

HUNTINGTON/EAST NORTHPORT LANDFILL

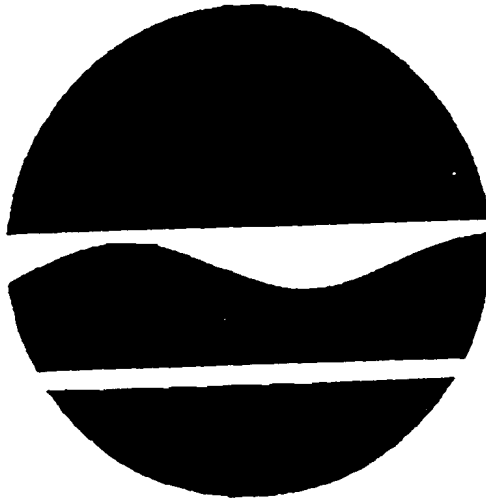
NYSDEC I.D. NO. 152040

INTERIM REMEDIAL PROGRAM ("IRP")

DECISION DOCUMENT

JANUARY 19, 1994

January 1994





STATE OF NEW YORK
DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
ALBANY, NEW YORK 12233

MARC S. GERSTMAN
DEPUTY COMMISSIONER AND GENERAL COUNSEL

January 19, 1994

Lawrence Cregan, Esq.
Town Attorney
Town of Huntington
100 Main Street
Huntington, NY 11743-6990

Re: Application for Amendment to Order on Consent (executed 3/26/91),
Huntington/East North Port Landfill
Index # W-1-254-88-06
Site # 1-52-040

Dear Mr. ~~DeGregorio~~:

This is in response to the Town of Huntington's ("the Town") Application for Amendment (the "Application") to the above referenced Order on Consent dated August 30, 1993. The Application was formally submitted to the Department by Mr. Periconi; however, on November 1, 1993, Mr. Periconi withdrew as counsel for the Town. As a result of the withdrawal by counsel and no subsequent contact by the Town, the Department now finds it necessary to review the Application and make a determination.

UNTIMELINESS

Pursuant to the Application, the Town seeks to amend the Consent Order to allow it to postpone construction of a cap required under the Interim Remedial Program ("IRP") for the landfill until the Town can complete the evaluation of remedial alternatives currently underway in a Remedial Investigation/Feasibility Study ("RI/FS") approved by staff of the Department of Environmental Conservation ("Department"). According to Paragraph XXXVI of the consent order, if the Town desires to modify any provision of the Order, "it shall make timely written application to the Department for the Commissioner's consideration, setting forth reasonable grounds for the relief sought." This project has been subject to continual and extensive delays in the implementation of the IRP. In light

of this history, it is not appropriate to grant a further extension of time to analyze more IRP alternatives and waivers to Part 360 as an Applicable or Relevant and Appropriate Requirement ("ARAR").

The appropriate time to have sought such an action was during the development of the approved IRP workplan and design and before the Town was in violation of the Consent Order.¹ Under the current consent order, the Town was obligated to start capping the landfill in November of 1992 and to date has failed to do so. Hence, the Town is currently violating the consent order and by its Application seeks to have the Department forgive this violation. The Town had the chance to raise the alternative designs it seeks under the Application during the IRP workplan review process and in fact availed itself of the opportunity by obtaining permission to construct drainage terraces with vertical intervals that did not conform to Part 360. The Town also had the chance during consent order negotiations to allow for consideration of design alternatives to the specifications set forth in 6 NYCRR 360-2.13 but freely consented to the issuance of a consent order that required a cover system satisfying specification, not performance, requirements set forth in regulation. As a result, the Town accepted the IRP workplan as the mechanism by which the capping of the landfill was to be undertaken.

This is not the first consent order requiring landfill closure that the Town has violated. The Town previously entered into an Order on Consent with the Department on November 27, 1984, in which the Town agreed that the landfill would be completely capped by January 1, 1989. This did not happen. Also, the existing Order on Consent schedule called for the construction of the final cap to begin in November 1992 and to be completed in August 1993. This was revised with permission of the Department to a construction start date of June 1993. Obviously, this too has not happened.

Under these circumstances a further extension is not warranted. Accordingly, the Department considers this Application by the Town to be untimely. The Town is obligated to proceed with constructing the approved IRP as required under the Consent Order.

LACK OF MERIT

The Town proposed five grounds upon which to base the relief it sought. A point by point response by the Department to those grounds follows:

Ground 1: The construction of a final cap outside of and prior to the completion of the RI/FS process is inconsistent with the established regulations, policies and practices of the Department and the United States Environmental Protection Agency ("EPA").

¹ As the Town already has done during this project when it requested and received a conditional Part 360 variance on January 15, 1991 for terrace intervals at purported savings of five million dollars. See letter from Edward O. Sullivan to Supervisor Ferraro as Exhibit A.

DEC Response: The consistency of the IRP workplan with established State and Federal regulations and policies, such as the NCP, is not applicable to the Town Application and does not merit consideration by the Department. The Consent Order and subsequent IRP workplan, establishing the process now being challenged, were freely consented to by the Town. The Town cannot now be heard to question this process. Notwithstanding that point, however, the IRP workplan and process mandated by the Consent Order are consistent with all State and EPA regulations and policies.

Accordingly, the first issue raised in Ground 1 of the Town application is the distinction between Interim Remedial Measures ("IRM"), or in this case an IRP, and an accelerated remedial action. We agree with the analysis that the IRP is, in fact, an early remedial action intended to be part of a final and complete response. However, the Town is mistaken in its contention that the construction of a final cap prior to the completion of the ongoing RI/FS process is inconsistent with established State and Federal regulations, policies, and practices.

It is apparent from USEPA's discussion in the Preamble of the NCP that it considers a landfill cap to be a remedial action, not a removal action, See, e.g., 55 F.Reg. 8818 (8 March 1990), wherein USEPA notes that the term "remedial action" includes such actions as installation of a clay cover.² Hence, the Department subscribes to the requirements described in the NCP that are applicable to this type of less-than-complete remedial action to preserve the State's legal ability to sustain CERCLA cost recovery action.

The USEPA clearly articulates a "bias for early site action" throughout the preface to the 8 March 1990 version of the NCP and as specifically set forth at 55 F.Reg. 8704. Consistent with that philosophy, USEPA declares its intentions to take early actions at sites where appropriate and to remediate sites in phases using operable units as early actions to eliminate, reduce, or control the hazards posed by a site or to expedite the completion of the total site cleanup.

Since the Huntington/East Northport Landfill has been classified a Class 2 inactive hazardous waste disposal site, at a minimum, the landfill must be capped in full compliance with 6 NYCRR Part 360 regulations. These regulations were finalized after an extensive public input and comment period where compliance with Part 360 regulations was demonstrated to be the most cost effective and environmentally sound solution to minimizing the impact from landfill leachate migration. As the Town knows, 6 NYCRR Part 360 also qualifies as the controlling ARAR in the IRP Workplan and as such, justifies the streamlining of the RI/FS process.

² Distinguish this from USEPA's exemplification of a removal action as including "capping of contaminated soils or sludges--where needed to reduce migration of hazardous substances or pollutants or contaminants into soil, ground or surface water, or air" [40 CFR 300.415(d)(4)].

Although a more streamlined analysis during an interim action such as the IRP is consistent with the NCP, both the Department and the Town have ensured that public participation activities have been maintained. Consistent with both the NCP and State guidelines, there has been extensive opportunity for public input throughout the development of the IRP Workplan. A chronology supporting this finding is attached as Exhibit B. Accordingly, the Department has more than substantially complied with both the Federal and State requirements for citizen participation during the development of a proposed plan in an accelerated RI/FS process.

In addition, 6 NYCRR Part 360 provides the primary basis relied upon for the IRP cost analysis. The capping requirements pursuant to 6 NYCRR Part 360 were originally promulgated on December 31, 1988. During the 1988 promulgation of 6 NYCRR Part 360, the draft environmental impact statement ("DEIS") contained a thorough cost analysis of the capping standards proposed in that regulation and extensive comments were received in regard to those standards. In addition, Part 360 has just recently undergone repromulgation and became effective on October 9, 1993. Again, there was an extensive comment period provided to the public during repromulgation.³ It was determined during the cost-benefit analysis of the regulatory process that the capping standards of Part 360 were justified and cost effective when compared to the cost of implementing remedial actions to address contamination adversely affecting the public health, environment and State natural resources. Furthermore, evaluations comparing the costs associated with "more conservative" and "less conservative" approaches to Part 360, presented in the Discussion of Proposed Changes in the 1988 DEIS, found Part 360 to be the most "environmentally responsible option". Because 6 NYCRR Part 360 is the controlling ARAR of the IRP workplan and the cost analyses regarding Part 360 had already been performed during the promulgation process of that regulation, additional cost analysis beyond what was performed by CDM is unnecessary. The cost-benefit analysis performed during the promulgation process of 6 NYCRR Part 360 in conjunction with that performed by CDM substantially complies with both the NCP and State requirements.

The Department did not receive any information during the development of the IRP workplan that would require changing the capping alternative that was proposed as the preferred cleanup approach and approved by the Department. Accordingly, there is no additional information beyond that already made available to the public regarding the IRP workplan.

Ground 2: Although this was unknown to the parties in 1990-1991 when they signed the consent order, the first Phase I RI results demonstrate that the Landfill now poses no immediate threat to human health and the environment; moreover, the nuisance problem from the Landfill has been eliminated by several interim measures taken by the Town.

³ According to Department records no comments were ever received from the Town of Huntington regarding either Part 360 promulgations.

There is no public health or environmental emergency to justify immediate cap construction and departure from State and Federal policies.

DEC Response: The contention that "the first phase RI results demonstrate that the landfill poses no immediate threat to human health and the environment" is without merit since it fails to account for the effects from landfill gas migration and for leachate generation and migration.

A. Landfill Gas Migration:

The draft RI report completed in November, 1992 by the Town's consultant Dvirka and Bartilucci Consulting Engineers concluded that, based upon the analytical data, the discharge from the landfill gas system from the blower stations (as well as emissions from the landfill surface) could be affecting ambient air quality in the surrounding area. Clearly, based on the results of the Phase I RI and the fact the IRP has not been completed, the potential threat to public health still exists and must be addressed immediately. In addition, the methane extraction system at the landfill is not operating and the additional effect this may be having on off-site ambient air quality has not been addressed by the Town. (See May 13, 1993 letter from the New York State Department of Health [DOH] to M. Komoroske as Exhibit C and the October 14, 1993 letter from DOH to M. O'Toole as Exhibit D.)

B. Landfill Leachate Migration:

1. **Residential Water Supply**

After reviewing the agencies' comments regarding the draft Phase I RI report and the Suffolk County Department of Health Services private well sampling data, the Town's consultant, Camp Dresser and McKee (CDM) has 1) concluded "that it is likely that the northern boundary of the landfill leachate plume extends beyond the northern monitoring well cluster EN-6 and may be as far as Sunken Meadow Creek, north of State Route 25A" [That is approximately two miles from the site - see CDM letter dated June 2, 1993 as Exhibit E]; and 2) recommended providing public water to 57 homes (see CDM letter dated August 16, 1993 as Exhibit F). CDM is now implementing the Phase II RI to identify further impacts from the landfill leachate plume.

Pursuant to a New York State Department of Health investigation and recommendation, the Department has requested that the Town proceed with providing public water to the 57 homes identified by their consultant as having private wells being impacted or potentially impacted by the landfill leachate plume. (See August 23, 1992 New York State Department of Health letter to M. Komoroske as Exhibit G and August 30, 1993 letter from S. Ervolina to S. Kearing as Exhibit H.) Although this work is well underway, it has not yet been completed. In addition, the Town's consultant has recently identified another impacted area to the North-West of the landfill that may require public

water as well. To say that "all private wells that might be effected by the leachate plume ... have been hooked up to public water or are about to be hooked up" [p.8 of Town Application] is not supported by the record.

2. Sole Source Aquifer Impacts

Upper Glacial Aquifer Impacts

Regardless of the above discussion, it is not the Department's policy to sacrifice aquifer segments, and certainly not aquifer segments which contribute to providing the sole source of water for a large portion of Suffolk County, Long Island. The groundwater data collected to date clearly documents, not a threat to the upper glacial aquifer, but rather, an actual impact upon the aquifer. As stated in the IRP Workplan, the purpose of an impermeable cap is to prevent percolation of precipitation into the landfill and mitigate the generation of leachate and contamination of ground water. Providing public water will in no way eliminate or diminish the documented impact to the upper glacial portion of the sole source aquifer. The Town's consultant has estimated that 10 to 20 million gallons per year of landfill generated leachate reaches the groundwater table, with 45 percent of that from the side slopes. Until the landfill is completely covered with a properly engineered impermeable barrier (cap), this impact (or insult) will continue unabated (see M. O'Toole to S. Kearing letter dated March 18, 1993 as Exhibit I).

Magothy Aquifer Impacts

The low permeability zone in the Magothy Aquifer may impede downgradient migration of groundwater from the upper glacial aquifer, but does not prevent it. As stated on page 2-27 (see Exhibit J) of the CDM RI report: "The aquifers within the study area are hydraulically interconnected. Layers of clay and silt within an aquifer....confine the groundwater, but these units do not completely prevent the vertical movement of water between them."

Again, until the landfill is capped, the threat to the Magothy aquifer will continue.

Ground 3: The FS now underway will examine alternatives to the IRP cap; Part 375 permits the Town to substitute for the IRP cap an alternative program if it can attain a level of performance that is equivalent to that required by Part 360 standards, that the Town and its consultants believe is likely.

DEC Response: Pursuant to Department guidelines, all remedial alternatives in regard to the IRP as an early remedy (i.e.: leachate collection and conditional final cover system for the landfill) are to be performed during the development of the IRP workplan and before

completion of the final RI/FS.⁴ As guidance, the Preamble of the NCP states, "[d]ata sufficient to support the interim action decision is extracted from the ongoing RI/FS that is underway for the site. . ." See 55 F.Reg. 8704. In addition, the Department's TAGM HWR-92-4044 also states that "certain remedial measures should be evaluated very early in the RI/FS process for possible accelerated implementation. . ." It is clear that an early remedial action is not to be delayed by the final RI/FS process. By continuing not to undertake its already approved IRP and to insist on examining yet more alternatives to the IRP cap in the final RI/FS process now underway, the Town is in direct violation of the Consent Order and Department guidelines.

Part 360 allows a permit applicant to design a cover system not conforming to the specifications for same set forth in 6NYCRR 360-2.13 if the applicant can show that "any equivalent design of individual components of a landfill liner and final cover system through the submission and the application of documentation substantiating the alternative component's ability to perform in the same manner as the component specified in [Part 360]." See 6 NYCRR 360-2.13(v). However, the Department's Order, to the issuance of which the Town freely and voluntarily consented, specified the exact provisions of Part 360 that control conformance of the IRP Workplan (i.e., 6 NYCRR 360-2.15(g), (b) and (i)): this precision in drafting evinces the Department's intent to disallow any design not conforming to those specifications.

Accordingly, the Town is currently under an obligation pursuant to the Consent Order and its requirements to which it freely and voluntarily subjected itself, to design and construct the IRP cap using very strict regulatory specifications. The Consent Order is very specific in its description of the Part 360 provisions that will dictate the IRP cap design.

Ground 4: A potentially dramatically less expensive alternative cap would conserve scarce EQBA funds, scarce Town resources, and be consistent with the EPA and DEC remedy selection criterion of cost effectiveness.

DEC Response: As the Town points out in its application, the State has a strong interest in keeping the remedial costs for the Landfill at a minimum, in fact, it has a duty to conserve State funds. However, the Department also has an obligation to protect the public health, the environment and the State's natural resources. Part 360's closure design specifications reflect an effective undertaking of that obligation by satisfactorily addressing all those concerns. The environmental impact studies along with the regulatory impact studies performed during Part 360's major revisions in 1988 and 1993 demonstrated the cost benefit of the Part 360 capping standards to the public as compared to the cost of eliminating contamination once it has entered the environment.

⁴ These alternatives were adequately reviewed by the Town's own consultants during the development of the IRP Workplan.

Notwithstanding the proven cost-effectiveness of Part 360, the Town has never submitted, during the IRP process or otherwise, one engineering report for the proposed cap alternatives that ensured the protection of the public health, environment and State natural resources in compliance with Part 360. The Town had the opportunity to do so and it was the obligation of the Town to avail itself of that opportunity during development of the IRP Workplan. As a result, the IRP only considered those alternatives submitted by the Town's consultant as the viable alternatives that were both compliant with the Consent Order and Part 360.⁵

Ground 5: Because construction of the IRP cap would be inconsistent with the EPA's National Contingency Plan, it compromises the Town's ability to compel other responsible persons to bear all or part of the cost of the remedial action.

DEC Response: For reasons discussed above, the NCP is not applicable to the dispute in this matter. The Town has agreed to cap the landfill according to the requirements of the Consent Order. These requirements now dictate the implementation of the IRP as proposed by the Town and approved by the Department. Notwithstanding that point, however, the Department believes that the IRP process, as mandated and implemented pursuant to the consent Order, is consistent with the NCP and therefore would not compromise the Town's cost recovery efforts against other responsible persons.

In addition, a Federal cost recovery action for a remedial cleanup pursuant to CERCLA §107 and §113 is not the only recourse available to the Town: State cost recovery theories, which do not depend upon NCP consistency, can still be asserted. Hence, the Town's ability to cost recover as a result of NCP inconsistency is irrelevant. In fact, had the Department never issued an Order directing the Town to close the landfill, the Town still would have had the right to force other responsible parties at the site to undertake or contribute to the landfill's remediation.

DISCUSSION:

Assessment of the Site

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

BACKGROUND: The Huntington Landfill was listed as a Class 2 Inactive Hazardous Waste Disposal Site in December 1986. A Class 2 designation indicates that the disposal

⁵ The Town's current request to be granted an extension of time to review additional alternatives that were not considered during the IRP process is in direct violation with the Consent Order and with EPA and Department remedy selection criterion for an early remedial action.

of hazardous waste has been confirmed and that waste is resulting in a significant threat to public health and/or the environment.

Initial groundwater studies that were performed for the Town at and around the Site documented a significant plume of landfill leachate in the upper glacial aquifer downgradient of the Site. Sampling of private residential wells since 1979 by the SCDHS also documented significant volatile organic compound (voc) and landfill leachate parameter contamination of private wells downgradient of the landfill.

Description of the Selected Remedy

In order to reduce the off-site migration of landfill gas and minimize the generation of leachate and odors from within the landfill, the Town agreed to the regrading, capping and closure of the landfill as an Interim Remedial Program (IRP) as part of the Order on Consent with the Department. The Town hired consulting engineers to determine the optimum way to regrade the landfill and design a cost-effective capping plan which would meet required State regulations and requirements. The Town's regrading plan called for landfill side slopes which would be steeper than state regulations would normally allow. The Town's argument was that this would significantly reduce the amount of regrading necessary and of course result in a significant cost savings to the Town. The Town applied for and received a conditional waiver in January 1991 from the Department which would allow them to regrade to these steeper slopes. It was also determined at that time that to stabilize the landfill cap on the side slopes a high friction geogrid layer would be required. Construction of the landfill cap was originally scheduled to begin in the Fall of 1992.

The regrading of the landfill was completed in the Fall of 1992. This allowed the Town's consultants to complete the draft design of the landfill cap and gas control systems. The draft designs were submitted to the Town and the Department in December of 1992. The Department issued comments on the draft designs in January 1993. Final design documents were submitted on June 21, 1993 and were approved by the Department on July 9, 1993.

The Department has worked with the Town and their consultants over the last two years to obtain a landfill capping design that is cost effective and is protective of human health and the environment. Major design changes which the Department recommended or supported were made by the design consultant and have resulted in a significant reduction in the estimated cost to construct the cap. These changes, combined with the savings to the Town in regrading costs due to the waiver granted by the Department, total approximately \$8.8 Million dollars in project cost reduction. The landfill's estimated capping costs on a per acre basis is within the range of actual per acre capping costs of other Long Island hazardous waste landfills that have been funded by the Department. The Town's consulting professional engineers have certified the design which is now complete.

Major components of the remedy include the following:

- o A minimum 12-inch thick gas venting layer soil layer (sand) will be placed above the compacted sub-grade and below the barrier layer of the final cover system. Six-inch diameter PVC gas vents will be installed into the refuse at high points on the reshaped landfill to prevent the buildup of gas pressure which could lift the geomembrane (impermeable barrier layer).
- o The barrier layer will consist of either 45-mil geomembrane with an 8 ounce per square yard non-woven/geotextile laminated on both sides (for steeper slopes) or a 45-mil membrane (for flatter slopes).
- o The barrier protection layer will be 24-inch select fill placed over the barrier layer. To enhance the stability of the side slopes steeper than 3 to 1, a high-friction geogrid will be interbedded in the select fill layer.
- o A 6-inch thick topsoil layer will be placed over the select fill layer to maintain vegetative growth over the landfill.
- o The drainage control system will consist of a series of drainage terraces cut into and encircling the landfill. The drainage terraces would convey runoff to down drains that will run down the slopes of the landfill. Two recharge basins will receive the runoff from the drainage control system.
- o A rebuilt perimeter landfill gas migration control system will be installed which will consist of a series of gas collection wells, gas header pipe and a gas collection station consisting of two blower units which will exhaust the gas through a stack to the atmosphere. The need for treatment of the gases prior to exhausting to the atmosphere will be evaluated after construction of the landfill cap and gas collection systems.

CONCLUSION:

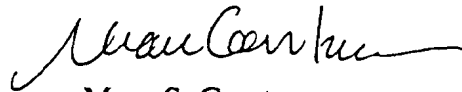
The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. However, because of the size of the landfill and because there are no identified on-site "hot spots" that represent the major sources of contamination, the landfill material cannot be excavated and treated effectively.

Because the Department did not receive any information during the IRP process that justifies changing the alternative that has been submitted by the Town and approved

by the Department, the Department hereby confirms the capping method specified in the approved IRP Workplan.

The Town continues to be obligated under the Consent Order to proceed with the construction of the Landfill cap as described in the approved IRP Workplan. Threats to the State's natural resources, public health and the environment continue to exist unabated and unaddressed by the Town of Huntington. We expect that upon receipt of this application denial, the Town will move forward to comply with the requirements of the Consent Order by going to bid on the construction immediately.

Sincerely,



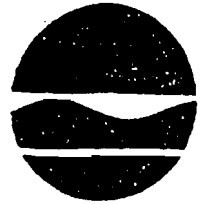
Marc S. Gerstman
Deputy Commissioner and
General Counsel

cc: Commissioner Jorling
Ann H. DeBarbieri
Frank P. Petrone, Supervisor
Ann Hurley, Town Board
Steve Israel, Town Board
Donald Musgnug, Town Board
Susan Scarpati-Reilly, Town Board

bcc: Jeffrey T. Lacey
Michael J. O'Toole
Jack Willson
Charles E. Sullivan, Jr.
Robert K. Davies
Mike Komoroske
Andy Carlson

RD/eb/a
RD2:huntapp.rd2

New York State Department of Environmental Conservation
Wolf Road, Albany, New York 12233 - 7010



Thomas C. Jorling
Commissioner

Mr. Stephen Ferraro
Supervisor
Town of Huntington
100 Main Street
Huntington, New York 11743-6990

JAN 15 1991

Dear Mr. Ferraro:

RE: Huntington/East Northport Landfill
Site Regrading Proposal

The Department of Environmental Conservation has reviewed the Town of Huntington's proposal for regrading the East Northport Landfill, specifically your request for a variance from the 20-foot vertical interval for run-off diversion terraces. Because the landfill is a Class 2 inactive hazardous waste disposal site, closure of the landfill will be done under the jurisdiction of the site remedial program. As a result, any request for a variance from 6 NYCRR Part 360 is treated as a request for a waiver from a New York State Applicable or Relevant and Appropriate Requirement (ARAR).

The Department has a strong technical preference for the 20 foot terrace interval. This preference is based on an acceptable degree of soil erosion and corresponding level of cover maintenance and slope stability safety factor. The Department believes that the Town's regrading proposal will result in slopes that will have a higher degree of soil erosion, will require greater and more difficult maintenance, and will have an increased risk of slope failure.

The Department also acknowledges that the severe regrading necessary to achieve a 20 foot terrace interval would increase the risk of environmental degradation from exposure to landfill gas and odors. In order to avoid prolonged public exposure to odors and potential hazardous constituents, the Department will consider the Town's request for a waiver.

The Town of Huntington will be allowed, at its own risk, to regrade the landfill according to its proposal. Upon completion of the regrading and placement of intermediate cover, the Department will observe the performance of the cover and the ability of the Town to maintain the cover during the cap system design period. If excessive erosion occurs

2.

which the Town is unable to mitigate, the Department will not approve the final cap design until mitigating measures, including regrading, are implemented. A final decision on the Town's request for a waiver will be made at that time.

Consideration of the Town's waiver request is contingent upon receiving an acceptable certification statement from the Town's consultants that the cover system will perform acceptably and upon the Town's written commitment to maintain the intermediate and final covers in a condition acceptable to the Department. Staff comments regarding the proposed CDM certification statement have been forwarded under separate cover.

Sincerely,



Edward O. Sullivan
Deputy Commissioner

GWH:mm

bcc: E. Sullivan (2)
M. O'Toole (2)
H. Berger, Region 1
A. McCarthy, DEE, White Plains
G. Srezner, Region 1
S. Hammond
R. Cozzy
J. Heitzman
P. Stannard

EXHIBIT B

- 1990 SEPT. - Overall Site Regrading Plan completed by the Town's consultant. Contains a section on public relations, calling for public information meetings, fact sheets, and a on-site community relations specialist during project start-up.
- FALL - **Public meeting conducted** by the Town to present the overall site regrading plan and to discuss plans for final landfill closure (capping).
- 1991 Jan.11 - Final Regrading Plan received by the Department. Contains the revised section on public relations (CP) based on the Department comments.
- Feb.8 - A letter (second in series) is sent by the Town to the public contact list to provide a status report on the regrading and closure of the landfill. Locations of project documents for review was given as well as a contact number.
- Mar.22 - **Public meeting conducted** to discuss the landfill regrading progress and to listen to citizen complaints on odors from the landfill. Decision was made to stop work on May 1st for the summer to eliminate odors.
- Sep. 9 - Citizen Participation Plan for the Interim Remedial Program (IRP) and RI/FS completed by the Town's consultant per the terms of the CO.
- Oct. - Fact Sheet No. 1 issued. Site status, future activities planned, RI workplan discussed. Document repositories listed. Contacts for written or verbal comments were provided.
- Oct.24 - **Public Information meeting** conducted. The landfill regrading, IRP, RI workplan and the New York State Department of Health cancer cluster study plans were discussed.
- 1992 April - Fact Sheet No. 2 issued. Site status, IRP workplan discussed. Contacts for written or verbal comments were provided.
- Mar.16 - **Public meeting conducted** by the New York State Department of Health to explain the cancer study results. Department personnel were present.
- Aug. - Fact Sheet No. 3 issued. Site status, IRP workplan discussed. Contacts for written or verbal comments were provided.

- 1993 June - Fact Sheet No. 4 issued. Same as other fact sheets.
- June 30 - **Public meeting** conducted by the Department. Status of the IRP and the results of the Phase I RI were discussed. A detailed information sheet was distributed.
- July - Written responses were provided to groups and individuals who submitted written comments on the IRP/RI for landfill after the public meeting.
- Aug. 5 - **A public meeting** hosted by Suffolk County legislator D'Andre was conducted. Providing public water to impacted residences was discussed as well as the status of the IRP.



STATE OF NEW YORK
DEPARTMENT OF HEALTH

Center for Environmental Health

2 University Place

Albany, New York 12203-3399

Mark R. Chassin, M.D., M.P.P., M.P.H.
Commissioner
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Executive Deputy Director
William N. Stasiuk, P.E., Ph. D.
Center Director

May 13, 1993

Mr. Michael Komoroske
Division of Hazardous Waste Remediation
NYS Dept. of Environmental Conservation
50 Wolf Road
Albany, NY 12233

RE: Phase I RI-RA
Huntington Landfill
Site ID #152040
Huntington, Suffolk County

Dear Mr. Komoroske:

I have reviewed the Phase I Remedial Investigation Health Risk Assessment for the Huntington Landfill and have the following comments:

The health risk associated with the air pathway of exposure at this site was not evaluated in the first phase of the Remedial Investigation (RI). Due to the historical odor problem at this site and based upon the results of the Phase I RI landfill gas vent monitoring, and the on-site ambient air sample results, we conclude that the possibility exists for the off-site exposure to site-related contaminants in air, and that the potential health risks associated with this type of exposure must be characterized.

To evaluate the potential for off-site exposure to air contaminants originating from the landfill, off-site ambient air sampling will be necessary. In addition, we recommend that appropriate air modeling is conducted to verify the ambient air sample results. As you are aware, we have agreed to wait for the air sampling until the proposed addition to the landfill gas collection system is completed, provided that the collection system is functional by the end of August 1993. If by the end of August 1993, the landfill gas collection system is not functional, off-site ambient air sampling and the modeling of potential off-site ambient air impacts should commence immediately thereafter.

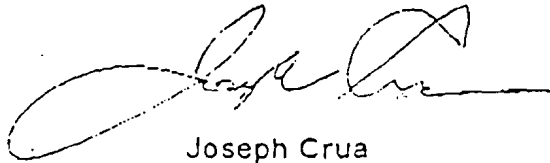
The consultant excluded the data from five monitoring wells (CW-1s, CW-1M, CW-1D, EN-5M, and VM-1) in their risk analysis because the wells "are located adjacent to the landfill and are not likely to be used as a drinking water source." The omission of this data when evaluating the potential health risks associated with the ingestion of contaminated groundwater is unacceptable. Due to the presence of private wells in the area downgradient from the landfill, the potential exists for the ingestion of groundwater contaminants in concentrations equal those detected in monitoring wells.

Therefore, all monitoring well and private well data must be used when evaluating the risks associated with exposure to contaminated drinking water. The duration of exposure to contaminated groundwater is assumed to be seventy years (lifetime).

When calculating hazard indices it is appropriate to add the non-carcinogenic ^{carcinogenic} risks for compounds with the same target organ. For example: the hazard indices calculated for 1,2-dichloroethene (31 ppb), tetrachloroethene (48 ppb) and trichloroethene (10 ppb) in drinking water should be totaled.

Should you have any questions, please call me at 518-458-6305.

Sincerely,



Joseph Crua
Program Research Specialist II
Bureau of Environmental Exposure
Investigation

lmw/93132PRO0670

cc: Dr. Carlson
Mr. Bates/Mr. VanValkenburg
Mr. Trent/Mr. Pontero/Mr. Robbins - SCDHS
Mr. Ervolina/Ms. McCormick - DEC
Mr. Shah - DEC Region 1
Mr. Block - ATSDR

DOH STATE OF NEW YORK
DEPARTMENT OF HEALTH

EXHIBIT D

Center for Environmental Health

2 University Place

Albany, New York 12203-3399

Mark R. Chassin, M.D., M.P.P., M.P.H.
Commissioner

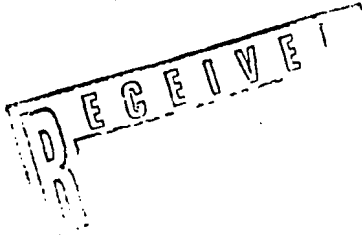
Paula Wilson
Executive Deputy Commissioner

OFFICE OF PUBLIC HEALTH

Lloyd F. Novick, M.D., M.P.H.
Director

Diana Jones Ritter
Executive Deputy Director

William N. Stasiuk, P.E., Ph.D.
Center Director



October 14, 1993

Mr. Michael O'Toole, P.E., Director
Division of Hazardous Waste Remediation
NYS Dept. of Environmental Conservation
50 Wolf Road, Room 212
Albany, New York 12233

RE: **Ambient Air Sampling**
Huntington Landfill
Site ID # 152040
Huntington, Suffolk County

Dear Mr. O'Toole:

In our May 13, 1993 comment letter (enclosed) regarding the Phase I Remedial Investigation/Health Risk Assessment, we agreed to wait for ambient air sampling and air exposure assessment modeling until the proposed landfill gas collection system (incorporated in the landfill cap) was completed, provided that said gas collection system was functional by the end of August 1993. Based on the information provided by your staff, it appears that the Town of Huntington does not intend to cap the landfill in the near future.

The delay in capping the landfill, and thus controlling the release of generated gases, known to include volatile organic compounds, raises concerns about the continued potential for community exposure to site related contaminants migrating from the landfill through the air. The best solution to reduce this exposure will be to complete the cap as soon as possible.

Without the cap in place, the ambient air monitoring that was discussed in the May 13, 1992 letter must be implemented immediately. The monitoring is intended to evaluate the potential for off-site exposure to air contaminants originating from the landfill. The delay in construction of the cap now means that the Town of Huntington must now proceed with off-site ambient air monitoring and the modeling of potential off-site ambient air impacts.

If you want to discuss this, please contact Steve Bates at 518-458-6305.

Sincerely,



G. Anders Carlson, Ph.D.
Director
Bureau of Environmental Exposure
Investigation

sms/93258PRO0329

Enclosure

cc: Dr. N. Kim
Mr. S. Bates
Mr. M. VanValkenburg/Mr. J. Crua
Mr. P. Pontero/Mr. A. Repiejko, SCDHS
Mr. S. Ervolina, DEC
Ms. S. McCormick/Mr. M. Komoroski, DEC
Mr. A. Shah, DEC Reg.III
Mr. A. Block/Mr. S. Jones, ATSDR

(5)

EXHIBIT E

CDM

environmental engineers, scientists,
planners, & management consultants

CAMP DRESSER & MCKEE

100 Crossways Park West
Woodbury, New York 11797
496-8400, Fax: 496-8864

June 2, 1993

Rec'd
6/14/93
DUNK/BERG

Mr. Michael Komoroske
Senior Environmental Engineer
Bureau of Central Remedial Action
Division of Hazardous Waste Remediation
NYSDEC
50 Wolf Road
Albany, NY 12233-7010

Subject: East Northport Landfill RI/FS
Provision of Public Water to Residential Homes

Dear Mr. Komoroske:

Camp Dresser & McKee (CDM) has re-evaluated the Phase I Remedial Investigation (Phase I RI) data in conjunction with the Suffolk County Health Services (SCDHS) data for private wells PW-13 and PW-52. Based on the re-evaluation, CDM has concluded that it is likely that the northern boundary of the landfill leachate plume extends beyond the northern monitoring well cluster EN-6 and may be as far as Sunken Meadow Creek, north of State Route 25A. Enclosed is a figure of the study area illustrating the plume extent provided in the Draft Phase I RI report and the potential plume extent based on present data.

~2 miles
downgradient
of landfill
or
1 mile further
than draft
RI report
identified
plume
migration!

Based on the potential plume extent, CDM has estimated that 16 residential homes which rely on well water for potable uses are within or potentially within the landfill leachate plume as defined in the enclosed figure. Of the 16 residential homes, CDM has identified four, PW-10, PW-51, PW-20 and PW-52 through the completed Phase I RI private well survey. The remaining 12 homes are believed to be using well water given the fact that review of Suffolk County Water Authority (SCWA) water distribution maps indicates the street in which the homes are located does not contain a water main.

CDM has concluded that PW-52 has been impacted by landfill leachate given the additional SCDHS data for this private well. Several inorganic parameters for PW-20 and PW-51 appear to be above background concentrations and are either adjacent to or within the boundary defining areas that could be potentially impacted by landfill leachate. The 13 other suspected private wells which no data is presently available are immediately downgradient of the leachate plume as defined in the Draft Phase I RI. Therefore, it is reasonable to assume that these private wells are impacted or have a real threat of being impacted by landfill leachate.

Due to the State and County health department's great concern over potential health issues related to the use of groundwater contaminated by landfill leachate as a potable water source, CDM recommends providing public water to the identified residential homes as an Interim Remedial Action (IRA).

Mr. Michael Komoroske
June 2, 1993
Page 2

As part of the IRA, CDM would conduct a door to door survey along Sunken Meadow Road which does not contain a SCWA water main, in order to identify the exact number of homes using private wells within this area. This effort could be included under the private well survey to be conducted as part of the Phase II RI. After identifying the additional wells, the Town can request SCDHS to collect samples for analysis to help determine if the wells are presently impacted. This work can be completed in a relatively short time.

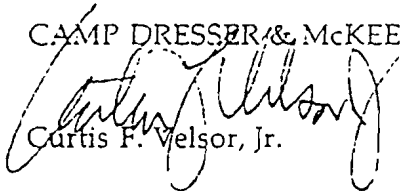
Upon written authorization and approval of the Phase II RI scope of work by the Town and NYSDEC, CDM will immediately undertake the door to door survey along Sunken Meadow Road.

As part of an IRA, the Town would like to proceed as quickly as possible with connecting the identified homes to public water. Once an agreement between the NYSDEC, CDM and the Town regarding the location and number of homes requiring public water has been made, CDM can provide the information to SCWA who in turn will provide a cost estimate to the Town for work related to extending water mains where necessary. Additional costs would include the engineering and installation of service lines connecting the homes to the water mains. All work related to this proposed IRA should be 75 percent state reimbursable.

If you would like to discuss this or other issues related to this project, feel free to contact me.

Very truly yours,

CAMP DRESSER & McKEE



Curtis F. Velsor, Jr.

cc: S. Kearing, TOH
D. Koopman, TOH
M. Irving, TOH
J. Crua, NYSDOH
M. Memoli, CDM
File 2.1.1/5.3.1

(m2/kom2)

CDM

environmental engineers, scientists,
planners, & management consultants

August 16, 1993

Mr. Samuel Kearing
Director
Department of Environmental Control
Huntington Town Hall
100 Main Street
Huntington, NY 11743

Subject: East Northport Landfill RI/FS, Phase II Private Well Survey
Proposed List of Residential Homes Requiring Public Water

Dear Mr. Kearing:

Enclosed for your review is a summary table listing a total of 57 residential homes with a private well used as a potable water source which are candidates for connection to public water as part of an Interim Remedial Measure (IRM) under the East Northport Landfill RI/FS program. The summary table is divided into two groups of residential homes requiring public water. Group A includes those residents located within the area potentially impacted by the landfill leachate plume, as defined in Camp Dresser & McKee's June 2, 1993 letter addressed to you; while Group B contains those homes located immediately west of the area which is presently considered potentially impacted.

The listed residents were identified through the completed Phase I Private Well Survey, conducted during the Spring of 1992 and the presently ongoing Phase II Private Well Survey which is being completed as part of the Phase II Remedial Investigation. CDM has identified a total of 43 residents which are considered candidates for connection to public water based on information from returned questionnaire forms and numerous follow-up visits to the Private Well Survey target areas.

In addition, there are a total of 14 residents that are located within the areas that may require public water, but who have not completed a questionnaire form which CDM has mailed or hand delivered. CDM has included these "unknown" residents in the proposed list due to their potential of using a private well as a potable water source. A number of these unknown private wells may already have public water resulting in the total number of required connections being less than the present estimate of 57 residents. It should be noted that as part of the Phase II private well survey program, CDM delivered, in some cases more than once, additional questionnaire forms to targeted residents two failed to return the first questionnaire form initially mailed or delivered to them. CDM is presently attempting to resolve these unknowns by obtaining Suffolk County Water Authority (SCWA) data on residents presently being serviced with public water within the areas of concern.

Sunken Meadow State Park is included in the list of residents requiring public water due to the fact that several areas within the park use well water for potable uses. According

(b)
EXHIBIT F

CAMP DRESSER & MCKEE

100 Crossways Park West
Woodbury, New York 11797
496-8400, Fax: 496-8864

MK

SECRET

Mr. Samuel Kearing
August 16, 1993
Page 2

to park personnel, modifications will have to be made to onsite water mains in order to supply public water to all buildings within the park. Furthermore, as stated by park personnel, engineering related to onsite water mains will be undertaken by park service engineering staff.

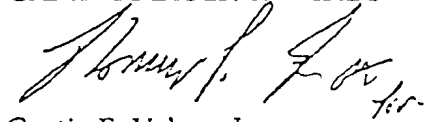
Attached is a composite tax map of the residential areas bounded by Bread and Cheese Hollow Road to the west, Sunken Meadow park to the north and Sunken Meadow Parkway to the east, which shows the locations of each known and unknown resident requiring public water. In addition, the map identifies the locations in which SCWA proposes to extend water mains within the impacted or potentially impacted areas.

Based on the review of the August 9, 1993 SCWA design drawings, the water main extensions listed as projects 1,2,3,5 and 6 are within the areas which CDM recommends providing public water to. Project number 4 is the extension of 429 feet of water main on Kohr Road. Kohr Road which is located east of Sunken Meadow Parkway is not within the area that is considered impacted or potentially impacted by the landfill leachate plume at this time.

If you would like to discuss this or other issues related to this project, feel free to contact me.

Very truly yours,

CAMP DRESSER & McKEE



Curtis F. Velsor, Jr.

cc: M. Komoroske
D. Koopman
M. Irving
✓ J. Crua
M. Memoli
File 2.1.1/5.3.1

(m4/kearing 5)

57 Homes!



STATE OF NEW YORK
DEPARTMENT OF HEALTH

Center for Environmental Health

2 University Place

Albany, New York 12203-3399

EXHIBIT G

Mark R. Chassin, M.D., M.P.P., M.P.H.
Commissioner

Paula Wilson
Executive Deputy Commissioner

OFFICE OF PUBLIC HEALTH

Lloyd F. Novick, M.D., M.P.H.
Director

Diana Jones Ritter
Executive Deputy Director

William N. Stasiuk, P.E., Ph.D.
Center Director

August 23, 1993

Mr. Michael Komoroske
Division of Hazardous Waste Remediation
NYS Dept. of Environmental Conservation
50 Wolf Rd., Room 218
Albany, NY 12233

RE: Private Well Survey
Huntington Landfill
Site ID #152040
Huntington, Suffolk County

Dear Mr. Komoroske:

This correspondence serves to reiterate the New York State Department of Health's (NYSDOH) concern over the presence of private wells located hydraulically downgradient from the Huntington Landfill.

All homes with private wells located within the region of the landfill contaminant plume must be identified and sampled for volatile organic compounds (VOCs), and inorganic parameters, including metals. The homes located on Breezy Hill Drive and Chris Court must be included in this investigation since the operation of the Gunn Club Road public water supply wells may be drawing the plume further to the northwest of the area which the Town of Huntington presently delineates as the "area potentially impacted by the plume."

Homes identified in the subject area with wells contaminated at or above NYSDOH public drinking water supply standards must be supplied with bottled water. Homes located within the subject area with private wells testing below NYSDOH standards must be sampled on a quarterly basis.

To eliminate any possible existing and/or future exposure to site-related contaminants in drinking water wells we request that all homes with private wells potentially impacted by the plume migrating from the landfill be connected to public water.

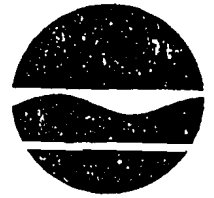
Should you have any questions, please call me at (518) 458-6305.

Sincerely,

Joseph P. Crua
Environmental Health Specialist II
Bureau of Environmental Exposure
Investigation

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233

MR (8)
EXHIBIT H



Thomas C. Jorling
Commissioner

AUG 30 1993

Mr. Samuel J. Kearing
Director
Department of Environmental Control
Town of Huntington
100 Main Street
Huntington, N.Y. 11743-6990

Dear Mr. Kearing:

RE: HUNTINGTON/EAST NORTHPORT LANDFILL
SITE NO. 152040

I am writing in regards to the need to provide an alternative water supply to residences which still utilize private wells as their primary drinking water supply and which are impacted or potentially impacted by the Huntington/East Northport Landfill leachate plume. You have stated that the Town of Huntington is ready to act on this matter and the Department would like to see this issue resolved.

In a letter to you dated October 9, 1992 I requested that the Town of Huntington provide public water to three residences (identifiers #20, 41 and 43) and bottled water to two others (identifiers # 19 and 35). I also requested that the Town arrange for the sampling of any additional residences which utilize private wells located hydraulically downgradient from the Huntington Landfill and had not been previously sampled.

To date, two of the residences have been connected to public water (one by the Town of Huntington (#41) and one on their own (#20)). The Town has indicated that the third residence (#43) will be connected in the near future as part of a broader extension of public water due to the actual or potential impact of the landfill's leachate plume. Bottled water is currently being provided to residences #19 and #35 by the New York State Department of Environmental Conservation (NYSDEC), rather than the Town as requested.

The Town's consultant, Camp Dresser & McKee (CDM), has re-evaluated the Phase I Remedial Investigation (RI) data in conjunction with the Suffolk County Health Services (SCDHS) data and concluded that it is likely that the landfill leachate plume extends as far as Sunken Meadow Creek, north of State Route 25A (see correspondence dated June 2, 1993 from C. Velsor to M. Komoroska). CDM went on to state that they recommended providing public water to the identified residential homes as an interim Remedial Action.

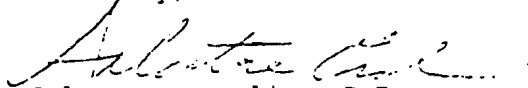
In a letter dated August 16, 1993 to you (copy enclosed), CDM is recommending that public water be provided to a total of 57 residential homes. Both the New York State Health Department (NYSDOH) and the SCDHS have concerns about the impacts of the landfill leachate plume contaminants on these residential wells (see enclosed letters). To eliminate any possible existing and/or future exposure to site-related contaminants in drinking water wells, the NYSDOH has requested that all homes with private wells potentially impacted by the landfill leachate plume be connected to public water. They have also requested that homes with wells contaminated at or above NYSDOH public drinking water supply standards be supplied with bottled water (until public water is provided) and homes below NYSDOH standards be sampled on a quarterly basis.

Based on the above, it is requested that the Town of Huntington proceed with the task of providing public water to the 57 homes identified by your consultant. You have indicated that the Town would like to proceed with this work. The Suffolk County Water Authority (SCWA) has identified which water mains will require extension to accomplish the above request. They have indicated that they can not only arrange for the necessary engineering and construction for the main lines, but also for the service lines into the residential homes themselves. The NYSDEC feels this would be the most cost-effective approach. The Town is also requested to comply with NYSDOH requests to provide bottled water and quarterly sampling of impacted homes.

As indicated in the October 9, 1992 letter, since this request is the result of actual or potential impacts from the Huntington/East Northport landfill leachate plume, the reasonable costs incurred by the Town to complete this work are eligible for 75% grant reimbursement under the Town's State Assistance Contract (SAC). Actual reimbursement will be dependent on the Town's full compliance with the Order on Consent.

A copy of the resolution by the Town Board authorizing this work must be forwarded to this office by September 17, 1993 with a written request to modify your SAC to include these grant eligible costs.

Sincerely,



Salvatore Ervolina, P.E.
Director
Bureau of Eastern Remedial Action
Div. of Hazardous Waste Remediation

Enclosures

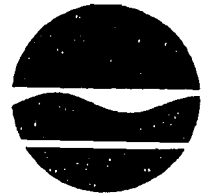
- cc: S. Ferraro
- P. Vecchio
- M. D'Andre
- H. Miller
- R. Daugherty
- W. Irving
- A. Hoopman
- C. Velsor
- T. Orta
- S. Robbins

- cc: S. Ervolina
- S. McCormick
- A. Slat
- H. Chyral
- J. Epstein

FILE COPY

(9)

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 -7010



Thomas C. Jorling
Commissioner

MAR 1 1993

EXHIBIT I

Mr. Samuel J. Kearing
Director
Department of Environmental Control
Town of Huntington
100 Main Street
Huntington, N.Y. 11743-6990

Dear Mr. Kearing:

RE: HUNTINGTON/EAST NORTHPORT LANDFILL
SITE NO. 152040

I am responding to your letter of February 1, 1993, in which you requested to postpone further work on the Interim Remedial Program (IRP) bid documents until after the completion of the Feasibility Study (FS) process. To justify this request you have made a number of statements and conclusions which are based on your interpretations of the draft Remedial Investigation (RI) report. In addition, you have brought up a number of subjects which this Department has previously responded to.

As I stated in our meeting of November 23, 1992 here in Albany, since the Huntington/East Northport Landfill has been classified a class 2 inactive hazardous waste site, at a minimum, the landfill must be capped in full compliance with current 6 NYCRR Part 360 regulations. These regulations were finalized after an extensive public input and comment period. Compliance with Part 360 regulations has demonstrated to be the most cost-effective and environmentally sound solution to minimizing the impact from landfill leachate migration. Strict and timely compliance with Part 360 becomes even more important when the fact that the Huntington/East Northport Landfill is located within the deep recharge zone of the Long Island sole source aquifer is considered.

Your consultant has estimated that approximately 10 to 20 million gallons per year of landfill generated leachate reaches the groundwater table. Only approximately 55 percent of this amount is estimated by your consultant to be generated from the flat portion of the landfill. The landfill leachate plume has been documented by your consultant to extend at least one mile downgradient of the landfill to the north northeast. This plume will continue to be supplied by landfill leachate and continue to deteriorate the upper glacial aquifer downgradient of the landfill until the landfill is completely covered with a properly engineered impermeable barrier.

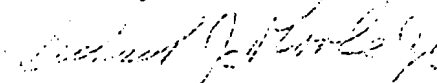
Contrary to the statement in your letter, no where in the draft RI report does it say that the groundwater contamination associated with the landfill does not have the potential to significantly impact the public health. Based on the opinions of both the Suffolk County and New York State Health Departments, just the opposite is true. In addition and contrary to your statement, the regraded landfill is a continuing source of odors and visual problems and does generate local concerns as witnessed in the public meeting held in March, 1992.

Based on the above, I must deny your request to delay the completion of the Interim Remedial Program bid documents. My staff has and will continue to work with you to construct the most cost-effective Part 360 compliant closure system for the Huntington Landfill. We are very sensitive to the need to contain costs whenever legally and technically possible. To that end, the Department did allow the Town a conditional waiver from the 20 foot terrace interval requirement in Part 360. This allowed the Town to considerably modify the landfill regrading plan (see enclosed copy of E. Sullivan to S. Ferraro letter dated January 15, 1991). The Department's review of the draft IRP workplan resulted in the elimination of a costly stormwater runoff pump station to be replaced by a less costly recharge basin. The Department has also allowed the use of 200-mil geonet gas venting element for slopes of 25% or flatter in the cap design. The Department's review of the Landfill Gas IRP preliminary cost estimate resulted in your consultant switching from two landfill gas blower stations to one station in the design. The Department is also supportive of the use of only one geogrid layer in the landfill cap barrier protection layer rather than two if a factor of safety of 1.5 or greater can be maintained in the slope stability analysis.

In consideration of the above, please direct your consultants to submit the approved Interim Remedial Program final bid documents to this office by April 2, 1993.

If you have any questions on the above, feel free to call me at (518) 457-5861.

Sincerely,



Michael J. O'Toole, Jr.
Director
Div. of Hazardous Waste Remediation

Enclosure

c: Stephen Ferraro, Supervisor, TOH
Ann Hurley, Deputy Supervisor and Councilwoman, TOH
Kenneth Christensen, Councilman, TOH
Steven Hackeling, Councilman, TOH
William Rebolini, Councilman, TOH
G. Anders Carlson, NYSDOH
Sy Robbins, SCDOH
Alice McCarthy, NYSDEC

a:\hunt58d

bc: A. DeBarbieri
M. Gerstman
M. O'Toole (2)
C. Goddard
S. Ervolina
S. McCormick
R. Cowen
B. Mitrey
A. Candela
S. Farkas
M. Komoroske

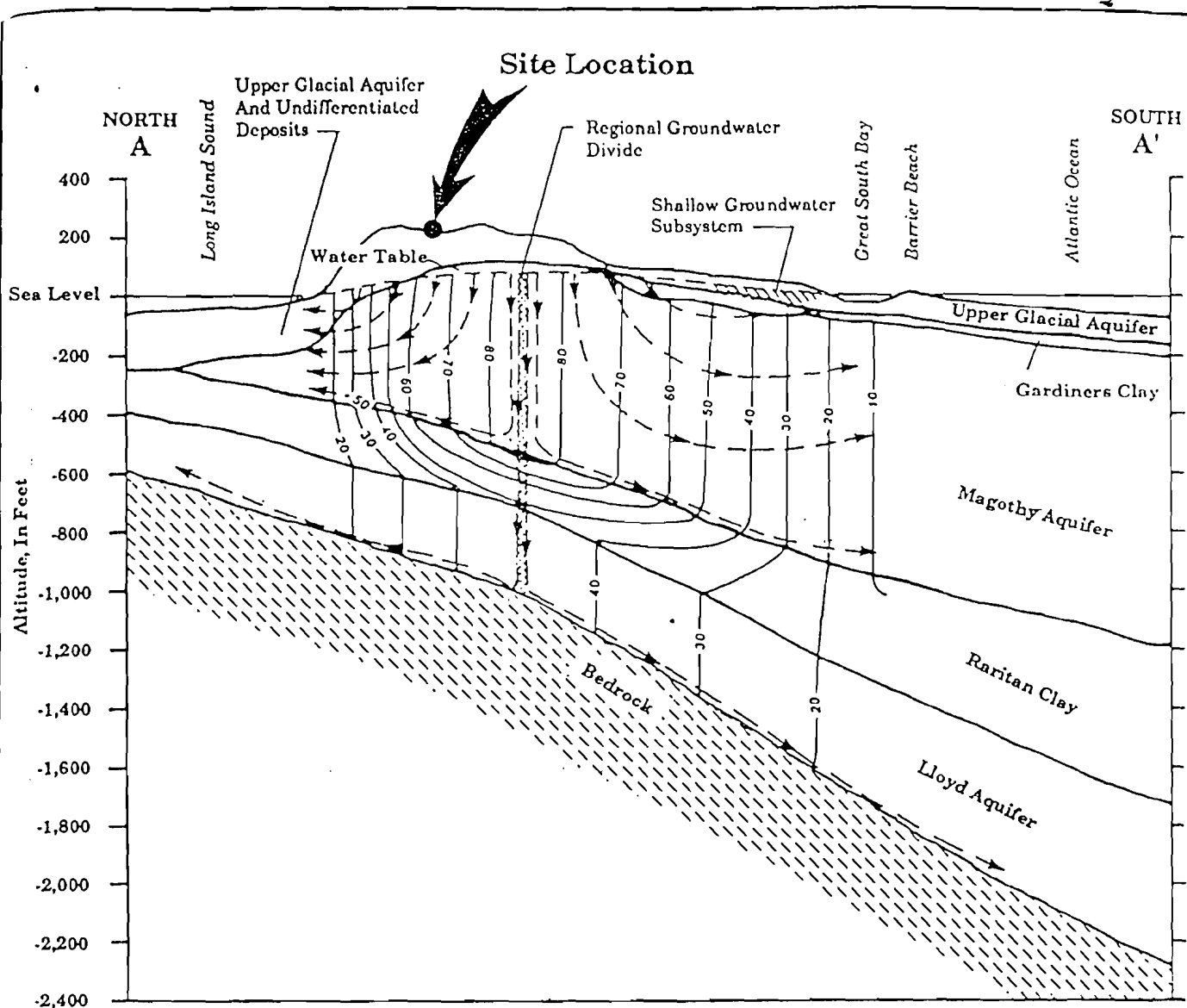
glaciofluvial deposits are generally moderately to highly permeable with porosities of 30 to 40 percent being common (Veatch et al, 1906). Wells screened within the aquifer have recorded specific capacities ranging from 10 to more than 200 gpm per foot of drawdown (McClymonds and Franke, 1972). Hydraulic conductivity for the Upper Glacial aquifer within northwestern Suffolk County has been estimated to be 1,500 gpd per square foot (200 ft/day) (McClymonds and Franke 1972).

The aquifers within the study area are hydraulically interconnected. Layers of clay and silt within an aquifer, or clayey and silty units between aquifers, confine the groundwater, but these units do not completely prevent the vertical movement of water through them. Getzen, 1977, estimated that the ratio of vertical hydraulic conductivity to horizontal conductivity in the Upper Glacial aquifer ranges from 1:10 to 1:24 and that in the Magothy aquifer, the ratio ranges from 1:30 to 1:60.

2.7.5 GROUNDWATER FLOW

The movement of groundwater in the study area is initiated as the Upper Glacial aquifer receives recharge over its entire surface. Precipitation is the sole source of fresh water recharge to all aquifers within Suffolk County. Groundwater flow lines shown in figure 2-9 show that the water moves vertically downward within the central portion of Long Island to recharge the underlying Magothy and Lloyd aquifers. Further north, the flow lines in all three aquifers are nearly horizontal. Finally, flow near the shoreline is upward from the deeper zones and discharge to the Long Island Sound occurs. Thus, in the study area, both vertical and horizontal flow components can be expected.

On the average, the vertical hydraulic conductivity and rates of vertical flow through the Upper Glacial aquifer are greater than those of the other hydrogeologic units in Suffolk County. The vertical movement of water through the Magothy aquifer is impeded by intercalated lenses and beds of



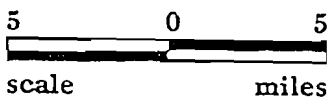
Vertical Exaggeration About 50 X

EXPLANATION:

- 10 —— Equipotential Line, In Feet Above Mean Sea Level
- - - - -> - - - - Inferred Path Of Ground Water Flow

NOTE:

Geology And Topography Generalized, Particularly In The Northern Part Of Cross-Section.



SOURCE: Franke And Cohen, 1972

Figure 2-9

CDM

environmental engineers, scientists,
planners & management consultants

Generalized Ground Water Flow

Town of Huntington
Remedial Investigation for the East Northport Landfill