Department of Environmental Conservation

Division of Hazardous Waste Remediation

Clinton County Landfill at Mooers

Site Number 510005
Clinton County, New York

Record of Decision

November 1993

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of the
1986 Environmental Quality Bond Act

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

RECORD OF DECISION
CLINTON COUNTY LANDFILL AT MOOERS
CLINTON COUNTY, NEW YORK
ID NUMBER 510005

PREPARED BY
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
NOVEMBER 1993

DECLARATION STATEMENT - RECORD OF DECISION

Clinton County Landfill at Mooers Inactive Hazardous Waste Site
Clinton County, New York
Site No. 510005

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Clinton County Landfill at Mooers inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL) and consistent with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 USC Section 9601, et., sec., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Clinton County Landfill at Mooers Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, may present a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Clinton County Landfill at Mooers and the criteria identified for evaluation of alternatives the NYSDEC has selected a landfill cap plus downstream removal of sediment to be placed on site under the cap, construction of a stepped impoundment system, and enhanced natural attenuation and long term monitoring. The components of the remedy are as follows:

- Construction of an approximately 12 acre modified Part 360 landfill cap which will include 6 inches of cover, a 40 mil PVC geomembrane and a 30 inch barrier protection layer. The bottom 12 inches of the barrier layer will be a drainage layer on sideslopes greater than 10% with a filter fabric on top, and the top 6 inches of the barrier layer mulched and seeded.

- institutional controls including the purchase or lease of the property to the north contiguous with the landfill, deed restrictions and warning signs.

- excavation of approximately 6,700 cubic yards of offsite sediment deposited on site under the landfill cap.

- the construction of a stepped impoundment with porous media added to each impoundment to isolate any contamination from foraging wildlife.

- enhanced natural attenuation through the introduction of wetland vegetation planted within the stepped impoundment.

- the creation of approximately 2 acres of wetland to replace wetland disturbed by the excavation of sediments and construction of the stepped impoundment.

- long-term (30-year) monitoring of surface water and groundwater within the overbruden and bedrock.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. Waivers are justified for applicable or relevant and appropriate requirements that will not be met. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the statutory preference for remedies that reduce toxicity, mobility, or volume as a principal element. In addition, the remedy relies on remediation and treatment techologies that are more passive than active in their approach, offering less direct intervention and significantly reducing operation and maintenance costs.

November 22, 1993
Date

Ann Hill DeBarbieri
Deputy Commissioner

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Clinton County, New York
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SECTION 1: SITE LOCATION AND DESCRIPTION

The Clinton County Landfill at Mooers, NYSDEC Site # 510005, also known as the Mooers Landfill is located on North Star Road in the Town of Mooers, New York (Figure 1). The landfill occupies approximately 11 acres on a contiguous 145-acre parcel of land owned by Clinton County.

The landfill Site is situated near the northeast margin of the Champlain Valley Lowlands physiographic province, approximately 1 1/2 miles south of the Canadian border. It lies within the St. Lawrence River drainage basin. The English River, located approximately 1/2 mile west of the landfill, drains the immediate site vicinity. Surface runoff on the eastern side of the landfill is toward the Northeast into a wetland complex known as Beaver Meadows.

Land use within the site vicinity is agricultural and residential. The thickly wooded area bordering the landfill to the North has supported logging activities.

The landfill site vicinity is marked by generally flatlying to moderately rolling terrain.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

In September, 1976 Clinton County purchased the 145-acre parcel for the purpose of siting a sanitary landfill facility. The landfill became operational in 1977, accepting mixed municipal wastes predominantly from residents in Northern Clinton County. In 1985 records of waste disposal practices were disclosed that indicated hazardous wastes generated at one or more local industries had been disposed at the Mooers landfill from 1979 to 1985. The site was added to the State Hazardous Waste Site Registry in October of 1986.

2.2: Remedial History

Surface water and Groundwater sampling performed in 1989 confirmed the presence of several volatile organic compounds in excess of groundwater standards. On March 1, 1990 an Order on Consent was signed by the Commissioner requiring the closure, investigation and remediation of the landfill site.

The signing of the Order made Clinton County eligible for reimbursement of 75% of the costs

of the site investigation and remediation. In a separate agreement, Harris Corporation agreed to fund a portion of the site investigation.

SECTION 3: CURRENT STATUS

Clinton County retained Barton & Loguidice, P.C. (B&L) to perform a Remedial Investigation/Feasibility Study (RI/FS) at the Mooers Landfill. In November 1990 the Department approved a Workplan for the RI/FS and in December 1992 the Department approved the RI Report prepared for Clinton County by B&L. The Final Feasibility Study Report was submitted to the Department in July 1993.

3.1: Summary of the Remedial Investigation

The purpose of the Remedial Investigation was to define the nature and extent of any contamination resulting from previous activities at the site.

Field Work for the RI began in November 1990 and was completed in February 1992 when a final round of water level monitoring was performed. A two Volume Report entitled "Final Remedial Investigation Report", August 1992 has been prepared describing the field activities and findings of the RI in detail.

The primary RI activities consisted of the following:

* *Site Base Map Preparation*
* *Electromagnetic Terrain Conductivity Survey*
* *Borings and Monitoring Well Installation*
* *Downhole Gamma Ray Logging*
* *Groundwater, Surface Water, and Soil Sampling and Analysis*
* *Data Validation*
* *Groundwater Modeling*
* *Ecological Evaluations*
* *Risk Assessment*
* *Air Monitoring and Air Quality Evaluation*
* *In-Site Hydraulic Conductivity Determinations*
* *Groundwater Elevation Monitoring*

The location of the monitoring wells and surface water/sediment sampling locations is shown on Figure 2.

The analytical data obtained from the RI was compared to Applicable Standards, Criteria, and Guidance (SCGs) in determining remedial alternatives. Groundwater, drinking water and surface water SCGs identified for the Mooers Landfill site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For the evaluation and interpretation of soil and sediment analytical results, NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals for soil.

Based upon the results of the remedial investigation in comparison to the SCGs, certain areas and media of the site require remediation.

The electromagnetic (EM) terrain conductivity survey identified two areas of high conductivity indicating groundwater contamination - a larger area to the Northeast of the landfill and a smaller area adjacent to the Southwest side of the fill. The EM results correlated well with the analytical groundwater results, which confirmed groundwater contamination in these areas. These areas are shown in Figure 3. A total of nineteen groundwater monitoring wells and one piezometer were installed during the RI. Most

locations were completed as couplets, with one bedrock and one overburden well.

Groundwater within the overburden and bedrock units generally flows to the northeast. A mounding of the overburden water table is inferred directly beneath the landfill, creating a localized radial flow system, a part of which flows towards southwest.

Groundwater contamination within the bedrock and overburden has been confirmed beyond the County property line, approximately 350 feet off site and downgradient from the northeast perimeter of the landfill. The concentration of total volatile organic compounds in the overburden groundwater at this location ranged from 8.2-9.5 ppm (mg/1).

Groundwater contamination within the bedrock and overburden has also been confirmed approximately 100 feet downgradient from the southwest perimeter of the landfill. In addition, groundwater contamination by low concentrations of organic compounds (6-12ppb) has been detected in the overburden beyond the county property line, approximately 300 feet off site and downgradient from the northwest perimeter of the landfill.

Contamination of the surface water and sediments was confirmed northeast of the landfill. Approximately 150 feet from the northeast perimeter of landfill total volatile organics in surface water ranged from 7.6 to 9.4 ppm. The primary organic compounds present were acetone and 2 - butanone. Several other volatile and semi - volatile compounds were also detected. Inorganic compounds were elevated above background levels in groundwater, surfacewater and sediments. The range of contaminant concentrations is shown on Table 1.

The results of the air quality testing indicate that the landfill is not a significant source of atmospheric contamination.

The ecological impacts of the landfill appear to be limited to the contaminated area on the northeast side of the landfill, where some degradation of wetland habitat has occurred.

3.2 Summary of Human Exposure Pathways:

The human health exposure pathways which are considered complete are those involving direct contact with surface materials. A hunter who accesses the site on a frequent basis is likely to be the maximally exposed individual. The pathways of concern are dermal contact with and incidental ingestion of surface materials.

At present, there are no municipal water supplies or individual residential water wells in the immediate vicinity of the site. The nearest residences are about a third of a mile from the site and are not located downgradient with respect to groundwater flow direction. Therefore, the impact from the site groundwater at these residential locations is likely to be nonexistent. On this basis, the groundwater use exposure pathway was considered incomplete. This exposure pathway was addressed in the risk assessment under a future theoretical risk scenario since future residential development of areas closer to the site cannot be ruled out.

Residential wells in the area were sampled by the New York State Department of Health and no contamination attributable to the landfill was detected.

Based on the exposure pathways evaluated and the therotical risk calculations performed, the risk assessment concluded that the site does not pose a threat to public health. The site however, has contaminated groundwater, surface water and sediments within its immediate vincity and the leachate seeps and leachate pond are current human exposure pathways. Given the significant exceedence of standards that exists in

groundwater and surface water there exists the likelihood that contamination would continue to migrate and may pose an unacceptable risk in the future. Due to the relatively recent cessation of waste disposal at the landfill, the chance of future migration is greater at the Mooers Landfill than at older landfills.

3.3 Summary of Environmental Exposure Pathways:

Environmental exposure pathways determined to be complete for wildlife were direct contact with and incidental ingestion of contaminated surface water and sediments. This contact could take place while feeding and foraging as part of dietary uptake. Likely receptors are birds and small mammals. A criteria-specific analysis was conducted which identified that surface water standards for several constituents were exceeded in a nonaquatic (flow - limited) habitat downstream of the significant outbreak area. The standards and criteria/guidance values are based on aquatic life toxicology. Since there is no aquatic life (fish) in the area of impact identified in the ecological assessment (the vegetation die-off in the seep area to the east of the landfill), the standards and criteria applied cannot be used to attribute effects to non-aquatic wildlife. Therefore, a quantitative terrestrial environmental risk assessment was performed.

Risks through incidental ingestion of sediment, surface water ingestion and dietary uptake were quantified for terrestrial animals. Receptor types included rodents, rabbits, deer, omnivorous birds and raptors. Overall, the quantitative findings of the risk assessment indicate that the site may pose a risk to selected individual animals residing within the small area associated with the groundwater outbreak, although effects would probably not be observable. Individual animals of species having small home ranges would be expected to be at greater risk and have a greater number of individuals at risk. Due to the absence of risks to higher-level consumers of species with wider ranges, impacts, if any, are confined. Bioaccumulation via the food chain or effects on the ecosystem would not be anticipated.

SECTION 4: ENFORCEMENT STATUS

The NYSDEC and Clinton County entered into a Consent Order on March 1, 1990. The Order obligates Clinton County to implement a full remedial program and allows reimbursement to Clinton County of up to 75 percent of the eligible cost of the remediation.

The Consent Order was amended on April 20, 1992 and again on October 20, 1992 to allow the landfill to continue to accept municipal solid waste. On November 1, 1992, the landfill gates were officially closed and the Mooers transfer station became operational. The October 20, 1992 amendment also required that the landfill be covered with intermediate cover as defined in 6NYCRR Part 360-1.2(b) (84), and that the landfill be graded to at least four percent by December 1, 1992. The amendment allowing for an extension of municipal waste dumping was allowed since the extension did not impede or delay the remedial program.

New York State and Clinton County (plaintiffs) entered into a separate Partial Consent Decree with Harris Corporation (defendant) to fund a portion of the Remedial Investigation and Feasibility Study.

The following is a chronological enforcement history of this site:

Orders on Consent

Date Index

3/1/90 #A5-0152-88-09

Subject

Development and Implentation of a Remedial Program

Date Index

12/10/90 #90-CV-918

Subject

Partial Consent Decree NYS & Clinton Co. VS. Harris Corp. Harris contribution to RI/FS

Date Index

4/20/92 #A501528809

Subject

Allowed landfill to accept Municipal Waste until 9/1/92 with 4% grade by 11/1/92

Date Index

10/20/92 Amendment to Order #A501528809

Subject

Allowed landfill to accept Municipal Waste Until 11/1/92 with 4% grade by 12/1/92

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6NYCRR 375-1.10. These goals are established under the guideline of meeting all standard, criteria, and guidance (SCGs) and protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

- *Reduce, control, or eliminate the contamination present within the soils/waste on site (generation of leachate within the fill mass).*
- *Eliminate the threat to surface waters by eliminating any future contaminated surface run-off from the contaminated soils on site.*
- *Eliminate the potential for direct human or animal contact with the contaminated soils on site.*
- *Mitigate the impacts of contaminated groundwater to the environment.*
- *Prevent, to the extent possible, migration of contaminants in the landfill to groundwater.*
- *Provide for attainment of SCGs for groundwater quality at the limits of the area of concern (AOC).*

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Mooers Landfill site were identified, screened and evaluated in a three-phase Feasibility Study. This evaluation is presented in the report entitled Final Feasibility Study Report, July 1993. A summary of the detailed analysis follows.

6.1: Description of Alternatives

The potential remedies are intended to address the contaminated list Media of concern, i.e., soils, sediments, surface water and groundwater at the site.

The final FS Report evaluated a total of 21 remedial alternatives, 18 in detail. The following is a summary of the 18 alternatives. The Roman numerals after each alternative correspond to the numbering of the alternatives in the Final FS Report.

The alternatives generally consist of various combinations of several basic remedial components. The remedial components include capping, enhanced natural attenuation, surface water/sediment isolation, construction of a subsurface barrier, excavation of contaminants, construction of a stepped impoundment system, leachate collection and treatment and groundwater collection and treatment.

All of 18 alternatives could be implemented within one or two construction seasons. Alternatives which involve fewer components, such as capping and enhanced natural attenuation, could be implemented within one construction season. More complex alternatives such as those involving a subsurface barrier and collection and treatment of groundwater in addition to capping would likely require two construction seasons to implement.

No Action, Long-term Monitoring (Alternative I)

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state.

This is an unacceptable alternative as the site would remain in its present condition, statutory requirements would not be met, and the environment would not be adequately protected.

Waste Containment/Capping **(Alternative IIa)**

This alternative incorporates the construction of a modified Part 360 12 acre landfill cap, long term water quality monitoring and institutional controls. The landfill cap would be constructed as follows.

- 6-inches of subgrade
  note: during the placement of this material approximately four (4) gas vents per acre would be installed through the existing intermediate cover into the waste.
- A 40 mil PVC geomembrane
- A 12 inch drainage layer placed over the PVC geomembrane along sideslopes greater than 10%
- A 6 oz. filter fabric
- A 30-inch barrier protection layer, the top 6 inches mulched and seeded.

It is anticipated that on-site materials would be used for the barrier protection layer and the 6-inch subgrade, and that the subgrade layer would generally meet Part 360 specifications for gas vent material.

Institutional controls include the purchase or lease of the property to the north contiguous with the landfill property, and the imposition of deed restrictions for both properties. Warning signs would be posted along the perimeters of both properties alerting potential trespassers of possible hazards within these areas.

The site would be monitored for 30 years.

Waste Containment/Capping including Enhanced Natural Attenuation **(Alternative IIb)**

This alternative incorporates all options included with the development of Alternative IIa, plus the enhancement of natural attenuation mechanisms through the introduction of wetland vegetation to all impacted surficial areas including the leachate contaminated pond and the drainage channel to the northeast of the landfill.

Waste Containment including Capping plus Surface Water/Sediment Isolation with Natural Attenuation. **(Alternative IIIa)**

This alternative incorporates all the elements of Alternative IIa above. It also includes the isolation of contaminated surface water and sediment by the placement of a layer of porous material over the entire leachate impacted area northeast of the landfill including filling of the leachate contaminated pond.

Waste Containment including Capping plus Surface Water/Sediment Isolation with Enhanced Natural Attenuation. **(Alternative IIIb)**

This alternative incorporates all options included with the development of Alternative IIIa, plus the enhancement of natural attenuation mechanisms through the introduction of wetland vegetation to all areas within the boundaries of the porous medium.

Waste Containment including Capping plus Subsurface Barrier and Sediment Isolation with Leachate Collection and Treatment at On-Site Facility. **(Alternative IVa)**

This alternative includes the remedial measures described in Alternative IIIa above. In addition, this alternative includes construction of a subsurface barrier along downgradient portions of the landfill perimeter, installation of a series of leachate extraction wells within the cut-off wall, isolation of contaminated sediments, construction of an on-site treatment facility including a separate holding tank for the storage of collected leachate, and the provision for on-site discharge of treated effluent to nearby surface waters.

Waste Containment including Capping plus Subsurface Barrier and Sediment Isolation with Leachate Collection and Treatment at Off-Site Facility. **(Alternative IVb)**

This alternative incorporates options included with Alternative IVa. The collected leachate, however, would be trucked offsite for treatment at a Publicly Owned Waste Water Treatment Plant (POTW).

Waste Containment including Capping plus Landfill Cap Extension and Sediment Isolation. **(Alternative Va)**

This alternative would include extending the landfill cap over the existing leachate pond and sediment isolation described previously in Alternative IIIa.

Waste Containment including Capping plus Landfill Cap Extension, Sediment Isolation and Subsurface Barrier with Leachate Collection and Treatment at On-Site Facility. **(Alternative Vb)**

This alternative combines the landfill cap extension of Alternative Va above, with a subsurface barrier, sediment isolation, and

leachate collection and treatment at on-site facility described in Alternative IVa.

Waste Containment including Capping plus Landfill Cap Extension, Sediment Isolation and Subsurface Barrier with Leachate Collection and Treatment at Off-Site Facility. **(Alternative Vc)**

This alternative is Alternative Vb above with treatment of leachate offsite at a POTW.

Waste Containment including Capping plus Surface Water Impoundment and Sediment Isolation with Enhanced Natural Attenuation. **(Alternative VIb)**

Construction of the cap, sediment isolation and enhanced natural attenuation would be accomplished as described in previous alternatives.

Impoundment of surface water would be accomplished through the construction of an earthen berm around the leachate contaminated pond. Construction of the berm would include a weir to allow for surface water to be discharged into the porous fill layer.

Waste Containment including Capping plus Subsurface Barrier and Downstream Removal of Sediment with On-Site Treatment of Collected Leachate and On-Site Disposal of Sediments. **(Alternative VIIa)**

All sediments within the area of surficial discoloration would be excavated to the depth of contamination and disposed of within the landfill. Capping, subsurface barrier construction and collection with on-site treatment of leachate would be accomplished as described in previous alternatives.

Waste Containment including Capping plus Subsurface Barrier and Downstream Removal of Sediment with Off-Site Treatment of Collected Leachate and On-Site Disposal of Sediments. **(Alternative VIIb)**

This is Alternative VIIa above, with treatment of collected leachate at a POTW.

Waste Containment including Capping plus Downstream Removal of Sediment, Construction of a Stepped Impoundment System and Surface Water Isolation with On-Site Disposal of Sediments and Enhanced Natural Attenaution. **(Alternative VIIc)**

Excavation of contaminated sediments would be conducted concurrently with the development of subgrade for a stepped impoundment system. Porous materials would be added to completely fill each impoundment, including the leachate contaminated pond, to isolate all contaminants from foraging wildlife. Contaminated surface water would be naturally treated as it flows through this shallow subsurface wetland system. The introduction of wetland vegetation would aid the natural treatment process. Construction of the landfill cap would be the same as previously mentioned.

Waste Containment including Capping plus Overburden Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment with On-Site Treatment of Collected Leachate and Groundwater, and On-Site Disposal of Sediments. **(Alternative VIIIa)**

This alternative includes capping, excavating off-site contaminated sediments and deposition on-site under the cap, collection and on-site treatment of collected leachate as previously described. This alternative also includes the extraction and treatment of contaminated groundwater.

Waste Containment including Capping plus Overburden Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment with Off-Site Treatment of Collected Leachate and Groundwater, and On-Site Disposal of Sediments. **(Alternative VIIIb)**

This alternative incorporates the options listed previously in Alternative VIIIa. However, this alternative includes treatment of collected leachate and groundwater at a POTW.

Waste Containment including Capping plus Overburden and Bedrock Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment, with On-Site Treatment of Collected Leachate and Groundwater, and On-Site Disposal of Sediments. **(Alternative IXa)**

This alternative incorporates the options described in Alternative VIIIa above. However, it includes extraction and treatment of groundwater from the bedrock.

Waste Containment including Capping plus Overburden and Bedrock Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment, with Off-Site Treatment of Collected Leachate and Groundwater, and On-Site Disposal of Sediments.
(Alternative IXb)

This is Alternative VIIIb above, including the extraction and treatment at groundwater from the bedrock.

6.2 Evaluation of Remedial Alternatives

The criteria used to compare the potential remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6NYCRR Part 375). For each of the criteria, a brief description is provided followed by an evaluation of the alternatives against that criterion. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Feasibility Study.

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

Since theoretical risk assessment calculations indicated that the site did not pose a threat to public health, all of the eighteen remedial alternative evaluated in detail in the FS would theoretically satisfy the requirement for protection of human health. The "no action" alternative, however, would allow exposure pathways to remain and given the significant exceedence of standards that exist in the groundwater and surface water, there exists the likelihood that contamination would continue to migrate and may pose an unacceptable risk in the future.

The quantitative findings of the environmental risk assessment indicate that the site may pose a slight risk to selected individual animals residing within the area of the contaminated groundwater outbreak. Therefore, in order to be protective of the designated wetlands adjacent to the site and the environment overall, only alternatives which involved capping and excavation of contaminated off-site sediments within the wetland were acceptable to technical staff within the Department's Division of Fish and Wildlife.

2. Compliance with Applicable Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance.

All of the remedial alternatives, with the exception of no-action, satisfy the closure requirements specified in 6 NYCRR Part 360 for municipal solid waste landfills. SGCs for surface water should be obtained, over time by all alternatives involving enhanced natural attenuation, construction of stepped impoundment, and collection and treatment of leachate in addition to capping. Criteria for evaluating contamination in sediments would be achieved by alternatives which involve excavating and removing off-site sediments. Alternatives which include pumping and treating groundwater from the overburden and the bedrock are alternatives which would have to be implemented in order to obtain groundwater SGCs. However, from an engineering perspective, obtaining groundwater SCGs is technically impractical.

Utilizing five extraction wells completed in the overburden (diamicton sequence), it would take an estimated time of 281 years to achieve SGCs for all organic compounds. To achieve SGCs for all inorganic parameters, it would take over 70,000 years. The excessive duration of estimated cleanup times is due to high retardation rates and a relatively low hydraulic conductivity of the diamicton sequence.

Estimated cleanup times for the bedrock contamination are less than in the overburden primarily because groundwater flow occurs through bedrock fractures. However, the cleanup times remain excessive. Using five extraction wells, it would take an estimated 28 years to achieve SGCs for organic compounds and 33 years for inorganic compounds. Groundwater contamination seems largely confined to the area immediately northeast of the landfill. This area of groundwater contamination underlies a small portion of a large designated wetland, and the overburden above the bedrock does not recharge the bedrock directly below. There are no downgradient water supply wells within miles of this plume. Given the slow rates of groundwater movement within the bedrock and overburden, it would take hundreds of years for any contaminated groundwater to reach any receptor. Given the amount of dilution and attenuation that would take place in that time concentrations would be significantly reduced.

Institutional controls, such as deed restrictions, would prevent the possibility of water supply wells being drilled within or near the area of groundwater contamination. Source control measures, such as capping would eliminate or significantly reduce future groundwater contamination. Therefore, for all of the above reasons, SCGs for groundwater were waived.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

6. Feasibility. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnal and material is evaluated along with potential difficulties in obtaining special permits, access for construction, etc..

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

8. Community Acceptance - This final criterion is considered a modifying criterion and is taken into account after evaluating those above. Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan were evaluated. A "Responsiveness Summary" was prepared that describes public comments received and how concerns were addressed. The final remedy selected does not differ from the remedy proposed in the Proposed Remedial Action Plan (PRAP).

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 6, the NYSDEC selected Alternative VIIc as the remedy for this site.

This selection was made after careful consideration of the evaluation criteria. All of the alternatives, with the exception of Alternative I, no action, satisfy the closure requirements specified in 6NYCRR Part 360 for municipal solid waste landfills and achieve source control. All of the alternatives, with the exception of Alternatives I and IIa, strive to meet SCGs for surface water. Alternatives which involve actively pumping and treating leachate with subsurface barriers achieve surface water SCGs sooner than alternatives which involve enhanced natural attenuation. Alternatives which involve isolating contaminated sediments through covering with porous media attempt to eliminate the exposure pathway, but only alternatives which include excavation and removal of contaminated sediments actually achieve criteria used to evaluate contamination in sediments. Only Alternatives IXa and IXb achieve SCGs for groundwater. However, the diamicton sequence is not a potable aquifer in the area. Contamination within the bedrock aquifer is very localized and the estimated times to achieve SCGs for groundwater are excessive. The net present worth costs of Alternatives IXa and IXb are $8,084,000.00 and $10,946,000.00 respectively. This is excessive given the absence of downgradient groundwater use. The institutional controls of Alternative VIIc, such as deed restrictions, will prevent future groundwater use in the immediate area of the landfill.

The low permeability cap system included with Alternative VIIc will significantly reduce or eliminate landfill leachate. Contaminated

sediment northeast of the landfill will be remediated by excavating an area approximately 50 feet wide by 1200 feet long to a depth of approximately 3 feet. (Figure 3). The contaminated sediments will be placed on the landfill under the landfill cap.

Surface water contamination will be remediated by enhanced natural attenuation achieved by increased hydraulic retention within a stepped impoundment system, and the introduction of wetland vegetation. Risks to foraging wildlife will be eliminated through the isolation of contaminated media within the constructed subsurface wetland system.

Among those alternatives which would meet the remedial objectives of the project, Alternative VIIc demonstrates the greatest benefit for the lowest cost. In addition, this alternative relies on remediation and treatment technologies that are more passive than active in their approach, offering less direct intervention and significantly reducing the operational and maintenance costs. Because approximately 2 acres of a wetland drainage channel will have to be altered to implement this alternative, an equivalent on-site area will be developed into a wetland as a replacement for the area affected.

The estimated present worth cost to implement the remedy is $3,389,000. The cost to construct the remedy is estimated to be $1,730,000 and the estimated average annual operation and maintenance cost is $89,000.

Once remedial construction is complete, surface water and groundwater quality will be carefully monitored to ensure that the remedy is effectively reducing contaminant levels. It is expected that the low permeability cap will reduce leachate generation by 80% within one year and 96% within seven to eight years after constuction. Contaminant discharge to surface waters within that period will be significantly reduced within the stepped impoundment. Should monitoring results indicate no significant improvement in water quality, more aggressive groundwater and surface water remedial technologies such as a subsurface barrier or a groundwater collection and treatment system will be employed.

The elements of the selected remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program. Uncertainties identified during the RI/FS will be resolved.

2. The construction and implementation of Alternative VIIc which includes the following:

   - Construction of a approximately 12 acre modified Part 360 landfill cap which will include 6 inches of cover, a 40 mil PVC geomembrane and a 30 inch barrier protection layer. The bottom 12 inches of the barrier layer will be a drainage layer on sideslopes greater that 10% with a filter fabric on top , and the top 6 inches of the barrier layer mulched and seeded.

   - institutional controls including the purchase or lease of the property to the north contiguous with the landfill, deed restrictions and warning signs.

   - excavation of approximately 6,700 cubic yards of off-site sediment deposited on site under the landfill cap.

- the construction of a stepped impoundment with porous media added to each impoundment to isolate any contamination from foraging wildlife.

- enhanced natural attenuation through the introduction of wetland vegetation planted within the stepped impoundment.

- the creation of approximately 2 acres of wetland to replace wetland disturbed by the excavation of sediments and construction of the stepped impoundment.

- long-term (30-year) monitoring of surface water and groundwater within the overburden and bedrock.

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

A public meeting was held, press releases were issued and letters have been mailed to interested parties in an attempt to keep the public apprised of the ongoing remedial investigation and feasibility study as summarized in the following chronology:

- June 8, 1989 - A letter and fact sheet were sent out to the press and all identified interested parties by the NYSDEC informing them of the beginning of the remedial program, and providing names and telephone numbers for interested parties to obtain more information.

- March 26, 1990 - A letter and fact sheet were sent out to the press and interested parties by the NYSDEC providing an update on efforts underway to investigate the site.

- September 12, 1990 - A public notice was issued by the Clinton County Legislature annoucing the beginning of the RI/FS.

- August 4, 1993 - A letter was issued by Clinton County to all interested parties announcing the availability of the final FS Report.

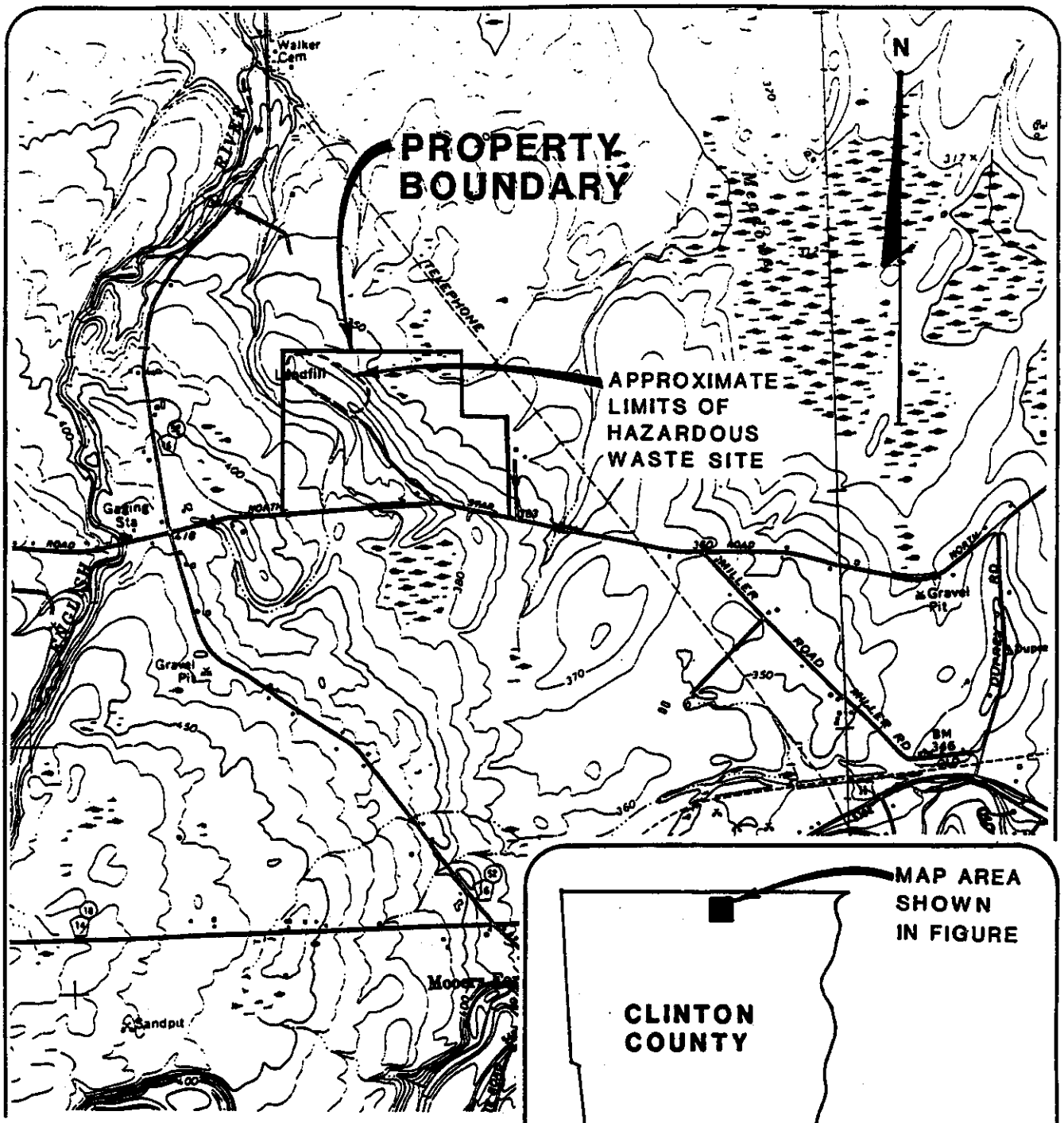
- September 24, 1993 - A press release was issued, and a letter was sent out to interested parties by the NYSDEC annoucing the public comment period and public meeting.

- September 27, 1993 to October 27, 1993 Public comment period on the Proposed Remedial Action Plan (PRAP).

- October 7, 1993, Public meeting to present PRAP.

A Citizen Participation (CP) Plan was developed and implemented by Clinton County with oversight and participation by the NYSDEC. All final Reports were placed in the document repositories in the vicinity of the site and made available to the public for review. The few public comments which were received during the remedial program seemed to be supportive of the program and the remedy proposed for the Site. The public meeting on the PRAP is summarized in the Responsiveness Summary Section of the document, Appendix A.

FIGURES



SOURCE: 7.5 minute series
Altona Quadrangle 1966
Mooers Quadrangle 1979

SCALE: 1" = 2,000'

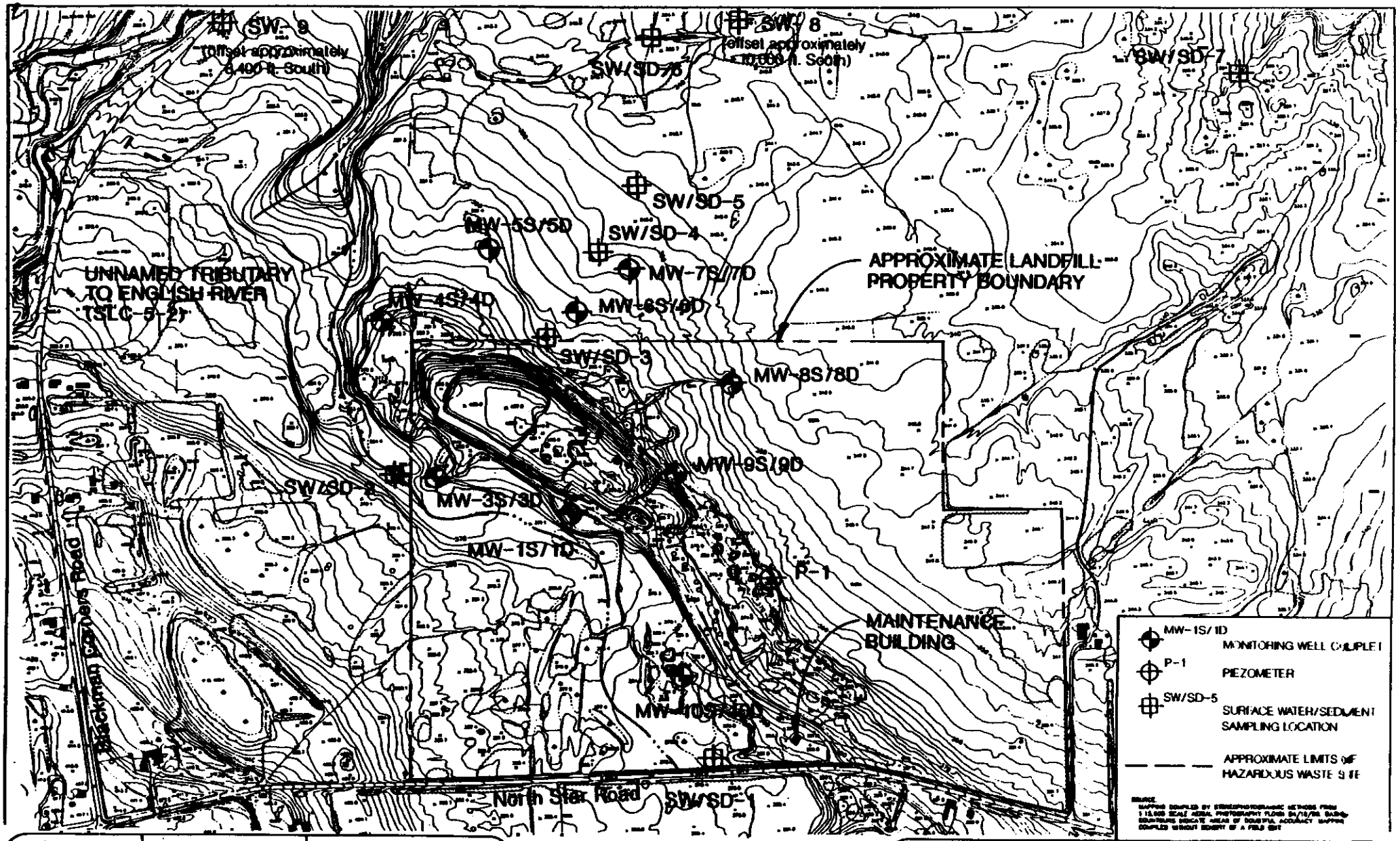
BARTON & LOGUIDICE, P.C.
CONSULTING ENGINEERS & LAND SURVEYORS
290 ELWOOD DAVIS ROAD / BOX 3107, SYRACUSE, NEW YORK 13220

MOOERS LANDFILL RI/FS

SITE LOCATION MAP

TOWN OF MOOERS CLINTON CO.

Figure
1
Project No.
244.19



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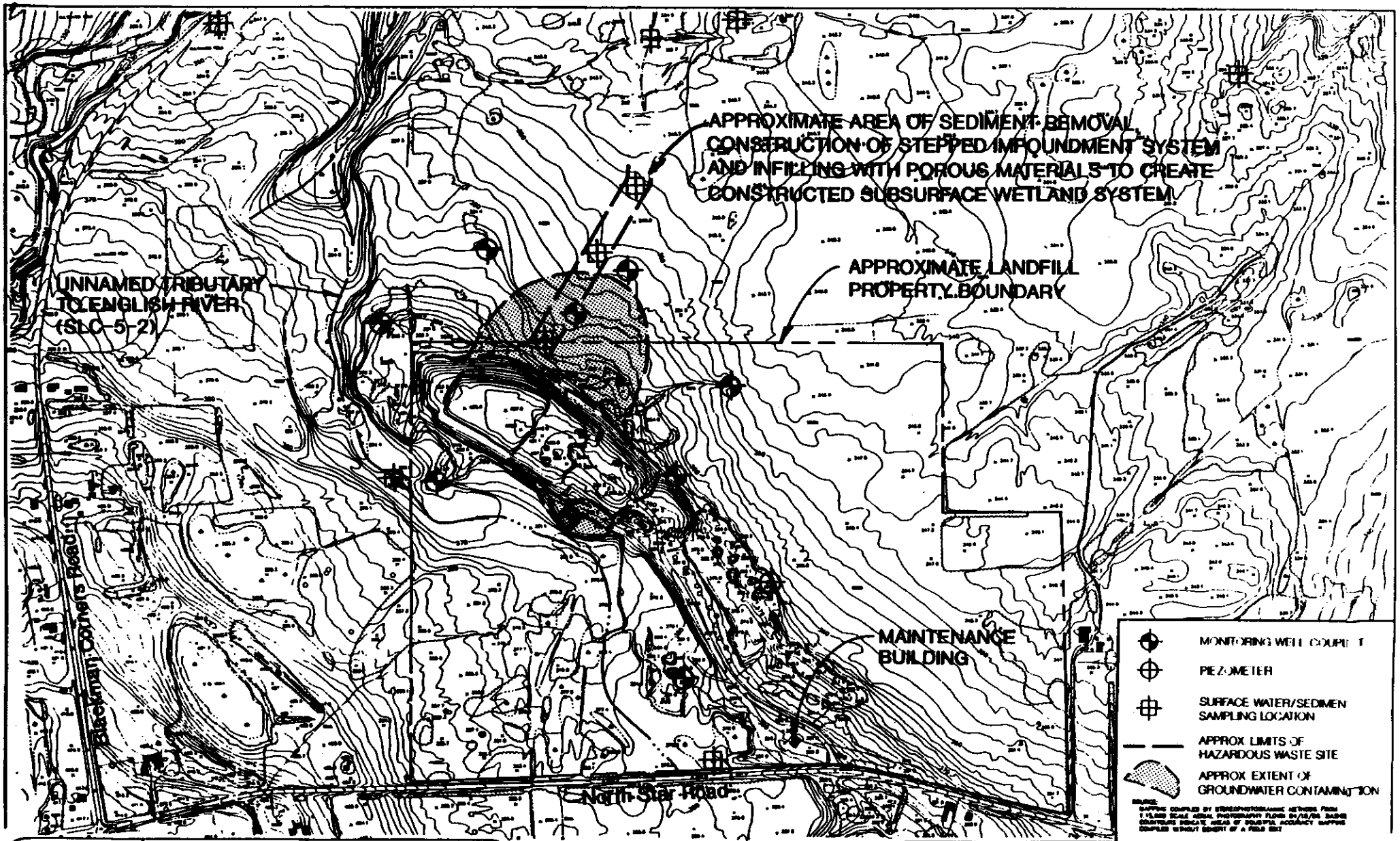
CLINTON COUNTY HIGHWAY DEPARTMENT – DIVISION OF SOLID WASTE
MODERS LANDFILL – RI/FS

SITE PLAN

Fig. 2

TOWN OF MODERS CLINTON COUNTY, N.Y.



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BARTON & LOGUIDICE, P.C.

CLINTON COUNTY HIGHWAY DEPARTMENT – DIVISION OF SOLID WASTE
MODERS LANDFILL – RI/FS

PROPOSED REMEDIATION LAYOUT

Fig. 3

TOWN OF MOODERS CLINTON COUNTY, N.Y.

APPENDIX

TABLE 1
RANGES OF CONTAMINANT CONCENTRATIONS

CONTAMINANT	CONCENTRATION RANGE*			
	GROUNDWATER	SURFACE WATER	SEDIMENT	SOIL
ORGANICS:				
Acetone	200–4500	2700–3600	65–695	230–1200
Benzene	2–6	ND–2		
Benzoic acid	570–2600	ND–5700		
2–Butanone	79–2900	4000–5400	ND–900	170–750
Carbon disulfide			ND–19	
Chloroethane	14–21	ND–19		
Chloroform	1–13			
4–Chloro–3–methylphenol		3–5		
1,1–Dichloroethane	20–69	ND–6		
1,2–Dichloroethane	27–37	6–5400		
1,2–Dichloroethene	6–42	ND–6		
Diethyl phthalate	3–11	ND–10		ND–230
2,4–Dimethylphenol		ND–32		
Ethylbenzene	1–6	ND–4		
2–Hexanone	5–180	22–26		ND–52
Naphthalene	ND–6			
Methylene chloride	16–58	ND–84		ND–17
4–Methyl–2–pentanone	8–280	ND–200		ND–120
2–Methylphenol	ND–31	3–7		ND–53
4–Methylphenol	10–660	95–1200	1100–1600	ND–1100
Phenol	51–180	5–310		ND–270
Tetrachloroethene	7–10			
Toluene	37–2500	380–580	110–570	47–57
1,1,1–Trichloroethane	12			
Trichloroethene	6–16	ND–2		
Vinyl chloride	2–8			
Xylenes	4–28	ND–12		
Total VOC's	6–9455	7632–9406	91–2179	457–2186
INORGANICS: (total)				
Aluminum		1170–8100		
Arsenic	13.6–31.2	23.8–43.1		0.8–1.6
Barium	407–1470	134–4840	167–500	34.2–90.9
Beryllium	0.2–8.7	5.3–8.6	0.22–0.72	0.64–0.94
Cadmium	10.6–14.1	22.5–43	2.1–8.3	ND–2.2
Calcium	147000–512000	210000–553000	24000–51700	31200–36100
Chromium	20	13.6–30	13.5–30	9.2–19.3
Cobalt			2.8–18.8	
Copper	ND–58.9	10.6–99.4	13.7–25.5	9–17.8
Iron	1750–52000	147000–266000	10600–55600	84300–15600
Lead	ND–7.4	54.4–138	ND–20.1	
Magnesium	48000–292000	106000–331000	3570–4970	12800–15700
Manganese	61.2–2670	1410–12200	1190–4570	214–413
Mercury	ND–0.45	0.3–0.5		
Nickel	29.8–162	64.2–143	17.6–50.8	7.7–14.6
Potassium	27000–46000	15500–149000	870–1610	681–2080
Selenium		0.3–2.2		
Sodium	7100–429000	71000–555000	1390–2470	222–346
Vanadium		19.4–64.3	15.6–18	12.1–23.6
Zinc		280–311		
Ammonia		4000–80000		

Notes: ND = not detected
VOC = volatile organic compound
* = groundwater and surface water concentrations reported in µg/l.
organic compound concentrations in sediments and soils reported in µg/kg (dry weight).
inorganic parameter concentrations in sediments and soils reported in mg/kg (dry weight).

TABLE 2
Summary of Order–of–Magnitude Costs
Remedial Alternatives
Mooers Landfill Feasibility Study

ALTERNATIVE	CAPITAL COSTS*	ANNUAL O&M COSTS**	NET PRESENT VALUE***
I – No Action, Long–Term Monitoring	NA	$86,000	$1,645,000
IIa – Waste Containment including capping	$1,434,000	$86,000	$3,079,000
IIb – Waste Containment including capping plus Enhanced Natural Attenuation	$1,460,000	$86,000	$3,105,000
IIIa – Waste Containment including capping plus Surface Water/Sediment Isolation	$1,551,000	$86,000	$3,196,000
IIIb – Waste Containment including capping plus Surface Water/Sediment Isolation with Enhanced Natural Attenuation	$1,577,000	$86,000	$3,222,000
IVa – Waste Containment including Capping plus Subsurface Barrier and Sediment Isolation with Leachate Collection and Treatment at On–Site Facility	$2,292,000	$271,000	$4,519,000
IVb – Waste Containment including Capping plus Subsurface Barrier and Sediment Isolation with Leachate Collection and Treatment at Off–Site Facility	$1,896,000	$248,000	$4,022,000
Va – Waste Containment including Capping plus Landfill Cap Extension and Sediment Isolation	$1,706,000	$70,000	$3,045,000
Vb – Waste Containment including Capping plus Landfill Cap Extension, Sediment Isolation and Subsurface Barrier with Leachate Collection and Treatment at On–Site Facility	$2,447,000	$271,000	$4,674,000
Vc – Waste Containment including Capping plus Landfill Cap Extension, Sediment Isolation and Subsurface Barrier with Leachate Collection and Treatment at Off–Site Facility	$2,051,000	$248,000	$4,177,000
VIb – Waste Containment including Capping plus Surface Water Impoundment and Sediment Isolation with Enhanced Natural Attenuation	$1,608,000	$86,000	$3,253,000

Notes: * Capital costs reflect 1993 dollars and have been adjusted using a 25% factor for engineering fees and contingency.
** O&M Costs have been adjusted using a 15% factor for contingency.
*** Net Present Value based on a 7% interest rate for the initial investment amount, and a 4% annual inflation rate for O&M costs over a 30–year period for groundwater monitoring, extraction and treatment; 5–year period for leachate collection and treatment.

TABLE 2 cont.
Summary of Order–of–Magnitude Costs
Remedial Alternatives
Mooers Landfill Feasibility Study

ALTERNATIVE	CAPITAL COSTS*	ANNUAL O&M COSTS**	NET PRESENT VALUE***
VIIa – Waste Containment including Capping plus Subsurface Barrier and Downstream Removal of Sediment with On–Site Treatment of Collected Leachate and On–Site Disposal of Sediments	$2,341,000	$271,000	$4,568,000
VIIb – Waste Containment including Capping plus Subsurface Barrier and Downstream Removal of Sediment with Off–Site Treatment of Collected Leachate and On–Site Disposal of Sediments	$1,945,000	$248,000	$4,071,000
VIIc – Waste Containment including Capping plus Downstream Removal of Sediment, Construction of Stepped Impoundment System and Isolation of Surface Water, with On–Site Disposal of Sediments and Enhanced Natural Attenuation	$1,730,000	$89,000	$3,389,000
VIIIa – Waste Containment including Capping plus Overburden Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment with On–Site Treatment of Collected Leachate and Groundwater, and On–Site Disposal of Sediments	$2,485,000	$279,000	$7,749,000
VIIIb – Waste Containment including Capping plus Overburden Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment with Off–Site Treatment of Collected Leachate and Groundwater, and On–Site Disposal of Sediments	$2,095,000	$428,000	$10,209,000
IXa – Waste Containment including Capping plus Overburden and Bedrock Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment with On–Site Treatment of Collected Leachate and Groundwater, and On–Site Disposal of Sediments	$2,629,000	$289,000	$8,084,000
IXb – Waste Containment including Capping plus Overburden and Bedrock Groundwater Extraction, Subsurface Barrier and Downstream Removal of Sediment with Off–Site Treatment of Collected Leachate and Groundwater, and On–Site Disposal of Sediments	$2,239,000	$459,000	$10,946,000

Notes: * Capital costs reflect 1993 dollars and have been adjusted using a 25% factor for engineering fees and contingency.
** O&M Costs have been adjusted using a 15% factor for contingency.
*** Net Present Value based on a 7% interest rate for the initial investment amount, and a 4% annual inflation rate for O&M costs over a 30–year period for groundwater monitoring, extraction and treatment; 5–year period for leachate collection and treatment.

APPENDIX

APPENDIX A
Responsiveness Summary

The Proposed Remedial Action Plan (PRAP) for the Clinton County Landfill at Mooers was issued by the New York State Department of Environmental Conservation in September 1993. A public comment period on the RI/FS Report, PRAP, and preferred alternative was held from September 27, 1993 to October 27, 1993. A public meeting was held during the public comment period on October 7, 1993 at 7:30pm at the Mooers Village Office, Rt.11, Mooers, NY. A press release was issued by the NYSDEC, and letters were mailed to all individuals listed on the Contact List in the Citizen Participation Plan announcing the Public Comment Period and Public meeting. A newspaper article on the proposed remedy appeared in the September 30, 1993 issue of the Plattsburgh Press-Republican. The article included information on the public comment period and public meeting.

The public meeting lasted about one hour. There were 18 people present for the public meeting, including the State and County Representatives. Betsy Lowe, NYSDEC Citizen Participation Specialist, Opened the public meeting by introducing the State Representatives present and Mr. Mark Chavin of Barton and Loguidice. Mr. Chavin then provided an approximately 30 minute presentation on the RI/FS findings, including a brief slide show. Brian Davidson of the NYSDEC then briefly stated the remedy proposed by the State in the PRAP, and opened the meeting to questions. All questions asked were asked by Messers Zurlo, Trombly and Bruno of the Clinton County Legislature. All questions asked were satisfactory addressed at the public meeting. The following is a summary of the questions asked and responses given:

1. Additional information was asked about the monitoring program following the capping of the landfill and the length of the monitoring program. It was explained that generally monitoring will continue for 30 years depending on what is reflected in monitoring well data over time.

2. There was general question asked about the basis for the risk assessment. It was explained that the risk assessment was theoretical and based on current use conditions.

3. A concern was raised about hunters and others entering the property and a question was asked about whether the property is fenced off. It was explained that none of the institutional controls have been put into effect and that the risk assessment evaluated hunters coming

into contact with contaminants onsite and determined there would not be a significantly increased risk to their health.

4. A question was raised about impact of the landfill on wildlife. Have any dead animals been observed? The response was that no impacts on wildlife have been observed.

5. A question was asked about the impact of the landfill on the food chain. The Response was that there would not be a risk through the food chain. Aquatic species were looked at and findings applied to terrestrial species. The remedy is intended to eliminate any potential future risk.

6. A question was asked about distance of the site from the Canadian border. Response was that it is roughly two miles.

7. A question was raised about groundwater flow direction, and the response referred to the groundwater flow directions shown during the presentation which is generally Northeast.

8. A question was asked about findings of gamma logs in boreholes. The response included that the gamma logs were not of much value at this site and showed little more than the placement of the bentonite well seals.

9. A question was asked about the natural flow regime of groundwater and where it eventually ends up. It was explained that precipitation currently recharges the waste mass and sand and gravel unit. It was also explained that most of the ground water then discharges to the surface near the site, with minor amounts of groundwater entering deeper flow regimes.

10. A question was asked about treatment of contaminants through a shallow wetland system and whether bacteria in the system is pathogenic. The response indicated that the bacteria that would be in the system would not be pathogenic and that they are naturally occurring.

The attitude at the public meeting was positive, and everyone who commented seemed to be supportive of the remedy proposed. The meeting was video taped by Home Town Cable of Champlain, NY. and the questions and answers were audio taped by NYSDEC. Copies of the PRAP, an RI/FS Summary, and information on State Hazardous Waste Remedial Program were provided to attendees.

CLINTON COUNTY LANDFILL
INACTIVE HAZARDOUS WASTE SITE
Oct. 7, 1993 - Mooers Village Office

PLEASE SIGN IN

	name	address	
1.	Rick Boulerice	187 Gilbert Rd Mooers, N.Y.	Councilman
2.	Anna Hebert	Rt 11, Ellenburg Depot, N.Y. 12935	
3.	Eric Hebert	"	
4.	Craig Sauer	286 Sand Rd morrisonville, N.Y 12962	
5.	Matt Engle	CCHD 133 Margaret St Plattsburgh	
6.	John Zurlo	P.O Box 27 Champlain 12919	NYS DOH
7.	Jim Menard	585 Joe wood Rd altona NY. 12910	
8.	~~Samuel Tumbley~~	C.C. Legislator, Ellenburg Dep., 12933	
9.	John Orogan	Town Supervisor Mooers	
10.	Rich Fediqal	- NYS DOH	
11.	Bob Cozzy	NYS DEC - DHWR. Municipal Projects	
12.	Brian Davidson	NYS DEC	
13.	Mark Gruccio	Burton + Loguidice	
14.	Paul Dudden	Burton + Loguidice.	
15.	Bob Bruno	Clinton Co. Solid Waste	
16.	~~Betsy~~ Lowe	NYS DEC	
17.	Bob Bruno	Solid Waste - Clinton Co.	
18.	Robin Gisone	Time Warner Cable, Champlain	
19.			
20.			
21.			
22.			
23.			

APPENDIX B
Administrative Record

A. Reports and Workplans

1) Proposed Remedial Action Plan "Clinton County Landfill at Mooers" prepared by the New York State Department of Environmental Conversation September 1993.

2) Final Feasibility Study Report Mooers Landfill prepared by Barton & Loguidice, P.C. July 1993.

3) Supplemental Evaluation of Organic Compound Biodegradation and the Removal of Cadmium within Proposed Constructed Wetland System prepared by Barton & Loguidice, P.C. June 1993.

4) Final Remedial Investigation Report Volumes 1 and 2 prepared by Barton & Loguidice, P.C. August 1992.

5) Final Interim Operating Plan Appendix A prepared by Barton & Loguidice P.C. November 1991.

6) Final Interim Operating Plan prepared by Barton & Loguidice, P.C. December 1990.

7) Final Work Plan Remedial Investigation/Feasibility Study by Barton & Loguidice, P.C. November 1990.

8) Final Workplan Appendix A Remedial Investigation/Feasibility Study Sampling and Analysis Plan prepared by Barton & Loguidice, P.C. November 1980.

9) Final Work Plan Appendix B Remedial Investigation/Feasibility Study Health and Safety Plan prepared by Barton & Loguidice P.C. November 1990.

10) Citizen Participation Program Mooers Landfill Remedial Investigation/Feasibility Study prepared by Barton & Loguidice, P.C. August 1990.

B. Court Orders:

Partial Consent Decree - New York State and Clinton County VS. Harris Corporation Index # 90 -CV - 918 December 10, 1990.

Order on Consent between the New York State Department of Environmental Conservation and Clinton County Index # A5-

c. **Correspondence:**

- October 6, 1993 correspondence from G. Anders Carlson, NYSDOH, to Michael O'Toole, NYSDEC.
- September 24, 1993 Correspondence from Betsy Lowe, NYSDEC to Interested Citizens.
- September 13, 1993 Correspondence from Mark J. Chavin, B & L to Brian Davidson, NYSDEC.
- August 4, 1993 Correspondence from William J. Bingel, Clinton County to Brian H. Davidson, NYSDEC.
- July 26, 1993 correspondence from Mark J. Chavin, B & L to Brian H. Davidson, NYSDEC.
- June 4, 1993 correspondence from Mark J. Chavin, B & L to Paul Corella, NYSDEC.
- April 19, 1993 correspondence from Susan Phillips Read, Bond Schoeneck and King, to Albert M. Bronson, NYSDEC.
- March 4, 1993 correspondence from Mark J. Chavin, B&L, to Brian H. Davidson, NYSDEC.
- January 8, 1993 Correspondence from Martin P. Chandler to Brian H. Davidson, NYSDEC.
- December 16, 1992 Correspondence from Brian H. Davidson, NYSDEC to Martin P. Chandler, B&L.
- November 11, 1992 Correspondence from Mark J. Chavin to Brian H. Davidson, NYSDEC
- September 29, 1992 Correspondence from Brian H. Davidson. NYSDEC to Martin P. Chandler, B&L
- August 25, 1992 Correspondence from Martin Chandler to Brian H. Davidson, NYSDEC.
- April 8, 1992 Correspondence from Brian H. Davidson, NYSDEC to Martin P. Chandler, B&L
- April 24, 1992 Correspondence from Mark J. Chavin, B&L to Brian H. Davidson, NYSDEC
- August 22, 1991 Correspondence from Melvin R. Bruno, Clinton County to George Stahler, NYSDEC

- January 2, 1991 Correspondence from Michael S. Quinn, B&L to Brian H. Davidson, NYSDEC
- May 17, 1990 Correspondence from Michael S. Quinn, B&L, to Brian H. Davidson, NYSDEC
- May 15, 1990 Correspondence from Michael S. Quinn, B&L, to Brian H. Davidson, NYSDEC
- September 12, 1990 Correspondence from Michael S. Quinn, B&L to Brian H. Davidson, NYSDEC
- September 1990 Public Notice, Mooers Landfill RI/FS issued by the Clinton County Legislature
- March 26, 1990 correspondence from Besty Lowe, NYSDEC to Interested Parties
- June 8, 1989 correspondence from Besty Lowe, NYSDEC to Interested Parties
- September 15, 1992 correspondence from William J. Bingel, Clinton County, to Brian H. Davidson, NYSDEC
- May 21, 1992 correspondence from William J. Bingel, Clinton County to Brian H. Davidson, NYSDEC
- November 23, 1992 correspondence from William J. Bingel Clinton County to Brian H. Davidson, NYSDEC
- November 26, 1990 correspondence from Brian H. Davidson, NYSDEC to Michael S. Quinn, B&L
- October 1, 1990 correspondence from Brian H. Davidson, NYSDEC to Michael S. Quinn, B&L
- July 20, 1990 correspondence from Brian H. Davidson NYSDEC, to Michael S. Quinn, B&L
- March 2, 1992 correspondence from Martin P. Chandler, B&L to Brian H. Davidson, NYSDEC
- August 22, 1991 correspondence from Mark J. Chavin, B&L, to Brian H. Davidson, NYSDEC
- July 2, 1991 correspondence from Mark Chavin, B&L to Brian H. Davidson, NYSDEC
- September 23, 1992 correspondence from Richard Fedigan,

- April 8, 1992 correspondence from Richard Fedigan, NYSDOH to Brian H. Davidson, NYSDEC

- July 27, 1990 correspondence from Richard Fedigan, NYSDOH to Brian H. Davidson, NYSDEC

- June 27, 1990 correspondence from Richard Fedigan, NYSDOH to Brian H. Davidson, NYSDEC

- June 4, 1992 correspondence from James E. Huff, of Huff and Huff to Albert Bronson, NYSDOL

- June 5, 1992 correspondence from Susan Phillips Read to Albert Bronson, NYSDOL and others.