

Eckenfelder Engineering, P.C.

**Volume II
Corrective Measure Study (CMS)
DYNO Port Ewen Plant
Port Ewen, New York**

December 2000

**CORRECTIVE MEASURE STUDY (CMS)
DYNO PORT EWEN PLANT
PORT EWEN, NEW YORK
VOLUME II**

**Prepared for:
Hercules Incorporated and
Dyno Nobel, Inc.**

**Prepared by:
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19305.001

APPENDIX A
DESCRIPTION OF SWMUS AND AOCs

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DESCRIPTION OF SWMUs AND AOCs

The SWMUs and AOCs to be addressed as part of the CMS, as required by the NYSDEC letter dated July 11, 2000, are presented below. A description of the wastes handled at each unit is taken from the RFA. Acronyms used in the following descriptions and throughout the report are summarized in Table A-1.

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.

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 No. 49: Building 2073 Sump - This unit is an area in which wash-water drained into. The wash-water was a result of putting out an explosion and fire that occurred in building 2073.

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.

TABLE A-1

ACRONYMS USED WITHIN THIS CMS

AOC	=	Area of Concern
CMS	=	Corrective Measure Study
CMI	=	Corrective Measure Implementation
DDNP	=	Secondary Explosive (Diazodinitrophenol)
F-CMS	=	Focused-Corrective Measure Study
HMSD	=	Heavy Metal Surface Deposition
HMX	=	Secondary Explosive (Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetramine)
ICM	=	Interim Corrective Measures
MCL	=	Maximum Contaminant Level
MNA	=	Monitored Natural Attenuation
NYSDEC	=	New York State Department of Environmental Conservation
PBX	=	Plastic Bonded Explosive (RDX and plasticizer)
PCB	=	Polychlorinated Biphenyl
PETN	=	Secondary Explosive (Pentaerythritol tetranitrate)
PQL	=	Practical Quantitation Limit
PR	=	Preliminary Review
RCRA	=	Resource Conservation Recovery Act
RDX	=	Secondary Explosive (Hexahydro-1,3,5-trinitro-1,3,5-triazine)
RFA	=	RCRA Facility Assessment
RFI	=	RCRA Facility Investigation
SV	=	Sampling Visit
SWMU	=	Solid Waste Management Unit
TCE	=	Trichloroethylene
TPH	=	Total Petroleum Hydrocarbons
VSI	=	Visual Site Inspection

APPENDIX B

RFI APPROVAL LETTER AND CMS SCOPE OF WORK

New York State Department of Environmental Conservation

Division of Solid and Hazardous Materials

Bureau of Radiation & Hazardous Site Management, Room 460

50 Wolf Road, Albany, New York 12233-7252

Phone: (518) 457-9253 • FAX: (518) 457-9240

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Ms. Rose Sticher
Environmental Manager
Dyno Nobel Inc.
161 Ulster Avenue
Ulster Park, NY 12487-5019

July 11, 2000

Dear Ms. Sticher:

Re: RFI Report for Dyno Nobel facility - December 1999
Corrective Measures

As you requested in today's meeting, the Department reiterates its February 14, 2000 statement that it has reviewed the above referenced report and considers it approved. In addition, we agreed today that a site-wide Corrective Measures Study (CMS) will be prepared for all SWMUs and AOCs requiring remediation instead of separating out some units for an expedited Focused Corrective Measures Study (F-CMS).

The list of SWMUs and AOCs that are considered suitable for a CMS at this time are found in Table I below:

TABLE -1

Unit No.	Unit Description	Category	Next Step*
1	Shooting Pond	SWMU	CMS
2	Burning Cage/Incinerator	SWMU	CMS
3	Copper Wire Burning Area	SWMU	CMS
4	Iron Wire Burning Area	SWMU	CMS
5	Wire Burning Area III	SWMU	CMS
6	Open Burning Pads	SWMU	CMS
7	Open Burning Pads	SWMU	CMS
8	Former Burning Area	SWMU	CMS
9	Waste Powder Catch Basins - Building 2037	SWMU	CMS

Unit No.	Unit Description	Category	Next Step*
10	Waste Powder Catch Basins - Building 2048	SWMU	CMS
11	Waste Powder Catch Basins - Building 2049	SWMU	CMS
13	Former Waste Powder Catch Basins - Lead Azide Building	SWMU	CMS
21	Lead Recycling Unit Area	SWMU	CMS
22	Former Landfill	SWMU	CMS
23	Former Dump	SWMU	CMS
24	Former Wastewater Treatment Facility	SWMU	CMS
26D	Burnable Waste Satellite Accumulation Areas	SWMU	CMS
26E	Burnable Waste Satellite Accumulation Areas	SWMU	CMS
26G	Burnable Waste Satellite Accumulation Areas	SWMU	CMS
27	Sanitary Sewer System	SWMU	CMS
29	Drainage Ditch (Downgrade of Building 2049)	SWMU	CMS
30	Drainage Ditch (Downgrade of Building 2036)	SWMU	CMS
32	Old Dump (near water tower)	SWMU	CMS
33	Mercury Fulminate Tanks Area	SWMU	CMS
35	Stone Fence Dump	SWMU	CMS
37	Former Shell Plant Drum Storage Area	SWMU	CMS
39	Former Wastewater Discharge Area	SWMU	CMS
40	Pilot Line Condensate Collection Sump	SWMU	CMS
42	SAC Building Steam Collection Containers	SWMU	CMS
46	Vacuum Line Condensate Collection Sump - Building 2059 (need conformation samples)	SWMU	CMS
47	Building 2058 Fuse Room	AOC	CMS
48	Mercury Fulminate Area	SWMU	CMS
49	Building 2073 Sump	SWMU	CMS
A	Kerosene Tank Leak	AOC	CMS
B	Open Burning Pads Area	AOC	CMS

Unit No.	Unit Description	Category	Next Step*
C	Open Detonation Pit	AOC	CMS
D	Detonation Test Building	AOC	CMS

* The next step determinations are based on information provided in the RCRA Facility Investigation Report approved by the Department on July 11, 2000 and on the no further action decisions made by the Department on May 2, 1997 and December 15, 1999.

A CMS report must be submitted to this office by December 29, 2000. The CMS should generally follow the guidance provided Dyno in its 373 Permit Appendix II-C Scope of Work for a Corrective Measure Study. It is expected that some items may not be applicable to this particular project, and these items should be discussed with this office before omitting them from the CMS report.

If you have any questions or concerns, please contact Mr. Keith Gronwald or myself at (518) 457-9255.

Sincerely,



Paul Patel
 Environmental Engineer
 Eastern Engineering Section
 Bureau of Radiation and Hazardous Site
 Management
 Division of Solid and Hazardous
 Materials

cc: J. Reidy, EPA Reg. 2
 T. Killeen, Reg. 3
 K. Gronwald
 J. Dolen
 G. Schmiesing, Hercules

SCOPE OF WORK FOR A CORRECTIVE MEASURE STUDY

DYNO NOBEL INC., PORT EWEN, NEW YORK

I. PURPOSE

The purpose of this Corrective Measure Study (CMS) is to develop and evaluate the corrective action alternative or alternatives and to recommend the corrective measure or measures to be taken. This Appendix serves as guidance for developing a CMS and much of its content may not be applicable, especially when developing a focused CMS addressing a presumptive remedy. Permittee should consult with Department representatives before beginning the CMS process regarding which items need to be addressed during the study. The Permittee will furnish the personnel, materials, and services necessary to prepare the corrective measure study, except as otherwise specified.

II. SCOPE

The Corrective Measure Study consists of four tasks:

Task I: Identification and Development of the Corrective Measure Alternative or Alternatives

- A. Description of Current Situation
- B. Establishment of Corrective Action Objectives
- C. Screening of Corrective Measures Technologies
- D. Identification of the Corrective Measure Alternative or Alternatives

Task II: Evaluation of the Corrective Measure Alternative or Alternatives

- A. Technical/Environmental/Human Health/Institutional
- B. Cost Estimate

Task III: Justification and Recommendation of the Corrective Measure or Measures

- A. Technical
- B. Human Health
- C. Environmental

Task IV: Reports

- A. Progress
- B. Final

III. TASK I: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVE OR ALTERNATIVES

Based on the results of the RCRA Facility Investigation and consideration of the identified Preliminary Corrective Measure Technologies (Task II of Appendix III-B), the Permittee shall identify, screen, and develop the alternative or alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

The Permittee shall submit an update to the information describing the current situation at the facility and the known nature and extent of the contamination as documented by the RCRA Facility Investigation Report. The Permittee shall provide an update to information presented in Task I of the RFI to the Commissioner regarding previous response activities and any interim measures which have or are being implemented at the facility. The Permittee shall also make a facility-specific statement of the purpose for the response, based on the results of the RCRA Facility Investigation ("RFI"). The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

The Permittee, in conjunction with the Department, shall establish site specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA and New York State guidance, and the requirements of any applicable federal and state statutes. At a minimum, all corrective actions concerning groundwater releases from regulated units must be consistent with, and as stringent as, those required under 6NYCRR 373-2.6.

C. Screening of Corrective Measure Technologies

The Permittee shall review the results of the RFI and reassess the technologies specified in Task II and identify additional technologies which are applicable at the facility. The Permittee shall screen the preliminary corrective measure technologies identified in Task II of the RFI and any supplemental technologies to eliminate those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-

specific conditions. The screening step may also eliminate technologies based on inherent technology limitations. Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration;

2. Waste Characteristics

Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site); and

3. Technology Limitations

During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

D. Identification of the Corrective Measure Alternative or Alternatives

The Permittee shall develop the corrective measure alternative or alternatives based on the corrective action objectives and analysis of the Preliminary Corrective Measure Technologies, as presented in Task II of the RFI and as supplemented following the preparation of the RFI Final Report. The Permittee shall rely on engineering practice to determine which of the previously identified technologies appear most suitable. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that each appear to adequately address all problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. The Permittee shall document the reasons for excluding technologies, identified in Task II, as supplemented in the development of the alternative or alternatives.

IV. TASK II: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

The Permittee shall describe each corrective measure alternative that passes through the Initial Screening in Task I of Appendix III-C and evaluate each corrective measure alternative and its components. The evaluation shall be based on technical, environmental, human health and institutional concerns. The Permittee shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

The Permittee shall provide a description of each corrective measure alternative which includes, but is not limited to the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. The Permittee shall evaluate each alternative in the four following areas:

1. Technical

The Permittee shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

- (a) The Permittee shall evaluate performance based on the effectiveness and useful life of the corrective measure:
- (i) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and
 - (ii) Useful life is defined as the length of time the level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness

of the technologies, must be considered in estimating the useful life of the project.

- (b) The Permittee shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:
 - (i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straight forward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and
 - (ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. The Permittee should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes.
- (c) The Permittee shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:
 - (i) Constructability is determined by conditions both internal and external to the facility conditions and include such items as location of underground utilities, depth of water table, heterogeneity of subsurface materials, and location of the facility (i.e., remote location vs. a congested urban area). The Permittee shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and
 - (ii) Time has two components that shall be addressed: (1) the time it takes to implement a corrective measure; and (2) the time it takes to actually see beneficial results. Beneficial

results are defined as the reduction of contaminants to some acceptable, pre-established level.

- (d) The Permittee shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Among the factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental

The Permittee shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the facility conditions and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short and long term beneficial and adverse effects of the response alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health

The Permittee shall assess each alternative in terms of the extent to which it mitigates short and long term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected populations. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines.

4. Institutional

The Permittee shall assess relevant institutional needs for each alternative. Specifically, the effects of Federal, State, and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

B. Cost Estimate

The Permittee shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital, operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (nonconstruction and overhead) costs.

(a) Direct capital costs include:

- (i) Construction costs: Costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure;
- (ii) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the action; these materials remain until the corrective action is complete;
- (iii) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and
- (iv) Buildings and services costs: Costs of process and nonprocess buildings, utility connections, purchased services, and disposal costs.

(b) Indirect capital costs include:

- (i) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;
- (ii) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permits for installation and operation;
- (iii) Startup and shakedown costs: Costs incurred during corrective measure startup; and
- (iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate facility characterization.

2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. The Permittee shall consider the following operation and maintenance cost components;

- (a) Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;
- (b) Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;
- (c) Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;
- (d) Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;
- (e) Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues generated during operations;
- (f) Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;
- (g) Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accidental insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;
- (h) Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and
- (i) Other costs: Items that do not fit any of the above categories.

V. TASK III: JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

The Permittee shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Tradeoffs among health risks, environmental effects, and other pertinent factors shall be highlighted. The Commissioner will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks II and III of Appendix III-C.

At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;
2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and facility conditions similar to those anticipated will be given preference;
3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and
4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

The corrective measure or measures must comply with existing EPA and/or State criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. Environmental

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored.

VI. TASK IV: REPORTS

A. Progress Reports

The Permittee shall provide the Commissioner with signed progress reports as required by Condition B.8.(a) of Module III of this Permit.

B. Corrective Measures Study ("CMS") Final Report

The Permittee shall prepare a CMS Final Report as required by Condition E.11. of Module III of this Permit. The CMS Final Report shall include all information gathered under the approved CMS Workplan. The CMS Final Report shall at a minimum include:

1. A description of the facility;
 - (a) Site topographic map and preliminary layouts.
2. A summary of the corrective measure or measures;
 - (a) Description of the corrective measure or measures and rationale for selection;
 - (b) Performance expectations;
 - (c) Preliminary design criteria and rationale;
 - (d) General operation and maintenance requirements; and
 - (e) Long-term monitoring requirements.
3. A summary of the RCRA Facility Investigation and impact on the selected corrective measure or measures;
 - (a) Field studies (groundwater, surface-water, soil, air); and
 - (b) Laboratory studies (bench scale, pilot scale).
4. Design and Implementation Precautions;
 - (a) Special technical problems;
 - (b) Additional engineering data required;

- (c) Permits and regulatory requirements;
 - (d) Access, easements, right-of-way;
 - (e) Health and safety requirements; and
 - (f) Community relations activities.
5. Cost Estimates and Schedules;
- (a) Capital cost estimate;
 - (b) Operation and maintenance cost estimate; and
 - (c) Project schedule (design, construction, operation).

APPENDIX C

**INORGANIC CONSTITUENTS EXCEEDING UNRESTRICTED
USE OF SOIL CLEANUP CRITERIA**

TABLE C-1
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 1 and 22
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum	Antimony	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Potassium	Selenium	Silver
22-01-1.0	9/8/97	28000					21000	440 *	58	2400	18	
22-02-1.0	9/8/97						2400		89		8.1	
22-03-1.0	9/8/97	21000					5000					
22-04-1.0	9/8/97	36000			46		33000	590 *	240	2300	31	
22-05-1.0	9/8/97								14			
22-06-1.0	9/8/97				27		1400				37	
22-07-1.0	9/8/97		8.4	N	8.7	75	4800	2000 *			280	
22-08-1.0	9/8/97	22000	11	N	38	80	100000	4000 *		4600	64	65 *
22-10-1.0	9/8/97	23000	N*					490 E		2200	61	
22-11-1.0	9/8/97										14	
22-13-1.0	5/5/98					280	N	11000 *	3500 *		490	N*
22-14-1.0	5/5/98					98	N	8000 *	3700 *		2200	N*
22-14-4-6	7/23/99						2600					
22-15-1.0	5/5/98						3700 *	3600 *			530	N*
22-16-1.0	5/5/98						2600 *	4700 *			740	N*
22-18-1.0	5/5/98					42	N*	1200 *			78	N*
22-19-1.0	5/5/98										5.6	N*
22-20-1.0	5/5/98						18000 *				26	N*
22-21-1.0	5/5/98					44	N*					
22-22-1.0	10/23/98						5400	N	550		18	
22-23-1.0	10/23/98						4300	N			13	
22-24-1.0	10/23/98						2300	N	440		33	
22-25-1.0	10/23/98						3460	N			12	
22-26-1.0	10/23/98						6600	N	35		16	
22-27-1.0	10/23/98						16000	N	67		85	
22-28-1.0	10/23/98						4700	N			49	
22-29-1.0	10/23/98						3900	N			120	
22-30-1.0	10/23/98				12		7200	N				
22-31-1.0	4/29/99						7000		48		43	
22-32-1.0	4/29/99						1000					
22-33-1.0	4/29/99								16			

TABLE C-2
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 2 and AOC A
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum	Antimony	Cadmium	Chromium	Copper	Lead	Potassium	Selenium	TPH
Screening Conc.		19265	5	8	38	600	400	1900	5	100
02-01 4-6	7/13/99								14	N
02-01-1.0	9/5/97						2600	E*		10000
02-01-1.0	4/29/98						4800	*	6	
02-02-1.0	9/5/97				48	E	460	E*	24	E* 1100
02-04-1.0	9/5/97			9.8						
02-06-1.0	9/5/97					1200	N	2000		190
02-07-1.0	9/5/97		6.1	N		54000	N		190	580
02-07-1.0	4/29/98			8.1	*	70000		*	340	
02-07 4-6	7/14/99					16000			160	N
02-08-1.0	9/5/97								10	E*
02-09-1.0	9/5/97							2200	8.8	E*
02-10-1.0	9/5/97					16000	*		25	E*
02-11-1.0	9/5/97					9100	*	620	35	E*
02-12-1.0	9/5/97	23000	E*			740	*			
02-14-1.0	4/29/98					27000		560	43	
02-18-1.0	4/29/98					770				
02-20-1.0	10/20/98					2200				
02-21-1.0	10/20/98						790			
02-27-1.0	4/28/99			12		900				
AOC-A-04-1.0	9/9/97								18000	

TABLE C-3
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 3 & 5
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum 19265	Arsenic 29	Cadmium 8	Copper 600	Lead 400	Selenium 5	TPH 100
03-02-1.0	9/4/97		49	N*	860	78000	N	23 E
03-02 4-6	7/14/99				9.5			
03-03-1.0	9/4/97	20000			1000	N		
03-05-1.0	9/4/97				730	30000	N	16 E 140
03-08-1.0	9/4/97		54	N*	690	100000	N	680 E 38 E 810
03-08 4-6	7/14/99				43	3300	5200	500 N
03-10-1.0	5/4/98				710	48000 *	2300 *	380 *
03-13-1.0	10/20/98				1100			
03-15-1.0	4/28/99				16			

TABLE C-4
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 4
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum 19265	Arsenic 29	Cadmium 8	Copper 600	Potassium 1900	Selenium 5	
04-04-1.0	9/5/97	22000	E*					
04-05-1.0	9/5/97		32	*	1600	*	14	
04-06-1.0	9/5/97			8.5	NE	1100	*	2000
04-07-1.0	4/30/98			12	N			7.3
04-08-1.0	4/30/98			16	N	810		6.2
04-09-1.0	10/20/98			8.8				

TABLE C-5
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 AOC B (SWMU 6, 7 & 8)
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum	Antimony	Barium	Chromium	Lead	Mercury	Potassium	Selenium	TPH
Screening Conc.		19265	5	1600	38	400	10	1900	5	100
06-02-1.0	9/4/97								88	E
06-03-1.0	9/4/97								26	E
06-04-1.0	9/4/97	22000					18	*N	46	E
06-05-1.0	9/4/97								7.1	E
06-06-1.0	9/4/97								63	E
06-07-1.0	9/4/97			3900				2300	120	E
06-07-1.0	5/1/98			2700	N	1700			640	
06-08-1.0	9/4/97								16	E
06-08 4-6	7/15/99								34	
06-08 6-8	7/15/99								17	
06-09-1.0	9/4/97			4400		7100	E		3000	E
06-09-1.0	5/1/98		8.5	2900	N	14000			1900	
06-10-1.0	9/4/97		9	17000		14000	E		7900	E
06-10-1.0	5/1/98				56				6.9	
06-10 2-4	7/14/99					440	N		260	N
06-11-1.0	9/4/97							2200	19	E
06-12-1.0	9/3/97			1800		820	E		260	E*
06-15-1.0	5/1/98								45	
06-16-1.0	5/1/98								5.1	
06-17-1.0	5/1/98								50	
06-18-1.0	5/4/98								55	*
06-19-1.0	5/4/98					780	*		240	*
06-19 2-4	7/15/99		11	N		8000	N		1700	
06-20-1.0	5/4/98					4600	*		1000	*
06-21-1.0	5/4/98					4100	*		950	*

TABLE C-6
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 9
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10	
09-01-1.0	9/12/97	25	
09-06-1.0	9/12/97	14	
09-07-1.0	9/12/97	110	
09-07 2-4	7/12/99	49	
09-13-1.0	9/12/97	16	
09-18-1.0	4/28/98	50	N*

TABLE C-7
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 10
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265	Mercury 10
10-01-1.0	9/15/97		330
10-02-1.0	9/15/97	20000 E	51
10-03-1.0	9/15/97		16
10-04-1.0	9/15/97		120
10-05-1.0	9/15/97		34
10-06-1.0	9/15/97		600
10-08-1.0	9/15/97		37
10-09-1.0	9/15/97		58
10-10-1.0	9/15/97		17
10-14-1.0	4/29/98		77
10-15-1.0	4/29/98		180
10-18-1.0	4/29/98		750
10-19-1.0	10/22/98		200
10-19 2-4	7/8/99		38
10-21-1.0	10/22/98		540
10-22-1.0	10/22/98		580
10-23-1.0	4/29/99		160
10-24-1.0	4/29/99		20

TABLE C-8
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 11
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10	Potassium 1900
11-02-1.0	9/11/97	12	
11-03-1.0	9/11/97	240	
11-03 2-4	7/12/99	37	
11-04-1.0	9/11/97	20	
11-06-1.0	9/11/97		2200
11-08-1.0	4/28/98	41	N*
11-12-1.0	10/22/98	51	
11-14-1.0	4/29/99	13	

TABLE C-9
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 13
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10	
13-08-1.0	9/13/97	21	
13-09-1.0	9/13/97	110	
13-10-1.0	9/13/97	16	
13-11-1.0	9/13/97	61	
13-12-1.0	9/13/97	14	
13-13-1.0	9/13/97	120	
13-17-1.0	4/30/98	20	N
13-19-1.0	4/30/98	22	N
13-21-1.0	10/21/98	150	

TABLE C-10
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 21
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum 19265	Antimony 5	Barium 1600	Lead 400	Selenium 5
21-01-1.0	9/16/97		97 N	6200	27000 E	1300 N
21-02-1.0	9/16/97				680 E	23 N
21-03-1.0	9/16/97	20000 E				
21-05-1.0	9/16/97					8.1 N
21-06-1.0	9/16/97	24000				
21-09-1.0	9/16/97	24000				24 N
21-10-1.0	4/29/98				760 *	120
21-12-1.0	4/29/98					27
21-13-1.0	4/29/98				1200 *	
21-14-1.0	4/29/98					5.4
21-15-1.0	4/29/98					18
21-16-1.0	4/29/98				460 *	18
21-19-1.0	10/21/98					5.8
21-23-1.0	10/21/98					24

TABLE C-11
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 23
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265	Potassium 1900		
23-04-1.0	9/9/97	21000	N*		
23-05-1.0	9/9/97	27000	N*	2200	*
23-08-1.0	9/9/97	20000	N*		

TABLE C-12
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 26D
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Aluminum 19265	Copper 600	Lead 400	Selenium 5
26D-04-1.0	9/18/97	20000	3400		
26D-05-1.0	9/18/97			600	E
26D-06-1.0	9/18/97				21 N
26D-07-1.0	4/30/98				16
26D-08-1.0	4/30/98			1800	140
26D-09-1.0	4/30/98				140
26D-10-1.0	10/21/98			1000	41
26D-11-1.0	10/21/98				15
26D-13-1.0	4/28/99				18

TABLE C-13
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 26E
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10	Selenium 5
26E-03-1.0	9/15/97	17	
26E-04-1.0	9/15/97		7 N

TABLE C-14
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 26G
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10		Selenium 5	
26G-01-1.0	9/10/97			25	E*
26G-02-1.0	9/10/97	37		44	E*
26G-03-1.0	9/10/97	130			
26G-04-1.0	9/10/97			6.9	E*
26G-05-1.0	4/30/98	1500	N	16	
26G-07-1.0	4/30/98			1600	
26G-08-1.0	4/30/98			24	
26G-09-1.0	4/30/98			17	
26G-10-1.0	4/30/98			1400	
26G-11-1.0	4/30/98	17	N	23	
26G-12-1.0	4/30/98	16	N	24	
26G-16 2-4	7/6/99			6.3	

TABLE C-15
INORGANIC CONSTITUENTS EXCEEDING
UNRESTRICTED USE SOIL CLEANUP CRITERIA
SWMU No. 27
(all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265
27-01-1.5	9/11/97	21000

TABLE C-16
INORGANIC CONSTITUENTS EXCEEDING
UNRESTRICTED USE SOIL CLEANUP CRITERIA
SWMU No. 29
(all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury
29-01-1.0	9/17/97	140

TABLE C-17
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 32
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Selenium Screening Conc.	
32-01-1.0	9/4/97	32	E
32-04-1.0	9/4/97	160	E*
32-04-1.0	4/28/98	28	

TABLE C-18
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 33
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Mercury 10	
33-01-1.0	9/11/97	130	
33-01-1.0	4/28/98	74	N*
33-02-1.0	9/11/97	13	
33-02-1.0	4/28/98	82	N*
33-04-1.0	9/11/97	630	
33-04-1.0	4/28/98	890	N*
33-05-1.0	9/11/97	46	
33-05-1.0	4/28/98	43	N*
33-07-1.0	9/11/97	38	
33-07-1.0	4/28/98	28	N*
33-08-1.0	9/11/97	52	
33-08-1.0	4/28/98	37	N*
33-13 4-6	7/12/99	18	
33-13-1.0	4/28/98	7400	N*
33-15-1.0	4/28/98	22	N*
33-17-1.0	10/22/98	63	

TABLE C-19
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 SWMU No. 34
 (all values in MG/KG)

SAMPLE LOCATION Screening Conc.	SAMPLE DATE	Aluminum 19265	Potassium 1900		
34-03-1.0	9/8/97	26000	N*		
34-04-1.0	9/8/97	22000		2000	E*
34-05-1.0	9/8/97	20000			
34-06-1.0	9/8/97	23000			
34-07-1.0	9/8/97	21000			
34-09-1.0	9/8/97	21000			
34-11-1.0	9/8/97	20000			

TABLE C-26
 INORGANIC CONSTITUENTS EXCEEDING
 UNRESTRICTED USE SOIL CLEANUP CRITERIA
 AOC C, D & SWMU 26G
 (all values in MG/KG)

SAMPLE LOCATION	SAMPLE DATE	Copper 600	Lead 400		Mercury 10		Selenium 5	
AOC-C-03-1.0	9/17/97				19	N	48	N
AOC-C-04-1.0	9/17/97						7.2	N
AOC-C-05-1.0	9/17/97	8800	870	E	20	N	180	N
AOC-C-14-1.0	4/30/98				16		39	
AOC-C-16-1.0	4/30/98	3400	950		310		180	
AOC-C-20-1.0	10/19/98						9.7	

APPENDIX D

**COST ESTIMATE FOR REMEDIATION TO UNRESTRICTED
USE SOIL CLEANUP CRITERIA**

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,300
	2a	EA ACRE	4 0.3	213 1200	\$900 \$400
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$17,000
	4	DAY DAY	40 40	300 120	\$12,000 \$4,800
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 500	N/A 1.00	\$500
	6	LS	N/A	N/A	\$16,000
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	40	22	\$900
	8	DAY	40	380	\$15,000
	8	ACRE	0.3	300	\$100
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 40	N/A 790	\$32,000
	10	ACRE	0.3	6000	\$1,800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	11	LS	N/A	N/A	\$2,000
	11	EA EA	4 4	213 280	\$900 \$1,100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	12	LS	N/A	N/A	\$5,900
	12	SF	5,000	0.50	\$2,500
	12	SF	5,000	0.20	\$1,000
	12	EA	70	4	\$280
	12	EA	70	15	\$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	13	LS	N/A	N/A	\$1,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. DEWATERING Pump Water treatment - GAC		LS	N/A	N/A	\$17,000
	29	DAY	40	46.34	\$1,900
	30	EA	1	15211	\$15,000
10. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	6,000	10	\$60,000
	28	DAY	40	2500	\$100,000
11. UXB ASSISTANCE	15	CY	3,000	21	\$60,000
12. CLEAN FILL - IN PLACE	16	ACRE	0.3	2050	\$600
13. VEGETATIVE COVER	22	TON	3,600	10	\$36,000
14. STABILIZATION OF EXCAVATED MATERIALS Cement Kiln Dust					\$350,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$35,000
	24	LS	N/A	N/A	\$17,500
Other Costs					
	25			Waste Characterization of Soil for Disposal	\$3,900
	26			Post Excavation Soil Analysis	\$3,800

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$1,100,000
				SUBTOTAL ESTIMATE (Non-Hazardous):	\$1,500,000
				Contingency @ 20%	\$300,000
				Engineering @ 5%	\$75,000
				Constr/Mngmnt/Admin @ 10%	\$150,000
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$2,200,000
				SUBTOTAL ESTIMATE (Hazardous):	\$2,600,000
				Contingency @ 20%	\$520,000
				Engineering @ 5%	\$75,000
				Constr/Mngmnt/Admin @ 10%	\$150,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$2,000,000
				if waste is Hazardous	\$3,300,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1-22 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$9,400
	2a	EA ACRE	4 7.1	213 1200	\$900 \$8,500
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$42,000
	4	DAY DAY	100 100	300 120	\$30,000 \$12,000
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 5,200	N/A 1.00	\$5,200 \$5,200
	6	LS	N/A	N/A	\$42,000
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	100	22	\$2,200
	8	DAY ACRE	100 7.1	380 300	\$38,000 \$2,100
	9	LS DAY	N/A 100	N/A 790	\$79,000 \$79,000
5. DUST CONTROL MEASURES Water tank	10	ACRE	7.1	6000	\$43,000 \$43,000
	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	12	LS	N/A	N/A	\$10,000
	13	SF SF EA EA LS	10,000 10,000 90 90 N/A	0.50 0.20 4 15 N/A	\$5,000 \$2,000 \$400 \$1,400 \$1,000
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	14	EA	4	280	\$1,100
	15	EA	4	280	\$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	16	LS	N/A	N/A	\$10,000
	17	SF SF EA EA LS	10,000 10,000 90 90 N/A	0.50 0.20 4 15 N/A	\$5,000 \$2,000 \$400 \$1,400 \$1,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1-22 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	31,000	10	\$310,000
10. UXB ASSISTANCE	28	DAY	9	2500	\$24,000
11. CLEAN FILL - IN PLACE	15	CY	31,000	21	\$650,000
12. VEGETATIVE COVER	16	ACRE	7.1	2050	\$15,000
13. STABILIZATION OF EXCAVATED MATERIALS Cement Kiln Dust	22	TON	9,300	10	\$93,000
14. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$130,000
15. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$65,000
<u>Other Costs</u>					
	25		Waste Characterization of Soil for Disposal		\$20,000
	26		Post Excavation Soil Analysis		\$31,000
	27		<u>Non-Hazardous Waste</u> Transportation & Disposal (\$87/Ton)		\$4,900,000
SUBTOTAL ESTIMATE (Non-Hazardous) :					\$6,400,000

Subtotal - Line Items
\$1,300,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1-22 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
				Contingency @ 20%	\$1,300,000
				Engineering @ 5%	\$320,000
				Constr/Mngmnt/Admin @ 10%	\$640,000
				<u>Hazardous Waste</u>	
	27			Transportation & Disposal (\$178/Ton)	\$10,000,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$12,000,000
				Contingency @ 20%	\$2,400,000
				Engineering @ 5%	\$320,000
				Constr/Mngmnt/Admin @ 10%	\$640,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$9,000,000
				if waste is Hazardous	\$15,000,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 2 & AOC A - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	\$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$4,200
		DAY	10	300	\$3,000
		DAY	10	120	\$1,200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$700
		LF	700	1.00	\$700
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$4,200
		DAY	10	22	\$200
		DAY	10	380	\$3,800
		ACRE	0.5	300	\$200
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$7,900
		DAY	10	790	\$7,900
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.5	6000	\$3,000
					\$3,000
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	\$900
		EA	4	280	\$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$10,000
		SF	10,000	0.50	\$5,000
		SF	10,000	0.20	\$2,000
		EA	90	4	\$400
		EA	90	15	\$1,400
		LS	N/A	N/A	\$1,000

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SWMU 2 & AOC A - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	4,400	10	\$44,000
10. CLEAN FILL - IN PLACE	15	CY	4,400	21	\$92,000
11. VEGETATIVE COVER	16	ACRE	0.4	2050	\$900
12. ASPHALT SAW CUT	21	LF	400	3.00	\$1,200
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17 18 27	CY CY TON	60 60 90	10 10 54	\$6,100 \$600 \$4,900
14. ASPHALT REPLACEMENT	20	SF	3,100	2	\$6,200
Subtotal - Line Items					\$180,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$18,000
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$9,000
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$2,800
	26	Post Excavation Soil Analysis			\$5,900

Excavation and Off-Site Disposal Cost Estimate
 SWMU 2 & AOC A - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$570,000
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$800,000
				Contingency @ 20%	\$160,000
				Engineering @ 5%	\$40,000
				Constr/Mngmnt/Admin @ 10%	\$80,000
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$1,200,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$1,400,000
				Contingency @ 20%	\$280,000
				Engineering @ 5%	\$40,000
				Constr/Mngmnt/Admin @ 10%	\$80,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$1,100,000
				if waste is Hazardous	\$1,800,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 3 & 5 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	1	LS	N/A	N/A	\$1,100
Prep staging area	2a	EA ACRE	4 0.2	213 1200	\$900 \$200
2. HEALTH AND SAFETY MEASURES					
PPE (est. \$50/pers/day/w/ 6 people using PPE)	3	LS	N/A	N/A	\$2,500
Air Monitoring (dust and vapor)	4	DAY DAY	6 6	300 120	\$1,800 \$700
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	5	LS LF	N/A 400	N/A 1.00	\$400
4. SITE MAINTENANCE					
Sanitary facilities	6	LS	N/A	N/A	\$2,500
Trailer	7	DAY	6	22	\$100
Cleanup of work areas	8	DAY ACRE	6 0.2	380 300	\$2,300 \$60
5. DUST CONTROL MEASURES					
Water tank	9	LS DAY	N/A 6	N/A 790	\$4,700
6. SURVEYING & RECORD DOCUMENTS					
Survey crew (2 person) and Survey documents	10	ACRE	0.2	6000	\$1,200
7. DEMOBILIZATION					
Removal of non-permanent mat's & facilities	1	LS	N/A	N/A	\$2,000
Equipment decontamination	11	EA EA	4 4	213 280	\$900 \$1,100
8. TEMPORARY WASTE CONTAINMENT AREA					
Geomembrane	12	LS	N/A	N/A	\$10,000
Geotextile	12	SF	10,000	0.50	\$5,000
Haybales	12	SF	10,000	0.20	\$2,000
Sandbags	12	EA	90	4	\$400
Labor	12	EA	90	15	\$1,400
	13	LS	N/A	N/A	\$1,000

Excavation and Disposal Cost Estimate
 SWMU 3 & 5 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	1,700	10	\$17,000
10. CLEAN FILL - IN PLACE	15	CY	1,700	21	\$36,000
11. VEGETATIVE COVER	16	ACRE	0.15	2050	\$300
12. ASPHALT SAW CUT	21	LF	400	3.00	\$1,200
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17 18 27	CY CY TON	40 40 60	10 10 54	\$4,000 \$400 \$3,200
14. ASPHALT REPLACEMENT	20	SF	2,000	2	\$4,000
Subtotal - Line Items					\$87,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$8,700
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$4,400
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$1,100
	26	Post Excavation Soil Analysis			\$4,200

Excavation and Off-Site Disposal Cost Estimate
 SWMU 3 & 5 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT	
		<u>Non-Hazardous Waste</u>				
	27			Transportation & Disposal (\$87/Ton)	\$220,000	
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$330,000	
				Contingency @ 25%	\$80,000	
				Engineering @ 5%	\$17,000	
				Constr/Mngmnt/Admin @ 10%	\$33,000	
		<u>Hazardous Waste</u>				
	27			Transportation & Disposal (\$178/Ton)	\$450,000	
				SUBTOTAL ESTIMATE (Hazardous) :	\$560,000	
				Contingency @ 25%	\$140,000	
				Engineering @ 5%	\$17,000	
				Constr/Mngmnt/Admin @ 10%	\$33,000	
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$460,000	
				if waste is Hazardous	\$750,000	

Excavation and Off-Site Disposal Cost Estimate
SWMU 4 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$400
		DAY	1	300	
		DAY	1	120	
				\$100	
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$400
		LF	400	1.00	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$500
		DAY	1	22	
		DAY	1	380	
		ACRE	0.2	300	
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$800
		DAY	1	790	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.2	6000	\$1,200
				\$1,200	
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	
		EA	4	280	
				\$1,100	
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$3,200
		SF	2,000	0.50	
		SF	2,000	0.20	
		EA	40	4	
		EA	40	15	
		EA	40	\$600	
		LS	N/A	\$1,000	

Environmental Impact
 SWMU 4 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	300	10	\$3,000
10. CLEAN FILL - IN PLACE	15	CY	300	21	\$6,300
11. VEGETATIVE COVER	16	ACRE	0.18	2050	\$400
12. ASPHALT SAW CUT	21	LF	130	3.00	\$400
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17 18 27	CY CY TON	15 15 20	10 10 54	\$1,500 \$200 \$1,100
14. ASPHALT REPLACEMENT	20	SF	800	2	\$1,600
Subtotal - Line Items					\$23,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$2,300
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$1,200
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$300
	26	Post Excavation Soil Analysis			\$2,700

Excavation and Off-Site Disposal Cost Estimate
 SWMU 4 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$39,000
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$69,000
				Contingency @ 20%	\$14,000
				Engineering @ 5%	\$3,500
				Constr/Mngmnt/Admin @ 10%	\$6,900
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$80,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$110,000
				Contingency @ 20%	\$22,000
				Engineering @ 5%	\$3,500
				Constr/Mngmnt/Admin @ 10%	\$6,900
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$90,000
				if waste is Hazardous	\$140,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 6,7,8,32 & AOC B - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$22,000
	2a	EA ACRE	4 1.35	213 15400	\$900 \$21,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$25,000
	4	DAY DAY	60 60	300 120	\$18,000 \$7,200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 1,100	N/A 1.00	\$1,100
		LS	N/A	N/A	\$25,000
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6	DAY	60	22	\$1,300
	7	DAY	60	380	\$22,800
	8	ACRE	1.35	300	\$400
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 60	N/A 790	\$47,000
	10	ACRE	1.35	6000	\$8,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
	12	LS	N/A	N/A	\$10,000
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	12	SF	10,000	0.50	\$5,000
	12	SF	10,000	0.20	\$2,000
	12	EA	90	4	\$400
	12	EA	90	15	\$1,400
	13	LS	N/A	N/A	\$1,000
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12	SF	10,000	0.50	\$5,000
	12	SF	10,000	0.20	\$2,000
	12	EA	90	4	\$400

Excavation and Off-Site Disposal Cost Estimate
SWMU 6,7,8,32 & AOC B - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	18,000	10	\$180,000
10. CLEAN FILL - IN PLACE	15	CY	18,000	21	\$380,000
11. VEGETATIVE COVER	16	ACRE	1.33	2050	\$2,700
12. ASPHALT SAW CUT	21	LF	300	3.00	\$900
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17 18 27	CY CY TON	20 20 30	10 10 54	\$2,000 \$200 \$1,600
14. ASPHALT REPLACEMENT	20	SF	1,200	2	\$2,400
Subtotal - Line Items					\$710,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$71,000
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$36,000
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$46,000
	26	Post Excavation Soil Analysis			\$8,100

Excavation and Off-Site Disposal Cost Estimate
 SWMU 6,7,8,32 & AOC B - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$2,300,000
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$3,200,000
				Contingency @ 20%	\$640,000
				Engineering @ 5%	\$160,000
				Constr/Mngmnt/Admin @ 10%	\$320,000
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$4,800,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$5,700,000
				Contingency @ 20%	\$1,100,000
				Engineering @ 5%	\$160,000
				Constr/Mngmnt/Admin @ 10%	\$320,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$4,300,000
				if waste is Hazardous	\$7,300,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 9 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$400
		DAY	1	300	
		DAY	1	120	
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$300
		LF	300	1.00	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$400
		DAY	1	22	
		DAY	1	380	
		ACRE	0.04	300	
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$800
		DAY	1	790	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.04	6000	\$200
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	
		EA	4	280	
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybates Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$2,800
		SF	1,400	0.50	
		SF	1,400	0.20	
		EA	40	4	
		EA	40	15	
		LS	N/A	N/A	

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 SWMU 9 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	200	10	\$2,000
10. CLEAN FILL - IN PLACE	15	CY	200	21	\$4,200
11. VEGETATIVE COVER	16	ACRE	0.04	2050	\$100
Subtotal - Line Items					\$14,000
12. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$1,400
13. SUBMITTALS/QQC PROGRAM	24	LS	N/A	N/A	\$700
<u>Other Costs</u>					
	25			Waste Characterization of Soil for Disposal	\$300
	26			Post Excavation Soil Analysis	\$2,000
<u>Non-Hazardous Waste</u>					
	27			Transportation & Disposal (\$87/Ton)	\$26,000
SUBTOTAL ESTIMATE (Non-Hazardous) :					\$44,000
Contingency @ 25%					\$11,000
Engineering @ 5%					\$2,200
Constr/Mngmnt/Admin @ 10%					\$4,400

Excavation and Off-Site Disposal Cost Estimate
 SWMU 9 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
					\$53,000
	27				
					\$71,000
					\$18,000
					\$2,200
					\$4,400
					\$62,000
					\$100,000

Hazardous Waste
 Transportation & Disposal
 (\$178/Ton)

SUBTOTAL ESTIMATE
 (Hazardous) :

Contingency @ 25%
 Engineering @ 5%
 Constr/Mngmnt/Admin @ 10%

TOTAL CAPITAL COST ESTIMATE
 if waste is Non-Hazardous

if waste is Hazardous

Excavation and Off-Site Disposal Cost Estimate
SWMU 10 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	\$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$1,300
		DAY	3	300	\$900
		DAY	3	120	\$400
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$600
		LF	600	1.00	\$600
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$1,300
		DAY	3	22	\$70
		DAY	3	380	\$1,100
		ACRE	0.32	300	\$100
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$2,400
		DAY	3	790	\$2,400
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.32	6000	\$1,900
					\$1,900
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	\$900
		EA	4	280	\$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$7,300
		SF	6,800	0.50	\$3,400
		SF	6,800	0.20	\$1,400
		EA	80	4	\$320
		EA	80	15	\$1,200
		LS	N/A	N/A	\$1,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 10 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	1,000	10	\$10,000
10. CLEAN FILL - IN PLACE	15	CY	1,000	21	\$21,000
11. VEGETATIVE COVER	16	ACRE	0.31	2050	\$600
12. ASPHALT SAW CUT	21	LF	200	3.00	\$600
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17 18 27	CY CY TON	8 8 10	10 10 54	\$700 \$80 \$80 \$500
14. ASPHALT REPLACEMENT	20	SF	400	2	\$800
Subtotal - Line Items					\$51,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$5,100
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$2,600
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$600
	26	Post Excavation Soil Analysis			\$4,700

Location at Off-Site Disposal Cost Estimate
 SWMU 10 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$130,000
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$190,000
				Contingency @ 20%	\$38,000
				Engineering @ 5%	\$10,000
				Constr/Mngmnt/Admin @ 10%	\$19,000
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$270,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$330,000
				Contingency @ 20%	\$66,000
				Engineering @ 5%	\$10,000
				Constr/Mngmnt/Admin @ 10%	\$19,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$260,000
				if waste is Hazardous	\$430,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 11 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$900
	2a	EA ACRE	4 0.03	213 1200	\$40
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$400
	4	DAY DAY	1 1	300 120	\$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100
	6	LS	N/A	N/A	\$400
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	1	22	\$20
	8	DAY ACRE	1 0.03	380 300	\$400 \$10
	9	LS DAY	N/A 1	N/A 790	\$800
5. DUST CONTROL MEASURES Water tank	10	ACRE	0.03	6000	\$200
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	11	LS EA EA	N/A 4 4	N/A 213 280	\$900 \$1,100
	12	LS	N/A	N/A	\$2,000
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	13	SF SF	1,400 1,400	0.50 0.20	\$700 \$300
	14	EA EA EA	40 40 40	4 15 15	\$160 \$600 \$600
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	15	EA LS	40 N/A	15 N/A	\$1,000
	16	LS	N/A	N/A	\$2,800

Excavation and Off-Site Disposal Cost Estimate
 SWMU 11 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	200	10	\$2,000
10. CLEAN FILL - IN PLACE	15	CY	200	21	\$4,200
11. VEGETATIVE COVER	16	ACRE	0.03	2050	\$100
Subtotal - Line Items					\$14,000
12. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$1,400
13. SUBMITTALS/QQC PROGRAM	24	LS	N/A	N/A	\$700
<u>Other Costs</u>					
	25			Waste Characterization of Soil for Disposal	\$300
	26			Post Excavation Soil Analysis	\$800
	27			<u>Non-Hazardous Waste</u> Transportation & Disposal (\$87/Ton)	\$26,000
SUBTOTAL ESTIMATE (Non-Hazardous):					\$43,000
Contingency @ 20%					\$9,000
Engineering @ 5%					\$2,200
Constr/Mngmt/Admin @ 10%					\$4,300

Excavation at Off-Site Disposal Cos. - Estimate
 SWMU 11 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
					\$53,000
					\$70,000
					\$14,000
					\$2,200
					\$4,300
					\$59,000
					\$91,000

Hazardous Waste
 Transportation & Disposal
 (\$178/Ton)

SUBTOTAL ESTIMATE
 (Hazardous):
 Contingency @ 20%
 Engineering @ 5%
 Constr/Mngmnt/Admin @ 10%

TOTAL CAPITAL COST ESTIMATE
 if waste is Non-Hazardous
 if waste is Hazardous

Environmental Assessment
 SWMU 13 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 600	N/A 1.00	\$600 \$600
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.3	N/A 22 380 300	\$500 \$20 \$400 \$90
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.3	6000	\$1,800 \$1,800
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS SF SF EA EA LS	N/A 2,800 2,800 50 50 N/A	N/A 0.50 0.20 4 15 N/A	\$4,000 \$1,400 \$600 \$200 \$800 \$1,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 13 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	400	10	\$4,000
10. CLEAN FILL - IN PLACE	15	CY	400	21	\$8,400
11. VEGETATIVE COVER	16	ACRE	0.3	2050	\$600
			Subtotal - Line Items		\$24,000
12. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$2,400
13. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$1,200
			Other Costs		
	25		Waste Characterization of Soil for Disposal		\$300
	26		Post Excavation Soil Analysis		\$3,900
	27		Non-Hazardous Waste Transportation & Disposal (\$87/Ton)		\$52,000
			SUBTOTAL ESTIMATE (Non-Hazardous):		\$80,000
			Contingency @ 25%		\$20,000
			Engineering @ 5%		\$4,000
			Constr/Mngmnt/Admin @ 10%		\$8,000

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 SWMU 13 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
					\$110,000
					\$140,000
					\$35,000
					\$4,000
					\$8,000
					\$110,000
					\$190,000

Hazardous Waste

Transportation & Disposal (\$178/Ton)

27

SUBTOTAL ESTIMATE (Hazardous) :

- Contingency @ 25%
- Engineering @ 5%
- Constr/Mngmnt/Admin @ 10%

TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous

if waste is Hazardous

Excavation and Off-Site Disposal Cost Estimate
 SWMU 21 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$800
		DAY	2	300	
		DAY	2	120	
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$700
		LF	700	1.00	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$900
		DAY	2	22	
		DAY	2	380	
		ACRE	0.3	300	
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$1,600
		DAY	2	790	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.3	6000	\$1,800
7. DEMOBILIZATION Removal of non-permanent mat'l's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	
		EA	4	280	
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$4,400
		SF	3,400	0.50	
		SF	3,400	0.20	
		EA	50	4	
		EA	50	15	
		EA	50	15	
		LS	N/A	N/A	

Excavation and Off-Site Disposal Costs Estimate
 SWMU 21 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	500	10	\$5,000
10. CLEAN FILL - IN PLACE	15	CY	500	21	\$11,000
11. VEGETATIVE COVER	16	ACRE	0.11	2050	\$200
12. ASPHALT SAW CUT	21	LF	700	3.00	\$2,100
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17 18 27	CY CY TON	200 200 300	10 10 54	\$20,000 \$2,000 \$16,200
14. ASPHALT REPLACEMENT	20	SF	8,200	2	\$16,000
Subtotal - Line Items					\$67,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$6,700
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$3,400
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$300
	26	Post Excavation Soil Analysis			\$4,600

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 SWMU 21 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$65,000
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$150,000
				Contingency @ 20%	\$30,000
				Engineering @ 5%	\$7,500
				Constr/Mngmnt/Admin @ 10%	\$15,000
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$130,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$210,000
				Contingency @ 20%	\$42,000
				Engineering @ 5%	\$7,500
				Constr/Mngmnt/Admin @ 10%	\$15,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$200,000
				if waste is Hazardous	\$270,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 26D - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$800
		DAY DAY	2 2	300 120	
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$600
		LF	600	1.00	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$900
		DAY	2	22	
		DAY ACRE	2 0.4	380 300	
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$1,600
		DAY	2	790	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.4	6000	\$2,200
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	
		EA	4	280	
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$4,900
		SF	4,000	0.50	
		SF	4,000	0.20	
		EA	60	4	
		EA	60	15	
LS	N/A	N/A			

Excavation and Off-Site Disposal Cost Estimate
 SWMU 26D - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	600	10	\$6,000
10. CLEAN FILL - IN PLACE	15	CY	600	21	\$13,000
11. VEGETATIVE COVER	16	ACRE	0.3	2050	\$600
12. ASPHALT SAW CUT	21	LF	500	3.00	\$1,500
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17 18 27	CY CY TON	60 60 90	10 10 54	\$600 \$600 \$4,900
14. ASPHALT REPLACEMENT	20	SF	3,500	2	\$7,000
Subtotal - Line Items					\$48,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$4,800
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$2,400
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$400
	26	Post Excavation Soil Analysis			\$4,200

Investigation and Remediation Post Remediation
 SWMU 26D - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$78,000
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$138,000
				Contingency @ 25%	\$35,000
				Engineering @ 5%	\$6,900
				Constr/Mngmnt/Admin @ 10%	\$13,800
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$160,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$220,000
				Contingency @ 25%	\$55,000
				Engineering @ 5%	\$6,900
				Constr/Mngmnt/Admin @ 10%	\$14,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$190,000
				if waste is Hazardous	\$300,000

Location at [unclear] Cos. [unclear]
SWMU 26E - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.030	N/A 22 380 300	\$400 \$20 \$400 \$10
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.030	6000	\$200 \$200
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	50	10	\$500
9. CLEAN FILL - IN PLACE	15	CY	50	21	\$1,100
10. VEGETATIVE COVER	16	ACRE	0.029	2050	\$60

Excavation and Off-Site Disposal Cos. Estimate
 SWMU 26E - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. ASPHALT SAW CUT	21	LF	40	3.00	\$100
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17	CY	1	10	\$10
	18	CY	1	10	\$10
	27	TON	0	54	\$0
13. ASPHALT REPLACEMENT	20	SF	40	2	\$80
Subtotal - Line Items					\$6,900
14. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$700
15. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$300
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$300
	26	Post Excavation Soil Analysis			\$2,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 26E - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$6,500
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$17,000
				Contingency @ 20%	\$3,400
				Engineering @ 5%	\$900
				Constr/Mngmnt/Admin @ 10%	\$1,700
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$13,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$23,000
				Contingency @ 20%	\$4,600
				Engineering @ 5%	\$900
				Constr/Mngmnt/Admin @ 10%	\$1,700
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$23,000
				if waste is Hazardous	\$30,000

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SWMU 26G & AOC C&D - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$800
		DAY	2	300	
		DAY	2	120	
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$600
		LF	600	1.00	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$900
		DAY	2	22	
		DAY	2	380	
		ACRE	0.4	300	
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$1,600
		DAY	2	790	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.4	6000	\$2,400
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	
		EA	4	280	
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$5,800
		SF	4,800	0.50	
		SF	4,800	0.20	
		EA	70	4	
		EA	70	15	
		LS	N/A	N/A	

Excavation and Off-Site Disposal Cost Estimate
 SWMU 26G & AOC C&D - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	700	10	\$7,000
10. CLEAN FILL - IN PLACE	15	CY	700	21	\$15,000
11. VEGETATIVE COVER	16	ACRE	0.4	2050	\$800
Subtotal - Line Items					\$38,000
12. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$3,800
13. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$1,900
<u>Other Costs</u>					
	25		Waste Characterization of Soil for Disposal		\$500
	26		Post Excavation Soil Analysis		\$4,300
	27		<u>Non-Hazardous Waste</u> Transportation & Disposal (\$87/Ton)		\$91,000
SUBTOTAL ESTIMATE (Non-Hazardous):					\$140,000
Contingency @ 20%					\$28,000
Engineering @ 5%					\$7,000
Constr/Mngmnt/Admin @ 10%					\$14,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 26G & AOC C&D - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
					\$190,000
					\$240,000
					\$48,000
					\$7,000
					\$14,000
					\$190,000
					\$310,000

Hazardous Waste
 Transportation & Disposal
 (\$178/Ton)

27

SUBTOTAL ESTIMATE
 (Hazardous) :

Contingency @ 20%
 Engineering @ 5%
 Constr/Mngmnt/Admin @ 10%

TOTAL CAPITAL COST ESTIMATE
 if waste is Non-Hazardous

if waste is Hazardous

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 SWMU 29 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est. \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.02	N/A 22 380 300	\$400 \$20 \$400 \$10
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.02	6000	\$100 \$100
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	40	10	\$400
9. CLEAN FILL - IN PLACE	15	CY	40	21	\$800
10. VEGETATIVE COVER	16	ACRE	0.02	2050	\$50
Subtotal - Line Items					\$6,000

Excavation and Off-Site Disposal: Cost Estimate
 SWMU 29 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. MISCELLANEOUS AND OTHER					
	23	LS	N/A	N/A	\$600
	24	LS	N/A	N/A	\$300
12. SUBMITTALS/CQC PROGRAM					
			<u>Other Costs</u>		
	25		Waste Characterization of Soil for Disposal		\$300
	26		Post Excavation Soil Analysis		\$800
			<u>Non-Hazardous Waste</u>		
	27		Transportation & Disposal (\$87/Ton)		\$5,200
			SUBTOTAL ESTIMATE (Non-Hazardous) :		\$13,000
			Contingency @ 20%		\$2,600
			Engineering @ 5%		\$700
			Constr/Mngmnt/Admin @ 10%		\$1,300
			<u>Hazardous Waste</u>		
	27		Transportation & Disposal (\$178/Ton)		\$11,000
			SUBTOTAL ESTIMATE (Hazardous) :		\$19,000
			Contingency @ 20%		\$3,800
			Engineering @ 5%		\$700
			Constr/Mngmnt/Admin @ 10%		\$1,300
			TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous		\$18,000
			if waste is Hazardous		\$25,000

**Excavation and Off-Site Disposal Cost Estimate
SWMU 33 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY**

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT	
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$4,800	
	2a	EA ACRE	4 0.25	213 15400		\$900 \$3,900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day/w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$4,200	
	4	DAY DAY	10 10	300 120		\$3,000 \$1,200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 500	N/A 1.00	\$500	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6	LS	N/A	N/A	\$4,100	
	7	DAY	10	22		\$200
	8	DAY ACRE	10 0.25	380 300		\$3,800 \$80
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 10	N/A 790	\$7,900	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.25	6000	\$1,500	
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000	
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12	LS	N/A	N/A	\$10,000	
	12	SF	10,000	0.50		\$5,000
	12	SF	10,000	0.20		\$2,000
	12	EA	90	4		\$400
	13	EA LS	90 N/A	15 N/A		\$1,400 \$1,000

Excavation at Off-Site Disposal Cos. - Jima
 SWMU 33 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	2,500	10	\$25,000
10. CLEAN FILL - IN PLACE	15	CY	2,500	21	\$53,000
11. VEGETATIVE COVER	16	ACRE	0.24	2050	\$500
12. ASPHALT SAW CUT	21	LF	130	3.00	\$400
13. EXCAVATE AND DISPOSE OF ASPHALT	17	CY	8	10	\$700
Removal	18	CY	8	10	\$80
Hauling	27	TON	10	54	\$500
Disposal (recycling facility)					
14. ASPHALT REPLACEMENT	20	SF	500	2	\$1,000
15. STABILIZATION OF EXCAVATED MATERIALS	22	TON	100	10	\$1,000
Cement Kiln Dust					\$1,000
Subtotal - Line Items					\$120,000
16. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$12,000
17. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$6,000
Other Costs					
Waste Characterization of Soil for Disposal					\$1,600
Post Excavation Soil Analysis					\$4,700

Excavation and Off-Site Disposal Cost Estimate
 SWMU 33 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$330,000
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$470,000
				Contingency @ 20%	\$90,000
				Engineering @ 5%	\$24,000
				Constr/Mngmnt/Admin @ 10%	\$47,000
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$685,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$830,000
				Contingency @ 20%	\$170,000
				Engineering @ 5%	\$24,000
				Constr/Mngmnt/Admin @ 10%	\$47,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$600,000
				if waste is Hazardous	\$1,100,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 39 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 400	N/A 1.00	\$400 \$400
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.06	N/A 22 380 300	\$400 \$20 \$400 \$20
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.06	6000	\$400 \$400
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	100	10	\$1,000
9. CLEAN FILL - IN PLACE	15	CY	100	21	\$2,100
10. VEGETATIVE COVER	16	ACRE	0.06	2050	\$100
Subtotal - Line Items					\$8,500

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 SWMU 39 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. MISCELLANEOUS AND OTHER					
	23	LS	N/A	N/A	\$900
	24	LS	N/A	N/A	\$400
12. SUBMITTALS/CQC PROGRAM					
		<u>Other Costs</u>			
	25			Waste Characterization of Soil for Disposal	\$300
	26			Post Excavation Soil Analysis	\$2,800
		<u>Non-Hazardous Waste</u>			
	27			Transportation & Disposal (\$87/Ton)	\$13,000
				SUBTOTAL ESTIMATE (Non-Hazardous):	\$26,000
				Contingency @ 20%	\$5,200
				Engineering @ 5%	\$1,300
				Constr/Mngmnt/Admin @ 10%	\$2,600
		<u>Hazardous Waste</u>			
	27			Transportation & Disposal (\$178/Ton)	\$27,000
				SUBTOTAL ESTIMATE (Hazardous):	\$40,000
				Contingency @ 20%	\$8,000
				Engineering @ 5%	\$1,300
				Constr/Mngmnt/Admin @ 10%	\$2,600
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$35,000
				if waste is Hazardous	\$52,000

Excavation Off-Site disposal Just E...ite
 SWMU 40 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.002	N/A 22 380 300	\$400 \$20 \$400 \$10
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.002	6000	\$10 \$10
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	5	10	\$50
9. CLEAN FILL - IN PLACE	15	CY	5	21	\$110
10. VEGETATIVE COVER	16	ACRE	0.002	2050	\$5
Subtotal - Line Items					\$4,800

Excavation and Off-Site Disposal Cost Estimate
 SWMU 40 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. MISCELLANEOUS AND OTHER					
	23	LS	N/A	N/A	\$500
	24	LS	N/A	N/A	\$200
12. SUBMITTALS/COC PROGRAM					
			<u>Other Costs</u>		
	25		Waste Characterization of Soil for Disposal		\$300
	26		Post Excavation Soil Analysis		\$600
			<u>Non-Hazardous Waste</u>		
	27		Transportation & Disposal (\$87/Ton)		\$700
			SUBTOTAL ESTIMATE (Non-Hazardous) :		\$7,100
			Contingency @ 20%		\$1,400
			Engineering @ 5%		\$400
			Constr/Mngmnt/Admin @ 10%		\$700
			<u>Hazardous Waste</u>		
	27		Transportation & Disposal (\$178/Ton)		\$1,300
			SUBTOTAL ESTIMATE (Hazardous) :		\$7,700
			Contingency @ 20%		\$1,500
			Engineering @ 5%		\$400
			Constr/Mngmnt/Admin @ 10%		\$700
			TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous		\$10,000
			if waste is Hazardous		\$10,000

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SWMU 42 - Unrestricted Use Soil Cleanup Criteria
Corrective Measure Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 200	N/A 1.00	\$200 \$200
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.016	N/A 22 380 300	\$400 \$20 \$400 \$10
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.016	6000	\$100 \$100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	30	10	\$300
9. CLEAN FILL - IN PLACE	15	CY	30	21	\$600
10. VEGETATIVE COVER	16	ACRE	0.014	2050	\$30

Excavation and Off-Site Disposal Cost Estimate
 SWMU 42 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. ASPHALT SAW CUT	21	LF	50	3.00	\$200
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17	CY	1	10	\$10
	18	CY	1	10	\$10
	27	TON	0	54	\$0
13. ASPHALT REPLACEMENT	20	SF	70	2	\$100
				Subtotal - Line Items	\$6,100
14. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$600
15. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$300
				<u>Other Costs</u>	
	25			Waste Characterization of Soil for Disposal	\$300
	26			Post Excavation Soil Analysis	\$1,300
	27			<u>Non-Hazardous Waste</u> Transportation & Disposal (\$87/Ton)	\$3,900
				SUBTOTAL ESTIMATE (Non-Hazardous):	\$13,000
				Contingency @ 25%	\$3,300
				Engineering @ 5%	\$700
				Constr/Mngmnt/Admin @ 10%	\$1,300

Excavation and Off-Site Disposal Cost Estimate
SWMU 47 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	\$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$1,300
		DAY	3	300	\$900
		DAY	3	120	\$400
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$200
		LF	200	1.00	\$200
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$1,200
		DAY	3	22	\$70
		DAY	3	380	\$1,100
		ACRE	0.07	300	\$20
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$2,400
		DAY	3	790	\$2,400
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.07	6000	\$400
7. DEMOBILIZATION Removal of non-permanent matting & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	\$900
		EA	4	280	\$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS	N/A	N/A	\$6,600
		SF	6,000	0.50	\$3,000
		SF	6,000	0.20	\$1,200
		EA	70	4	\$300
		EA	70	15	\$1,100
		LS	N/A	N/A	\$1,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 47 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	900	10	\$9,000
10. CLEAN FILL - IN PLACE	15	CY	900	21	\$19,000
11. VEGETATIVE COVER	16	ACRE	0.07	2050	\$100
12. STABILIZATION OF EXCAVATED MATERIALS Cement Kiln Dust	22	TON	100	10	\$1,000
					\$1,000
				Subtotal - Line Items	\$44,000
13. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$4,400
14. SUBMITTALS/QQC PROGRAM	24	LS	N/A	N/A	\$2,200
				Other Costs	
	25			Waste Characterization of Soil for Disposal	\$600
	26			Post Excavation Soil Analysis	\$2,300
	27			Non-Hazardous Waste Transportation & Disposal (\$87/Ton)	\$130,000
				SUBTOTAL ESTIMATE (Non-Hazardous):	\$180,000
				Contingency @ 25%	\$45,000
				Engineering @ 5%	\$9,000
				Constr/Mngmt/Admin @ 10%	\$18,000

Local Environmental Services
 SWMU 48 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	\$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$400
		DAY	1	300	\$300
		DAY	1	120	\$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$300
		LF	300	1.00	\$300
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$500
		DAY	1	22	\$20
		DAY	1	380	\$400
		ACRE	0.1	300	\$40
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$800
		DAY	1	790	\$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.1	6000	\$700
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	\$900
		EA	4	280	\$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 12 13	LS	N/A	N/A	\$2,800
		SF	1,400	0.50	\$700
		SF	1,400	0.20	\$300
		EA	40	4	\$200
		EA	40	15	\$600
		EA	40	15	\$600
		LS	N/A	N/A	\$1,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 48 - Unrestricted Use Soil Cleanup Criteria
 Corrective Measure Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	200	10	\$2,000
10. CLEAN FILL - IN PLACE	15	CY	200	21	\$4,200
11. VEGETATIVE COVER	16	ACRE	0.1	2050	\$200
			Subtotal - Line Items		\$15,000
12. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$1,500
13. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$800
			<u>Other Costs</u>		
	25		Waste Characterization of Soil for Disposal		\$300
	26		Post Excavation Soil Analysis		\$2,000
	27		<u>Non-Hazardous Waste</u> Transportation & Disposal (\$87/Ton)		\$26,000
			SUBTOTAL ESTIMATE (Non-Hazardous) :		\$46,000
			Contingency @ 20%		\$9,000
			Engineering @ 5%		\$2,300
			Constr/Mngmnt/Admin @ 10%		\$4,600

NOTES TO
UNRESTRICTED USE SOIL CLEANUP CRITERIA
EXCAVATION AND OFF-SITE DISPOSAL COST ESTIMATES
CORRECTIVE MEASURES STUDY
DYN0 NOBEL
PORT EWEN, NEW YORK

1. Unit costs based on Means 022-274-0020, mobilization/demobilization up to 50 miles of dozer, loader, backhoe or excavator, 70 H.P. – 250 H.P.
2. A) Unit costs based on ECHOS 17-01-0112, Heavy clearing, without grub, wet clearing, includes loading,hauling and disposal costs, assuming uncontaminated.

B)Unit costs based on Means 021-104-0300, Clear and Grub – cut heavy, trees to 24" diameter, Means 021-104-0350, Clear and Grub – Grub stumps and remove.
3. Cost based on experience with similar applications at other sites.
4. Unit costs based on ECHOS 33-02-0303, Organic vapor analyzer, ECHOS 33-02-0312, Digital dust analyzer.
5. Unit costs based on Means 022-704-1000, Silt fence, polypropylene, 3' high, adverse conditions.
6. Unit costs based on Means 016-420-6430, Toilet, fresh water flush, garden hose.
7. Unit costs based on Means 015-904-0550 Office trailer, furnished, no hookups 50'X12', Means 015-904-0700, air conditioning.
8. Unit costs based on ECHOS 17-04-0101, General Cleanup, where a safety level of D was assumed.
9. Unit costs based on Means 016-420-6900, Water tank, engine driven discharge, 5,000 gallons, Means Crew No. B-33J for 1 Equipment Operator (Med.).
10. Unit costs based on Means 013-306-0100, Conventional topographical maximum, assuming 3 survey submittals consisting of a pre-excavation survey, post-excavation survey and a post-backfill survey.
11. Unit costs based on ECHOS 33-17-0803, Decontaminate heavy size equipment, where a safety level of D was assumed.
12. Unit costs based on costs for same (or similar) item on recent site remediation project in Northeast USA.
13. Unit costs based on 2 laborers working for a total of 1 day to construct the TWCA..
14. Unit costs based on Means 022-238-0200, Backhoe, hydraulic, crawler mtd., 1 CY capacity, Means 022-238-0020, for loading onto trucks, Means 022-238-4100, for heavy soil or stiff clay, Means 022-238-4250 For wet excavation, Means 022-266-2010, Off highway haulers, 22 CY rear/bottom dump, 1000' round trip. Unit costs also contains a scale up factor of 20% for handling of stabilization of excavated material. Excavation volume includes a 20% bulking factor applied to in-place volume. Excavation production rate estimated at 150 CY/day for SWMU Nos. 1 and 1-22. A production rate of 300 CY/day is estimated for all other SWMUs and AOCs.
15. Unit costs based on Means 022-286-0200, remove and stockpile loam, Means 022-266-1130, hauling, 16.5 C.Y. trailer, 20 mile round trip, Means 022-208-4420, structural backfill, 200 hp dozer, and Means 022-226-5700, compaction, sheepsfoot, 12" lift, 3 pass. It is estimated that the backfill will be 50% of excavated material for SWMU No.1.
16. Unit costs based on ECHOS 18-05-0402, Seeding, Vegetative Cover, where a safety level of D was assumed.

17. Unit costs based on Means 022-238-0200, Backhoe, hydraulic, crawler mtd., 1 CY capacity, Means 022-238-0020, for loading onto trucks, Means 022-238-4100, for heavy soil or stiff clay, Means 022-238-4250 For wet excavation, Means 022-266-2010, Off highway haulers, 22 CY rear/bottom dump, 1000' round trip.
18. Unit costs based on Means 022-266-0200, 6 C.Y. dump truck, 4 mile round trip.
19. [Reserved].
20. Unit costs based on Means 025-124-0020, Paving asphaltic concrete, parking lots and driveways, 6" stone base, 2" binder course, 1" topping.
21. Unit costs based on Means 020-728-0010, Saw cutting, asphalt, up to 3" deep, Means 020-728-0020, Each additional inch of depth. Unit cost was determined assuming an existence of a 6" maximum depth of asphalt at the SWMU/AOC.
22. Unit costs based on ECHOS 33-15-0401, Cement Kiln Dust (Bulk). Volume of Cement Kiln Dust needed was based on 40% of tonnage of excavated material for SWMU No. 1, 20% of tonnage of excavated material for SWMU No. 1-22 and 20% of tonnage of excavated material from below the Ground Water Table for all other SWMUs and AOCs.
23. Cost estimated as 10% of subtotal, based on previous experience and includes items such as fence removal/replacement and protection of utilities.
24. Cost estimated as 5% of subtotal, based on previous experience.
25. Unit costs based on analytical lab fee schedule. Cost includes RCRA Waste Characterization (TCLP Metals Extraction and Analysis and Reactivity Analysis) plus 20% for QA/QC testing. The analysis is estimated to be performed for every 500 CY of excavated material.
26. Unit costs based on analytical lab fee schedule. Cost includes RCRA Metals Analysis plus 20% for QA/QC testing. The analysis is estimated to be performed for every 30 linear foot from the sidewall and a bottom sample for every 900 SF of excavated material.
27. Unit costs based on recent price quote from a vendor.
28. Unit cost based on recent price quote from a vendor. This unit cost has been added due to the possibility of the existence of undetonated explosives in SWMU 1 and in a limited portion of SWMU 1/22, approximately 6400 SF, which is considered a "buffer zone". In addition, the need for the UXB evaluation reduces the production rate to 150 C.Y./day, rather than the estimated production rate of 300 C.Y./day for excavation of materials.
29. Unit costs based on ECHOS-Unit Price 17-03-1003, 3" Diameter Contractor's Trash Pump, 150 GPM.
30. Unit costs based on ECHOS-Unit Price 33-13-2024, Carbon Adsorption Unit, 200 GPM, 6,000 Lb fill, Disposable, assuming no change-outs will be needed.

REFERENCES

1. **Heavy Construction Cost Data (Means); R. S. Means Company, Inc.; 13th Annual Edition, 1999**
2. **Environmental Remediation Cost Data - Assemblies, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.**
3. **Environmental Remediation Cost Data - Unit Price, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.**

APPENDIX E

**INORGANIC CONSTITUENTS EXCEEDING INDUSTRIAL
USE SOIL CLEANUP CRITERIA**

TABLE E-1
 INORGANIC CONSTITUENTS EXCEEDING INDUSTRIAL USE SOIL CLEANUP CRITERIA
 SWMU Nos. 1 & 22
 (all values in mg/kg)

SAMPLE LOCATION	SAMPLE DATE	Arsenic 27	Copper 76,000	Lead 1,000
01-01- 4.0	6/11/98			8300
01-01- 6.0	6/11/98			8300
01-01- 8.5	6/11/98			12000 *
01-01-10.0	6/11/98			11000
01-02- 4.0	6/10/98			1900
01-02- 6.0	6/10/98			1100
01-02- 8.0	6/11/98			1100 *
01-02-12.0	6/11/98			1100 *
01-02B- 4.0	6/11/98			1900
01-02B- 6.0	6/11/98			2300
01-02B- 8.0	6/11/98			3400 *
01-02B-12.0	6/11/98			3400 *
01-03- 4.0	6/10/98			5800
01-04- 4.0	6/11/98			1300
01-05-1.1	2/17/98			8100
01-05-3.5	5/7/98			7100
01-06-1.1	2/17/98			5300
01-06-3.5	5/7/98			6800
01-07-1.0	2/17/98			1000
01-14-1.0	5/7/98			5400
01-15-1.0	5/7/98			5400
01-16-1.0	5/7/98			3900
22-07-1.0	9/8/97			2000 *
22-08-1.0	9/8/97	29	* 100000	4000 *
22-13-1.0	5/5/98			3500 *
22-14-1.0	5/5/98			3700 *
22-15-1.0	5/5/98			3600 *
22-16-1.0	5/5/98			4700 *

TABLE E-2
 INORGANIC CONSTITUENTS EXCEEDING INDUSTRIAL USE SOIL CLEANUP CRITERIA
 SWMU No. 2 & AOC A
 (all values in mg/kg)

SAMPLE LOCATION	SAMPLE DATE	Lead 1,000	Selenium 10,000
02-01-1.0	9/5/97	2600 E*	
02-01-1.0	4/29/98	4800 *	
02-07 4-6	7/14/99	1100	
02-07-1.0	9/5/97	1900	
02-07-1.0	4/29/98	2300 *	
AOC-A-04-1.0	9/9/97		18000

TABLE E-3
 INORGANIC CONSTITUENTS EXCEEDING INDUSTRIAL USE SOIL CLEANUP CRITERIA
 SWMU No. 3
 (all values in mg/kg)

SAMPLE LOCATION	SAMPLE DATE	Arsenic	Cadmium	Copper	Lead
		27	810	76,000	1,000
03-02-1.0	9/4/97	49	N* 860	78000 N	
03-08-1.0	9/4/97	54	N*	100000 N	
03-08 4-6	7/14/99				5200
03-10-1.0	5/4/98				2300 *

APPENDIX F
COST ESTIMATES FOR REMEDIATION TO INDUSTRIAL
USE SOIL CLEANUP CRITERIA

PERMEABLE COVER COST ESTIMATES

SWMU 1 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	1	LS	N/A	N/A	\$1,300
Prep staging area	2a	EA ACRE	4 0.3	213 1200	\$900 \$400
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/pers/day, w/ 6 people using PPE)	3	LS	N/A	N/A	\$800
Air Monitoring (dust and vapor)	4	DAY DAY	2 2	300 120	\$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	5	LS LF	N/A 500	N/A 1.00	\$500 \$500
4. SITE MAINTENANCE					
Sanitary facilities	6	LS	N/A	N/A	\$900
Trailer	7	DAY	2	22	\$40
Cleanup of work areas	8	DAY ACRE	2 0.3	380 300	\$800 \$90
5. DUST CONTROL MEASURES					
Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS					
Survey crew (2 person) and Survey documents	10	ACRE	0.3	6000	\$1,800 \$1,800
7. DEMOBILIZATION					
Removal of non-permanent mat's & facilities	1	LS	N/A	N/A	\$2,000
Equipment decontamination	11	EA EA	4 4	213 280	\$900 \$1,100
8. DEWATERING					
Pump	23	LS	N/A	N/A	\$15,000
Water treatment - GAC	24	DAY EA	2 1	46.34 15211	\$100 \$15,000
9. CAPPING					
Gravel (2')	12	LS	N/A	N/A	\$24,000
Geotextile	13	CY SF	1,000 13,000	21.00 0.20	\$21,000 \$2,600

Permeable Cover Cost Estimate
SWMU 1-22 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	1	LS	N/A	N/A	\$3,100
Prep staging area	2a	EA ACRE	4 1.8	213 1200	\$900 \$2,200
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/pers/day, w/ 6 people using PPE)	3	LS	N/A	N/A	\$1,700
Air Monitoring (dust and vapor)	4	DAY DAY	4 4	300 120	\$1,200 \$500
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	5	LS LF	N/A 1,900	N/A 1.00	\$1,900 \$1,900
4. SITE MAINTENANCE					
Sanitary facilities	6	LS	N/A	N/A	\$2,100
Trailer	7	DAY	4	22	\$90
Cleanup of work areas	8	DAY ACRE	4 1.8	380 300	\$1,500 \$500
5. DUST CONTROL MEASURES					
Water tank	9	LS DAY	N/A 4	N/A 790	\$3,200 \$3,200
6. SURVEYING & RECORD DOCUMENTS					
Survey crew (2 person) and Survey documents	10	ACRE	1.8	6000	\$10,900 \$10,900
7. DEMOBILIZATION					
Removal of non-permanent mat's & facilities	1	LS	N/A	N/A	\$2,000
Equipment decontamination	11	EA EA	4 4	213 280	\$900 \$1,100
8. CAPPING					
Geotextile	13	LS	N/A	N/A	\$140,000
Soil Cover (18")	14	SF	79,000	0.20	\$16,000
Topsoil (6")	16	CY CY	4,400 1,500	21 22	\$92,000 \$33,000
9. VEGETATIVE COVER					
	17	ACRE	1.8	2050	\$3,700

Permeable Cover Cost Estimate
SWMU 1-22 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. MITIGATION	3	ACRE	1.8	150000	\$270,000
Subtotal - Line Items					\$440,000
10. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$44,000
11. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$22,000
SUBTOTAL ESTIMATE :					\$510,000
Contingency @ 20%					\$102,000
Engineering @ 5%					\$26,000
Constr/Mngmnt/Admin @ 10%					\$51,000
ESTIMATED CAPITAL COST:					\$690,000

Permeable Cover Cost Estimate
SWMU 1-22 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	150	22	\$3,300
2. VEGETATIVE COVER	17	ACRE	0.2	2050	\$400
ESTIMATED ANNUAL COST:					\$4,000
NPW @ 4%, 30 years					\$69,000
ESTIMATED PRESENT WORTH:					\$800,000

Permeable Cover Cost Estimate
SWMU 2 & AOC A - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 2 2	N/A 300 120	\$800 \$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 2 2 0.10	N/A 22 380 300	\$900 \$40 \$800 \$30
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.10	6000	\$600 \$600
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13 14 16	LS SF CY CY	N/A 3,600 200 70	N/A 0.20 21 22	\$6,400 \$700 \$4,200 \$1,500
9. VEGETATIVE COVER	17	ACRE	0.08	2050	\$200

Permeable Cover Cost Estimate
 SWMU 2 & AOC A - Industrial Use Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT OVERLAY (2")	20	SY	80	6	\$500
Subtotal - Line Items					\$14,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$1,400
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$700
SUBTOTAL ESTIMATE :					\$16,000
Contingency @ 20%					\$3,200
Engineering @ 5%					\$800
Constr/Mngmnt/Admin @ 10%					\$1,600
ESTIMATED CAPITAL COST:					\$22,000

Environmental Consulting & Construction, Inc.
SWMU 2 & AOC A - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	7	22	\$200
2. VEGETATIVE COVER	17	ACRE	0.04	2050	\$100
ESTIMATED ANNUAL COST:					\$300
NPW @ 4%, 30 years					\$5,000
ESTIMATED PRESENT WORTH:					\$27,000

Permeable Cover Cost Estimate
SWMU 3 & 5 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,000
	2a	EA ACRE	4 0.08	213 1200	\$900 \$100
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$800
	4	DAY DAY	2 2	300 120	\$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
	6	LS	N/A	N/A	\$900
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	2	22	\$40
	8	DAY ACRE	2 0.08	380 300	\$800 \$20
	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.08	6000	\$500 \$500
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
	13	LS	N/A	N/A	\$3,000
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	14	SF	1,900	0.20	\$400
	16	CY CY	100 40	21 22	\$2,100 \$900
	17	ACRE	0.04	2050	\$100

Permeable Cover Cost Estimate
SWMU 3 & 5 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT OVERLAY (2")	20	SY	200	6	\$1,200
Subtotal - Line Items					\$11,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$1,100
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$600
SUBTOTAL ESTIMATE :					\$13,000
Contingency @ 25%					\$3,300
Engineering @ 5%					\$700
Constr/Mngmnt/Admin @ 10%					\$1,300
ESTIMATED CAPITAL COST:					\$18,000

Permeable Cover Cost Estimate
SWMU 3 & 5 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	4	22	\$100
2. VEGETATIVE COVER	17	ACRE	0.04	2050	\$100
ESTIMATED ANNUAL COST:					\$200
NPW @ 4%, 30 years					\$3,000
ESTIMATED PRESENT WORTH:					\$21,000

Remove and Cover Cost Estimate
SWMU 4 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$2,100
		LS	N/A	N/A	\$2,100
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$800
		DAY	2	300	\$600
		DAY	2	120	\$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$100
		LF	100	1.00	\$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6	LS	N/A	N/A	\$900
		DAY	2	22	\$40
		DAY	2	380	\$800
		ACRE	0.04	300	\$10
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$1,600
		DAY	2	790	\$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.04	6000	\$200
					\$200
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	11	LS	N/A	N/A	\$3,200
		LS	N/A	N/A	\$2,100
		EA	4	280	\$1,100
					\$3,200
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13	LS	N/A	N/A	\$900
		SF	600	0.20	\$100
		CY	30	21	\$600
		CY	10	22	\$200
9. VEGETATIVE COVER	17	ACRE	0.016	2050	\$30
					\$30

Permeable Cover Cost Estimate
SWMU 4 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT OVERLAY (2")	20	SY	100	6	\$600
Subtotal - Line Items					\$10,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$1,000
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$500
SUBTOTAL ESTIMATE :					\$12,000
Contingency @ 20%					\$2,400
Engineering @ 5%					\$600
Constr/Mngmnt/Admin @ 10%					\$1,200
ESTIMATED CAPITAL COST:					\$16,000

Environmental Control Systems
 SWMU 4 - Industrial Use Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	5	22	\$100
2. VEGETATIVE COVER	17	ACRE	0.02	2050	\$30
ESTIMATED ANNUAL COST:					\$100
NPW @ 4%, 30 years					\$1,700
ESTIMATED PRESENT WORTH:					\$18,000

SWMU 6,7,8,32 & AOC B - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$6,900
	2b	EA ACRE	4 0.39	213 15400	\$900 \$6,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$800
	4	DAY DAY	2 2	300 120	\$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 800	N/A 1.00	\$800 \$800
	6	LS	N/A	N/A	\$900
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	2	22	\$40
	8	DAY ACRE	2 0.39	380 300	\$800 \$10
	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
5. DUST CONTROL MEASURES Water tank	10	ACRE	0.39	6000	\$2,300 \$2,300
	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	13	LS	N/A	N/A	\$29,000
	14	SF	17,000	0.20	\$3,400
	16	CY CY	900 300	21 22	\$19,000 \$6,600
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	17	ACRE	0.384	2050	\$800
	18	LS	N/A	N/A	\$800
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	19	SF	17,000	0.20	\$3,400
	20	CY	900	21	\$19,000
	21	CY	300	22	\$6,600
9. VEGETATIVE COVER					

Performance Cover Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT OVERLAY (2")	20	SY	30	6	\$200
Subtotal - Line Items					\$45,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$4,500
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$2,300
SUBTOTAL ESTIMATE :					\$52,000
Contingency @ 20%					\$10,000
Engineering @ 5%					\$2,600
Constr/Mngmnt/Admin @ 10%					\$5,200
ESTIMATED CAPITAL COST:					\$70,000

Permeable Cover Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	30	22	\$700
2. VEGETATIVE COVER	17	ACRE	0.08	2050	\$200
ESTIMATED ANNUAL COST:					\$900
NPW @ 4%, 30 years					\$20,000
ESTIMATED PRESENT WORTH:					\$90,000

Permeable Cover Cost Estimate
SWMU 10 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 2 2	N/A 300 120	\$800 \$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 2 2 0.02	N/A 22 380 300	\$800 \$40 \$800 \$5
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.02	6000	\$100 \$100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13 14 16	LS SF CY CY	N/A 700 40 10	N/A 0.20 21 22	\$1,100 \$100 \$800 \$200
9. VEGETATIVE COVER	17	ACRE	0.02	2050	\$30

Permeable Cover Cost Estimate
SWMU 10 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					
10. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$7,400
11. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$700
					\$400
SUBTOTAL ESTIMATE :					\$8,500
Contingency @ 20%					\$1,700
Engineering @ 5%					\$400
Constr/Mngmnt/Admin @ 10%					\$900
ESTIMATED CAPITAL COST:					\$12,000

Permeable Cover Cost Estimate
SWMU 10 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	5	22	\$100
2. VEGETATIVE COVER	17	ACRE	0.02	2050	\$30
ESTIMATED ANNUAL COST:					\$100
NPW @ 4%, 30 years					\$1,700
ESTIMATED PRESENT WORTH:					\$14,000

Permeable Cover Cost Estimate
SWMU 21 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS	N/A	N/A	\$900
		EA	4	213	\$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$800
		DAY	2	300	\$600
		DAY	2	120	\$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$100
		LF	100	1.00	\$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$800
		DAY	2	22	\$40
		DAY	2	380	\$800
		ACRE	0.02	300	\$6
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$1,600
		DAY	2	790	\$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.02	6000	\$100
					\$110
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS	N/A	N/A	\$2,000
		EA	4	213	\$900
		EA	4	280	\$1,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13 14 16	LS	N/A	N/A	\$1,200
		SF	800	0.20	\$200
		CY	40	21	\$800
		CY	10	22	\$200
9. VEGETATIVE COVER	17	ACRE	0.02	2050	\$40

Permeable Cover Cost Estimate
SWMU 21 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					
10. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$800
11. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$400
SUBTOTAL ESTIMATE :					\$8,700
Contingency @ 20%					\$1,700
Engineering @ 5%					\$400
Constr/Mngmnt/Admin @ 10%					\$900
ESTIMATED CAPITAL COST:					\$12,000

Permeable Cover Cost Estimate
 SWMU 21 - Industrial Use Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	5	22	\$100
2. VEGETATIVE COVER	17	ACRE	0.02	2050	\$40
ESTIMATED ANNUAL COST:					\$100
NPW @ 4%, 30 years					\$1,700
ESTIMATED PRESENT WORTH:					\$14,000

Remediate Cover Costs Estimate
SWMU 26D - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 2 2	N/A 300 120	\$800 \$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 200	N/A 1.00	\$200 \$200
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 2 2 0.08	N/A 22 380 300	\$900 \$40 \$800 \$20
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.08	6000	\$500 \$500
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13 14 16	LS SF CY CY	N/A 2,100 100 40	N/A 0.20 21 22	\$3,400 \$400 \$2,100 \$900
9. VEGETATIVE COVER	17	ACRE	0.06	2050	\$100

Estimated Construction Cost Estimate
SWMU 26D - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT OVERLAY (2")	20	SY	100	6	\$600
Subtotal - Line Items					\$11,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$1,100
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$600
SUBTOTAL ESTIMATE :					\$13,000
Contingency @ 25%					\$3,300
Engineering @ 5%					\$700
Constr/Mngmnt/Admin @ 10%					\$1,300
ESTIMATED CAPITAL COST:					\$18,000

Permeable Cover Cost Estimate
SWMU 26D - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	8	22	\$200
2. VEGETATIVE COVER	17	ACRE	0.06	2050	\$100
ESTIMATED ANNUAL COST:					\$300
NPW @ 4%, 30 years					\$5,000
ESTIMATED PRESENT WORTH:					\$23,000

Permeable Cover Cost Estimate
SWMU 26G & AOC C&D - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 2 2	N/A 300 120	\$800 \$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 90	N/A 1.00	\$90 \$90
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 2 2 0.01	N/A 22 380 300	\$800 \$40 \$800 \$3
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.01	6000	\$70 \$70
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13 14 16	LS SF CY CY	N/A 500 30 9	N/A 0.20 21 22	\$900 \$100 \$600 \$200
9. VEGETATIVE COVER	17	ACRE	0.01	2050	\$20

Environmental Consulting & Construction, Inc.
SWMU 26G & AOC C&D - Industrial Use Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$7,200
10. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$700
11. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$400
SUBTOTAL ESTIMATE :					\$8,300
Contingency @ 20%					\$1,700
Engineering @ 5%					\$400
Constr/Mngmnt/Admin @ 10%					\$800
ESTIMATED CAPITAL COST:					\$11,000

Permeable Cover Cost Estimate
SWMU 26G & AOC C&D - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	5	22	\$100
2. VEGETATIVE COVER	17	ACRE	0.01	2050	\$20
ESTIMATED ANNUAL COST:					\$100
NPW @ 4%, 30 years					\$1,700
ESTIMATED PRESENT WORTH:					\$13,000

Permeable Cover Cost Estimate
SWMU 33 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	1	LS	N/A	N/A	\$1,600
Prep staging area	2b	EA ACRE	4 0.05	213 15400	\$900 \$700
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/pers/day, w/ 6 people using PPE)	3	LS	N/A	N/A	\$800
Air Monitoring (dust and vapor)	4	DAY DAY	2 2	300 120	\$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	5	LS LF	N/A 200	N/A 1.00	\$200 \$200
4. SITE MAINTENANCE					
Sanitary facilities	6	LS	N/A	N/A	\$900
Trailer	7	DAY	2	22	\$40
Cleanup of work areas	8	DAY ACRE	2 0.05	380 300	\$800 \$10
5. DUST CONTROL MEASURES					
Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS					
Survey crew (2 person) and Survey documents	10	ACRE	0.05	6000	\$300 \$300
7. DEMOBILIZATION					
Removal of non-permanent mat's & facilities	1	LS	N/A	N/A	\$2,000
Equipment decontamination	11	EA EA	4 4	213 280	\$900 \$1,100
8. CAPPING					
Geotextile	13	LS	N/A	N/A	\$3,200
Soil Cover (18")	14	SF	1,800	0.20	\$400
Topsoil (6")	16	CY CY	100 30	21 22	\$2,100 \$700
9. VEGETATIVE COVER					
	17	ACRE	0.04	2050	\$100

Environmental Consulting & Construction, Inc.
 SWMU 33 - Industrial Use Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. ASPHALT OVERLAY (2")	20	SY	20	6	\$100
Subtotal - Line Items					\$11,000
13. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$1,100
14. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$600
SUBTOTAL ESTIMATE :					\$13,000
Contingency @ 20%					\$2,600
Engineering @ 5%					\$700
Constr/Mngmnt/Admin @ 10%					\$1,300
ESTIMATED CAPITAL COST:					\$18,000

Permeable Cover Cost Estimate
SWMU 33 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	6	22	\$100
2. VEGETATIVE COVER	17	ACRE	0.04	2050	\$90
ESTIMATED ANNUAL COST:					\$200
NPW @ 4%, 30 years					\$3,000
ESTIMATED PRESENT WORTH:					\$21,000

Permeable Cover Cost Estimate
SWMU 40 - Industrial Use Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 2 2	N/A 300 120	\$800 \$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 40	N/A 1.00	\$40 \$40
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 2 2 0.002	N/A 22 380 300	\$800 \$40 \$800 \$1
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.002	6000	\$10 \$10
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13 14 16	LS SF CY CY	N/A 100 6 2	N/A 0.20 21 22	\$200 \$20 \$100 \$40
9. VEGETATIVE COVER	17	ACRE	0.002	2050	\$5

Environmental Control Cos. Estimate
SWMU 40 - Industrial Use Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					
10. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$600
11. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$300
SUBTOTAL ESTIMATE :					\$7,300
Contingency @ 20%					\$1,500
Engineering @ 5%					\$400
Constr/Mngmnt/Admin @ 10%					\$700
ESTIMATED CAPITAL COST:					\$10,000

Environmental Consulting & Construction
 SWMU 40 - Industrial Use Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
ANNUAL OPERATIONS & MAINTENANCE COSTS					
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	2	22	\$40
2. VEGETATIVE COVER	17	ACRE	0.002	2050	\$5
ESTIMATED ANNUAL COST:					\$50
NPW @ 4%, 30 years					\$900
ESTIMATED PRESENT WORTH:					\$11,000

NOTES TO
PERMEABLE COVER
COST ESTIMATES
CORRECTIVE MEASURES STUDY
DYNO NOBEL
PORT EWEN, NEW YORK

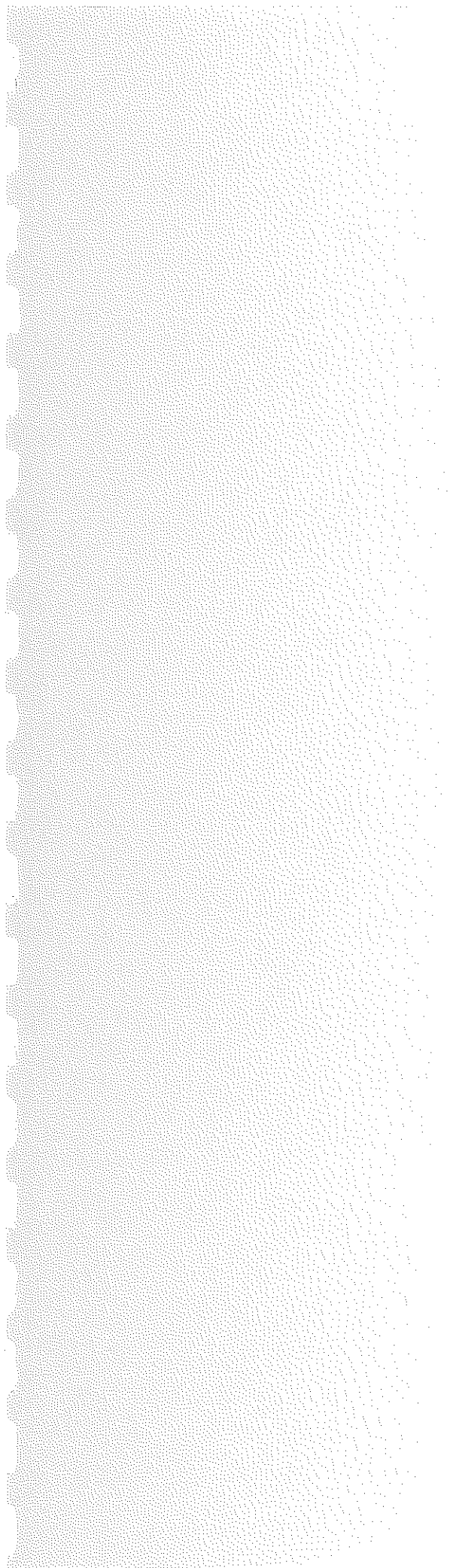
1. Unit costs based on Means 022-274-0020, mobilization/demobilization up to 50 miles of dozer, loader, backhoe or excavator, 70 H.P. – 250 H.P and Means 022-274-1150, delivery charge for small equipment on flatbed trailer, maximum.
2. A) Unit costs based on ECHOS 17-01-0112, Heavy clearing, without grub, wet clearing, includes loading,hauling and disposal costs, assuming uncontaminated.

B)Unit costs based on Means 021-104-0300, Clear and Grub – cut heavy, trees to 24” diameter, Means 021-104-0350, Clear and Grub – Grub stumps and remove.
3. Cost based on experience with similar applications at other sites.
4. Unit costs based on ECHOS 33-02-0303, Organic vapor analyzer, ECHOS 33-02-0312, Digital dust analyzer.
5. Unit costs based on Means 022-704-1000, Silt fence, polypropylene, 3’ high, adverse conditions.
6. Unit costs based on Means 016-420-6430, Toilet, fresh water flush, garden hose.
7. Unit costs based on Means 015-904-0550 Office trailer, furnished, no hookups 50’X12’, Means 015-904-0700, air conditioning.
8. Unit costs based on ECHOS 17-04-0101, General Cleanup, where a safety level of D was assumed.
9. Unit costs based on Means 016-420-6900, Water tank, engine driven discharge, 5,000 gallons, Means Crew No. B-33J for 1 Equipment Operator (Med.).
10. Unit costs based on Means 013-306-0100, Conventional topographical maximum, assuming3 survey submittals consisting of a pre-excavation survey, post-excavation survey and a post-backfill survey.
11. Unit costs based on ECHOS 33-17-0803, Decontaminate heavy size equipment, where a safety level of D was assumed.
12. Unit costs based on Means 022-262-1300, Fill, gravel fill, compacted under floor slabs, 12” deep.
13. Unit costs based on costs for same (or similar) item on recent site remediation project in Northeast USA.
14. Unit costs based on Means 022-286-0200, remove and stockpile loam, Means 022-266-1130, hauling, 16.5 C.Y. trailer, 20 mile round trip, Means 022-208-4420, structural backfill, 200 hp dozer, and Means 022-226-5700, compaction, sheepsfoot, 12” lift, 3 pass.
15. Unit costs based on Means 022-226-5040, Compaction Riding, vibrating rollover, 6” lifts, 4 passes.
16. Unit costs based on ECHOS 18-05-0301, Topsoil, 6” lifts off-site.
17. Unit costs based on ECHOS 18-05-0402, Seeding, Vegetative Cover, where a safety level of D was assumed.
18. Cost estimated as 10% of subtotal, based on previous experience and includes items such as fence removal/replacement and protection of utilities.

19. Cost estimated as 5% of subtotal, based on previous experience.
20. Unit costs based on Means 025-128-0020, Paving asphaltic concrete 2" thick, no base.
21. Unit costs based on analytical lab fee schedule. Cost includes RCRA Hazardous Waste List Metal Analysis plus 20% for QA/QC testing. The analysis is estimated to be performed for every 30 linear foot from the sidewall and a bottom sample for every 900 SF of excavated material.
22. Unit costs based on Means 028-308-0200, 3 strands barb wire, 2" post A 10' O.C., set in concrete, 6' H, 9 ga. Wire, galv. steel.
23. Unit costs based on ECHOS-Unit Price 17-03-1003, 3" Diameter Contractor's Trash Pump, 150 GPM.
24. Unit costs based on ECHOS-Unit Price 33-13-2024, Carbon Adsorption Unit, 200 GPM, 6,000 Lb fill, Disposable, assuming no change-outs will be needed.

REFERENCES

1. **Heavy Construction Cost Data (Means); R. S. Means Company, Inc.; 13th Annual Edition, 1999**
2. **Environmental Remediation Cost Data - Assemblies, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.**
3. **Environmental Remediation Cost Data - Unit Price, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.**



STABILIZATION/FIXATION COST ESTIMATES

bill: n/F/ on C Est
SWMU 2 & AOC A - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	3	LS LS	N/A N/A	N/A N/A	\$5,000 \$5,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 5 5	N/A 300 120	\$2,100 \$1,500 \$600
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 5 5 0.10	N/A 22 380 300	\$2,000 \$110 \$1,900 \$30
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 5	N/A 790	\$4,000 \$4,000
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.10	6000	\$600 \$600
7. DEMOBILIZATION Removal of non-permanent mat'l's & facilities Equipment decontamination	3 11	LS LS EA	N/A N/A 4	N/A N/A 280	\$6,100 \$5,000 \$1,100
8. STABILIZATION/FIXATION Auger Portland Cement Compaction Top soil (6")	12 13 14 15	DAY SY CY CY	5 500 500 80	1150 10 0.5 22	\$13,000 \$5,800 \$5,000 \$300 \$1,800
9. VEGETATIVE COVER	16	ACRE	0.08	2050	\$200

Stabilization/Fixation Cost Estimate
SWMU 2 & AOC A - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT SAW CUT	21	LF	100	3.00	\$300
11. EXCAVATE AND DISPOSE OF ASPHALT					
Removal	17	CY	10	10	\$100
Hauling	18	CY	10	10	\$100
Disposal (recycling facility)	25	TON	20	54	\$1,100
12. ASPHALT REPLACEMENT	20	SF	800	2	\$1,600
Subtotal - Line Items					\$37,000
13. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$3,700
14. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$1,900
<u>Other Costs</u>					
	24	Post Stabilization Soil Analysis			\$1,100
SUBTOTAL ESTIMATE :					\$44,000
Contingency @ 20%					\$8,800
Engineering @ 5%					\$2,200
Constr/Mngmnt/Admin @ 10%					\$4,400
SUBTOTAL ESTIMATE :					\$59,000

Stabilization/Fixation Cost Estimate
SWMU 3 & 5 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	3	LS	N/A	N/A	\$5,100
Prep staging area	2a	LS ACRE	N/A 0.08	N/A 1200	\$5,000 \$100
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/pers/day,w/ 6 people using PPE)	3	LS	N/A	N/A	\$1,700
Air Monitoring (dust and vapor)	4	DAY DAY	4 4	300 120	\$1,200 \$500
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300
4. SITE MAINTENANCE					
Sanitary facilities	6	LS	N/A	N/A	\$1,600
Trailer	7	DAY	4	22	\$90
Cleanup of work areas	8	DAY ACRE	4 0.08	380 300	\$1,500 \$20
5. DUST CONTROL MEASURES					
Water tank	9	LS DAY	N/A 4	N/A 790	\$3,200
6. SURVEYING & RECORD DOCUMENTS					
Survey crew (2 person) and Survey documents	10	ACRE	0.08	6000	\$500
7. DEMOBILIZATION					
Removal of non-permanent mat's & facilities	3	LS	N/A	N/A	\$6,100
Equipment decontamination	11	LS EA	N/A 4	N/A 280	\$5,000 \$1,100
8. STABILIZATION/FIXATION					
Auger	12	DAY	4	1150	\$4,600
Portland Cement	13	SY	400	10	\$4,000
Compaction	14	CY	400	0.5	\$200
Top soil (6")	15	CY	70	22	\$1,500
9. VEGETATIVE COVER					
	16	ACRE	0.04	2050	\$100

Stabilization/Fixation Cost Estimate
 SWMU 3 & 5 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT SAW CUT	21	LF	300	3.00	\$900
11. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17	CY	30	10	\$3,300
	18	CY	30	10	\$300
	25	TON	50	54	\$2,700
12. ASPHALT REPLACEMENT	20	SF	1,600	2	\$3,200
Subtotal - Line Items					\$36,000
13. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$3,600
14. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$1,800
<u>Other Costs</u>					
24	Post Stabilization Soil Analysis				\$900
SUBTOTAL ESTIMATE :					\$42,000
Contingency @ 25%					\$10,500
Engineering @ 5%					\$2,100
Constr/Mngmnt/Admin @ 10%					\$4,200
					\$59,000

Stabilization/Fixation Cost Estimate
SWMU 4 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	3	LS LS	N/A N/A	N/A N/A	\$5,000 \$5,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.04	N/A 22 380 300	\$400 \$20 \$400 \$10
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.04	6000	\$200 \$200
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	3 11	LS LS EA	N/A N/A 4	N/A N/A 280	\$6,100 \$5,000 \$1,100
8. STABILIZATION/FIXATION Auger Portland Cement Compaction Top soil (6")	12 13 14 15	DAY SY CY CY	1 200 60 30	1150 10 0.5 22	\$3,900 \$1,200 \$2,000 \$30 \$700
9. VEGETATIVE COVER	16	ACRE	0.01	2050	\$30

Stabilization/Fixation Cost Estimate
SWMU 4 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT SAW CUT	21	LF	100	3.00	\$300
11. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17	CY	20	10	\$2,000
	18	CY	20	10	\$200
	25	TON	30	54	\$1,600
12. ASPHALT REPLACEMENT	20	SF	1,000	2	\$2,000
Subtotal - Line Items					\$21,000
13. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$2,100
14. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$1,100
<u>Other Costs</u>					
	24	Post Stabilization Soil Analysis			\$200
SUBTOTAL ESTIMATE :					\$24,000
Contingency @ 20%					\$4,800
Engineering @ 5%					\$1,200
Constr/Mngmnt/Admin @ 10%					\$2,400
					\$32,000

Stabilization/Fixation Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	3	LS	N/A	N/A	\$11,000
	2b	LS ACRE	N/A 0.390	N/A 15400	\$5,000 \$6,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$8,400
	4	DAY DAY	20 20	300 120	\$6,000 \$2,400
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 800	N/A 1.00	\$800
	6	LS	N/A	N/A	\$8,100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	20	22	\$400
	8	DAY ACRE	20 0.390	380 300	\$7,600 \$100
	9	LS DAY	N/A 20	N/A 790	\$16,000 \$16,000
5. DUST CONTROL MEASURES Water tank	10	ACRE	0.390	6000	\$2,300
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	3	LS	N/A	N/A	\$6,100
	11	LS EA	N/A 4	N/A 280	\$5,000 \$1,100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	12	DAY	20	1150	\$50,000
	13	SY	1,900	10	\$23,000
	14	CY	1,900	0.5	\$19,000
	15	CY	300	22	\$1,000 \$6,600
8. STABILIZATION/FIXATION Auger Portland Cement Compaction Top soil (6")	16	ACRE	0.384	2050	\$800
	16	ACRE	0.384	2050	\$800

Stabilization/Fixation Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT SAW CUT	21	LF	60	3.00	\$200
11. EXCAVATE AND DISPOSE OF ASPHALT	17	CY	5	10	\$50
Removal	18	CY	5	10	\$50
Hauling	25	TON	10	54	\$500
Disposal (recycling facility)					
12. ASPHALT REPLACEMENT	20	SF	300	2	\$600
Subtotal - Line Items					\$100,000
13. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$10,000
14. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$5,000
<u>Other Costs</u>					
	24	Post Stabilization Soil Analysis			\$4,200
SUBTOTAL ESTIMATE :					\$120,000
Contingency @ 20%					\$24,000
Engineering @ 5%					\$6,000
Constr/Mngmnt/Admin @ 10%					\$12,000
					\$160,000

Stabilization/Fixation Cost Estimate
SWMU 10 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	3	LS	N/A	N/A	\$5,000
		LS	N/A	N/A	\$5,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$400
		DAY	1	300	\$300
		DAY	1	120	\$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$100
		LF	100	1.00	\$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$400
		DAY	1	22	\$20
		DAY	1	380	\$400
		ACRE	0.02	300	\$5
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$800
		DAY	1	790	\$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.02	6000	\$100
					\$100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	3 11	LS	N/A	N/A	\$6,100
		LS	N/A	N/A	\$5,000
		EA	4	280	\$1,100
8. STABILIZATION/FIXATION Auger Portland Cement Compaction Top soil (6")	12 13 14 15	DAY	1	1150	\$2,200
		SY	80	10	\$1,200
		CY	30	0.5	\$800
		CY	10	22	\$20
9. VEGETATIVE COVER	16	ACRE	0.02	2050	\$30
					\$30

Stabilization/Fixation Cost Estimate
 SWMU 10 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$15,000
10. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$1,500
11. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$800
<u>Other Costs</u>					
	24		Post Stabilization Soil Analysis		\$200
SUBTOTAL ESTIMATE :					\$18,000
Contingency @ 20%					\$3,600
Engineering @ 5%					\$900
Constr/Mngmnt/Admin @ 10%					\$1,800
TOTAL ESTIMATE					\$24,000

Stabilization/Fixation Cost Estimate
SWMU 21 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	3	LS	N/A	N/A	\$5,000
		LS	N/A	N/A	\$5,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day.w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$400
		DAY	1	300	\$300
		DAY	1	120	\$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$100
		LF	100	1.00	\$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$400
		DAY	1	22	\$20
		DAY	1	380	\$400
		ACRE	0.02	300	\$6
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$800
		DAY	1	790	\$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.02	6000	\$100
					\$100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	3 11	LS	N/A	N/A	\$6,100
		LS	N/A	N/A	\$5,000
		EA	4	280	\$1,100
8. STABILIZATION/FIXATION Auger Portland Cement Compaction Top soil (6")	12 13 14 15	DAY	1	1150	\$2,300
		SY	90	10	\$1,200
		CY	30	0.5	\$900
		CY	10	22	\$20
9. VEGETATIVE COVER	16	ACRE	0.02	2050	\$40
					\$40

Stabilization/Fixation Cost Estimate
 SWMU 21 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					
10. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$1,500
11. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$800
<u>Other Costs</u>					
	24			Post Stabilization Soil Analysis	\$200
SUBTOTAL ESTIMATE :					
				Contingency @ 20%	\$3,600
				Engineering @ 5%	\$900
				Constr/Mngmnt/Admin @ 10%	\$1,800
					\$24,000

Stabilization/Fixation Cost Estimate
SWMU 26D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	3	LS	N/A	N/A	\$5,000
		LS	N/A	N/A	\$5,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$400
		DAY	1	300	\$300
		DAY	1	120	\$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$200
		LF	200	1.00	\$200
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$400
		DAY	1	22	\$20
		DAY	1	380	\$400
		ACRE	0.08	300	\$20
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$800
		DAY	1	790	\$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.08	6000	\$500
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	3 11	LS	N/A	N/A	\$6,100
		LS	N/A	N/A	\$5,000
		EA	4	280	\$1,100
8. STABILIZATION/FIXATION Auger Portland Cement Compaction Top soil (6")	12 13 14 15	DAY	1	1150	\$6,800
		SY	400	10	\$1,200
		CY	100	0.5	\$4,000
		CY	70	22	\$50
					\$1,500
9. VEGETATIVE COVER	16	ACRE	0.05	2050	\$100

Stabilization/Fixation Cost Estimate
SWMU 26D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. ASPHALT SAW CUT	21	LF	200	3.00	\$600
11. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	17	CY	20	10	\$200
	18	CY	20	10	\$200
	25	TON	30	54	\$1,600
12. ASPHALT REPLACEMENT	20	SF	1,300	2	\$2,600
Subtotal - Line Items					\$26,000
13. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$2,600
14. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$1,300
<u>Other Costs</u>					
	24	Post Stabilization Soil Analysis			\$200
SUBTOTAL ESTIMATE :					\$30,000
Contingency @ 25%					\$7,500
Engineering @ 5%					\$1,500
Constr/Mngmnt/Admin @ 10%					\$3,000
					\$42,000

Stabilization/Fixation Cost Estimate
SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	3	LS	N/A	N/A	\$5,000
		LS	N/A	N/A	\$5,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS	N/A	N/A	\$400
		DAY	1	300	\$300
		DAY	1	120	\$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$90
		LF	90	1.00	\$90
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS	N/A	N/A	\$400
		DAY	1	22	\$20
		DAY	1	380	\$400
		ACRE	0.01	300	\$3
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$800
		DAY	1	790	\$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.01	6000	\$70
					\$70
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	3 11	LS	N/A	N/A	\$6,100
		LS	N/A	N/A	\$5,000
		EA	4	280	\$1,100
8. STABILIZATION/FIXATION Auger Portland Cement Compaction Top soil (6")	12 13 14 15	DAY	1	1150	\$2,000
		SY	60	10	\$1,200
		CY	20	0.5	\$600
		CY	10	22	\$10
					\$200
9. VEGETATIVE COVER	16	ACRE	0.01	2050	\$20

Stabilization/Fixation Cost Estimate
SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					
10. MISCELLANEOUS AND OTHER	22	LS	N/A	N/A	\$1,500
11. SUBMITTALS/CQC PROGRAM	23	LS	N/A	N/A	\$800
<u>Other Costs</u>					
	24		Post Stabilization Soil Analysis		\$200
SUBTOTAL ESTIMATE :					
			Contingency @ 20%		\$3,600
			Engineering @ 5%		\$900
			Constr/Mngmnt/Admin @ 10%		\$1,800
					\$24,000



PHYTOREMEDIATION COST ESTIMATES

Phytoremediation Cost Estimate
SWMU 1-22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	1	LS	N/A	N/A	\$2,500
Prep Staging Area	2a	EA	1	300	\$300
		Acres	1.8	1200	\$2,200
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/person/day, w/ 2 people using PPE)	2	LS	N/A	N/A	\$4,400
Air Monitoring (dust and vapor)	3	DAY	20	100	\$2,000
		DAY	20	120	\$2,400
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	4	LS	N/A	N/A	\$1,900
		LF	1,900	1.00	\$1,900
4. DUST CONTROL MEASURES					
Water Hookup	2	LS	N/A	N/A	\$300
Labor	16	DAY	1	50	\$50
		DAY	0.5	320	\$200
5. DEMOBILIZATION					
Removal of non-permanent matlis & facilities	1	LS	N/A	N/A	\$600
Equipment decontamination	5	EA	1	300	\$300
		EA	1	280	\$300
6. PHYTOREMEDIATION IMPLEMENTATION					
Amendments	6	ACRE	1.8	200	\$400
Retilling	7	SY	8,800	0.6	\$5,300
Seeds & Planting	8	ACRE	1.8	5000	\$9,100
7. MISCELLANEOUS AND OTHER					
	9	LS	N/A	N/A	\$2,500
8. SUBMITTALS/COC PROGRAM					
	10	LS	N/A	N/A	\$1,300
Subtotal - Line items					\$25,000
SUBTOTAL ESTIMATE :					\$29,000
Contingency @ 25%					\$7,300
Engineering @ 5%					\$1,500
Constr/Mngmnt/Admin @ 10%					\$2,900
Total					\$41,000

Phytoremediation Cost Estimate
SWMU 1-22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Operations and Maintenance *assume 3 crops per growing season over 10 years					
1. MOBILIZATION	Necessary equipment	LS	N/A	N/A	\$300
		EA	1	300	\$300
2. HEALTH AND SAFETY MEASURES	PPE (est \$50/pers/day w/ 2 people using PPE)	LS	N/A	N/A	\$200
	Air Monitoring (dust and vapor)	DAY	1	100	\$100
		DAY	1	120	\$100
3. DUST CONTROL MEASURES		LS	N/A	N/A	\$300
	Water Hookup	DAY	1	50	\$50
	Labor	DAY	0.5	320	\$200
4. DEMOBILIZATION		LS	N/A	N/A	\$600
	Removal of non-permanent mats & facilities	EA	1	300	\$300
	Equipment decontamination	EA	1	280	\$300
5. PHYTOREMEDIATION IMPLEMENTATION					\$17,000
	Amendments	ACRE	1.8	200	\$400
	Retilling	SY	8,800	0.6	\$5,300
	Seeds & Planting	ACRE	1.8	5000	\$9,100
	Harvesting	MSF	72	5	\$400
	Handling and Storage	LS	1	2000	\$2,000
6. DISPOSAL		TON	0.5	87	\$40
7. MONITORING		EA	70	200	\$14,000
8. MISCELLANEOUS AND OTHER		LS	N/A	N/A	\$3,200
					\$300
					\$36,000
					\$110,000
					\$27,500
					\$140,000
					\$1,100,000
					\$32,000
					\$3,200
					\$300
					\$36,000
					\$110,000
					\$27,500
					\$140,000
					\$1,100,000

Subtotal - Line Items \$32,000

Other Costs \$3,200

Waste Characterization \$300

SUBTOTAL ESTIMATE :

per year \$36,000

Contingency @ 25% \$110,000

Total \$27,500

PRESENT WORTH (@ 4% interest for 10 years) \$140,000

Phytoremediation Cost Estimate
SWMU 10 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 1	N/A 300	\$300 \$300
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day/w/ 2 people using PPE) Air Monitoring (dust and vapor)	2 3	LS DAY DAY	N/A 1 1	N/A 100 120	\$200 \$100 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	4	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. DUST CONTROL MEASURES Water Hookup Labor	2 10	LS DAY DAY	N/A 1 0.5	N/A 50 320	\$300 \$50 \$200
5. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 5	LS EA EA	N/A 1 1	N/A 300 280	\$600 \$300 \$300
6. PHYTOREMEDIATION IMPLEMENTATION Amendments Refilling Seeds & Planting	6 7 8	ACRE SY ACRE	0.02 80 0.02	200 0.6 5000	\$100 \$3 \$50 \$80
7. MISCELLANEOUS AND OTHER	9	LS	N/A	N/A	\$1,600 \$200
8. SUBMITTALS/CQC PROGRAM	10	LS	N/A	N/A	\$100
Subtotal - Line Items					\$1,900
SUBTOTAL ESTIMATE :					\$1,900
Contingency @ 25%					\$500
Engineering @ 5%					\$100
Constr/Mngmnt/Admin @ 10%					\$200
Total					\$2,700

Phytoremediation Cost Estimate
SWMU 10 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Operations and Maintenance					
*assume 3 crops per growing season over 10 years					
1. MOBILIZATION					
Necessary equipment	1	EA	1	N/A	\$300
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/pers/day, w/ 2 people using PPE)	2	DAY	1	N/A	\$100
Air Monitoring (dust and vapor)	3	DAY	1	120	\$100
3. DUST CONTROL MEASURES					
Water Hookup	2	DAY	1	N/A	\$300
Labor	16	DAY	0.5	50	\$80
				320	\$200
4. DEMOBILIZATION					
Removal of non-permanent mats & facilities	1	EA	1	N/A	\$600
Equipment decontamination	5	EA	1	300	\$300
				280	\$300
5. PHYTOREMEDIATION IMPLEMENTATION					
Amendments	6	ACRE	0.02	200	\$1,100
Rototilling	7	SY	80	0.6	\$3
Seeds & Planting	8	ACRE	0.02	6000	\$80
Harvesting	14	MSF	0.7	5	\$4
Handling and Storage	2	LS	1	1000	\$1,000
6. DISPOSAL	2	TON	0.50	87	\$40
7. MONITORING	12	EA	1	200	\$200
Subtotal - Line Items					\$2,700
8. MISCELLANEOUS AND OTHER	9	LS	N/A	N/A	\$300
	13	<u>Other Costs</u>			
Waste Characterization					\$300
SUBTOTAL ESTIMATE :					\$3,300
per year					\$9,900
Contingency @ 25%					\$2,500
Total					\$12,000
PRESENT WORTH (@ 4% interest for 10 years)					\$97,000

Phytoremediation Cost Estimate
SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 1	N/A 300	\$300 \$300
2. HEALTH AND SAFETY MEASURES PPE (est \$50/person/day,w/ 2 people using PPE) Air Monitoring (dust and vapor)	2 3	LS DAY DAY	N/A 1 1	N/A 100 120	\$200 \$100 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	4	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. DUST CONTROL MEASURES Water Hookup Labor	2 16	LS DAY DAY	N/A 1 0.5	N/A 50 320	\$300 \$50 \$200
5. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 5	LS EA EA	N/A 1 1	N/A 300 280	\$600 \$300 \$300
6. PHYTOREMEDIATION IMPLEMENTATION Amendments Rototilling Seeds & Planting	6 7 8	ACRE SY ACRE	0.01 60 0.01	200 0.6 5000	\$700 \$2 \$40 \$60
Subtotal - Line Items					\$1,600
7. MISCELLANEOUS AND OTHER	9	LS	N/A	N/A	\$200
8. SUBMITTALS/COC PROGRAM	10	LS	N/A	N/A	\$100
SUBTOTAL ESTIMATE :					\$1,900
Contingency @ 25%					\$500
Engineering @ 5%					\$100
Constr/Mingmnt/Admin @ 10%					\$200
Total					\$2,700

Phytoremediation Cost Estimate
SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Operations and Maintenance					
*assume 3 crops per growing season over 10 years					
1. MOBILIZATION		LS	N/A	N/A	\$300
Necessary equipment	1	EA	1	300	\$300
2. HEALTH AND SAFETY MEASURES		LS	N/A	N/A	\$200
PPE (est \$50/pers/day, w/ 2 people using PPE)	2	DAY	1	100	\$100
Air Monitoring (dust and vapor)	3	DAY	1	120	\$100
3. DUST CONTROL MEASURES		LS	N/A	N/A	\$300
Water Hookup	2	DAY	1	60	\$50
Labor	16	DAY	0.5	320	\$200
4. DEMOBILIZATION		LS	N/A	N/A	\$500
Removal of non-permanent mat's & facilities	1	EA	1	300	\$300
Equipment decontamination	5	EA	1	280	\$300
5. PHYTOREMEDIATION IMPLEMENTATION					\$1,100
Amendments	6	ACRE	0.01	200	\$2
Rototilling	7	SY	60	0.6	\$40
Seeds & Planting	8	ACRE	0.01	5000	\$60
Harvesting	14	MSF	0.5	5	\$3
Handling and Storage	2	LS	1	1000	\$1,000
6. DISPOSAL	2	TON	0.5	87	\$40
7. MONITORING	12	EA	1	200	\$200
Subtotal - Line Items					\$2,700
8. MISCELLANEOUS AND OTHER	9	LS	N/A	N/A	\$300
Other Costs					\$300
Waste Characterization					\$300
SUBTOTAL ESTIMATE :					\$3,300
per Year					\$9,900
Contingency @ 25%					\$2,500
Total					\$12,000
PRESENT WORTH (@ 4% interest for 10 years)					\$97,000



**EXCAVATION, ON-SITE CONSOLIDATION, AND
CAPPING COST ESTIMATES**

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 1 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,300
	2a	EA ACRE	4 0.298	213 1200	\$900 \$400
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$17,000
	4	DAY DAY	40 40	300 120	\$12,000 \$4,800
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 500	N/A 1.00	\$500
	6	LS	N/A	N/A	\$16,000
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	40	22	\$900
	8	DAY	40	380	\$15,000
	8	ACRE	0.298	300	\$90
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 40	N/A 790	\$32,000 \$32,000
	10	ACRE	0.298	6000	\$1,800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	11	LS	N/A	N/A	\$2,000
	11	EA EA	4 4	213 280	\$900 \$1,100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	28	LS	N/A	N/A	\$17,000
	29	Pump DAY EA	40 1	46.34 15211	\$1,900 \$15,000
8. DEWATERING Pump Water treatment - GAC	12	CY	6,000	10	\$60,000
	26	DAY	40	2500	\$100,000

Note: SWMU 1 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 1 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. CLEAN FILL - IN PLACE	13	CY	3,000	21	\$60,000
12. VEGETATIVE COVER	14	ACRE	0.298	2050	\$600
13. STABILIZATION OF EXCAVATED MATERIALS Cement Kiln Dust	20	TON	3,600	10	\$36,000 \$36,000
Subtotal - Line Items					\$340,000
14. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$34,000
15. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$17,000
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$5,300
SUBTOTAL ESTIMATE :					\$400,000
Contingency @ 20%					\$80,000
Engineering @ 5%					\$20,000
Constr/Mngmnt/Admin @ 10%					\$40,000
TOTAL CAPITAL COST ESTIMATE					\$540,000

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 1-22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$3,100
	2a	EA ACRE	4 1.814	213 1200	\$900 \$2,200
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$8,400
	4	DAY DAY	20 20	300 120	\$6,000 \$2,400
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 1,900	N/A 1.00	\$1,900
	6	LS	N/A	N/A	\$8,500
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	20	22	\$400
	8	DAY ACRE	20 1.814	380 300	\$7,600 \$500
	9	LS DAY	N/A 20	N/A 790	\$16,000
5. DUST CONTROL MEASURES Water tank	10	ACRE	1.814	6000	\$10,900
	11	EA EA	4 4	213 280	\$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	12	CY	6,500	10	\$65,000
	26	DAY	5	2500	\$14,000
7. DEMOBILIZATION Removal of non-permanent mat'l's & facilities Equipment decontamination	13	CY	6,500	21	\$140,000
	11	EA EA	4 4	213 280	\$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)					
9. UXB ASSISTANCE					
10. CLEAN FILL - IN PLACE					

Note: SWMU 1-22 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 1-22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. VEGETATIVE COVER	14	ACRE	1.814	2050	\$3,700
12. STABILIZATION OF EXCAVATED MATERIALS Cement Kiln Dust	20	TON	2,000	10	\$20,000
Subtotal - Line Items					\$290,000
13. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$29,000
14. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$15,000
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$26,000
SUBTOTAL ESTIMATE :					\$360,000
Contingency @ 20%					\$72,000
Engineering @ 5%					\$18,000
Constr/Mngmnt/Admin @ 10%					\$36,000
TOTAL CAPITAL COST ESTIMATE					\$490,000

Note: SWMU 1-22 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	1	LS	N/A	N/A	\$2,700
Prep staging area	2a	EA ACRE	4.000 1.515	213 1200	\$900 \$1,800
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/pers/day, w/ 6 people using PPE)	3	LS	N/A	N/A	\$29,000
Air Monitoring (dust and vapor)	4	DAY DAY	70 70	300 120	\$21,000 \$8,400
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	5	LS LF	N/A 900	N/A 1.00	\$900
4. SITE MAINTENANCE					
Sanitary facilities	6	LS	N/A	N/A	\$29,000
Trailer	7	DAY	70	22	\$1,540
Cleanup of work areas	8	DAY ACRE	70 1.515	380 300	\$26,600 \$500
5. DUST CONTROL MEASURES					
Water tank	9	LS DAY	N/A 14	N/A 790	\$11,000
6. SURVEYING & RECORD DOCUMENTS					
Survey crew (2 person) and Survey documents	10	ACRE	1.515	6000	\$9,100
7. DEMOBILIZATION					
Removal of non-permanent mat'l's & facilities	1	LS	N/A	N/A	\$2,000
Equipment decontamination	11	EA EA	4 4	213 280	\$900 \$1,100
8. CAPPING					
Geotextile	15	LS	N/A	N/A	\$130,000
Soil Cover (18")	13	SF	66,000	0.20	\$13,000
Compaction	16	CY	3,700	21	\$78,000
Topsoil (6")	17	CY	16,000	0.5	\$8,000
		CY	1,200	22	\$26,000
9. VEGETATIVE COVER					
	14	ACRE	1.515	2050	\$3,100

Note: SWMU 22 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
 SWMU 22 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$220,000

Note: SWMU 22 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$22,000
11. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$11,000
SUBTOTAL ESTIMATE :					\$250,000
Contingency @ 20%					\$50,000
Engineering @ 5%					\$13,000
Constr/Mngmnt/Admin @ 10%					\$25,000
TOTAL CAPITAL COST ESTIMATE					\$340,000

ANNUAL OPERATIONS & MAINTENANCE COSTS	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	120	22	\$2,600
2. VEGETATIVE COVER	17	ACRE	1.5	2050	\$3,100
ESTIMATED ANNUAL COST:					\$5,700
NPW @ 4%, 30 years					\$100,000
ESTIMATED PRESENT WORTH:					\$440,000

Note: SWMU 22 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 2 & AOC A - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 2 2	N/A 300 120	\$800 \$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 2 2 0.101	N/A 22 380 300	\$900 \$40 \$800 \$30
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.101	6000	\$600 \$600
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	500	10	\$5,000
9. CLEAN FILL - IN PLACE	13	CY	500	21	\$10,500
10. VEGETATIVE COVER	14	ACRE	0.084	2050	\$200
11. ASPHALT SAW CUT	24	LF	100	3.00	\$300

Note: SWMU 2 & AOC A will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
 SWMU 2 & AOC A - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	12	CY	10		\$1,300
	18	CY	10		\$100
	27	TON	20		\$1,100
13. ASPHALT REPLACEMENT	23	SF	800	2	\$1,600
Subtotal - Line Items					\$26,000
14. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$2,600
15. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$1,300
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$2,500
SUBTOTAL ESTIMATE :					\$32,000
Contingency @ 20%					\$6,400
Engineering @ 5%					\$1,600
Constr/Mngmnt/Admin @ 10%					\$3,200
TOTAL CAPITAL COST ESTIMATE					\$43,000

Note: SWMU 2 & AOC A will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 3 & 5 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,000
	2a	EA ACRE	4 0.080	213 1200	\$900 \$96
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers./day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$400
	4	DAY DAY	1 1	300 120	\$300 \$120
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
	6	LS	N/A	N/A	\$400
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	1	22	\$22
	8	DAY ACRE	1 0.080	380 300	\$380 \$24
	9	LS DAY	N/A 1	N/A 790	\$800 \$790
5. DUST CONTROL MEASURES Water tank	10	ACRE	0.080	6000	\$500 \$482
	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	12	CY	400	10	\$4,000
	13	CY	400	21	\$8,400
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	14	ACRE	0.044	2050	\$90
	24	LF	313	3.00	\$900
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	400	10	\$4,000
	13	CY	400	21	\$8,400
9. CLEAN FILL - IN PLACE					
10. VEGETATIVE COVER					
11. ASPHALT SAW CUT					

Note: SWMU 3 & 5 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
 SWMU 3 & 5 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	12	CY	29	10	\$2,800
	18	CY	29	10	\$292
	27	TON	40	54	\$2,200
13. ASPHALT REPLACEMENT	23	SF	1,576	2	\$3,200
Subtotal - Line Items					\$25,000
14. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$2,500
15. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$1,300
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$2,400
SUBTOTAL ESTIMATE :					\$31,000
Contingency @ 25%					\$7,800
Engineering @ 5%					\$1,600
Constr/Mngmnt/Admin @ 10%					\$3,100
TOTAL ESTIMATE					\$44,000

Note: SWMU 3 & 5 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 4 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.037	N/A 22 380 300	\$400 \$20 \$400 \$10
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.037	6000	\$200 \$200
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	60	10	\$600
9. CLEAN FILL - IN PLACE	13	CY	60	21	\$1,300
10. VEGETATIVE COVER	14	ACRE	0.014	2050	\$30
11. ASPHALT SAW CUT	24	LF	100	3.00	\$300

Note: SWMU 4 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
 SWMU 4 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	12	CY	20	10	\$2,000
	18	CY	20	10	\$200
	27	TON	30	54	\$1,600
13. ASPHALT REPLACEMENT	23	SF	1,000	2	\$2,000
Subtotal - Line Items					\$11,000
14. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$1,100
15. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$600
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$900
SUBTOTAL ESTIMATE :					\$14,000
Contingency @ 20%					\$2,800
Engineering @ 5%					\$700
Constr/Mngmnt/Admin @ 10%					\$1,400
TOTAL CAPITAL COST ESTIMATE					\$19,000

Note: SWMU 4 will be excavated and then consolidated and capped on SWMU 22.
 P:\y\19305\001\Excav&Consol (rev)

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT	
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,400	
	2a	EA ACRE	4 0.390	213 1200		\$900 \$500
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$4,200	
	4	DAY DAY	10 10	300 120		\$3,000 \$1,200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 800	N/A 1.00	\$800	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6	LS	N/A	N/A	\$4,100	
	7	DAY	10	22		\$200
	8	DAY ACRE	10 0.390	380 300		\$3,800 \$100
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 10	N/A 790	\$7,900	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.390	6000	\$2,300	
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000	
						\$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	1,900	10	\$19,000	
	13	CY	1,900	21		\$40,000
9. CLEAN FILL - IN PLACE	14	ACRE	0.384	2050	\$800	
10. VEGETATIVE COVER	24	LF	60	3.00	\$200	
11. ASPHALT SAW CUT						

Note: SWMU 6,7,8,32 & AOC B will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
12. EXCAVATE AND DISPOSE OF ASPHALT	12	CY	5	10	\$600
	18	CY	5	10	\$50
	27	TON	10	54	\$500
13. ASPHALT REPLACEMENT	23	SF	300	2	\$600
Subtotal - Line Items					\$84,000
14. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$8,400
15. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$4,200
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$7,800
SUBTOTAL ESTIMATE :					\$104,000
Contingency @ 20%					\$21,000
Engineering @ 5%					\$5,200
Constr/Mngmnt/Admin @ 10%					\$10,400
TOTAL CAPITAL COST ESTIMATE					\$140,000

Note: SWMU 6,7,8,32 & AOC B will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 10 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.016	N/A 22 380 300	\$400 \$20 \$400 \$5
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.016	6000	\$100 \$100
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	30	10	\$300
9. CLEAN FILL - IN PLACE	13	CY	30	21	\$600
10. VEGETATIVE COVER	14	ACRE	0.016	2050	\$30
Subtotal - Line Items					\$5,600

Note: SWMU 10 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
 SWMU 10 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$600
12. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$300
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$700
SUBTOTAL ESTIMATE :					
			Contingency @ 20%		\$1,400
			Engineering @ 5%		\$400
			Constr/Mngmnt/Admin @ 10%		\$700
TOTAL CAPITAL COST ESTIMATE					
					\$9,700

Note: SWMU 10 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 21 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.018	N/A 22 380 300	\$400 \$20 \$400 \$6
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.018	6000	\$100 \$100
7. DEMOBILIZATION Removal of non-permanent mat'l's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	30	10	\$300
9. CLEAN FILL - IN PLACE	13	CY	30	21	\$600
10. VEGETATIVE COVER	14	ACRE	0.018	2050	\$40
Subtotal - Line Items					\$5,600

Note: SWMU 21 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
 SWMU 21 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$600
12. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$300
<u>Other Costs</u>					
	25			Post Excavation Soil Analysis	\$700
SUBTOTAL ESTIMATE :					
				Contingency @ 20%	\$1,400
				Engineering @ 5%	\$400
				Constr/Mngmnt/Admin @ 10%	\$700
TOTAL CAPITAL COST ESTIMATE					
					\$10,000

Note: SWMU 21 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 26D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A .200	N/A 1.00	\$200 \$200
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.078	N/A 22 380 300	\$400 \$20 \$400 \$20
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.078	6000	\$500 \$500
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	100	10	\$1,000
9. CLEAN FILL - IN PLACE	13	CY	100	21	\$2,100
10. VEGETATIVE COVER	14	ACRE	0.048	2050	\$100
11. ASPHALT SAW CUT	24	LF	200	3.00	\$600

Note: SWMU 26D will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 26D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	12	CY	20	10	\$2,000
	18	CY	20	10	\$200
	27	TON	30	54	\$1,600
13. ASPHALT REPLACEMENT	23	SF	1,300	2	\$2,600
Subtotal - Line Items					\$14,000
14. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$1,400
15. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$700
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$1,800
SUBTOTAL ESTIMATE :					\$18,000
			Contingency @ 25%		\$4,500
			Engineering @ 5%		\$900
			Constr/Mngmnt/Admin @ 10%		\$1,800
TOTAL CAPITAL COST ESTIMATE					\$25,000

Note: SWMU 26D will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 90	N/A 1.00	\$90 \$90
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.011	N/A 22 380 300	\$400 \$20 \$400 \$3
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.011	6000	\$70 \$70
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	20	10	\$200
9. CLEAN FILL - IN PLACE	13	CY	20	21	\$400
10. VEGETATIVE COVER	14	ACRE	0.011	2050	\$20
Subtotal - Line Items					\$5,300

Note: SWMU 26G & AOC C&D will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
 SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$530
12. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$300
<u>Other Costs</u>					
	25			Post Excavation Soil Analysis	\$600
SUBTOTAL ESTIMATE : Contingency @ 20% Engineering @ 5% Constr/Mngmnt/Admin @ 10%					
TOTAL CAPITAL COST ESTIMATE					\$9,000

16,000

Note: SWMU 26G & AOC C&D will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 33 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,600
	2b	EA ACRE	4 0.046	213 15400	\$900 \$700
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$400
	4	DAY DAY	1 1	300 120	\$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 200	N/A 1.00	\$200
	6	LS	N/A	N/A	\$400
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	1	22	\$20
	8	DAY ACRE	1 0.046	380 300	\$400 \$10
	9	LS DAY	N/A 1	N/A 790	\$800 \$800
5. DUST CONTROL MEASURES Water tank	10	ACRE	0.046	6000	\$300
	11	EA EA	4 4	N/A 213 280	\$2,000 \$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	12	CY	80	10	\$800
	13	CY	80	21	\$1,700
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	14	ACRE	0.042	2050	\$100
	24	LF	70	3.00	\$200
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	80	10	\$800
	13	CY	80	21	\$1,700
9. CLEAN FILL - IN PLACE					
10. VEGETATIVE COVER					
11. ASPHALT SAW CUT					

Note: SWMU 33 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 33 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	12	CY	4	10	\$580
	18	CY	4	10	\$40
	27	TON	10	54	\$40
13. ASPHALT REPLACEMENT	23	SF	200	2	\$400
Subtotal - Line Items					\$9,500
14. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$1,000
15. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$500
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$1,500
SUBTOTAL ESTIMATE :					\$13,000
Contingency @ 20%					\$2,600
Engineering @ 5%					\$700
Constr/Mngmnt/Admin @ 10%					\$1,300
TOTAL CAPITAL COST ESTIMATE					\$18,000

Note: SWMU 33 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 40 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 40	N/A 1.00	\$40 \$40
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.002	N/A 22 380 300	\$400 \$20 \$400 \$1
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.002	6000	\$10 \$10
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	12	CY	5	10	\$50
9. CLEAN FILL - IN PLACE	13	CY	5	21	\$110
10. VEGETATIVE COVER	14	ACRE	0.002	2050	\$5
Subtotal - Line Items					\$4,700

Note: SWMU 40 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 40 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$500
12. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$200
<u>Other Costs</u>					
	25		Post Excavation Soil Analysis		\$200
SUBTOTAL ESTIMATE :					
Contingency @ 20%					
Engineering @ 5%					
Constr/Mngmnt/Admin @ 10%					
TOTAL CAPITAL COST ESTIMATE					\$7,600

Note: SWMU 40 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 23 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,600
	2a	EA ACRE	4,000 0.551	213 1200	
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$25,000
	4	DAY DAY	60 60	300 120	
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 800	N/A 1.00	\$800
	6	LS	N/A	N/A	
7	DAY	60	22	\$1,320	
8	DAY ACRE	60 0.551	380 300	\$22,800 \$165	
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 10	N/A 790	\$8,000
	10	ACRE	0.551	6000	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000
	15	LS	N/A	N/A	
13	SF	24,000	0.20	\$4,800	
16	CY	1,300	21	\$27,000	
17	CY CY	7,100 400	0.5 22	\$3,600 \$8,800	
8. CAPPING Geotextile Soil Cover (18") Compaction Topsoil (6")	14	ACRE	0.551	2050	\$1,100
	14	ACRE	0.551	2050	

Note: SWMU 23 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 23 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$110,000

Note: SWMU 23 will be excavated and then consolidated and capped on SWMU 22.

Excavation, On-Site Consolidation and Capping Cost Estimate
SWMU 23 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. MISCELLANEOUS AND OTHER	21	LS	N/A	N/A	\$11,000
11. SUBMITTALS/CQC PROGRAM	22	LS	N/A	N/A	\$5,500
SUBTOTAL ESTIMATE :					\$130,000
Contingency @ 20%					\$26,000
Engineering @ 5%					\$6,500
Constr/Mngmnt/Admin @ 10%					\$13,000
TOTAL CAPITAL COST ESTIMATE					\$180,000

ANNUAL OPERATIONS & MAINTENANCE COSTS	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	40	22	\$900
2. VEGETATIVE COVER	17	ACRE	0.551	2050	\$1,100
ESTIMATED ANNUAL COST:					\$2,000
NPW @ 4%, 30 years					\$35,000
ESTIMATED PRESENT WORTH:					\$220,000

Note: SWMU 23 will be excavated and then consolidated and capped on SWMU 22.

NOTES TO
EXCAVATION, ON-SITE CONSOLIDATION & CAPPING
COST ESTIMATES
CORRECTIVE MEASURES STUDY
DYNO NOBEL
PORT EWEN, NEW YORK

1. Unit costs based on Means 022-274-0020, mobilization/demobilization up to 50 miles of dozer, loader, backhoe or excavator, 70 H.P. – 250 H.P and Means 022-274-1150, delivery charge for small equipment on flatbed trailer, maximum.
2. A) Unit costs based on ECHOS 17-01-0112, Heavy clearing, without grub, wet clearing, includes loading,hauling and disposal costs, assuming uncontaminated.

B)Unit costs based on Means 021-104-0300, Clear and Grub – cut heavy, trees to 24” diameter, Means 021-104-0350, Clear and Grub – Grub stumps and remove.
3. Cost based on experience with similar applications at other sites.
4. Unit costs based on ECHOS 33-02-0303, Organic vapor analyzer, ECHOS 33-02-0312, Digital dust analyzer.
5. Unit costs based on Means 022-704-1000, Silt fence, polypropylene, 3’ high, adverse conditions.
6. Unit costs based on Means 016-420-6430, Toilet, fresh water flush, garden hose.
7. Unit costs based on Means 015-904-0550 Office trailer, furnished, no hookups 50’X12’, Means 015-904-0700, air conditioning.
8. Unit costs based on ECHOS 17-04-0101, General Cleanup, where a safety level of D was assumed.
9. Unit costs based on Means 016-420-6900, Water tank, engine driven discharge, 5,000 gallons..
10. Unit costs based on Means 013-306-0100, Conventional topographical maximum, assuming 3 survey submittals consisting of a pre-excavation survey, post-excavation survey and a post-backfill survey.
11. Unit costs based on ECHOS 33-17-0803, Decontaminate heavy size equipment, where a safety level of D was assumed.
12. Unit costs based on Means 022-238-0200, Backhoe, hydraulic, crawler mtd., 1 CY capacity, Means 022-238-0020, for loading onto trucks, Means 022-238-4100, for heavy soil or stiff clay, Means 022-238-4250 For wet excavation, Means 022-266-2010, Off highway haulers, 22 CY rear/bottom dump, 1000’ round trip. Unit costs also contains a scale up factor of 20% for handling of stabilization of excavated material. Excavation volume includes a 20% bulking factor applied to in-place volume.
13. Unit costs based on Means 022-286-0200, remove and stockpile loam, Means 022-266-1130, hauling, 16.5 C.Y. trailer, 20 mile round trip, Means 022-208-4420, structural backfill, 200 hp dozer, and Means 022-226-5700, compaction, sheepsfoot, 12” lift, 3 pass. It is estimated that the backfill will be 50% of excavated material for SWMU No.1.
14. Unit costs based on ECHOS 18-05-0402, Seeding, Vegetative Cover, where a safety level of D was assumed.
15. Unit costs based on costs for same (or similar) item on recent site remediation project in Northeast USA.
16. Unit costs based on Means 022-226-5040, Compaction Riding, vibrating rollover, 6” lifts, 4 passes. .
17. Unit costs based on ECHOS 18-05-0301, Topsoil, 6” lifts off-site.

18. Unit Costs based on Means 022-266-0200, 6 C.Y. dump truck, 4 mile round trip.
19. [Reserved].
20. Unit costs based on ECHOS 33-15-0401, Cement Kiln Dust (Bulk). Volume of Cement Kiln Dust needed was based on 40% of tonnage of excavated material for SWMU No. 1, 20% of tonnage of excavated material for SWMU No. 1-22 and 20% of tonnage of excavated material found below the Ground Water Table for all other SWMUs and AOCs.
21. Cost estimated as 10% of subtotal, based on previous experience and includes items such as fence removal/replacement and protection of utilities.
22. Cost estimated as 5% of subtotal, based on previous experience.
23. Unit costs based on Means 025-124-0020, Paving asphaltic concrete parking lots and driveways, 6" stone base, 2" binder course, 1" topping.
24. Unit costs based on Means 020-728-0010, Saw cutting, asphalt, up to 3" deep, Means 020-728-0020, Each additional inch of depth. Unit costs was determined assuming an existence of a 6" maximum depth of asphalt at the SWMU/AOC.
25. Unit costs based on analytical lab fee schedule. Cost includes RCRA Metals Analysis plus 20% for QA/QC testing. The analysis is estimated to be performed for every 30 linear foot from the sidewall and a bottom sample for every 900 SF of excavated material.
26. Unit cost based on recent price quote from a vendor. This unit cost has been added due to the possibility of the existence of undetonated explosives in SWMU 1 and in a limited portion of SWMU 1/22, approximately 6400 SF, which is considered a "buffer zone". In addition, the need for the UXB evaluation reduces the production rate to 150 C.Y./day, rather than the estimated production rate of 300 C.Y./day for excavation.
27. Unit costs based on recent price quote from a vendor.
28. Unit costs based on ECHOS-Unit Price 17-03-1003, 3" Diameter Contractor's Trash Pump, 150 GPM.
29. Unit costs based on ECHOS-Unit Price 33-13-2024, Carbon Adsorption Unit, 200 GPM, 6,000 Lb fill, Disposable, assuming no change-outs will be needed.

REFERENCES

1. **Heavy Construction Cost Data (Means); R. S. Means Company, Inc.; 13th Annual Edition, 1999**
2. **Environmental Remediation Cost Data - Assemblies, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.**
3. **Environmental Remediation Cost Data -- Unit Price, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.**



EXCAVATION AND OFF-SITE DISPOSAL COST ESTIMATES

Excavation and Off-Site Disposal Cost Estimate
SWMU 1 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT	
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,300	
	2a	EA ACRE	4 0.3	213 1200		\$900 \$400
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$17,000	
	4	DAY DAY	40 40	300 120		\$12,000 \$4,800
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 500	N/A 1.00	\$500	
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6	LS	N/A		\$16,000	
	7	DAY	40	22		\$900
	8	DAY ACRE	40 0.3	380 300		\$15,000 \$100
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 40	N/A 790	\$32,000	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.3	6000	\$1,800	
7. DEMOBILIZATION Removal of non-permanent mat'l's & facilities Equipment decontamination	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000	
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12	LS	N/A	N/A	\$5,900	
	12	SF	5,000	0.50		\$2,500
	12	SF	5,000	0.20		\$1,000
	12	EA	70	4		\$300
	12	EA	70	15		\$1,100
	13	LS	N/A	N/A	\$1,000	

Excavation and Off-Site Disposal Cost Estimate
SWMU 1 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. DEWATERING Pump Water treatment - GAC	29 30	LS DAY EA	N/A 40 1	N/A 46.34 15211	\$17,000 \$1,900 \$15,000
10. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	6,000	10	\$60,000
11. UXB ASSISTANCE	28	DAY	40	2500	\$100,000
12. CLEAN FILL - IN PLACE	15	CY	3,000	21	\$60,000
13. VEGETATIVE COVER	16	ACRE	0.3	2050	\$600
14. STABILIZATION OF EXCAVATED MATERIALS Cement Kiln Dust	22	TON	3,600	10	\$36,000 \$36,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$35,000
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$18,000
<u>Other Costs</u>					
Waste Characterization of Soil for Disposal					\$3,900
Post Excavation Soil Analysis					\$3,800
<u>Non-Hazardous Waste</u>					
Transportation & Disposal (\$87/Ton)					\$1,100,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	SUBTOTAL ESTIMATE (Non-Hazardous) :				\$1,500,000
				Contingency @ 20%	\$300,000
				Engineering @ 5%	\$75,000
				Constr/Mngmnt/Admin @ 10%	\$150,000
	<u>Hazardous Waste</u>				
				Transportation & Disposal (\$178/Ton)	\$2,200,000
				27	
	SUBTOTAL ESTIMATE (Hazardous) :				\$2,600,000
				Contingency @ 20%	\$520,000
				Engineering @ 5%	\$75,000
				Constr/Mngmnt/Admin @ 10%	\$150,000
	TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous				\$2,000,000
	if waste is Hazardous				\$3,300,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 1-22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$3,100
	2a	EA ACRE	4 1.8	213 1200	\$900 \$2,200
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$8,400
	4	DAY DAY	20 20	300 120	\$6,000 \$2,400
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 1,900	N/A 1.00	\$1,900
	6	LS	N/A	N/A	\$8,500
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	20	22	\$400
	8	DAY	20	380	\$7,600
	8	ACRE	1.8	300	\$500
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 20	N/A 790	\$16,000 \$16,000
	10	ACRE	1.8	6000	\$11,000 \$11,000
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	11	LS EA	N/A 4	N/A 213	\$2,000 \$900
	11	EA	4	280	\$1,100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	12	LS	N/A	N/A	\$10,000
	12	SF	10,000	0.50	\$5,000
	12	SF	10,000	0.20	\$2,000
	12	EA	90	4	\$400
	12	EA	90	15	\$1,400
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	13	LS	N/A	N/A	\$1,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 1-22 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	6,500	10	\$65,000
10. UXB ASSISTANCE	28	DAY	5	2,500	\$14,000
11. CLEAN FILL - IN PLACE	15	CY	6,500	21	\$137,000
12. VEGETATIVE COVER	16	ACRE	1.8	2,050	\$3,700
13. STABILIZATION OF EXCAVATED MATERIALS Cement Kiln Dust	22	TON	2,000	10	\$20,000 \$20,000
14. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$300,000 \$30,000
15. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$15,000
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$4,200
	26	Post Excavation Soil Analysis			\$13,000
<u>Non-Hazardous Waste</u>					
	27	Transportation & Disposal (\$87/Ton)			\$1,000,000
SUBTOTAL ESTIMATE (Non-Hazardous) :					\$1,400,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 1-22 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
				Contingency @ 20%	\$280,000
				Engineering @ 5%	\$70,000
				Constr/Mngmnt/Admin @ 10%	\$140,000
				<u>Hazardous Waste</u>	
	27			Transportation & Disposal (\$178/Ton)	\$2,100,000
				SUBTOTAL ESTIMATE (Hazardous) :	\$2,500,000
				Contingency @ 20%	\$500,000
				Engineering @ 5%	\$70,000
				Constr/Mngmnt/Admin @ 10%	\$140,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$1,900,000
				if waste is Hazardous	\$3,200,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 2 & AOC A - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 2 2	N/A 300 120	\$800 \$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 2 2 0.10	N/A 22 380 300	\$900 \$40 \$800 \$30
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.10	6000	\$600 \$600
7. DEMOBILIZATION Removal of non-permanent mats & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS SF SF EA EA LS	N/A 3,400 3,400 50 50 N/A	N/A 0.50 0.20 4 15 N/A	\$4,400 \$1,700 \$700 \$200 \$800 \$1,000
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	500	10	\$5,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 2 & AOC A - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. CLEAN FILL - IN PLACE	15	CY	500	21	\$11,000
11. VEGETATIVE COVER	16	ACRE	0.08	2050	\$200
12. ASPHALT SAW CUT	21	LF	150	3.00	\$500
13. EXCAVATE AND DISPOSE OF ASPHALT	14	CY	10	10	\$1,300
	18	CY	10	10	\$100
	27	TON	20	54	\$1,100
14. ASPHALT REPLACEMENT	20	SF	800	2	\$1,600
Subtotal - Line Items					\$31,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$3,100
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$1,600
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$300
	26	Post Excavation Soil Analysis			\$2,300

Excavation and Off-Site Disposal Cost Estimate
 SWMU 2 & AOC A - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
	<u>Non-Hazardous Waste</u>				
		Transportation & Disposal (\$87/Ton)	27		\$65,000
	SUBTOTAL ESTIMATE (Non-Hazardous) :				
		Contingency @ 20%			\$20,000
		Engineering @ 5%			\$5,000
		Constr/Mngmnt/Admin @ 10%			\$10,000
	<u>Hazardous Waste</u>				
		Transportation & Disposal (\$178/Ton)	27		\$130,000
	SUBTOTAL ESTIMATE (Hazardous) :				
		Contingency @ 20%			\$34,000
		Engineering @ 5%			\$5,000
		Constr/Mngmnt/Admin @ 10%			\$10,000
	TOTAL CAPITAL COST ESTIMATE				
		if waste is Non-Hazardous			\$140,000
		if waste is Hazardous			\$220,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 3 & 5 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION					
Necessary equipment	1	LS	N/A	N/A	\$1,000
Prep staging area	2a	EA ACRE	4 0.08	213 1200	\$900 \$100
2. HEALTH AND SAFETY MEASURES					
PPE (est \$50/pers/day.w/ 6 people using PPE)	3	LS	N/A	N/A	\$400
Air Monitoring (dust and vapor)	4	DAY DAY	1 1	300 120	\$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES					
Silt fencing	5	LS LF	N/A 300	N/A 1.00	\$300 \$300
4. SITE MAINTENANCE					
Sanitary facilities	6	LS	N/A	N/A	\$400
Trailer	7	DAY	1	22	\$20
Cleanup of work areas	8	DAY ACRE	1 0.08	380 300	\$400 \$20
5. DUST CONTROL MEASURES					
Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS					
Survey crew (2 person) and Survey documents	10	ACRE	0.08	6000	\$500 \$500
7. DEMOBILIZATION					
Removal of non-permanent mat's & facilities	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
Equipment decontamination					
8. TEMPORARY WASTE CONTAINMENT AREA					
Geomembrane	12	LS	N/A	N/A	\$4,000
Geotextile	12	SF	2,800	0.50	\$1,400
Haybales	12	SF	2,800	0.20	\$600
Sandbags	12	EA	50	4	\$200
Labor	12	EA	50	15	\$800
	13	LS	N/A	N/A	\$1,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 3 & 5 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	400	10	\$4,000
10. CLEAN FILL - IN PLACE	15	CY	400	21	\$8,400
11. VEGETATIVE COVER	16	ACRE	0.04	2050	\$100
12. ASPHALT SAW CUT	21	LF	310	3.00	\$900
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	14	CY	30	10	\$3,300
	18	CY	30	10	\$300
	27	TON	50	54	\$2,700
14. ASPHALT REPLACEMENT	20	SF	1,600	2	\$3,200
				Subtotal - Line Items	\$29,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$2,900
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$1,500
<u>Other Costs</u>					
Waste Characterization of Soil for Disposal					
25					\$300
Post Excavation Soil Analysis					
26					\$2,200
<u>Non-Hazardous Waste</u>					
Transportation & Disposal (\$87/Ton)					
27					\$52,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 3 & 5 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$88,000
				Contingency @ 25%	\$22,000
				Engineering @ 5%	\$4,400
				Constr/Mngmnt/Admin @ 10%	\$8,800
				<u>Hazardous Waste</u>	
				Transportation & Disposal (\$178/Ton)	\$110,000
	27			SUBTOTAL ESTIMATE (Hazardous) :	\$150,000
				Contingency @ 25%	\$38,000
				Engineering @ 5%	\$4,400
				Constr/Mngmnt/Admin @ 10%	\$8,800
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$120,000
				if waste is Hazardous	\$200,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 4 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.037	N/A 22 380 300	\$400 \$20 \$400 \$10
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.037	6000	\$200 \$200
7. DEMOBILIZATION Removal of non-permanent matls & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	60	10	\$600
9. CLEAN FILL - IN PLACE	15	CY	60	21	\$1,300
10. VEGETATIVE COVER	16	ACRE	0.014	2050	\$30

Excavation and Off-Site Disposal Cost Estimate
 SWMU 4 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. ASPHALT SAW CUT	21	LF	140	3.00	\$400

Excavation and Off-Site Disposal Cost Estimate
 SWMU 4 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	14	CY	20	10	\$2,000
	18	CY	20	10	\$200
	27	TON	30	54	\$1,600
13. ASPHALT REPLACEMENT	20	SF	1,000	2	\$2,000
Subtotal - Line Items					\$11,000
14. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$1,100
15. SUBMITTALS/QOC PROGRAM	24	LS	N/A	N/A	\$550
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$300
	26	Post Excavation Soil Analysis			\$900
<u>Non-Hazardous Waste</u>					
	27	Transportation & Disposal (\$87/Ton)			\$7,800
SUBTOTAL ESTIMATE (Non-Hazardous) :					\$22,000
		Contingency @ 20%			\$4,400
		Engineering @ 5%			\$1,100
		Constr/Mngmnt/Admin @ 10%			\$2,200
<u>Hazardous Waste</u>					
	27	Transportation & Disposal (\$178/Ton)			\$16,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 4 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	SUBTOTAL ESTIMATE (Hazardous) :				\$30,000
		Contingency @ 20%			\$6,000
		Engineering @ 5%			\$1,100
		Constr/Mngmnt/Admin @ 10%			\$2,200
	TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous				\$30,000
	if waste is Hazardous				\$39,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT	
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$6,900	
	2b	EA ACRE	4 0.390	213 15400		\$900 \$6,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$4,200	
	4	DAY DAY	10 10	300 120		\$3,000 \$1,200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 800	N/A 1.00	\$800	
						\$800
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6	LS	N/A	N/A	\$4,100	
	7	DAY	10	22		\$200
	8	DAY	10	380		\$3,800
		ACRE	0.390	300		\$100
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 10	N/A 790	\$7,900	
						\$7,900
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.390	6000	\$2,300	
						\$2,300
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000	
						\$900 \$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12	LS	N/A	N/A	\$10,000	
	12	SF	10,000	0.50		\$5,000
	12	SF	10,000	0.20		\$2,000
	12	EA	90	4		\$400
	12	EA	90	15		\$1,400
	LS	N/A	N/A	N/A	\$1,000	

Excavation and Off-Site Disposal Cost Estimate
SWMU 6,7,8,32 & AOC B - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	1,900	10	\$19,000
10. CLEAN FILL - IN PLACE	15	CY	1,900	21	\$40,000
11. VEGETATIVE COVER	16	ACRE	0.384	2050	\$800
12. ASPHALT SAW CUT	21	LF	60	3.00	\$200
13. EXCAVATE AND DISPOSE OF ASPHALT	14	CY	5	10	\$600
Removal	18	CY	5	10	\$50
Hauling	27	TON	10	54	\$50
Disposal (recycling facility)					\$500
14. ASPHALT REPLACEMENT	20	SF	300	2	\$600
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$100,000
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$10,000
					\$5,000
<u>Other Costs</u>					
	25		Waste Characterization of Soil for Disposal		\$1,200
	26		Post Excavation Soil Analysis		\$6,400
	27		<u>Non-Hazardous Waste Transportation & Disposal (\$87/Ton)</u>		\$250,000
			Subtotal - Line Items		\$100,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$5,300
11. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$500
12. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$300
<u>Other Costs</u>					
	25		Waste Characterization of Soil for Disposal		\$300
	26		Post Excavation Soil Analysis		\$600
<u>Non-Hazardous Waste</u>					
	27		Transportation & Disposal (\$87/Ton)		\$1,700
SUBTOTAL ESTIMATE (Non-Hazardous) :					\$8,700
			Contingency @ 20%		\$1,700
			Engineering @ 5%		\$400
			Constr/Mngmnt/Admin @ 10%		\$900
<u>Hazardous Waste</u>					
	27		Transportation & Disposal (\$178/Ton)		\$5,300
SUBTOTAL ESTIMATE (Hazardous) :					\$12,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 6,7,8,32 & AOC B - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
				SUBTOTAL ESTIMATE (Non-Hazardous) :	\$370,000
				Contingency @ 20%	\$74,000
				Engineering @ 5%	\$19,000
				Constr/Mngmnt/Admin @ 10%	\$37,000
				<u>Hazardous Waste</u>	
				Transportation & Disposal (\$178/Ton)	\$510,000
	27			SUBTOTAL ESTIMATE (Hazardous) :	\$630,000
				Contingency @ 20%	\$130,000
				Engineering @ 5%	\$19,000
				Constr/Mngmnt/Admin @ 10%	\$37,000
				TOTAL CAPITAL COST ESTIMATE if waste is Non-Hazardous	\$500,000
				if waste is Hazardous	\$820,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 10 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.016	N/A 22 380 300	\$400 \$20 \$400 \$5
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.016	6000	\$100 \$100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	30	10	\$300
9. CLEAN FILL - IN PLACE	15	CY	30	21	\$600
10. VEGETATIVE COVER	16	ACRE	0.016	2050	\$30

Excavation and Off-Site Disposal Cost Estimate
 SWMU 10 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		Contingency @ 20%			\$3,200
		Engineering @ 5%			\$600
		Constr/Mngmnt/Admin @ 10%			\$1,100
TOTAL CAPITAL COST ESTIMATE					
		if waste is Non-Hazardous			\$15,000
		if waste is Hazardous			\$21,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 21 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 100	N/A 1.00	\$100 \$100
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.018	N/A 22 380 300	\$400 \$20 \$400 \$6
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.018	6000	\$100 \$100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	30	10	\$300
9. CLEAN FILL - IN PLACE	15	CY	30	21	\$600
10. VEGETATIVE COVER	16	ACRE	0.018	2050	\$40

Excavation and Off-Site Disposal Cost Estimate
 SWMU 21 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					
11. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$600
12. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$300
<u>Other Costs</u>					
	25		Waste Characterization of Soil for Disposal		\$300
	26		Post Excavation Soil Analysis		\$700
<u>Non-Hazardous Waste</u>					
	27		Transportation & Disposal (\$87/Ton)		\$3,900
			SUBTOTAL ESTIMATE (Non-Hazardous) :		\$11,000
			Contingency @ 20%		\$2,200
			Engineering @ 5%		\$600
			Constr/Mngmnt/Admin @ 10%		\$1,100
<u>Hazardous Waste</u>					
	27		Transportation & Disposal (\$178/Ton)		\$8,000
			SUBTOTAL ESTIMATE (Hazardous) :		\$16,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 21 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
			Contingency @ 20%		\$3,200
			Engineering @ 5%		\$600
			Constr/Mngmnt/Admin @ 10%		\$1,100
TOTAL CAPITAL COST ESTIMATE					
			if waste is Non-Hazardous		\$15,000
			if waste is Hazardous		\$21,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 26D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 200	N/A 1.00	\$200 \$200
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.078	N/A 22 380 300	\$400 \$20 \$400 \$20
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.078	6000	\$500 \$500
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. TEMPORARY WASTE CONTAINMENT AREA Geomembrane Geotextile Haybales Sandbags Labor	12 12 12 12 13	LS SF SF EA EA LS	N/A 600 600 20 20 N/A	N/A 0.50 0.20 4 15 N/A	\$2,000 \$300 \$100 \$80 \$300 \$1,000
9. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	100	10	\$1,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 26D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. CLEAN FILL - IN PLACE	15	CY	100	21	\$2,100
11. VEGETATIVE COVER	16	ACRE	0.048	2050	\$100
12. ASPHALT SAW CUT	21	LF	200	3.00	\$600
13. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	14	CY	20	10	\$2,000
	18	CY	20	10	\$200
	27	TON	30	54	\$1,600
14. ASPHALT REPLACEMENT	20	SF	1,300	2	\$2,600
				Subtotal - Line Items	\$16,000
15. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$1,600
16. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$800
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$300
	26	Post Excavation Soil Analysis			\$1,200

Excavation and Off-Site Disposal Cost Estimate
 SWMU 26D - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
	<u>Non-Hazardous Waste</u>				
	27	Transportation & Disposal (\$87/Ton)			\$13,000
		SUBTOTAL ESTIMATE (Non-Hazardous) :			\$33,000
		Contingency @ 25%			\$8,300
		Engineering @ 5%			\$1,700
		Constr/Mngmnt/Admin @ 10%			\$3,300
	<u>Hazardous Waste</u>				
	27	Transportation & Disposal (\$178/Ton)			\$27,000
		SUBTOTAL ESTIMATE (Hazardous) :			\$47,000
		Contingency @ 25%			\$12,000
		Engineering @ 5%			\$1,700
		Constr/Mngmnt/Admin @ 10%			\$3,300
	TOTAL CAPITAL COST ESTIMATE				
		if waste is Non-Hazardous			\$46,000
		if waste is Hazardous			\$64,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 90	N/A 1.00	\$90 \$90
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.011	N/A 22 380 300	\$400 \$20 \$400 \$3
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.011	6000	\$70 \$70
7. DEMOBILIZATION Removal of non-permanent mat'ls & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	20	10	\$200
9. CLEAN FILL - IN PLACE	15	CY	20	21	\$400
10. VEGETATIVE COVER	16	ACRE	0.011	2050	\$20

Excavation and Off-Site Disposal Cost Estimate
 SWMU 26G & AOC C&D - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		Contingency @ 20%			\$2,400
		Engineering @ 5%			\$400
		Constr/Mngmnt/Admin @ 10%			\$900
TOTAL CAPITAL COST ESTIMATE					
		if waste is Non-Hazardous			\$12,000
		if waste is Hazardous			\$16,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 33 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,600
	2b	EA ACRE	4 0.046	213 15400	\$900 \$700
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$400
	4	DAY DAY	1 1	300 120	\$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 200	N/A 1.00	\$200 \$200
	6	LS	N/A	N/A	\$400
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	1	22	\$20
	8	DAY ACRE	1 0.046	380 300	\$400 \$10
	9	LS DAY	N/A 1	N/A 790	\$800 \$800
5. DUST CONTROL MEASURES Water tank	10	ACRE	0.046	6000	\$300 \$300
	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	14	CY	80	10	\$800
	15	CY	80	21	\$1,700
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	16	ACRE	0.042	2050	\$100
	17	ACRE	0.042	2050	\$100

Excavation and Off-Site Disposal Cost Estimate
SWMU 33 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
11. ASPHALT SAW CUT	21	LF	70	3.00	\$200
12. EXCAVATE AND DISPOSE OF ASPHALT Removal Hauling Disposal (recycling facility)	14 18 27	CY CY TON	4 4 10	10 10 54	\$600 \$40 \$40 \$500
13. ASPHALT REPLACEMENT	20	SF	200	2	\$400
Subtotal - Line Items					\$9,500
14. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$1,000
15. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$500
<u>Other Costs</u>					
	25	Waste Characterization of Soil for Disposal			\$300
	26	Post Excavation Soil Analysis			\$1,500
<u>Non-Hazardous Waste</u>					
	27	Transportation & Disposal (\$87/Ton)			\$10,000
SUBTOTAL ESTIMATE (Non-Hazardous) :					\$23,000

Excavation and Off-Site Disposal Cost Estimate
 SWMU 33 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
			Contingency @ 20%		\$4,600
			Engineering @ 5%		\$1,200
			Constr/Mngmnt/Admin @ 10%		\$2,300
			<u>Hazardous Waste</u>		
	27		Transportation & Disposal (\$178/Ton)		\$21,000
			SUBTOTAL ESTIMATE (Hazardous) :		\$34,000
			Contingency @ 20%		\$6,800
			Engineering @ 5%		\$1,200
			Constr/Mngmnt/Admin @ 10%		\$2,300
			TOTAL CAPITAL COST ESTIMATE		\$31,000
			if waste is Non-Hazardous		
			if waste is Hazardous		\$44,000

Excavation and Off-Site Disposal Cost Estimate
SWMU 40 - Industrial Soil Cleanup Criteria
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION Necessary equipment	1	LS EA	N/A 4	N/A 213	\$900 \$900
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3 4	LS DAY DAY	N/A 1 1	N/A 300 120	\$400 \$300 \$100
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 40	N/A 1.00	\$40 \$40
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6 7 8	LS DAY DAY ACRE	N/A 1 1 0.002	N/A 22 380 300	\$400 \$20 \$400 \$1
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 1	N/A 790	\$800 \$800
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.002	6000	\$10 \$10
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	1 11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
8. EXCAVATION OF DESIGNATED MATERIALS (INCLUDES STAGING AND LOADING)	14	CY	5	10	\$50
9. CLEAN FILL - IN PLACE	15	CY	5	21	\$100
10. VEGETATIVE COVER	16	ACRE	0.002	2050	\$5

Excavation and Off-Site Disposal Cost Estimate
 SWMU 40 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$4,700
11. MISCELLANEOUS AND OTHER	23	LS	N/A	N/A	\$500
12. SUBMITTALS/CQC PROGRAM	24	LS	N/A	N/A	\$200
<u>Other Costs</u>					
	25		Waste Characterization of Soil for Disposal		\$300
	26		Post Excavation Soil Analysis		\$200
<u>Non-Hazardous Waste</u>					
	27		Transportation & Disposal (\$87/Ton)		\$700
SUBTOTAL ESTIMATE (Non-Hazardous) :					\$6,600
			Contingency @ 20%		\$1,300
			Engineering @ 5%		\$300
			Constr/Mngmnt/Admin @ 10%		\$700
<u>Hazardous Waste</u>					
	27		Transportation & Disposal (\$178/Ton)		\$1,300
SUBTOTAL ESTIMATE (Hazardous) :					\$7,200

Excavation and Off-Site Disposal Cost Estimate
 SWMU 40 - Industrial Soil Cleanup Criteria
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
		Contingency @ 20%			\$1,400
		Engineering @ 5%			\$300
		Constr/Mngmnt/Admin @ 10%			\$700
TOTAL CAPITAL COST ESTIMATE					
		if waste is Non-Hazardous			\$8,900
		if waste is Hazardous			\$10,000

NOTES TO
INDUSTRIAL USE SOIL CLEANUP CRITERIA
EXCAVATION AND OFF-SITE DISPOSAL COST ESTIMATES
CORRECTIVE MEASURES STUDY
DYNO NOBEL
PORT EWEN, NEW YORK

1. Unit costs based on Means 022-274-0020, mobilization/demobilization up to 50 miles of dozer, loader, backhoe or excavator, 70 H.P. – 250 H.P.
2. A) Unit costs based on ECHOS 17-01-0112, Heavy clearing, without grub, wet clearing, includes loading,hauling and disposal costs, assuming uncontaminated.

B)Unit costs based on Means 021-104-0300, Clear and Grub – cut heavy, trees to 24” diameter, Means 021-104-0350, Clear and Grub – Grub stumps and remove.
3. Cost based on experience with similar applications at other sites.
4. Unit costs based on ECHOS 33-02-0303, Organic vapor analyzer, ECHOS 33-02-0312, Digital dust analyzer.
5. Unit costs based on Means 022-704-1000, Silt fence, polypropylene, 3’ high, adverse conditions.
6. Unit costs based on Means 016-420-6430, Toilet, fresh water flush, garden hose.
7. Unit costs based on Means 015-904-0550 Office trailer, furnished, no hookups 50’X12’, Means 015-904-0700, air conditioning.
8. Unit costs based on ECHOS 17-04-0101, General Cleanup, where a safety level of D was assumed.
9. Unit costs based on Means 016-420-6900, Water tank, engine driven discharge, 5,000 gallons, Means Crew No. B-33J for 1 Equipment Operator (Med.).
10. Unit costs based on Means 013-306-0100, Conventional topographical maximum, assuming 3 survey submittals consisting of a pre-excavation survey, post-excavation survey and a post-backfill survey.
11. Unit costs based on ECHOS 33-17-0803, Decontaminate heavy size equipment, where a safety level of D was assumed.
12. Unit costs based on costs for same (or similar) item on recent site remediation project in Northeast USA.
13. Unit costs based on 2 laborers working for a total of 1 day to construct the TWCA..
14. Unit costs based on Means 022-238-0200, Backhoe, hydraulic, crawler mtd., 1 CY capacity, Means 022-238-0020, for loading onto trucks, Means 022-238-4100, for heavy soil or stiff clay, Means 022-238-4250 For wet excavation, Means 022-266-2010, Off highway haulers, 22 CY rear/bottom dump, 1000’ round trip. Unit costs also contains a scale up factor of 20% for handling of stabilization of excavated material. Excavation volume includes a 20% bulking factor applied to in-place volume. Excavation production rate estimated at 150 CY/day for SWMU Nos. 1 and 1-22. A production rate of 300 CY/day is estimated for all other SWMUs and AOCs.
15. Unit costs based on Means 022-286-0200, remove and stockpile loam, Means 022-266-1130, hauling, 16.5 C.Y. trailer, 20 mile round trip, Means 022-208-4420, structural backfill, 200 hp dozer, and Means 022-226-5700, compaction, sheepsfoot, 12” lift, 3 pass. It is estimated that the backfill will be 50% of excavated material for SWMU No.1.
16. Unit costs based on ECHOS 18-05-0402, Seeding, Vegetative Cover, where a safety level of D was assumed.

17. Unit costs based on Means 022-238-0200, Backhoe, hydraulic, crawler mtd., 1 CY capacity, Means 022-238-0020, for loading onto trucks, Means 022-238-4100, for heavy soil or stiff clay, Means 022-238-4250 For wet excavation, Means 022-266-2010, Off highway haulers, 22 CY rear/bottom dump, 1000' round trip.
18. Unit costs based on Means 022-266-0200, 6 C.Y. dump truck, 4 mile round trip.
19. [Reserved].
20. Unit costs based on Means 025-124-0020, Paving asphaltic concrete, parking lots and driveways, 6" stone base, 2" binder course, 1" topping.
21. Unit costs based on Means 020-728-0010, Saw cutting, asphalt, up to 3" deep, Means 020-728-0020, Each additional inch of depth. Unit cost was determined assuming an existence of a 6" maximum depth of asphalt at the SWMU/AOC.
22. Unit costs based on ECHOS 33-15-0401, Cement Kiln Dust (Bulk). Volume of Cement Kiln Dust needed was based on 40% of tonnage of excavated material for SWMU No. 1, 20% of tonnage of excavated material for SWMU No. 1-22 and 20% of tonnage of excavated material from below the Ground Water Table for all other SWMUs and AOCs.
23. Cost estimated as 10% of subtotal, based on previous experience and includes items such as fence removal/replacement and protection of utilities.
24. Cost estimated as 5% of subtotal, based on previous experience.
25. Unit costs based on analytical lab fee schedule. Cost includes RCRA Waste Characterization (TCLP Metals Extraction and Analysis and Reactivity Analysis) plus 20% for QA/QC testing. The analysis is estimated to be performed for every 500 CY of excavated material.
26. Unit costs based on analytical lab fee schedule. Cost includes RCRA Metals Analysis plus 20% for QA/QC testing. The analysis is estimated to be performed for every 30 linear foot from the sidewall and a bottom sample for every 900 SF of excavated material.
27. Unit costs based on recent price quote from a vendor.
28. Unit cost based on recent price quote from a vendor. This unit cost has been added due to the possibility of the existence of undetonated explosives in SWMU 1 and in a limited portion of SWMU 1/22, approximately 6400 SF, which is considered a "buffer zone". In addition, the need for the UXB evaluation reduces the production rate to 150 C.Y./day, rather than the estimated production rate of 300 C.Y./day for excavation of materials.
29. Unit costs based on ECHOS-Unit Price 17-03-1003, 3" Diameter Contractor's Trash Pump, 150 GPM.
30. Unit costs based on ECHOS-Unit Price 33-13-2024, Carbon Adsorption Unit, 200 GPM, 6,000 Lb fill, Disposable, assuming no change-outs will be needed.

REFERENCES

1. Heavy Construction Cost Data (Means); R. S. Means Company, Inc.; 13th Annual Edition, 1999
2. Environmental Remediation Cost Data - Assemblies, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.
3. Environmental Remediation Cost Data - Unit Price, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.

APPENDIX G

COST ESTIMATES FOR REMEDIATION OF LANDFILLS

Permeable Cover Cost Estimate
SWMU 22 (Landfill)
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$2,700
	2a	EA ACRE	4 1.5	213 1200	\$900 \$1,800
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$1,700
	4	DAY DAY	4 4	300 120	\$1,200 \$500
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 900	N/A 1.00	\$900 \$900
	6	LS	N/A	N/A	\$2,000
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	4	22	\$90
	8	DAY ACRE	4 1.5	380 300	\$1,500 \$450
	9	LS DAY	N/A 4	N/A 790	\$3,200 \$3,200
5. DUST CONTROL MEASURES Water tank	10	ACRE	1.5	6000	\$9,000 \$9,000
	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	13	LS	N/A	N/A	\$120,000
	14	SF	66,000	0.20	\$13,000
	16	CY CY	3,700 1,200	21 22	\$78,000 \$26,400
7. DEMOBILIZATION Removal of non-permanent mat'l's & facilities Equipment decontamination	17	ACRE	1.5	2050	\$3,100 \$3,100
	18	ACRE	1.5	2050	\$3,100 \$3,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	19	LS	N/A	N/A	\$120,000
	20	SF	66,000	0.20	\$13,000
	21	CY CY	3,700 1,200	21 22	\$78,000 \$26,400
9. VEGETATIVE COVER	22	ACRE	1.5	2050	\$3,100 \$3,100
	23	ACRE	1.5	2050	\$3,100 \$3,100

Permeable Cover Cost Estimate
 SWMU 22 (Landfill)
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
10. FENCING	22	LF	900	15	\$14,000
Subtotal - Line Items					\$160,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$16,000
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$8,000
SUBTOTAL ESTIMATE :					\$180,000
Contingency @ 20%					\$36,000
Engineering @ 5%					\$9,000
Constr/Mngmnt/Admin @ 10%					\$18,000
ESTIMATED CAPITAL COST:					\$240,000

ANNUAL OPERATIONS & MAINTENANCE COSTS	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	120	22	\$2,640
2. VEGETATIVE COVER	17	ACRE	0.2	2050	\$300
ESTIMATED ANNUAL COST:					\$3,000
NPW @ 4%, 30 years					\$50,000
ESTIMATED PRESENT WORTH:					\$290,000

Permeable Cover Cost Estimate
SWMU 23 (Landfill)
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area General Cleanup	1	LS	N/A	N/A	\$9,100
	2b	EA	4	213	\$900
	8	ACRE	0.6	15400	\$8,000
		ACRE	0.6	300	\$165
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$800
	4	DAY	2	300	\$600
		DAY	2	120	\$200
	5	LS LF	N/A 800	N/A 1.00	\$800 \$800
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	6	LS	N/A	N/A	\$1,000
	7	DAY	2	22	\$40
		DAY	2	380	\$800
	8	ACRE	0.6	300	\$170
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
	10	ACRE	0.6	6000	\$3,300 \$3,300
5. DUST CONTROL MEASURES Water tank	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
	13	LS	N/A	N/A	\$41,000
	14	SF	24,000	0.20	\$4,800
		CY	1,300	21	\$27,000
16	CY	400	22	\$8,800	
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	17	ACRE	0.6	2050	\$1,100
	22	LF	800	15	\$12,000
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	13	LS	N/A	N/A	\$41,000
	14	SF	24,000	0.20	\$4,800
		CY	1,300	21	\$27,000
	16	CY	400	22	\$8,800
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	17	ACRE	0.6	2050	\$1,100
	22	LF	800	15	\$12,000
	13	LS	N/A	N/A	\$41,000
	14	SF	24,000	0.20	\$4,800
CY		1,300	21	\$27,000	
16	CY	400	22	\$8,800	
9. VEGETATIVE COVER	17	ACRE	0.6	2050	\$1,100
	22	LF	800	15	\$12,000
10. FENCING	22	LF	800	15	\$12,000

Permeable Cover Cost Estimate
 SWMU 23 (Landfill)
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$73,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$7,300
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$3,700
SUBTOTAL ESTIMATE :					\$84,000
Contingency @ 20%					\$17,000
Engineering @ 5%					\$4,200
Const/Mngmnt/Admin @ 10%					\$8,400
ESTIMATED CAPITAL COST:					\$110,000

ANNUAL OPERATIONS & MAINTENANCE COSTS	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	40	22	\$880
2. VEGETATIVE COVER	17	ACRE	0.1	2050	\$100
ESTIMATED ANNUAL COST:					\$1,000
NPW @ 4%, 30 years					\$20,000
ESTIMATED PRESENT WORTH:					\$130,000

Permeable Cover Cost Estimate
 SWMU 32 (Landfill)
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$5,900
	2a	EA ACRE	4 0.3	213 15400	\$900 \$5,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$800
	4	DAY DAY	2 2	300 120	\$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 600	N/A 1.00	\$600 \$600
	6	LS	N/A	N/A	\$900
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	2	22	\$40
	8	DAY	2	380	\$800
	8	ACRE	0.3	300	\$100
5. DUST CONTROL MEASURES Water tank	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
	10	ACRE	0.3	6000	\$1,900 \$1,900
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	11	LS	N/A	N/A	\$2,000
	11	EA EA	4 4	213 280	\$900 \$1,100
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	13	LS	N/A	N/A	\$32,000
	14	SF	14,000	0.20	\$2,800
	16	CY	800	21	\$17,000
	13	CY SY	300 1,600	22 3.75	\$6,600 \$6,000
8. CAPPING Geotextile Soil Cover (18") Topsoil (6") Erosion Control Mat	13	LS	N/A	N/A	\$32,000
	13	SF	14,000	0.20	\$2,800

Permeable Cover Cost Estimate
 SWMU 32 (Landfill)
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
9. VEGETATIVE COVER	17	ACRE	0.3	2050	\$700
10. FENCING	22	LF	600	15	\$9,000
Subtotal - Line Items					\$55,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$5,500
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$2,800
SUBTOTAL ESTIMATE :					\$63,000
Contingency @ 20%					\$13,000
Engineering @ 5%					\$3,200
Constr/Mngmnt/Admin @ 10%					\$6,300
ESTIMATED CAPITAL COST:					\$86,000

ANNUAL OPERATIONS & MAINTENANCE COSTS	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	30	22	\$660
2. VEGETATIVE COVER	17	ACRE	0.0	2050	\$100
ESTIMATED ANNUAL COST:					\$800
NPW @ 4%, 30 years					\$10,000
ESTIMATED PRESENT WORTH:					\$100,000

Permeable Cover Cost Estimate
SWMU 35 (Landfill)
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$4,900
	2a	EA ACRE	4 0.2	213 15400	\$900 \$4,000
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day, w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$800
	4	DAY DAY	2 2	300 120	\$600 \$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS LF	N/A 500	N/A 1.00	\$500 \$500
	6	LS	N/A	N/A	\$900
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	7	DAY	2	22	\$40
	8	DAY ACRE	2 0.2	380 300	\$800 \$70
	9	LS DAY	N/A 2	N/A 790	\$1,600 \$1,600
5. DUST CONTROL MEASURES Water tank	10	ACRE	0.2	6000	\$1,400 \$1,400
	11	LS EA EA	N/A 4 4	N/A 213 280	\$2,000 \$900 \$1,100
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	13	LS	N/A	N/A	\$19,000
	14	SF	10,000	0.20	\$2,000
	16	CY CY	600 200	21 22	\$12,600 \$4,400
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	17	ACRE	0.2	2050	\$500
	22	LF	500	15	\$7,500
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	17	ACRE	0.2	2050	\$500
	22	LF	500	15	\$7,500
9. VEGETATIVE COVER	17	ACRE	0.2	2050	\$500
	22	LF	500	15	\$7,500
10. FENCING	17	ACRE	0.2	2050	\$500
	22	LF	500	15	\$7,500

Permeable Cover Cost Estimate
 SWMU 35 (Landfill)
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$39,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$3,900
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$2,000
SUBTOTAL ESTIMATE :					\$45,000
Contingency @ 20%					\$9,000
Engineering @ 5%					\$2,300
Constr/Mngmnt/Admin @ 10%					\$4,500
ESTIMATED CAPITAL COST:					\$61,000

ANNUAL OPERATIONS & MAINTENANCE COSTS	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	20	22	\$440
2. VEGETATIVE COVER	17	ACRE	0.1	2050	\$200
ESTIMATED ANNUAL COST:					\$600
NPW @ 4%, 30 years					\$10,000
ESTIMATED PRESENT WORTH:					\$70,000

Permeable Cover Cost Estimate
SWMU 48 (Landfill)
Corrective Measures Study
Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	PRICE	AMOUNT
1. MOBILIZATION Necessary equipment Prep staging area	1	LS	N/A	N/A	\$1,100
	2a	EA	4	213	\$900
	2b	ACRE	0.1	1200	\$200
2. HEALTH AND SAFETY MEASURES PPE (est \$50/pers/day,w/ 6 people using PPE) Air Monitoring (dust and vapor)	3	LS	N/A	N/A	\$800
	4	DAY	2	300	\$600
		DAY	2	120	\$200
3. EROSION AND SEDIMENT CONTROL MEASURES Silt fencing	5	LS	N/A	N/A	\$600
		LF	600	1.00	\$600
4. SITE MAINTENANCE Sanitary facilities Trailer Cleanup of work areas	6	LS	N/A	N/A	\$900
	7	DAY	2	22	\$40
		DAY	2	380	\$800
	8	ACRE	0.1	300	\$40
5. DUST CONTROL MEASURES Water tank	9	LS	N/A	N/A	\$0
		DAY	0	790	\$0
6. SURVEYING & RECORD DOCUMENTS Survey crew (2 person) and Survey documents	10	ACRE	0.1	6000	\$900
					\$900
7. DEMOBILIZATION Removal of non-permanent mat's & facilities Equipment decontamination	11	LS	N/A	N/A	\$2,000
		EA	4	213	\$900
		EA	4	280	\$1,100
8. CAPPING Geotextile Soil Cover (18") Topsoil (6")	13	LS	N/A	N/A	\$10,000
	14	SF	6,200	0.20	\$1,200
	16	CY	300	21	\$6,300
		CY	100	22	\$2,200
9. VEGETATIVE COVER	17	ACRE	0.1	2050	\$300
10. FENCING	22	LF	600	15	\$9,000

Permeable Cover Cost Estimate
 SWMU 48 (Landfill)
 Corrective Measures Study
 Dyno Nobel - Port Ewen, NY

ITEM	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
Subtotal - Line Items					\$26,000
11. MISCELLANEOUS AND OTHER	18	LS	N/A	N/A	\$2,600
12. SUBMITTALS/CQC PROGRAM	19	LS	N/A	N/A	\$1,300
SUBTOTAL ESTIMATE :					\$30,000
Contingency @ 20%					\$6,000
Engineering @ 5%					\$1,500
Constr/Mngmnt/Admin @ 10%					\$3,000
ESTIMATED CAPITAL COST:					\$41,000

ANNUAL OPERATIONS & MAINTENANCE COSTS	NOTES	UNIT	QUANTITY	UNIT PRICE	AMOUNT
PERMEABLE CAP					
1. TOPSOIL (6")	16	CY	10	22	\$220
2. VEGETATIVE COVER	17	ACRE	0.1	2050	\$100
ESTIMATED ANNUAL COST:					\$300
NPW @ 4%, 30 years					\$5,000
ESTIMATED PRESENT WORTH:					\$46,000

NOTES TO
PERMEABLE COVER
COST ESTIMATES
CORRECTIVE MEASURES STUDY
DYNO NOBEL
PORT EWEN, NEW YORK

1. Unit costs based on Means 022-274-0020, mobilization/demobilization up to 50 miles of dozer, loader, backhoe or excavator, 70 H.P. – 250 H.P and Means 022-274-1150, delivery charge for small equipment on flatbed trailer, maximum.
2. A) Unit costs based on ECHOS 17-01-0112, Heavy clearing, without grub, wet clearing, includes loading,hauling and disposal costs, assuming uncontaminated.

B)Unit costs based on Means 021-104-0300, Clear and Grub – cut heavy, trees to 24” diameter, Means 021-104-0350, Clear and Grub – Grub stumps and remove.
3. Cost based on experience with similar applications at other sites.
4. Unit costs based on ECHOS 33-02-0303, Organic vapor analyzer, ECHOS 33-02-0312, Digital dust analyzer.
5. Unit costs based on Means 022-704-1000, Silt fence, polypropylene, 3’ high, adverse conditions.
6. Unit costs based on Means 016-420-6430, Toilet, fresh water flush, garden hose.
7. Unit costs based on Means 015-904-0550 Office trailer, furnished, no hookups 50’X12’, Means 015-904-0700, air conditioning.
8. Unit costs based on ECHOS 17-04-0101, General Cleanup, where a safety level of D was assumed.
9. Unit costs based on Means 016-420-6900, Water tank, engine driven discharge, 5,000 gallons, Means Crew No. B-33J for 1 Equipment Operator (Med.).
10. Unit costs based on Means 013-306-0100, Conventional topographical maximum, assuming 3 survey submittals consisting of a pre-excavation survey, post-excavation survey and a post-backfill survey.
11. Unit costs based on ECHOS 33-17-0803, Decontaminate heavy size equipment, where a safety level of D was assumed.
12. Unit costs based on Means 022-262-1300, Fill, gravel fill, compacted under floor slabs, 12” deep.
13. Unit costs based on costs for same (or similar) item on recent site remediation project in Northeast USA.
14. Unit costs based on Means 022-286-0200, remove and stockpile loam, Means 022-266-1130, hauling, 16.5 C.Y. trailer, 20 mile round trip, Means 022-208-4420, structural backfill, 200 hp dozer, and Means 022-226-5700, compaction, sheepsfoot, 12” lift, 3 pass.
15. Unit costs based on Means 022-226-5040, Compaction Riding, vibrating rollover, 6” lifts, 4 passes.
16. Unit costs based on ECHOS 18-05-0301, Topsoil, 6” lifts off-site.
17. Unit costs based on ECHOS 18-05-0402, Seeding, Vegetative Cover, where a safety level of D was assumed.
18. Cost estimated as 10% of subtotal. based on previous experience and includes items such as fence removal/replacement and protection of utilities.

19. Cost estimated as 5% of subtotal, based on previous experience.
20. Unit costs based on Means 025-128-0020, Paving asphaltic concrete 2" thick, no base.
21. Unit costs based on analytical lab fee schedule. Cost includes RCRA Hazardous Waste List Metal Analysis plus 20% for QA/QC testing. The analysis is estimated to be performed for every 30 linear foot from the sidewall and a bottom sample for every 900 SF of excavated material.
22. Unit costs based on Means 028-308-0200, 3 strands barb wire, 2" post A 10' O.C., set in concrete, 6' H, 9 ga. Wire, galv. steel

REFERENCES

1. **Heavy Construction Cost Data (Means); R. S. Means Company, Inc.; 13th Annual Edition, 1999**
2. **Environmental Remediation Cost Data - Assemblies, Environmental Cost Handling Options and Solutions (ECHOS); R. S. Means Company, Inc.; 5th Annual Edition, 1999.**

APPENDIX H

COST ESTIMATE FOR GROUNDWATER MONITORING

**Groundwater - Monitored Natural Attenuation
Cost Estimate
Corrective Measures Study
Dyno Nobel - Port Ewen, NY**

ITEM	NOTE	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1. WELL INSTALLATION (20' WELL DEPTH) Installation Supervision	1	each	2	1800	\$3,600
	1	each	2	700	\$1,400
	1	each	2	100	\$200
SUBTOTAL ESTIMATE :					\$5,200
Contingency @ 20%					\$1,000
ANNUAL TOTAL:					\$6,000
Operations and Maintenance (for the first 10 years - requiring semi-annual sampling)					
1. SAMPLING LABOR AND EXPENSES	1	semi-annual	2	9200	\$18,000
	1	semi-annual	2	8500	\$17,000
2. ANALYTICAL	1	semi-annual	2	3800	\$7,600
3. DATA EVALUATION AND REPORT	1	semi-annual	2	1900	\$3,800
	2	semi-annual	2	1900	\$3,800
SUBTOTAL ESTIMATE :					\$46,000
Contingency @ 20%					\$9,200
ANNUAL TOTAL:					\$55,000
Operations and Maintenance (for the next 20 years - requiring annual sampling)					
1. SAMPLING LABOR AND EXPENSES	1	annual	1	9200	\$9,200
	1	annual	1	8500	\$8,500
2. ANALYTICAL	1	annual	1	3800	\$3,800
3. DATA EVALUATION AND REPORT	1	annual	1	1900	\$1,900
	2	annual	1	1900	\$1,900
SUBTOTAL ESTIMATE :					\$23,000
Contingency @ 20%					\$4,600
ANNUAL TOTAL:					\$28,000
PRESENT WORTH (@ 4% interest for 30 years)					\$830,000

NOTES:
 1. Costs based on experience at the project site and other similar projects.
 2. Includes costs for periodic redevelopment, maintenance and repairs based on experience with similar projects.

APPENDIX I

LETTER REGARDING ENDANGERED OR THREATENED
SPECIES AND SENSITIVE HABITATS

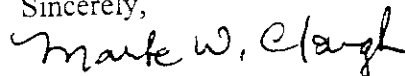
National Wetlands Inventory (NWI) maps may or may not be available for the project area. However, while the NWI maps are reasonably accurate, they should not be used in lieu of field surveys for determining the presence of wetlands or delineating wetland boundaries for Federal regulatory purposes. Copies of specific NWI maps can be obtained from:

Cornell Institute for Resource Information Systems
302 Rice Hall
Cornell University
Ithaca, NY 14853
(607) 255-4864

Work in certain waters and wetlands of the United States may require a permit from the U.S. Army Corps of Engineers (Corps). If a permit is required, in reviewing the application pursuant to the Fish and Wildlife Coordination Act, the Service may concur, with or without stipulations, or recommend denial of the permit depending upon the potential adverse impacts on fish and wildlife resources associated with project implementation. The need for a Corps permit may be determined by contacting Mr. Joseph Seebode, Chief, Regulatory Branch, U.S. Army Corps of Engineers, 26 Federal Plaza, New York, NY 10278 (telephone: [212] 264-3996).

If you require additional information please contact Michael Stoll at (607) 753-9334.

Sincerely,



for

David A. Stilwell
Field Supervisor

Enclosure

cc: NYSDEC, New Paltz, NY (Environmental Permits)
NYSDEC, Latham, NY
COE, New York, NY

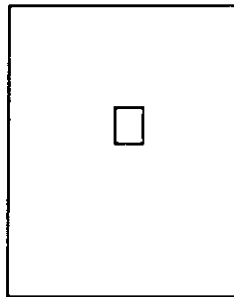
U.S. Fish and Wildlife Service
New York Field Office
3817 Luker Road
Cortland, NY 13045

Providing the following information will assist us in responding to your request for endangered species comments:

1. A concise description of the proposed project/action and where it will occur, including the name of the hamlet/village/city/town/county where the proposed project/action is in New York.
2. A map showing the proposed project/action location. The map should be a U.S. Geological Survey quadrangle map (USGS Quad). Please provide the name(s) of the USGS Quads involved.

If only providing a portion of the quadrangle, indicate where the portion would be on the full quadrangle, i.e.

Whole Quadrangle -



-Portion shown

3. The latitude and longitude of the proposed project/action (i.e. 42° 13' 28"/76° 56' 30"). If the proposed project/action is linear, provide coordinates for the beginning and ending points.

If you require additional information please contact Michael Stoll at (607) 753-9334.