Silt Fence (sediment control)	lf	460	\$1.5	\$690	460	\$1.5	\$690	460	\$1.5	\$690
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	7144	\$0.2	\$1,429
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	397	\$16	\$6,350
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	132	\$21	\$2,778
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$116,726			\$114,071			\$81,296
33 Waste Characterization	ea	0.0	\$400	\$0	1.6	\$400	\$637	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	797	\$120	\$95,580	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$96,217			\$0
Total Construction and Waste Disposal Costs				\$116,726			\$210,289			\$81,296
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,836	\$5,836	1	\$5,704	\$5,704	1	\$4,065	\$4,065
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$11,673	\$11,673	1	\$11,407	\$11,407	1	\$8,130	\$8,130
3 Contingency (20% of subtotal construction costs)	ls	1	\$23,345	\$23,345	1	\$22,814	\$22,814	1	\$16,259	\$16,259
Total Construction Services Costs				\$40,854			\$39,925			\$28,453
TOTAL CAPITAL COSTS				\$157,581			\$250,214			\$109,749
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	13	\$21	\$277.82
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$438
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$438	\$13,135
O&M Total Expenditure, 30 years				\$0			\$0			\$15,230
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$6,005
Total cost				\$157,581			\$250,214			\$115,754

SWMU 3 and 5
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.5	\$200	\$300	1.5	\$200	\$300	1.5	\$200	\$300
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$6,176	\$6,176	1	\$6,176	\$6,176	1	\$6,176	\$6,176
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	868	\$8	\$6,944	868	\$8	\$6,944	0	\$8	\$0
13 Backfill material	cy	868	\$18	\$15,624	868	\$18	\$15,624	0	\$18	\$0
14 Spread and Compact	cy	1,736	\$8	\$13,888	868	\$8	\$6,944	0	\$8	\$0
15 Load (soil)	cy	868	\$3	\$2,604	868	\$3	\$2,604	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	868	\$3	\$2,604	1,736	\$3	\$5,208	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,000	\$1.5	\$1,500	1,000	\$1.5	\$1,500	1,000	\$1.5	\$1,500
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheeptiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	18153	\$0.2	\$3,631
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1009	\$16	\$16,136
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	336	\$21	\$7,060
28 Seeding	acre	1.5	\$3,200	\$4,800	1.5	\$3,200	\$4,800	1.5	\$3,200	\$4,800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$133,440		\$129,100			\$98,103	
33 Waste Characterization	ea	0.0	\$400	\$0	2.6	\$400	\$1,042	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,302	\$120	\$156,240	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$157,282			\$0	
Total Construction and Waste Disposal Costs				\$133,440		\$286,382			\$98,103	
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$6,672	\$6,672	1	\$6,455	\$6,455	1	\$4,905	\$4,905
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$13,344	\$13,344	1	\$12,910	\$12,910	1	\$9,810	\$9,810
3 Contingency (20% of subtotal construction costs)	ls	1	\$26,688	\$26,688	1	\$25,820	\$25,820	1	\$19,621	\$19,621
Total Construction Services Costs				\$46,704		\$45,185			\$34,336	
TOTAL CAPITAL COSTS				\$180,145		\$331,567			\$132,438	
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	34	\$21	\$705.95
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.15	\$3,200	\$480
Estimated Annual O&M Cost				\$0		\$0			\$1,186	
Total O&M Cost				\$0	30	\$0	30	\$0	30	\$1,186
O&M Total Expenditure, 30 years				\$0		\$0			\$41,253	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$16,266	
Total cost				\$180,145		\$331,567			\$148,705	

SWMU 3 and 5
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.5	\$200	\$100	0.5	\$200	\$100	0.5	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	506	\$8	\$4,048	506	\$8	\$4,048	0	\$8	\$0	
13 Backfill material	cy	506	\$18	\$9,108	506	\$18	\$9,108	0	\$18	\$0	
14 Spread and Compact	cy	1,012	\$8	\$8,096	506	\$8	\$4,048	0	\$8	\$0	
15 Load (soil)	cy	506	\$3	\$1,518	506	\$3	\$1,518	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	506	\$3	\$1,518	1,012	\$3	\$3,036	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	360	\$1.5	\$540	360	\$1.5	\$540	360	\$1.5	\$540	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	8363	\$0.2	\$1,673	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	465	\$16	\$7,434	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	155	\$21	\$3,252	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$107,587			\$105,057			\$75,157	
33 Waste Characterization	ea	0.0	\$400	\$0	1.5	\$400	\$607	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	759	\$120	\$91,080	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0			\$91,687			\$0	
Total Construction and Waste Disposal Costs				\$107,587			\$196,744			\$75,157	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,379	\$5,379	1	\$5,253	\$5,253	1	\$3,758	\$3,758	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,759	\$10,759	1	\$10,506	\$10,506	1	\$7,516	\$7,516	
3 Contingency (20% of subtotal construction costs)	ls	1	\$21,517	\$21,517	1	\$21,011	\$21,011	1	\$15,031	\$15,031	
Total Construction Services Costs				\$37,655			\$36,770			\$26,305	
TOTAL CAPITAL COSTS				\$145,242			\$233,514			\$101,463	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	15	\$21	\$325.23	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0			\$0			\$485	
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$485	\$14,557	
O&M Total Expenditure, 30 years				\$0			\$0			\$16,879	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$6,655	
Total cost				\$145,242			\$233,514			\$108,118	

SWMU 4
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	523	\$8	\$4,184	523	\$8	\$4,184	0	\$8	\$0	
13 Backfill material	cy	523	\$18	\$9,414	523	\$18	\$9,414	0	\$18	\$0	
14 Spread and Compact	cy	1,046	\$8	\$8,368	523	\$8	\$4,184	0	\$8	\$0	
15 Load (soil)	cy	523	\$3	\$1,569	523	\$3	\$1,569	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	523	\$3	\$1,569	1,046	\$3	\$3,138	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	680	\$1.5	\$1,020	680	\$1.5	\$1,020	680	\$1.5	\$1,020	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	11029	\$0.2	\$2,206	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	613	\$16	\$9,804	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	204	\$21	\$4,289	
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$110,762			\$108,147			\$81,457	
33 Waste Characterization	ea	0.0	\$400	\$0	1.6	\$400	\$628	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	785	\$120	\$94,140	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0			\$94,768			\$0	
Total Construction and Waste Disposal Costs				\$110,762			\$202,915			\$81,457	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,538	\$5,538	1	\$5,407	\$5,407	1	\$4,073	\$4,073	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$11,076	\$11,076	1	\$10,815	\$10,815	1	\$8,146	\$8,146	
3 Contingency (20% of subtotal construction costs)	ls	1	\$22,152	\$22,152	1	\$21,629	\$21,629	1	\$16,291	\$16,291	
Total Construction Services Costs				\$38,767			\$37,852			\$28,510	
TOTAL CAPITAL COSTS				\$149,529			\$240,766			\$109,966	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	20	\$21	\$428.91	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240	
Estimated Annual O&M Cost				\$0			\$0			\$669	
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$669	\$20,067	
O&M Total Expenditure, 30 years				\$0			\$0			\$23,268	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$9,174	
Total cost				\$149,529			\$240,766			\$119,141	

SWMU 4
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	194	\$8	\$1,552	194	\$8	\$1,552	0	\$8	\$0
13 Backfill material	cy	194	\$18	\$3,492	194	\$18	\$3,492	0	\$18	\$0
14 Spread and Compact	cy	388	\$8	\$3,104	194	\$8	\$1,552	0	\$8	\$0
15 Load (soil)	cy	194	\$3	\$582	194	\$3	\$582	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	194	\$3	\$582	388	\$3	\$1,164	0	\$3	\$0
17 Silt Fence (sediment control)	lf	500	\$1.5	\$750	500	\$1.5	\$750	500	\$1.5	\$750
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	5244	\$0.2	\$1,049
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	291	\$16	\$4,661
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	97	\$21	\$2,039
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$92,821			\$91,851			\$70,758
33 Waste Characterization	ea	0.0	\$400	\$0	0.6	\$400	\$233	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	291	\$120	\$34,920	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$35,153			\$0
Total Construction and Waste Disposal Costs				\$92,821			\$127,004			\$70,758
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,641	\$4,641	1	\$4,593	\$4,593	1	\$3,538	\$3,538
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,282	\$9,282	1	\$9,185	\$9,185	1	\$7,076	\$7,076
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,564	\$18,564	1	\$18,370	\$18,370	1	\$14,152	\$14,152
Total Construction Services Costs				\$32,487			\$32,148			\$24,765
TOTAL CAPITAL COSTS				\$125,308			\$159,151			\$95,524
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	10	\$21	\$203.93
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$364
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$364	\$10,918
O&M Total Expenditure, 30 years				\$0			\$0			\$12,659
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$4,992
Total cost				\$125,308			\$159,151			\$100,515

SWMU 6, 7, 8, 32 and AOC B
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.75	\$200	\$350	1.75	\$200	\$350	1.75	\$200	\$350
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$7,206	\$7,206	1	\$7,206	\$7,206	1	\$7,206	\$7,206
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	1,453	\$8	\$11,624	1,453	\$8	\$11,624	0	\$8	\$0
13 Backfill material	cy	1,453	\$18	\$26,154	1,453	\$18	\$26,154	0	\$18	\$0
14 Spread and Compact	cy	2,906	\$8	\$23,248	1,453	\$8	\$11,624	0	\$8	\$0
15 Load (soil)	cy	1,453	\$3	\$4,359	1,453	\$3	\$4,359	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	1,453	\$3	\$4,359	2,906	\$3	\$8,718	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,040	\$1.5	\$1,560	1,040	\$1.5	\$1,560	1,040	\$1.5	\$1,560
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	34943	\$0.2	\$6,989
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1941	\$16	\$31,060
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	647	\$21	\$13,589
28 Seeding	acre	1.75	\$3,200	\$5,600	1.75	\$3,200	\$5,600	1.75	\$3,200	\$5,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$163,460			\$156,195			\$124,854
33 Waste Characterization	ea	0.0	\$400	\$0	4.4	\$400	\$1,744	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	2,180	\$120	\$261,540	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$263,284			\$0
Total Construction and Waste Disposal Costs				\$163,460			\$419,478			\$124,854
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$8,173	\$8,173	1	\$7,810	\$7,810	1	\$6,243	\$6,243
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$16,346	\$16,346	1	\$15,619	\$15,619	1	\$12,485	\$12,485
3 Contingency (20% of subtotal construction costs)	ls	1	\$32,692	\$32,692	1	\$31,239	\$31,239	1	\$24,971	\$24,971
Total Construction Services Costs				\$57,211			\$54,668			\$43,699
TOTAL CAPITAL COSTS				\$220,671			\$474,147			\$168,553
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	65	\$21	\$1,358.89
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.175	\$3,200	\$560
Estimated Annual O&M Cost				\$0			\$0			\$1,919
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,919	\$57,567
O&M Total Expenditure, 30 years				\$0			\$0			\$66,749
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$26,319
Total cost				\$220,671			\$474,147			\$194,872

SWMU 6, 7, 8, 32 and AOC B
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.00	\$200	\$200	1.00	\$200	\$200	1.00	\$200	\$200
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$4,118	\$4,118	1	\$4,118	\$4,118	1	\$4,118	\$4,118
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	683	\$8	\$5,464	683	\$8	\$5,464	0	\$8	\$0
13 Backfill material	cy	683	\$18	\$12,294	683	\$18	\$12,294	0	\$18	\$0
14 Spread and Compact	cy	1,366	\$8	\$10,928	683	\$8	\$5,464	0	\$8	\$0
15 Load (soil)	cy	683	\$3	\$2,049	683	\$3	\$2,049	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	683	\$3	\$2,049	1,366	\$3	\$4,098	0	\$3	\$0
17 Silt Fence (sediment control)	lf	760	\$1.5	\$1,140	760	\$1.5	\$1,140	760	\$1.5	\$1,140
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	21580	\$0.2	\$4,316
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1199	\$16	\$19,182
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	400	\$21	\$8,392
28 Seeding	acre	1	\$3,200	\$3,200	1	\$3,200	\$3,200	1	\$3,200	\$3,200
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$120,442		\$117,027		\$99,048		
33 Waste Characterization	ea	0.0	\$400	\$0	2.0	\$400	\$820	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,025	\$120	\$122,940	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$123,760		\$0		
Total Construction and Waste Disposal Costs				\$120,442		\$240,786		\$99,048		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$6,022	\$6,022	1	\$5,851	\$5,851	1	\$4,952	\$4,952
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$12,044	\$12,044	1	\$11,703	\$11,703	1	\$9,905	\$9,905
3 Contingency (20% of subtotal construction costs)	ls	1	\$24,088	\$24,088	1	\$23,405	\$23,405	1	\$19,810	\$19,810
Total Construction Services Costs				\$42,155		\$40,959		\$34,667		
TOTAL CAPITAL COSTS				\$162,596		\$281,746		\$133,715		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	40	\$21	\$839.22
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.1	\$3,200	\$320
Estimated Annual O&M Cost				\$0		\$0		\$1,159		
Total O&M Cost				\$0		\$0		\$34,777		
O&M Total Expenditure, 30 years				\$0		\$0		\$40,323		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$15,899		
Total cost				\$162,596		\$281,746		\$149,614		

SWMU 9
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	40	\$8	\$320	40	\$8	\$320	0	\$8	\$0
13 Backfill material	cy	40	\$18	\$720	40	\$18	\$720	0	\$18	\$0
14 Spread and Compact	cy	80	\$8	\$640	40	\$8	\$320	0	\$8	\$0
15 Load (soil)	cy	40	\$3	\$120	40	\$3	\$120	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	40	\$3	\$120	80	\$3	\$240	0	\$3	\$0
17 Silt Fence (sediment control)	lf	180	\$1.5	\$270	180	\$1.5	\$270	180	\$1.5	\$270
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	867	\$0.2	\$173
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	48	\$16	\$771
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	16	\$21	\$337
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$84,949			\$84,749			\$63,810
33 Waste Characterization	ea	0.0	\$400	\$0	0.1	\$400	\$48	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	60	\$120	\$7,200	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$7,248			\$0
Total Construction and Waste Disposal Costs				\$84,949			\$91,997			\$63,810
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,247	\$4,247	1	\$4,237	\$4,237	1	\$3,191	\$3,191
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,495	\$8,495	1	\$8,475	\$8,475	1	\$6,381	\$6,381
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,990	\$16,990	1	\$16,950	\$16,950	1	\$12,762	\$12,762
Total Construction Services Costs				\$29,732			\$29,662			\$22,334
TOTAL CAPITAL COSTS										
				\$114,681			\$121,659			\$86,144
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	2	\$21	\$33.72
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$194
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$194	\$5,812
O&M Total Expenditure, 30 years				\$0			\$0			\$6,738
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,657
Total cost				\$114,681			\$121,659			\$88,801

SWMU 10
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	1.00	\$200	\$200	1.00	\$200	\$200	1.00	\$200	\$200
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$4,118	\$4,118	1	\$4,118	\$4,118	1	\$4,118	\$4,118
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	434	\$8	\$3,472	434	\$8	\$3,472	0	\$8	\$0
13 Backfill material	cy	434	\$18	\$7,812	434	\$18	\$7,812	0	\$18	\$0
14 Spread and Compact	cy	868	\$8	\$6,944	434	\$8	\$3,472	0	\$8	\$0
15 Load (soil)	cy	434	\$3	\$1,302	434	\$3	\$1,302	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	434	\$3	\$1,302	868	\$3	\$2,604	0	\$3	\$0
17 Silt Fence (sediment control)	lf	820	\$1.5	\$1,230	820	\$1.5	\$1,230	820	\$1.5	\$1,230
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	11722	\$0.2	\$2,344
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	651	\$16	\$10,420
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	217	\$21	\$4,559
28 Seeding	acre	1	\$3,200	\$3,200	1	\$3,200	\$3,200	1	\$3,200	\$3,200
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$108,580		\$106,410		\$84,570		
33 Waste Characterization	ea	0.0	\$400	\$0	1.3	\$400	\$521	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	651	\$120	\$78,120	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$78,641		\$0		
Total Construction and Waste Disposal Costs				\$108,580		\$185,050		\$84,570		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,429	\$5,429	1	\$5,320	\$5,320	1	\$4,229	\$4,229
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,858	\$10,858	1	\$10,641	\$10,641	1	\$8,457	\$8,457
3 Contingency (20% of subtotal construction costs)	ls	1	\$21,716	\$21,716	1	\$21,282	\$21,282	1	\$16,914	\$16,914
Total Construction Services Costs				\$38,003		\$37,243		\$29,600		
TOTAL CAPITAL COSTS				\$146,583		\$222,294		\$114,170		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	22	\$21	\$455.86
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.1	\$3,200	\$320
Estimated Annual O&M Cost				\$0		\$0		\$776		
Total O&M Cost				\$0		\$0		\$23,276		
O&M Total Expenditure, 30 years				\$0		\$0		\$26,988		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$10,641		
Total cost				\$146,583		\$222,294		\$124,811		

SWMU 10
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	249	\$8	\$1,992	249	\$8	\$1,992	0	\$8	\$0
13 Backfill material	cy	249	\$18	\$4,482	249	\$18	\$4,482	0	\$18	\$0
14 Spread and Compact	cy	498	\$8	\$3,984	249	\$8	\$1,992	0	\$8	\$0
15 Load (soil)	cy	249	\$3	\$747	249	\$3	\$747	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	249	\$3	\$747	498	\$3	\$1,494	0	\$3	\$0
17 Silt Fence (sediment control)	lf	600	\$1.5	\$900	600	\$1.5	\$900	600	\$1.5	\$900
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	6705	\$0.2	\$1,341
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	373	\$16	\$5,960
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	124	\$21	\$2,608
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$95,611		\$94,366		\$73,067		
33 Waste Characterization	ea	0.0	\$400	\$0	0.7	\$400	\$299	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	374	\$120	\$44,820	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$45,119		\$0		
Total Construction and Waste Disposal Costs				\$95,611		\$139,485		\$73,067		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,781	\$4,781	1	\$4,718	\$4,718	1	\$3,653	\$3,653
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,561	\$9,561	1	\$9,437	\$9,437	1	\$7,307	\$7,307
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,122	\$19,122	1	\$18,873	\$18,873	1	\$14,613	\$14,613
Total Construction Services Costs				\$33,464		\$33,028		\$25,574		
TOTAL CAPITAL COSTS				\$129,075		\$172,513		\$98,641		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	12.4	\$21	\$260.75
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0		\$421		
Total O&M Cost				\$0		\$0		\$12,623		
O&M Total Expenditure, 30 years				\$0		\$0		\$14,636		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$5,771		
Total cost				\$129,075		\$172,513		\$104,412		

SWMU 11
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	20	\$8	\$160	20	\$8	\$160	0	\$8	\$0
13 Backfill material	cy	20	\$18	\$360	20	\$18	\$360	0	\$18	\$0
14 Spread and Compact	cy	40	\$8	\$320	20	\$8	\$160	0	\$8	\$0
15 Load (soil)	cy	20	\$3	\$60	20	\$3	\$60	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	20	\$3	\$60	40	\$3	\$120	0	\$3	\$0
17 Silt Fence (sediment control)	lf	240	\$1.5	\$360	240	\$1.5	\$360	240	\$1.5	\$360
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	538	\$0.2	\$108
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	30	\$16	\$478
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	10	\$21	\$209
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$84,079			\$83,979			\$63,414
33 Waste Characterization	ea	0.0	\$400	\$0	0.1	\$400	\$24	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	30	\$120	\$3,600	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$3,624			\$0
Total Construction and Waste Disposal Costs				\$84,079			\$87,603			\$63,414
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,204	\$4,204	1	\$4,199	\$4,199	1	\$3,171	\$3,171
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,408	\$8,408	1	\$8,398	\$8,398	1	\$6,341	\$6,341
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,816	\$16,816	1	\$16,796	\$16,796	1	\$12,683	\$12,683
Total Construction Services Costs				\$29,428			\$29,393			\$22,195
TOTAL CAPITAL COSTS										
				\$113,506			\$116,995			\$85,609
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover										
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	1	\$21	\$20.92
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$181
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$181	\$5,428
O&M Total Expenditure, 30 years				\$0			\$0			\$6,293
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$2,481
Total cost				\$113,506			\$116,995			\$88,090

SWMU 11
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	8	\$8	\$64	8	\$8	\$64	0	\$8	\$0
13 Backfill material	cy	8	\$18	\$144	8	\$18	\$144	0	\$18	\$0
14 Spread and Compact	cy	16	\$8	\$128	8	\$8	\$64	0	\$8	\$0
15 Load (soil)	cy	8	\$3	\$24	8	\$3	\$24	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	8	\$3	\$24	16	\$3	\$48	0	\$3	\$0
17 Silt Fence (sediment control)	lf	80	\$1.5	\$120	80	\$1.5	\$120	80	\$1.5	\$120
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	207	\$0.2	\$41
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	12	\$16	\$184
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	4	\$21	\$81
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$83,263		\$83,223		\$62,685		
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$10	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	12	\$120	\$1,440	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$1,450		\$0		
Total Construction and Waste Disposal Costs				\$83,263		\$84,672		\$62,685		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,163	\$4,163	1	\$4,161	\$4,161	1	\$3,134	\$3,134
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,326	\$8,326	1	\$8,322	\$8,322	1	\$6,268	\$6,268
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,653	\$16,653	1	\$16,645	\$16,645	1	\$12,537	\$12,537
Total Construction Services Costs				\$29,142		\$29,128		\$21,940		
TOTAL CAPITAL COSTS				\$112,405		\$113,800		\$84,624		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.4	\$21	\$8.05
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0		\$168		
Total O&M Cost				\$0		\$0		\$5,042		
O&M Total Expenditure, 30 years				\$0		\$0		\$5,846		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$2,305		
Total cost				\$112,405		\$113,800		\$86,929		

SWMU 13
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	575	\$8	\$4,600	575	\$8	\$4,600	0	\$8	\$0	
13 Backfill material	cy	575	\$18	\$10,350	575	\$18	\$10,350	0	\$18	\$0	
14 Spread and Compact	cy	1,150	\$8	\$9,200	575	\$8	\$4,600	0	\$8	\$0	
15 Load (soil)	cy	575	\$3	\$1,725	575	\$3	\$1,725	0	\$3	\$0	
16 Haul/Handling of Soil (on-site)	cy	575	\$3	\$1,725	1,150	\$3	\$3,450	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	760	\$1.5	\$1,140	760	\$1.5	\$1,140	760	\$1.5	\$1,140	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	15534	\$0.2	\$3,107	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	863	\$16	\$13,808	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	288	\$21	\$6,041	
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$113,378		\$110,503		\$88,234			
33 Waste Characterization	ea	0.0	\$400	\$0	1.7	\$400	\$690	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	863	\$120	\$103,500	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$104,190		\$0			
Total Construction and Waste Disposal Costs				\$113,378		\$214,693		\$88,234			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,669	\$5,669	1	\$5,525	\$5,525	1	\$4,412	\$4,412	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$11,338	\$11,338	1	\$11,050	\$11,050	1	\$8,823	\$8,823	
3 Contingency (20% of subtotal construction costs)	ls	1	\$22,676	\$22,676	1	\$22,101	\$22,101	1	\$17,647	\$17,647	
Total Construction Services Costs				\$39,682		\$38,676		\$30,882			
TOTAL CAPITAL COSTS				\$153,061		\$253,369		\$119,116			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	29	\$21	\$604.10	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240	
Estimated Annual O&M Cost				\$0		\$0		\$844			
Total O&M Cost				\$0		\$0		\$844		\$25,323	
O&M Total Expenditure, 30 years				\$0		\$0		\$29,362			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$11,577			
Total cost				\$153,061		\$253,369		\$130,693			

SWMU 21
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	302	\$8	\$2,416	302	\$8	\$2,416	0	\$8	\$0	
13 Backfill material	cy	302	\$18	\$5,436	302	\$18	\$5,436	0	\$18	\$0	
14 Spread and Compact	cy	604	\$8	\$4,832	302	\$8	\$2,416	0	\$8	\$0	
15 Load (soil)	cy	302	\$3	\$906	302	\$3	\$906	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	302	\$3	\$906	604	\$3	\$1,812	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	460	\$1.5	\$690	460	\$1.5	\$690	460	\$1.5	\$690	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	8152	\$0.2	\$1,630	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	453	\$16	\$7,246	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	151	\$21	\$3,170	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs											
				\$97,945		\$96,435		\$74,996			
33 Waste Characterization	ea	0.0	\$400	\$0	0.9	\$400	\$362	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	453	\$120	\$54,360	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost							\$54,722			\$0	
Total Construction and Waste Disposal Costs				\$97,945		\$151,157		\$74,996			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,897	\$4,897	1	\$4,822	\$4,822	1	\$3,750	\$3,750	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,794	\$9,794	1	\$9,643	\$9,643	1	\$7,500	\$7,500	
3 Contingency (20% of subtotal construction costs)	ls	1	\$19,589	\$19,589	1	\$19,287	\$19,287	1	\$14,999	\$14,999	
Total Construction Services Costs				\$34,281		\$33,752		\$26,248			
TOTAL CAPITAL COSTS				\$132,226		\$184,909		\$101,244			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	15	\$21	\$317.02	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0		\$477			
Total O&M Cost				\$0		\$0		\$14,311			
O&M Total Expenditure, 30 years				\$0		\$0		\$16,593			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$6,543			
Total cost				\$132,226		\$184,909		\$107,787			

SWMU 21
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.25	\$200	\$50	0.25	\$200	\$50	0.25	\$200	\$50
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,029	\$1,029	1	\$1,029	\$1,029	1	\$1,029	\$1,029
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	43	\$8	\$344	43	\$8	\$344	0	\$8	\$0
13 Backfill material	cy	43	\$18	\$774	43	\$18	\$774	0	\$18	\$0
14 Spread and Compact	cy	86	\$8	\$688	43	\$8	\$344	0	\$8	\$0
15 Load (soil)	cy	43	\$3	\$129	43	\$3	\$129	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	43	\$3	\$129	86	\$3	\$258	0	\$3	\$0
17 Silt Fence (sediment control)	lf	120	\$1.5	\$180	120	\$1.5	\$180	120	\$1.5	\$180
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	1154	\$0.2	\$231
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	64	\$16	\$1,026
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	21	\$21	\$449
28 Seeding	acre	0.25	\$3,200	\$800	0.25	\$3,200	\$800	0.25	\$3,200	\$800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$83,123		\$82,908		\$62,265		
33 Waste Characterization	ea	0.0	\$400	\$0	0.1	\$400	\$52	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	65	\$120	\$7,740	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$7,792		\$0		
Total Construction and Waste Disposal Costs				\$83,123		\$90,700		\$62,265		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,156	\$4,156	1	\$4,145	\$4,145	1	\$3,113	\$3,113
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,312	\$8,312	1	\$8,291	\$8,291	1	\$6,226	\$6,226
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,625	\$16,625	1	\$16,582	\$16,582	1	\$12,453	\$12,453
Total Construction Services Costs				\$29,093		\$29,018		\$21,793		
TOTAL CAPITAL COSTS				\$112,217		\$119,718		\$84,057		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	2	\$21	\$44.88
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.025	\$3,200	\$80
Estimated Annual O&M Cost				\$0		\$0		\$125		
Total O&M Cost				\$0		\$0		\$3,746		
O&M Total Expenditure, 30 years				\$0		\$0		\$4,344		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$1,713		
Total cost				\$112,217		\$119,718		\$85,770		

SWMU 22
Planning Level Engineering Estimate for Remediation
Commercial or Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	0	\$20,000	\$0	0	\$20,000	\$0	1	\$20,000	\$20,000
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	0	\$25,000	\$0	0	\$25,000	\$0	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.00	\$200	\$0	0.00	\$200	\$0	1.50	\$200	\$300
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	0	\$0	\$0	0	\$0	\$0	1	\$6,176	\$6,176
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
12 Excavation (soil)	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
15 Load (soil)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
16 Haul/Handling of Soils/Staging (on-site)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
17 Silt Fence (sediment control)	lf	0	\$1.5	\$0	0	\$1.5	\$0	1,000	\$1.5	\$1,500
18 Equipment Decontamination	ea	0	\$250	\$0	0	\$250	\$0	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	0	\$1	\$0	0	\$1	\$0	0	\$1	\$0
20 Ambient Air Monitoring	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	60867	\$0.2	\$12,173
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	3382	\$16	\$54,104
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	1127	\$21	\$23,671
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	1.5	\$3,200	\$4,800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	0	\$6,500	\$0	0	\$6,500	\$0	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$75,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	0	\$5,000	\$0	0	\$5,000	\$0	1	\$5,000	\$5,000
Subtotal Construction Costs				\$0		\$0	\$0			\$161,224
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$0	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$0	\$0			\$0
Total Construction and Waste Disposal Costs				\$0		\$0	\$0			\$161,224
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$8,061	\$8,061
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$16,122	\$16,122
3 Contingency (20% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$32,245	\$32,245
Total Construction Services Costs				\$0		\$0	\$0			\$56,429
TOTAL CAPITAL COSTS				\$0		\$0	\$0			\$217,653
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate		Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	113	\$21	\$2,367.05
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.15	\$3,200	\$480
Estimated Annual O&M Cost				\$0		\$0	\$0			\$2,847
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$2,847	\$85,412
O&M Total Expenditure, 30 years				\$0		\$0	\$0			\$99,034
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0	\$0			\$39,049
Total cost				\$0		\$0	\$0			\$256,702

SWMU 26D
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	404	\$8	\$3,232	404	\$8	\$3,232	0	\$8	\$0
13 Backfill material	cy	404	\$18	\$7,272	404	\$18	\$7,272	0	\$18	\$0
14 Spread and Compact	cy	808	\$8	\$6,464	404	\$8	\$3,232	0	\$8	\$0
15 Load (soil)	cy	404	\$3	\$1,212	404	\$3	\$1,212	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	404	\$3	\$1,212	808	\$3	\$2,424	0	\$3	\$0
17 Silt Fence (sediment control)	lf	440	\$1.5	\$660	440	\$1.5	\$660	440	\$1.5	\$660
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	7741	\$0.2	\$1,548
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	430	\$16	\$6,881
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	143	\$21	\$3,010
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$102,811		\$100,791		\$74,358		
33 Waste Characterization	ea	0.0	\$400	\$0	1.2	\$400	\$485	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	606	\$120	\$72,720	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$73,205		\$0		
Total Construction and Waste Disposal Costs				\$102,811		\$173,996		\$74,358		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,141	\$5,141	1	\$5,040	\$5,040	1	\$3,718	\$3,718
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,281	\$10,281	1	\$10,079	\$10,079	1	\$7,436	\$7,436
3 Contingency (20% of subtotal construction costs)	ls	1	\$20,562	\$20,562	1	\$20,158	\$20,158	1	\$14,872	\$14,872
Total Construction Services Costs				\$35,984		\$35,277		\$26,025		
TOTAL CAPITAL COSTS				\$138,795		\$209,272		\$100,384		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	14	\$21	\$301.04
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0		\$461		
Total O&M Cost				\$0		\$0		\$13,831		
O&M Total Expenditure, 30 years				\$0		\$0		\$16,037		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$6,323		
Total cost				\$138,795		\$209,272		\$106,707		

SWMU 26G and AOC C and D
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	780	\$8	\$6,240	780	\$8	\$6,240	0	\$8	\$0	
13 Backfill material	cy	780	\$18	\$14,040	780	\$18	\$14,040	0	\$18	\$0	
14 Spread and Compact	cy	1,560	\$8	\$12,480	780	\$8	\$6,240	0	\$8	\$0	
15 Load (soil)	cy	780	\$3	\$2,340	780	\$3	\$2,340	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	780	\$3	\$2,340	1,560	\$3	\$4,680	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	640	\$1.5	\$960	640	\$1.5	\$960	640	\$1.5	\$960	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	21049	\$0.2	\$4,210	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1169	\$16	\$18,710	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	390	\$21	\$8,186	
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$123,038			\$119,138			\$96,204	
33 Waste Characterization	ea	0.0	\$400	\$0	2.3	\$400	\$936	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,170	\$120	\$140,400	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0			\$141,336			\$0	
Total Construction and Waste Disposal Costs				\$123,038			\$260,474			\$96,204	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$6,152	\$6,152	1	\$5,957	\$5,957	1	\$4,810	\$4,810	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$12,304	\$12,304	1	\$11,914	\$11,914	1	\$9,620	\$9,620	
3 Contingency (20% of subtotal construction costs)	ls	1	\$24,608	\$24,608	1	\$23,828	\$23,828	1	\$19,241	\$19,241	
Total Construction Services Costs				\$43,063			\$41,698			\$33,671	
TOTAL CAPITAL COSTS				\$166,102			\$302,173			\$129,875	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	39	\$21	\$818.57	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240	
Estimated Annual O&M Cost				\$0			\$0			\$1,059	
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,059	\$31,757	
O&M Total Expenditure, 30 years				\$0			\$0			\$36,822	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$14,519	
Total cost				\$166,102			\$302,173			\$144,394	

SWMU 26G and AOC C and D
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	780	\$8	\$6,240	780	\$8	\$6,240	0	\$8	\$0	
13 Backfill material	cy	780	\$18	\$14,040	780	\$18	\$14,040	0	\$18	\$0	
14 Spread and Compact	cy	1,560	\$8	\$12,480	780	\$8	\$6,240	0	\$8	\$0	
15 Load (soil)	cy	780	\$3	\$2,340	780	\$3	\$2,340	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	780	\$3	\$2,340	1,560	\$3	\$4,680	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	640	\$1.5	\$960	640	\$1.5	\$960	640	\$1.5	\$960	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	21049	\$0.2	\$4,210	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1169	\$16	\$18,710	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	390	\$21	\$8,186	
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$123,038		\$119,138		\$96,204			
33 Waste Characterization	ea	0.0	\$400	\$0	2.3	\$400	\$936	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	1,170	\$120	\$140,400	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$141,336		\$0			
Total Construction and Waste Disposal Costs				\$123,038		\$260,474		\$96,204			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$6,152	\$6,152	1	\$5,957	\$5,957	1	\$4,810	\$4,810	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$12,304	\$12,304	1	\$11,914	\$11,914	1	\$9,620	\$9,620	
3 Contingency (20% of subtotal construction costs)	ls	1	\$24,608	\$24,608	1	\$23,828	\$23,828	1	\$19,241	\$19,241	
Total Construction Services Costs				\$43,063		\$41,698		\$33,671			
TOTAL CAPITAL COSTS				\$166,102		\$302,173		\$129,875			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	39	\$21	\$818.57	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240	
Estimated Annual O&M Cost				\$0		\$0		\$1,059			
Total O&M Cost				\$0		\$0		\$31,757			
O&M Total Expenditure, 30 years				\$0		\$0		\$36,822			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$14,519			
Total cost				\$166,102		\$302,173		\$144,394			

SWMU 29
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	177	\$8	\$1,416	177	\$8	\$1,416	0	\$8	\$0	
13 Backfill material	cy	177	\$18	\$3,186	177	\$18	\$3,186	0	\$18	\$0	
14 Spread and Compact	cy	354	\$8	\$2,832	177	\$8	\$1,416	0	\$8	\$0	
15 Load (soil)	cy	177	\$3	\$531	177	\$3	\$531	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	177	\$3	\$531	354	\$3	\$1,062	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	200	\$1.5	\$300	200	\$1.5	\$300	200	\$1.5	\$300	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	4778	\$0.2	\$956	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	265	\$16	\$4,247	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	88	\$21	\$1,858	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$91,555		\$90,670			\$69,620		
33 Waste Characterization	ea	0.0	\$400	\$0	0.5	\$400	\$212	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	266	\$120	\$31,860	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$32,072			\$0		
Total Construction and Waste Disposal Costs				\$91,555		\$122,742			\$69,620		
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,578	\$4,578	1	\$4,533	\$4,533	1	\$3,481	\$3,481	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,155	\$9,155	1	\$9,067	\$9,067	1	\$6,962	\$6,962	
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,311	\$18,311	1	\$18,134	\$18,134	1	\$13,924	\$13,924	
Total Construction Services Costs				\$32,044		\$31,734			\$24,367		
TOTAL CAPITAL COSTS				\$123,599		\$154,477			\$93,987		
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	9	\$21	\$185.81	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0			\$346		
Total O&M Cost				years 30	\$0	30	\$0	30	\$346	\$10,374	
O&M Total Expenditure, 30 years				\$0		\$0			\$12,029		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0			\$4,743		
Total cost				\$123,599		\$154,477			\$98,730		

SWMU 32
Planning Level Engineering Estimate for Remediation
Commercial or Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	0	\$20,000	\$0	0	\$20,000	\$0	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	0	\$25,000	\$0	0	\$25,000	\$0	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.00	\$200	\$0	0.00	\$200	\$0	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	0	\$0	\$0	0	\$0	\$0	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0	
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0	
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0	
15 Load (soil)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
16 Haul/Handling of Soils/Staging (on-site)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	0	\$1.5	\$0	0	\$1.5	\$0	500	\$1.5	\$750	
18 Equipment Decontamination	ea	0	\$250	\$0	0	\$250	\$0	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	0	\$1	\$0	0	\$1	\$0	0	\$1	\$0	
20 Ambient Air Monitoring	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	11556	\$0.2	\$2,311	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	642	\$16	\$10,272	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	214	\$21	\$4,494	
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	0	\$6,500	\$0	0	\$6,500	\$0	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$75,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	0	\$5,000	\$0	0	\$5,000	\$0	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$0		\$0				\$80,086	
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$0	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$0				\$0	
Total Construction and Waste Disposal Costs				\$0		\$0				\$80,086	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$4,004	\$4,004	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$8,009	\$8,009	
3 Contingency (20% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$16,017	\$16,017	
Total Construction Services Costs				\$0		\$0				\$28,030	
TOTAL CAPITAL COSTS				\$0		\$0				\$108,116	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover		Cost captured in wetlands estimate			Cost captured in wetlands estimate						
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	21.4	\$21	\$449.40	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0		\$0				\$609	
Total O&M Cost				years 30	\$0	\$0	30	\$0	30	\$609	\$18,282
O&M Total Expenditure, 30 years						\$0				\$21,198	
O&M Present Worth @ 7% discount, 1% inflation, 30 years						\$0				\$8,358	
Total cost						\$0				\$116,474	

SMMU 33
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	500	\$8	\$4,000	500	\$8	\$4,000	0	\$8	\$0	
13 Backfill material	cy	228	\$18	\$4,104	500	\$18	\$9,000	0	\$18	\$0	
14 Spread and Compact	cy	728	\$8	\$5,824	500	\$8	\$4,000	0	\$8	\$0	
15 Load (soil)	cy	500	\$3	\$1,500	500	\$3	\$1,500	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	500	\$3	\$1,500	728	\$3	\$2,184	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	560	\$1.5	\$840	560	\$1.5	\$840	560	\$1.5	\$840	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	13501	\$0.2	\$2,700	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	750	\$16	\$12,001	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	250	\$21	\$5,250	
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$100,527			\$104,283			\$83,050	
33 Waste Characterization	ea	0.0	\$400	\$0	1.5	\$400	\$600	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	750	\$120	\$90,000	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0			\$90,600			\$0	
Total Construction and Waste Disposal Costs				\$100,527			\$194,883			\$83,050	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$5,026	\$5,026	1	\$5,214	\$5,214	1	\$4,153	\$4,153	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$10,053	\$10,053	1	\$10,428	\$10,428	1	\$8,305	\$8,305	
3 Contingency (20% of subtotal construction costs)	ls	1	\$20,105	\$20,105	1	\$20,857	\$20,857	1	\$16,610	\$16,610	
Total Construction Services Costs				\$35,184			\$36,499			\$29,068	
TOTAL CAPITAL COSTS				\$135,711			\$231,382			\$112,118	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	25	\$21	\$525.04	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160	
Estimated Annual O&M Cost				\$0			\$0			\$685	
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$685	\$20,551	
O&M Total Expenditure, 30 years				\$0			\$0			\$23,829	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$9,396	
Total cost				\$135,711			\$231,382			\$121,514	

SWMU 33
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.25	\$200	\$50	0.25	\$200	\$50	0.25	\$200	\$50
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,029	\$1,029	1	\$1,029	\$1,029	1	\$1,029	\$1,029
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	237	\$8	\$1,896	237	\$8	\$1,896	0	\$8	\$0
13 Backfill material	cy	64	\$18	\$1,152	237	\$18	\$4,266	0	\$18	\$0
14 Spread and Compact	cy	301	\$8	\$2,408	237	\$8	\$1,896	0	\$8	\$0
15 Load (soil)	cy	237	\$3	\$711	237	\$3	\$711	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	237	\$3	\$711	301	\$3	\$903	0	\$3	\$0
17 Silt Fence (sediment control)	lf	280	\$1.5	\$420	280	\$1.5	\$420	280	\$1.5	\$420
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	6404	\$0.2	\$1,281
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	356	\$16	\$5,692
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	119	\$21	\$2,490
28 Seeding	acre	0.25	\$3,200	\$800	0.25	\$3,200	\$800	0.25	\$3,200	\$800
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$88,177		\$90,971		\$70,263		
33 Waste Characterization	ea	0.0	\$400	\$0	0.7	\$400	\$284	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	356	\$120	\$42,660	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$42,944		\$0		
Total Construction and Waste Disposal Costs				\$88,177		\$133,916		\$70,263		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,409	\$4,409	1	\$4,549	\$4,549	1	\$3,513	\$3,513
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,818	\$8,818	1	\$9,097	\$9,097	1	\$7,026	\$7,026
3 Contingency (20% of subtotal construction costs)	ls	1	\$17,635	\$17,635	1	\$18,194	\$18,194	1	\$14,053	\$14,053
Total Construction Services Costs				\$30,862		\$31,840		\$24,592		
TOTAL CAPITAL COSTS				\$119,040		\$165,756		\$94,855		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	12	\$21	\$249.04
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.025	\$3,200	\$80
Estimated Annual O&M Cost				\$0		\$0		\$329		
Total O&M Cost				\$0		\$0		\$9,871		
O&M Total Expenditure, 30 years				\$0		\$0		\$11,446		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$4,513		
Total cost				\$119,040		\$165,756		\$99,368		

SWMU 35
Planning Level Engineering Estimate for Remediation
Commercial or Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	0	\$20,000	\$0	0	\$20,000	\$0	1	\$20,000	\$20,000
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	0	\$25,000	\$0	0	\$25,000	\$0	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.00	\$200	\$0	0.00	\$200	\$0	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	0	\$0	\$0	0	\$0	\$0	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	0	\$1,000	\$0	0	\$1,000	\$0	1	\$1,000	\$1,000
12 Excavation (soil)	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
15 Load (soil)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
16 Haul/Handling of Soils/Staging (on-site)	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
17 Silt Fence (sediment control)	lf	0	\$1.5	\$0	0	\$1.5	\$0	500	\$1.5	\$750
18 Equipment Decontamination	ea	0	\$250	\$0	0	\$250	\$0	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	0	\$1	\$0	0	\$1	\$0	0	\$1	\$0
20 Ambient Air Monitoring	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	10062	\$0.2	\$2,012
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	559	\$16	\$8,944
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	186	\$21	\$3,913
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	0	\$6,500	\$0	0	\$6,500	\$0	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$75,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	0	\$5,000	\$0	0	\$5,000	\$0	1	\$5,000	\$5,000
Subtotal Construction Costs				\$0		\$0				\$77,878
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$0	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$0				\$0
Total Construction and Waste Disposal Costs				\$0		\$0				\$77,878
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$3,894	\$3,894
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$7,788	\$7,788
3 Contingency (20% of subtotal construction costs)	ls	1	\$0	\$0	1	\$0	\$0	1	\$15,576	\$15,576
Total Construction Services Costs				\$0		\$0				\$27,257
TOTAL CAPITAL COSTS				\$0		\$0				\$105,136
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover		Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	19	\$21	\$391.30
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0				\$551
Total O&M Cost				\$0		\$0				\$16,539
O&M Total Expenditure, 30 years				\$0		\$0				\$19,177
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0				\$7,561
Total cost				\$0		\$0				\$112,697

SWMU 40
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	12	\$8	\$96	12	\$8	\$96	0	\$8	\$0
13 Backfill material	cy	12	\$18	\$216	12	\$18	\$216	0	\$18	\$0
14 Spread and Compact	cy	24	\$8	\$192	12	\$8	\$96	0	\$8	\$0
15 Load (soil)	cy	12	\$3	\$36	12	\$3	\$36	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	12	\$3	\$36	24	\$3	\$72	0	\$3	\$0
17 Silt Fence (sediment control)	lf	120	\$1.5	\$180	120	\$1.5	\$180	120	\$1.5	\$180
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	316	\$0.2	\$63
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	18	\$16	\$288
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	6	\$21	\$123
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$83,515		\$83,455		\$62,906		
33 Waste Characterization	ea	0.0	\$400	\$0	0.0	\$400	\$14	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	18	\$120	\$2,160	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$2,174		\$0		
Total Construction and Waste Disposal Costs				\$83,515		\$85,629		\$62,906		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,176	\$4,176	1	\$4,173	\$4,173	1	\$3,145	\$3,145
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$8,351	\$8,351	1	\$8,345	\$8,345	1	\$6,291	\$6,291
3 Contingency (20% of subtotal construction costs)	ls	1	\$16,703	\$16,703	1	\$16,691	\$16,691	1	\$12,581	\$12,581
Total Construction Services Costs				\$29,230		\$29,209		\$22,017		
TOTAL CAPITAL COSTS				\$112,745		\$114,838		\$84,923		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0.6	\$21	\$12.29
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0		\$0		\$172		
Total O&M Cost				\$0		\$0		\$5,169		
O&M Total Expenditure, 30 years				\$0		\$0		\$5,993		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$2,363		
Total cost				\$112,745		\$114,838		\$87,286		

SWMU 48
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.50	\$200	\$100	0.50	\$200	\$100	0.50	\$200	\$100
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$2,059	\$2,059	1	\$2,059	\$2,059	1	\$2,059	\$2,059
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	233	\$8	\$1,864	233	\$8	\$1,864	0	\$8	\$0
13 Backfill material	cy	233	\$18	\$4,194	233	\$18	\$4,194	0	\$18	\$0
14 Spread and Compact	cy	466	\$8	\$3,728	233	\$8	\$1,864	0	\$8	\$0
15 Load (soil)	cy	233	\$3	\$699	233	\$3	\$699	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	233	\$3	\$699	466	\$3	\$1,398	0	\$3	\$0
17 Silt Fence (sediment control)	lf	440	\$1.5	\$660	440	\$1.5	\$660	440	\$1.5	\$660
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	6299	\$0.2	\$1,260
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	350	\$16	\$5,599
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	117	\$21	\$2,450
28 Seeding	acre	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600	0.5	\$3,200	\$1,600
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$94,603			\$93,438			\$72,227
33 Waste Characterization	ea	0.0	\$400	\$0	0.7	\$400	\$280	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	350	\$120	\$41,940	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$42,220			\$0
Total Construction and Waste Disposal Costs				\$94,603			\$135,657			\$72,227
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$4,730	\$4,730	1	\$4,672	\$4,672	1	\$3,611	\$3,611
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$9,460	\$9,460	1	\$9,344	\$9,344	1	\$7,223	\$7,223
3 Contingency (20% of subtotal construction costs)	ls	1	\$18,921	\$18,921	1	\$18,688	\$18,688	1	\$14,445	\$14,445
Total Construction Services Costs				\$33,111			\$32,703			\$25,280
TOTAL CAPITAL COSTS				\$127,714			\$168,361			\$97,507
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	12	\$21	\$244.96
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.05	\$3,200	\$160
Estimated Annual O&M Cost				\$0			\$0			\$405
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$405	\$12,149
O&M Total Expenditure, 30 years				\$0			\$0			\$14,087
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$5,554
Total cost				\$127,714			\$168,361			\$103,061

SMMU 52
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	2,559	\$8	\$20,472	2,559	\$8	\$20,472	0	\$8	\$0
13 Backfill material	cy	2,559	\$18	\$46,062	2,559	\$18	\$46,062	0	\$18	\$0
14 Spread and Compact	cy	5,118	\$8	\$40,944	2,559	\$8	\$20,472	0	\$8	\$0
15 Load (soil)	cy	2,559	\$3	\$7,677	2,559	\$3	\$7,677	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	2,559	\$3	\$7,677	5,118	\$3	\$15,354	0	\$3	\$0
17 Silt Fence (sediment control)	lf	600	\$1.5	\$900	600	\$1.5	\$900	600	\$1.5	\$900
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	20268	\$0.2	\$4,054
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1126	\$16	\$18,016
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	375	\$21	\$7,882
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$208,370		\$195,575		\$94,990		
33 Waste Characterization	ea	0.0	\$400	\$0	7.7	\$400	\$3,071	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	3,839	\$120	\$460,620	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0		\$463,691		\$0		
Total Construction and Waste Disposal Costs				\$208,370		\$659,266		\$94,990		
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$10,419	\$10,419	1	\$9,779	\$9,779	1	\$4,749	\$4,749
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$20,837	\$20,837	1	\$19,558	\$19,558	1	\$9,499	\$9,499
3 Contingency (20% of subtotal construction costs)	ls	1	\$41,674	\$41,674	1	\$39,115	\$39,115	1	\$18,998	\$18,998
Total Construction Services Costs				\$72,930		\$68,451		\$33,246		
TOTAL CAPITAL COSTS				\$281,300		\$727,717		\$128,236		
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate				
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	38	\$21	\$788.20
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240
Estimated Annual O&M Cost				\$0		\$0		\$1,028		
Total O&M Cost				\$0		\$0		\$30,846		
O&M Total Expenditure, 30 years				\$0		\$0		\$35,766		
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$14,102		
Total cost				\$281,300		\$727,717		\$142,339		

SWMU 52
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
Construction Costs											
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	0.75	\$200	\$150	0.75	\$200	\$150	0.75	\$200	\$150	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$3,088	\$3,088	1	\$3,088	\$3,088	1	\$3,088	\$3,088	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	1,490	\$8	\$11,920	1,490	\$8	\$11,920	0	\$8	\$0	
13 Backfill material	cy	1,490	\$18	\$26,820	1,490	\$18	\$26,820	0	\$18	\$0	
14 Spread and Compact	cy	2,980	\$8	\$23,840	1,490	\$8	\$11,920	0	\$8	\$0	
15 Load (soil)	cy	1,490	\$3	\$4,470	1,490	\$3	\$4,470	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	1,490	\$3	\$4,470	2,980	\$3	\$8,940	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	600	\$1.5	\$900	600	\$1.5	\$900	600	\$1.5	\$900	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/DW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	18121	\$0.2	\$3,624	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1007	\$16	\$16,108	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	336	\$21	\$7,047	
28 Seeding	acre	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	0.75	\$3,200	\$2,400	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$157,058		\$149,608		\$91,817			
33 Waste Characterization	ea	0.0	\$400	\$0	4.5	\$400	\$1,788	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	2,235	\$120	\$268,200	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0		\$269,988		\$0			
Total Construction and Waste Disposal Costs				\$157,058		\$419,596		\$91,817			
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$7,853	\$7,853	1	\$7,480	\$7,480	1	\$4,591	\$4,591	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$15,706	\$15,706	1	\$14,961	\$14,961	1	\$9,182	\$9,182	
3 Contingency (20% of subtotal construction costs)	ls	1	\$31,412	\$31,412	1	\$29,922	\$29,922	1	\$18,363	\$18,363	
Total Construction Services Costs				\$54,970		\$52,363		\$32,136			
TOTAL CAPITAL COSTS				\$212,029		\$471,959		\$123,953			
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	34	\$21	\$704.71	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.075	\$3,200	\$240	
Estimated Annual O&M Cost				\$0		\$0		\$945			
Total O&M Cost				\$0		\$0		\$28,341			
O&M Total Expenditure, 30 years				\$0		\$0		\$32,861			
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0		\$12,957			
Total cost				\$212,029		\$471,959		\$136,910			

SWMU 54
Planning Level Engineering Estimate for Remediation
Commercial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover			
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	
		Construction Costs									
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000	
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000	
3 Clearing and Grubbing	acre	3.50	\$200	\$700	3.50	\$200	\$700	3.50	\$200	\$700	
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0	
5 Spraying Vegetation	ls	1	\$14,412	\$14,412	1	\$14,412	\$14,412	1	\$14,412	\$14,412	
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0	
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0	
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
9 Fencing	ls	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0	
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0	
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000	
12 Excavation (soil)	cy	4,609	\$8	\$36,872	4,609	\$8	\$36,872	0	\$8	\$0	
13 Backfill material	cy	4,609	\$18	\$82,962	4,609	\$18	\$82,962	0	\$18	\$0	
14 Spread and Compact	cy	9,218	\$8	\$73,744	4,609	\$8	\$36,872	0	\$8	\$0	
15 Load (soil)	cy	4,609	\$3	\$13,827	4,609	\$3	\$13,827	0	\$3	\$0	
16 Haul/Handling of Soils (on-site)	cy	4,609	\$3	\$13,827	9,218	\$3	\$27,654	0	\$3	\$0	
17 Silt Fence (sediment control)	lf	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280	
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0	
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0	
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0	
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0	
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0	
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0	
25 Permeable Cover - Geotextile (in place)	sf	0	\$0	\$0	0	\$0	\$0	62216	\$0	\$12,443	
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	3456	\$16	\$55,303	
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	1152	\$21	\$24,195	
28 Seeding	acre	3.5	\$3,200	\$11,200	3.5	\$3,200	\$11,200	3.5	\$3,200	\$11,200	
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500	
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0	
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0	
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000	
Subtotal Construction Costs				\$328,824			\$305,779			\$179,033	
33 Waste Characterization	ea	0.0	\$400	\$0	13.8	\$400	\$5,531	0.0	\$400	\$0	
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	6,914	\$120	\$829,620	0	\$120	\$0	
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0	
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	
Subtotal Waste Disposal Cost				\$0			\$835,151			\$0	
Total Construction and Waste Disposal Costs				\$328,824			\$1,140,930			\$179,033	
Construction Services											
1 Engineering (5% of subtotal construction costs)	ls	1	\$16,441	\$16,441	1	\$15,289	\$15,289	1	\$8,952	\$8,952	
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$32,882	\$32,882	1	\$30,578	\$30,578	1	\$17,903	\$17,903	
3 Contingency (20% of subtotal construction costs)	ls	1	\$65,765	\$65,765	1	\$61,156	\$61,156	1	\$35,807	\$35,807	
Total Construction Services Costs				\$115,088			\$107,023			\$62,662	
TOTAL CAPITAL COSTS				\$443,912			\$1,247,952			\$241,695	
Annual Operation & Maintenance											
1 Inspection and maintenance of permeable cover			Cost captured in wetlands estimate			Cost captured in wetlands estimate					
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	115	\$21	\$2,419.51	
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.35	\$3,200	\$1,120	
Estimated Annual O&M Cost				\$0			\$0			\$3,540	
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$3,540	\$106,185	
O&M Total Expenditure, 30 years				\$0			\$0			\$123,122	
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$48,547	
Total cost				\$443,912			\$1,247,952			\$290,241	

SWMU 54
Planning Level Engineering Estimate for Remediation
Industrial Use Soil Clean Up Objectives
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Excavation/Onsite Consolidation			Option 2: Excavation/Offsite Disposal			Option 3: Permeable Cover		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
		Construction Costs								
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Load Out Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	0.27	\$200	\$53	0.27	\$200	\$53	0.27	\$200	\$53
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$1,101	\$1,101	1	\$1,101	\$1,101	1	\$1,101	\$1,101
6 Dewatering	ls	0	\$100,000	\$0	0	\$100,000	\$0	0	\$100,000	\$0
7 Stream Realignment	lf	0	\$100	\$0	0	\$100	\$0	0	\$100	\$0
8 Dust control/suppression	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
9 Fencing	lf	0	\$22	\$0	0	\$22	\$0	0	\$22	\$0
10 reserved	ls	1	\$0	\$0	1	\$0	\$0	1	\$0	\$0
11 SWMU Boundary Survey	ls	1	\$1,000	\$1,000	1	\$1,000	\$1,000	1	\$1,000	\$1,000
12 Excavation (soil)	cy	2,179	\$8	\$17,432	2,179	\$8	\$17,432	0	\$8	\$0
13 Backfill material	cy	2,179	\$18	\$39,222	2,179	\$18	\$39,222	0	\$18	\$0
14 Spread and Compact	cy	4,358	\$8	\$34,864	2,179	\$8	\$17,432	0	\$8	\$0
15 Load (soil)	cy	2,179	\$3	\$6,537	2,179	\$3	\$6,537	0	\$3	\$0
16 Haul/Handling of Soils (on-site)	cy	2,179	\$3	\$6,537	4,358	\$3	\$13,074	0	\$3	\$0
17 Silt Fence (sediment control)	lf	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280	1,520	\$1.5	\$2,280
18 Equipment Decontamination	ea	30	\$250	\$7,500	30	\$250	\$7,500	0	\$250	\$0
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	0	\$1	\$0
20 Ambient Air Monitoring	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
21 Fly Ash for Stabilization	ton	0	\$50	\$0	0	\$50	\$0	0	\$50	\$0
22 Soil Blending for Stabilization	cy	0	\$3	\$0	0	\$3	\$0	0	\$3	\$0
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	29413	\$0.2	\$5,883
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	1634	\$16	\$26,145
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	545	\$21	\$11,438
28 Seeding	acre	0.27	\$3,200	\$856	0.27	\$3,200	\$856	0.27	\$3,200	\$856
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	0	\$5,000	\$0
31 Equipment/Personnel Standby Time	ls	0	\$75,000	\$0	0	\$5,000	\$0	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000
Subtotal Construction Costs				\$187,882			\$176,987			\$106,256
33 Waste Characterization	ea	0.0	\$400	\$0	6.5	\$400	\$2,615	0.0	\$400	\$0
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	3,269	\$120	\$392,220	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$0			\$394,835			\$0
Total Construction and Waste Disposal Costs				\$187,882			\$571,822			\$106,256
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$9,394	\$9,394	1	\$8,849	\$8,849	1	\$5,313	\$5,313
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$18,788	\$18,788	1	\$17,699	\$17,699	1	\$10,626	\$10,626
3 Contingency (20% of subtotal construction costs)	ls	1	\$37,576	\$37,576	1	\$35,397	\$35,397	1	\$21,251	\$21,251
Total Construction Services Costs				\$65,759			\$61,946			\$37,190
TOTAL CAPITAL COSTS				\$253,641			\$633,768			\$143,446
Annual Operation & Maintenance										
1 Inspection and maintenance of permeable cover				Cost captured in wetlands estimate			Cost captured in wetlands estimate			
2 a Topsoil	cy	0	\$21	\$0	0	\$21	\$0	\$54	\$21	\$1,143.84
3 b Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0.03	\$3,200	\$86
Estimated Annual O&M Cost				\$0			\$0			\$1,229
Total O&M Cost	years	30	\$0	\$0	30	\$0	\$0	30	\$1,229	\$36,882
O&M Total Expenditure, 30 years				\$0			\$0			\$42,765
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0			\$0			\$16,862
Total cost				\$253,641			\$633,768			\$160,308

APPENDIX G

Greenhouse Gas Emissions Calculations

Average fuel consumption: 6.5 mpg of diesel

Nearest Subtitle C landfill: Model City NY – 361 miles per one-way trip or 722 miles roundtrip

Sediment Disposal: Mass Removal: 1,372 roundtrips [17,829 CY/13 CY [standard dump truck capacity]]

Soil Disposal: Industrial SCO 648 roundtrips [8,424 CY/13 CY (standard dump truck capacity)]
 Commercial SCO - 1,302 roundtrips [16,936 CY/13 CY (standard dump truck capacity)]

Media	Average MPG	Diesel Consumption per Mile	Miles (Roundtrip)	Total Number of Roundtrips	Total Number of Miles for All Roundtrips	Total Fuel Used (gallons)	Total CO2 Equivalent Emissions (metric tons)
Soil (Commercial SCO)	6.5	0.15	722	1302	940044	144622	1478
Soil (Industrial SCO)	6.5	0.15	722	648	467856	71978	736
Sediment	6.5	0.15	722	1372	990584	152398	1558

Media	Average MPG	Diesel Consumption per Mile	Miles (One-way trip)	Total Number of One-way Trips	Total Number of Miles for All One-Way Trips	Total Gallons Used During Project	Total CO2 Equivalent Emissions (metric tons)
Soil (Commercial SCO)	6.5	0.15	361	1302	470022	72311	739
Soil (Industrial SCO)	6.5	0.15	361	648	233928	35989	368
Sediment	6.5	0.15	361	1372	495292	76199	779

APPENDIX H

Sediment Corrective Measures Cost Estimates

Wetlands Complex
Planning Level Engineering Estimate for Remediation
Excavation, On-Site Consolidation and Capping
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Cleanup to SELs			Option 2: Cleanup to PRGs			Option 3: Mass Removal		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Pre-Construction Costs										
1 Wetlands Survey	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
2 PRG Sampling and Development	ls	0	\$250,000	\$0	1	\$250,000	\$250,000	0	\$250,000	\$0
3 Delineation Sampling	ls	1	\$100,000	\$100,000	1	\$100,000	\$100,000	0	\$100,000	\$0
4 Permitting	ls	1	\$100,000	\$100,000	1	\$100,000	\$100,000	1	\$100,000	\$100,000
5 Contingency (20%)				\$45,000			\$95,000			\$25,000
Total Pre-Construction Costs				\$270,000		\$570,000				\$150,000
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	10.3	\$200	\$2,053	8.7	\$200	\$1,748	11.1	\$200	\$2,210
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
6 Dewatering	ls	1	\$100,000	\$100,000	1	\$100,000	\$100,000	1	\$100,000	\$100,000
7 Stream Realignment	lf	3329	\$100	\$332,900	3329	\$100	\$332,900	3329	\$100	\$332,900
8 Dust control/suppression	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
9 Fencing	lf	1,400	\$22	\$30,800	1,400	\$22	\$30,800	1,400	\$22	\$30,800
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
11 Impacted Sediment Boundary Survey	ls	1	\$10,000	\$10,000	1	\$10,000	\$10,000	1	\$10,000	\$10,000
12 Excavation (sediment)	cy	16,557	\$8	\$132,457	14,102	\$8	\$112,812	17,829	\$8	\$142,631
13 Backfill material (for SWMU 1 and berms)	cy	9,367	\$18	\$168,606	9,367	\$18	\$168,606	9,367	\$18	\$168,606
14 Spread and Compact	cy	25,924	\$8	\$207,393	23,469	\$8	\$187,748	27,196	\$8	\$217,567
15 Load (sediment)	cy	16,557	\$7	\$115,900	14,102	\$7	\$98,711	17,829	\$7	\$124,802
16 Haul/Handling of Sediment (on-site)	cy	16,557	\$3	\$49,671	14,102	\$3	\$42,305	17,829	\$3	\$53,486
17 Silt Fence (sediment control)	lf	3,800	\$1.5	\$5,700	3,800	\$1.5	\$5,700	3,800	\$1.5	\$5,700
18 Equipment Decontamination	ls	1	\$15,000	\$15,000	1	\$15,000	\$15,000	1	\$15,000	\$15,000
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	3000	\$1	\$3,000
20 Ambient Air Monitoring	ls	1	\$50,000	\$50,000	1	\$50,000	\$50,000	1	\$50,000	\$50,000
21 Fly Ash for Stabilization	ton	1987	\$50	\$99,343	1692	\$50	\$84,609	2139	\$50	\$106,973
22 Soil Blending/Loading for Stabilization	cy	16,557	\$10	\$165,571	17,366	\$10	\$173,660	17,829	\$10	\$178,288
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	1289	\$65	\$83,785	1289	\$65	\$83,785	1289	\$65	\$83,785
25 Permeable Cover - Geotextile (in place)	sf	176656	\$0.2	\$35,331	176656	\$0.2	\$35,331	176656	\$0.2	\$35,331
26 Permeable Cover - 18" Fill/Clay (in place)	cy	8179	\$16	\$130,864	8179	\$16	\$130,864	8179	\$16	\$130,864
27 Permeable Cover - 6" Topsoil (in place)	cy	2726	\$21	\$57,246	2726	\$21	\$57,246	2726	\$21	\$57,246
28 Seeding	acre	3.5	\$3,200	\$11,200	3.5	\$3,200	\$11,200	3.5	\$3,200	\$11,200
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$50,000	\$50,000	1	\$50,000	\$50,000	0	\$50,000	\$0
31 Equipment/Personnel Standby Time	ls	1	\$75,000	\$75,000	1	\$75,000	\$75,000	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$10,000	\$10,000	1	\$10,000	\$10,000	1	\$10,000	\$10,000
33 Wetlands Restoration	ls	2.5	\$63,706	\$159,265	2.5	\$63,706	\$159,265	2.5	\$63,706	\$159,265
34 Wetlands Creation	ls	12.9	\$119,414	\$1,539,729	10.6	\$119,414	\$1,267,092	14.1	\$119,414	\$1,680,917
Subtotal Construction Costs				\$3,742,315		\$3,398,882				\$3,812,070
33 Waste Characterization	ea	58.5	\$400	\$23,400	42.3	\$400	\$16,922	53.5	\$400	\$21,395
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	0	\$120	\$0	0	\$120	\$0	0	\$120	\$0
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$23,400		\$16,922				\$21,395
Total Construction and Waste Disposal Costs				\$3,765,715		\$3,415,804				\$3,833,465
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$187,116	\$187,116	1	\$169,944	\$169,944	1	\$190,604	\$190,604
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$374,232	\$374,232	1	\$339,888	\$339,888	1	\$381,207	\$381,207
3 Contingency (20% of subtotal construction costs)	ls	1	\$748,463	\$748,463	1	\$679,776	\$679,776	1	\$762,414	\$762,414
Total Construction Services Costs				\$1,309,810		\$1,189,609				\$1,334,225
TOTAL CAPITAL COSTS				\$5,345,525		\$5,175,412				\$5,317,689
Annual Operation & Maintenance										
1 a Cover Inspection	ls	1	\$5,000	\$5,000	1	\$5,000	\$5,000	1	\$5,000	\$5,000.00
2 b Topsoil	cy	272.6	\$21	\$5,725	272.6	\$21	\$5,725	272.6	\$21	\$5,724.60
3 c Vegetative Cover	acre	0.35	\$3,200	\$1,120	0.35	\$3,200	\$1,120	0.35	\$3,200	\$1,120
Estimated Annual O&M Cost				\$11,845		\$11,845				\$11,845
Total O&M Cost				\$355,338		\$355,338				\$355,338
O&M Total Expenditure, 30 years				\$412,013		\$412,013				\$412,013
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$162,456		\$162,456				\$162,456
Total cost				\$5,507,981		\$5,337,868				\$5,480,145

Wetlands Complex
Planning Level Engineering Estimate for Remediation
Excavation and Off-Site Disposal
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Option 1: Cleanup to SELs			Option 2: Cleanup to PRGs			Option 3: Mass Removal		
		Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost	Estimated Quantity	Unit Cost (\$)	Total Cost
Pre-Construction Costs										
1 Wetlands Survey	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
2 PRG Sampling and Development	ls	0	\$250,000	\$0	1	\$250,000	\$250,000	0	\$250,000	\$0
3 Delineation Sampling	ls	1	\$100,000	\$100,000	0	\$100,000	\$0	0	\$100,000	\$0
4 Permitting	ls	1	\$100,000	\$100,000	1	\$100,000	\$100,000	1	\$100,000	\$100,000
5 Contingency (20%)				\$45,000			\$75,000			\$120,000
Total Pre-Construction Costs				\$270,000		\$450,000				\$570,000
Construction Costs										
1 Mobilization/Demobilization	ls	1	\$20,000	\$20,000	1	\$20,000	\$20,000	1	\$20,000	\$20,000
2 Site Preparation/Decon/Staging Areas Setup/Erosion Control	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
3 Clearing and Grubbing	acre	10.3	\$200	\$2,053	8.7	\$200	\$1,748	11.1	\$200	\$2,210
4 Clearing and Grubbing (potential for energetic materials)	acre	0	\$400	\$0	0	\$400	\$0	0	\$400	\$0
5 Spraying Vegetation	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
6 Dewatering	ls	1	\$100,000	\$100,000	1	\$100,000	\$100,000	1	\$100,000	\$100,000
7 Stream Realignment	lf	3329	\$100	\$332,900	3329	\$100	\$332,900	3329	\$100	\$332,900
8 Dust control/suppression	ls	1	\$25,000	\$25,000	1	\$25,000	\$25,000	1	\$25,000	\$25,000
9 Fencing	lf	1,400	\$22	\$30,800	1,400	\$22	\$30,800	1,400	\$22	\$30,800
10 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
11 Impacted Sediment Boundary Survey	ls	1	\$10,000	\$10,000	1	\$10,000	\$10,000	1	\$10,000	\$10,000
12 Excavation (soil)	cy	16,557	\$8	\$132,457	15,518	\$8	\$124,144	16,664	\$8	\$133,312
13 Backfill material	cy	0	\$18	\$0	0	\$18	\$0	0	\$18	\$0
14 Spread and Compact	cy	0	\$8	\$0	0	\$8	\$0	0	\$8	\$0
15 Load (soil)	cy	14,485	\$7	\$101,395	14,102	\$7	\$98,711	16,414	\$7	\$114,898
16 Haul/Handling of Soils/Staging (on-site)	cy	16,557	\$3	\$49,671	15,518	\$3	\$46,554	17,829	\$3	\$53,486
17 Silt Fence (sediment control)	lf	3,800	\$1.5	\$5,700	3,800	\$1.5	\$5,700	3,800	\$1.5	\$5,700
18 Equipment Decontamination	ls	1	\$15,000	\$15,000	1	\$15,000	\$15,000	1	\$15,000	\$15,000
19 Decon Water/IDW Transportation & Disposal (non-hazardous)	gal	3000	\$1	\$3,000	3000	\$1	\$3,000	3000	\$1	\$3,000
20 Ambient Air Monitoring	ls	1	\$50,000	\$50,000	1	\$50,000	\$50,000	1	\$50,000	\$50,000
21 Fly Ash for Stabilization	ton	1987	\$50	\$99,343	1862	\$50	\$93,108	2000	\$50	\$99,984
22 Soil Blending/Loading for Stabilization	cy	16,557	\$10	\$165,571	15,518	\$10	\$155,180	16,664	\$10	\$166,640
23 Sheetpiling	lf	0	\$80	\$0	0	\$80	\$0	0	\$80	\$0
24 Rock (material and placement)	ton	0	\$65	\$0	0	\$65	\$0	0	\$65	\$0
25 Permeable Cover - Geotextile (in place)	sf	0	\$0.2	\$0	0	\$0.2	\$0	0	\$0.2	\$0
26 Permeable Cover - 18" Fill/Clay (in place)	cy	0	\$16	\$0	0	\$16	\$0	0	\$16	\$0
27 Permeable Cover - 6" Topsoil (in place)	cy	0	\$21	\$0	0	\$21	\$0	0	\$21	\$0
28 Seeding	acre	0	\$3,200	\$0	0	\$3,200	\$0	0	\$3,200	\$0
29 Miscellaneous/Warning Signs/Equipment Rental/Lighting/Site Cleanup	ls	1	\$6,500	\$6,500	1	\$6,500	\$6,500	1	\$6,500	\$6,500
30 Confirmatory Sampling and Reporting	ls	1	\$50,000	\$50,000	1	\$50,000	\$50,000	0	\$50,000	\$0
31 Equipment/Personnel Standby Time	ls	1	\$75,000	\$75,000	1	\$75,000	\$75,000	0	\$75,000	\$0
32 Site Survey/As-Built	ls	1	\$10,000	\$10,000	1	\$10,000	\$10,000	1	\$10,000	\$10,000
33 Wetlands Restoration	ls	2.5	\$63,706	\$159,265	2.5	\$63,706	\$159,265	2.5	\$63,706	\$159,265
34 Wetlands Creation	ls	12.9	\$119,414	\$1,539,729	10.6	\$119,414	\$1,267,092	14.1	\$119,414	\$1,680,917
Subtotal Construction Costs				\$3,033,385		\$2,729,702				\$3,069,612
33 Waste Characterization	ea	58.5	\$400	\$23,400	46.6	\$400	\$18,622	50.0	\$400	\$19,997
34 Off-Site Disposal of Non-Hazardous Soils (includes T&D by truck)	ton	24,836	\$120	\$2,980,287	23,277	\$120	\$2,793,240	24,996	\$120	\$2,999,520
35 Off-Site Disposal of Hazardous Soils (includes T&D by truck)	ton	0	\$262	\$0	0	\$262	\$0	0	\$262	\$0
36 reserved	ls	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0
Subtotal Waste Disposal Cost				\$3,003,687		\$2,811,862				\$3,019,517
Total Construction and Waste Disposal Costs				\$6,037,071		\$5,541,563				\$6,089,129
Construction Services										
1 Engineering (5% of subtotal construction costs)	ls	1	\$151,669	\$151,669	1	\$136,485	\$136,485	1	\$153,481	\$153,481
2 Construction Mgt/Admin (10% of subtotal construction costs)	ls	1	\$303,338	\$303,338	1	\$272,970	\$272,970	1	\$306,961	\$306,961
3 Contingency (20% of subtotal construction costs)	ls	1	\$606,677	\$606,677	1	\$545,940	\$545,940	1	\$613,922	\$613,922
Total Construction Services Costs				\$1,061,685		\$955,396				\$1,074,364
TOTAL CAPITAL COSTS				\$7,368,756		\$6,946,959				\$7,313,493
Annual Operation & Maintenance										
1 a Cover Inspection	ls	0	\$5,000	\$0	0	\$5,000	\$0	0	\$5,000	\$0.00
2 b Topsoil	cy	0	\$21	\$0	0	\$21	\$0	0	\$21	\$0.00
3 c Vegetative Cover	acre	0	\$3,200	\$0	0	\$3,200	\$0	0	\$3,200	\$0
Estimated Annual O&M Cost				\$0		\$0				\$0
Total O&M Cost				\$0		\$0				\$0
O&M Total Expenditure, 30 years				\$0		\$0				\$0
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$0		\$0				\$0
Total cost				\$7,368,756		\$6,946,959				\$7,313,493

APPENDIX I

Groundwater and Indoor Air Corrective Measures Cost Estimates

Groundwater Alternative GW2
Planning Level Engineering Estimate for Remediation
Monitored Natural Attenuation
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Alternative GW2		
		Monitored Natural Attenuation		
		Estimate d Quantity	Unit Cost (\$)	Total Cost
Annual Monitoring and Report				
41 a Monitoring and Reporting	ls	1	\$16,000	\$16,000
b Project Management	ls	1	\$2,400	\$2,400
Estimated Annual O&M Cost				\$18,400
Total O&M Cost	years	30	\$18,400	\$552,000
O&M Total Expenditure, 30 years				\$640,042
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$252,367

Indoor Air Alternative
Planning Level Engineering Estimate for Remediation
Annual Indoor Air Monitoring
 Dyno Nobel
 Port Ewen, New York

Description	Unit	Indoor Air Monitoring		
		Estimated Quantity	Unit Cost (\$)	Total Cost
Annual Monitoring and Report				
41 a Monitoring and Reporting	ls	1	\$5,000	\$5,000
b Project Management	ls	1	\$750	\$750
Estimated Annual O&M Cost				\$5,750
Total O&M Cost		years 30	\$5,750	\$172,500
O&M Total Expenditure, 30 years				\$200,013
O&M Present Worth @ 7% discount, 1% inflation, 30 years				\$78,865