Gorick C&D Landfill

Kirkwood (T), Broome County, New York

Site No. 7-04-019

RECORD OF DECISION

March 1992

Prepared by:
New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation

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

Thomas C. Jorling
Commissioner

DECLARATION STATEMENT - RECORD OF DECISION (ROD)

Gorick C&D Landfill
Kirkwood (T), Broome County
Site No. 7-04-019

Statement of Purpose

The Record of Decision (ROD) sets forth the selected Remedial Action Plan for the Gorick C&D Landfill inactive hazardous waste site. This Remedial Action Plan was developed in accordance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the New York State Environmental Conservation Law (ECL). The selected remedial plan complies to the maximum extent practicable with the National Oil and Hazardous Substance Pollution Contingency Plan, 40 CFR Part 300, of 1985.

Statement of Basis

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Gorick C&D Landfill 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 4 of the ROD.

Description of Selected Remedy

The selected remedial action plan will provide for the protection of human health and the environment. The selected remedy is no further action. This remedy involves the continued operation of the air stripper installed on the Town of Kirkwood municipal well as an Interim Remedial Measure (IRM). A groundwater monitoring program will be implemented to periodically track the groundwater contamination under the landfill. Since the selected remedy results in hazardous wastes remaining on site, at a minimum, a five-year review of the effectiveness of the remedy is required. The review will be conducted to evaluate whether the implemented remedy continues to provide adequate protection of human health and the environment.

Proper closure of this landfill is required and will be enforced pursuant to the Part 360 requirements. Landfill closure is not within the scope of this ROD.

New York State Department of Health Acceptance

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

Declaration

The selected Remedial Action Plan is protective of human health and the environment. The remedy selected will meet the substantive requirements of the Federal and State laws, regulations and standards that are applicable or relevant and appropriate to the remedial action. The remedy will satisfy, to the maximum extent practicable, the statutory preference for remedies that employ treatment that reduce toxicity, mobility or volume as a principal element. This statutory preference will be met by eliminating the mobility of contaminant pathways of exposure to human health and the environment through the continued operation and maintenance of the air stripper treating the groundwater from this site.

3-25-92
DATE

EO Sull
Edward O. Sullivan
Deputy Commissioner

TABLE OF CONTENTS

GORICK C&D LANDFILL
Kirkwood (T), Broome County
Site No. 7-04-019

<u>**SECTION**</u>

SECTION 1: SITE LOCATION AND DESCRIPTION

The Gorick site is a construction and demolition debris (C&D) landfill located on a 35-acre tract of land in the Town of Kirkwood, Broome County, New York. The site lies approximately five miles southeast of Binghamton, off NY Route 11, near Five mile Point. The Gorick Landfill site location is shown in Figure 1; a site plan is presented in Figure 2.

The surface of the Landfill is sparsely vegetated in many areas, with a large quantity of demolition debris strewn about. The site is bordered on the east by Conrail railroad tracks and on the west by the Susquehanna River. Immediately north of the site is a warehouse of the Link Flight Simulation Corporation, and four private residences. To the south, across a small access road serving three water wells belonging to the Town of Kirkwood, is the American Pipe and Plastics (AP&P) factory, where PVC piping is manufactured.

Three Town of Kirkwood municipal water wells are located on a 5-acre parcel owned by the Town on the floodplain adjacent to, and about 300 feet southwest of the Landfill. These wells supply potable water to the residents of the Town of Kirkwood as well as numerous industrial customers.

* * * * * *

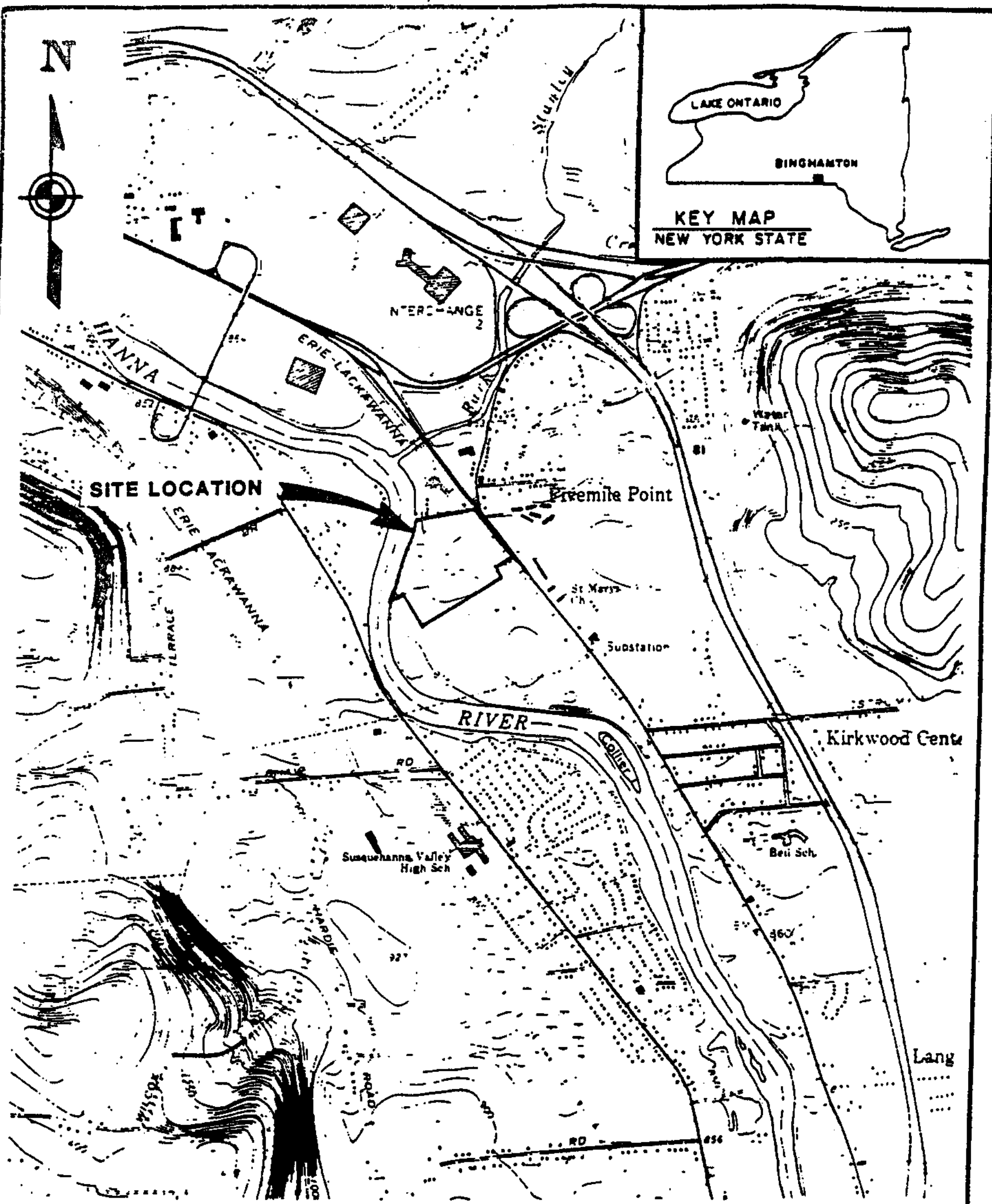
SECTION 2: SITE HISTORY

Prior to its use as a dump the site was mined for gravel. Although dumping may have occurred on site as early as 1959, Alfred Gorick purchased the property in 1964 and was issued a permit to establish a refuse disposal area at the site in 1965 by the Broome County Department of Health.

In 1977 the Town installed two municipal wells, numbers 1 and 2, on land purchased from Gorick which based on available records was about 750 feet southwest of the area of C&D disposal at the time of purchase. In 1984 a third well No. 3, designed for 2000 gpm, was constructed adjacent to the existing Town wells. In May 1981 trichloroethene (TCE) and 1,2-Dichloroethene (1,2-DCE) were detected at low concentrations in the distribution systems of Town wells Numbers 1 and 2. Although well below the U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs) in effect at that time (50 ppb for each of these compounds), these concentrations caused the Town in 1982 to institute a program of regular testing for volatile organic compounds (VOCs).

In 1988, 11 ppb of TCE was detected in Town well No. 3. This contravened the interim New York State Department of Health (NYSDOH) standard of 10 ppb for TCE (prior to the adaption of a stricter 5 ppb standard in 1989) and required that the well be shut down. In February 1989 the Town purchased an air stripper, capable of a maximum flow rate of 1000 gpm, for emergency removal of TCE.

Since 1981 various groundwater investigations were performed near the site to explore the TCE contamination and the aquifer.



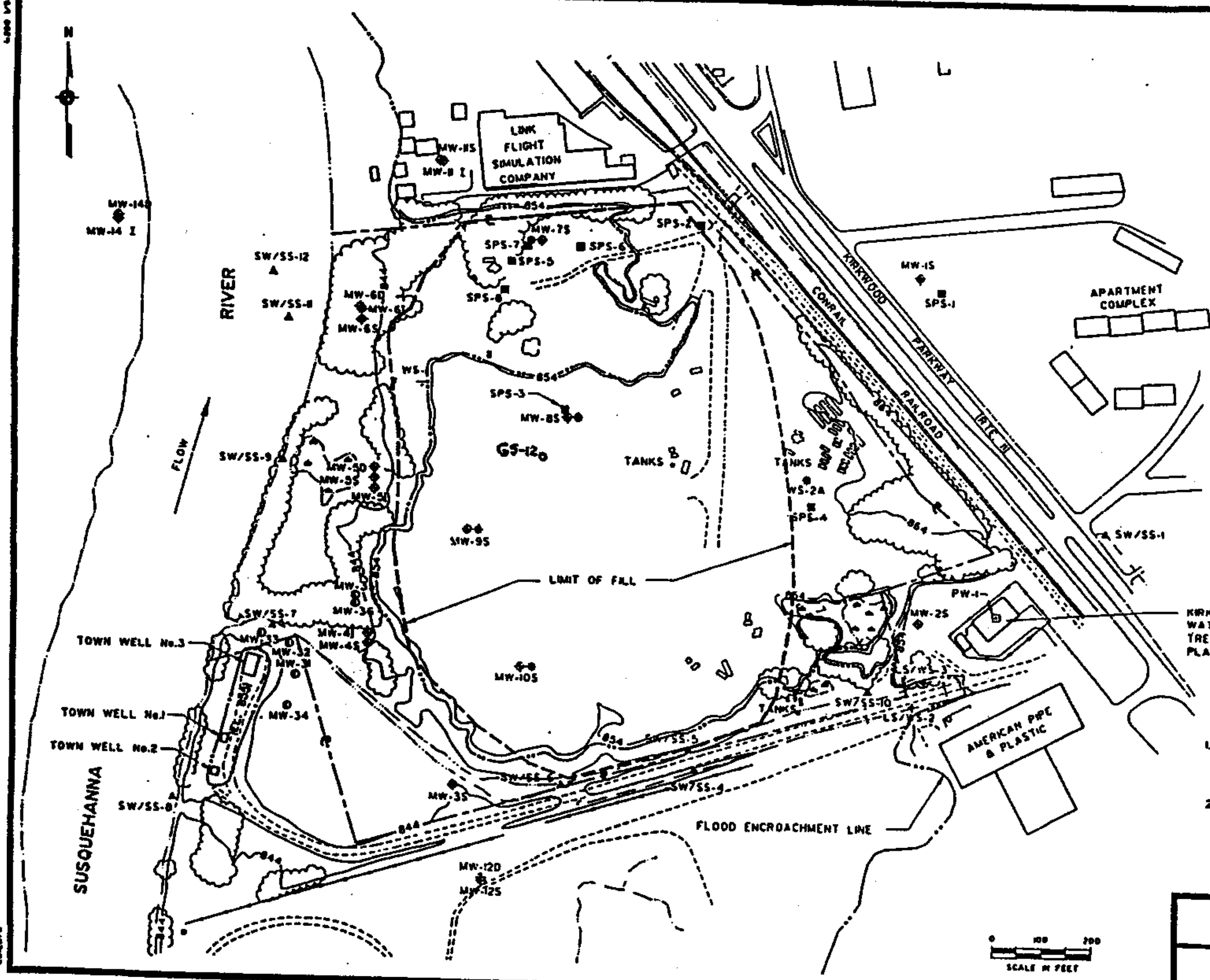
SOURCE

USGS, BINGHAMTON EAST, N.Y, QUADRANGLE
7.5 MINUTE SERIES (1976)

0 1000 2000 FT.

URS CONSULTANTS, INC.	GORICK LANDFILL SITE LOCATION MAP	FIGURE 1

A-3614



LEGEND

- MONITORING WELL; INSTALLED BY URS ALSO SOIL BORING SAMPLE LOCATION, EXCEPT AT MW-7S, MW-8S, MW-9S AND MW-10S WHERE WASTE SAMPLES WERE COLLECTED (1990)
- MONITORING WELL; INSTALLED BY URS (1991)
- EXISTING MONITORING WELL INSTALLED BY LAKE ENGINEERING
- SURFACE WATER AND STREAM SEDIMENT SAMPLE
- WASTE SAMPLE
- LEACHATE SEEP SAMPLE AND WASTE SAMPLE
- SHALLOW PROBE SOIL SAMPLE
- POTABLE WATER SAMPLE
- * APPROXIMATE 100-YEAR FLOOD ENCROACHMENT LINE (ELEV. 853.5±)

* SOURCE:
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (TOWN OF KIRKWOOD, BROOME COUNTY. FLOOD BOUNDARY AND FLOODWAY MAP - 6/1/77)

NOTES:

1. MAPPING BASE IS FROM AERIAL PHOTOGRAPHY DATED APRIL 1, 1990 AND COMPILED BY LOCKWOOD MAPPING, ROCHESTER, NEW YORK.
2. PROPERTY LINES SHOWN ARE APPROXIMATE, FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR CONVEYANCE OF REAL PROPERTY. PROPERTY LINES WERE INTERPOLATED FROM A TAX MAP PREPARED BY BROOME COUNTY, NEW YORK.

SITE PLAN

URS CONSULTANTS, INC.

FIGURE 2

a. In December 1981, five observation wells (VO1 through V05) were installed for the Town around Town wells Numbers 1 and 2 to explore a treatment process for iron and manganese removal.

b. In 1983, thirteen wells were installed on or near the Gorick Landfill as part of an investigation of the aquifer system that supplies water to the well fields in the Towns of Kirkwood and Conklin, conducted by the USGS.

c. In 1987 and 1988, the Town of Kirkwood had eight additional monitoring wells installed.

Groundwater samples taken in 1988 in wells 35 and 36 located at the toe of the Landfill showed concentrations of TCE of 88 and 430 ppb, respectively. Well GS-12 on-site contained levels of TCE at 45 ppb in 1987.

In November 1988, Gorick was issued a cease-and-desist order to stop all activities at the landfill. Dumping was stopped, but the owner retained the right to enter the site to remove tanks and other objects on the Landfill surface. In February 1989, based upon the analysis of samples taken from the various wells the site was classified as a Class 2 inactive hazardous waste site.

* * * * * *

SECTION 3: CURRENT STATUS

The Town air stripper has a design capacity of 1,000 gpm. This capacity does not meet the combined available capacity of well No. 1 and 3 nor the future demands of the Town. In order to resolve the immediate problems of the Town and restore the flexibility that existed prior to the discovery of TCE in the wells, a new stripper capable of treating 2,000 gpm was designed and installed on Town well No. 3 by URS Consultants, Inc., Buffalo, New York, under contract with the NYSDEC. Start-up of this stripping column began in February of 1992.

In November 1989, in order to more fully characterize the site and evaluate the potential health and environmental risks associated with the site, the NYSDEC also contracted the URS Consultants for the performance of a Remedial Investigation/Feasibility Study (RI/FS). Field activities performed as part of the RI from June 1990 through July 1991 include the following:

- surveying/mapping
- radiological air survey
- soil gas survey
- geophysical survey
- installation of soil borings and monitoring wells
- sampling and chemical analysis of groundwater, surface water, sediment, soils and waste.
- test trench excavation and sampling

- habitat based assessment

A general discussion of the findings of the RI is presented below. Data summary tables are presented in Appendix 3. For a complete discussion of these studies and their findings, refer to the report entitled - Volume 1 Remedial Investigation for the Gorick C&D Landfill RI/FS, and associated appendices Volumes 3 and 4.

Fill/Waste:

The boundary of fill is shown in Figure 2. The fill unit may be divided into a major, higher fill plateau-like feature, and a lower, less conspicuous plateau in the northern part of the landfill. The depth of fill ranges considerably, but is at least 24 feet in the center portion of the site.

The fill consists of mostly construction and demolition debris such as wood, brick and concrete. Quantities of a foundry sand/ash-like material, however, were found in various places. During the trenching program 28 test pits were dug in the northern half of the landfill as an attempt to locate a source of the groundwater contamination (see Figure 3). A discrete source was not identified, but the soil gas survey, in addition to a soil boring, identified TCE in the central portion of the landfill. Also, several drums were found, three of which contained grease and two drums contained a blue/white solid material, which are hazardous substances. Residues of a blackish-brown resin type waste, emitting strong solvent odors, were also found in a test pit. The resin material and blue/white solid contained significant quantities of organic solvents (0.25% and 0.75% by weight respectively). The drums along with the soil gas and soil hit were evidence of improper disposal of hazardous waste in the landfill.

Additional waste samples were taken on the fill surface and from the borings of the monitoring wells installed in the fill. TCE was detected in only one waste sample, that being in the boring of MW-7S at 18 ppb. Semi-volatile compounds, mostly combustion by-products known as poly-nuclear aromatic hydrocarbons (PAHs), were detected in subsurface waste samples, the highest were from MW-7S with 4,090 ppm total PAHs. Pesticides were found at low levels in some of the waste samples. No PCBs were found in any of the waste samples. Several metals were identified in the fill samples, but is as expected in a C&D Landfill where a large quantity of metallic objects were disposed.

Surface soils on the site are contaminated with PAHs, but no significant volatile organic contamination was identified. The surface soils containing elevated levels of PAHs were concentrated in the northern section of the landfill and contained total PAHs from 22 to 384 ppm. These PAHs are likely to be derived from foundry wastes which are present in this section of the landfill, and indicate that the waste is inadequately covered in most areas of the site.

Groundwater: The landfill overlays a highly productive sand and gravel aquifer which in turn overlays a poor water bearing till unit. Groundwater flow in the area is from east of the site towards the Susquehanna River. However, due to the pumping withdrawals by the Town of Kirkwood wells, most of the groundwater flow from the site is intercepted by these wells. The exception is the northwest portion of the site where flow is from the site to the river/aquifer.

The landfill's contribution to the Kirkwood wellfield is estimated in a study by the U.S. Geological Survey to be only 5% as the Town wells draw most of their water from the river and surrounding aquifer under the Conklin side of the river.

Based on the results of the RI the landfill is contaminating the groundwater downgradient of the site with volatile organic compounds, principally TCE, 1,2-DCE and 1,1,1-Trichloroethane. VOCs are moving westward towards the Susquehanna River and southwestward towards the Kirkwood Town wells from the landfill. Based on the distribution of the contaminants in the monitoring wells, the contaminants appear to lie within the north central portion of the landfill.

Groundwater reaches the fill when river levels rise during flooding or higher flow periods, causing groundwater to back up under and into the fill. This impacts the spread of landfill contaminants by allowing direct leaching of contaminants into the groundwater and allowing downward movement from the fill material into the groundwater.

Groundwater monitoring wells were installed in three zones shallow, intermediate and deep and were located both on the fill and around the landfill. The highest levels of TCE detected were in the wells just down gradient of the landfill. In downgradient wells TCE was detected up to 310 ppb. On the landfill TCE was detected at 130 ppb in MW-8S and 230 ppb in MW-9S. Other VOCs which are break-down products of TCE were also detected in these wells most notably 1,2-DCE, detected up to 260 ppb in MW-6I. TCE levels in the Town wells were significantly less than these values due to dilution from the water pumped from other portions of the aquifer by the Town wells. TCE was not detected in any wells upgradient or on either side of the landfill, supporting the conclusion of the landfill as the source of the TCE contamination.

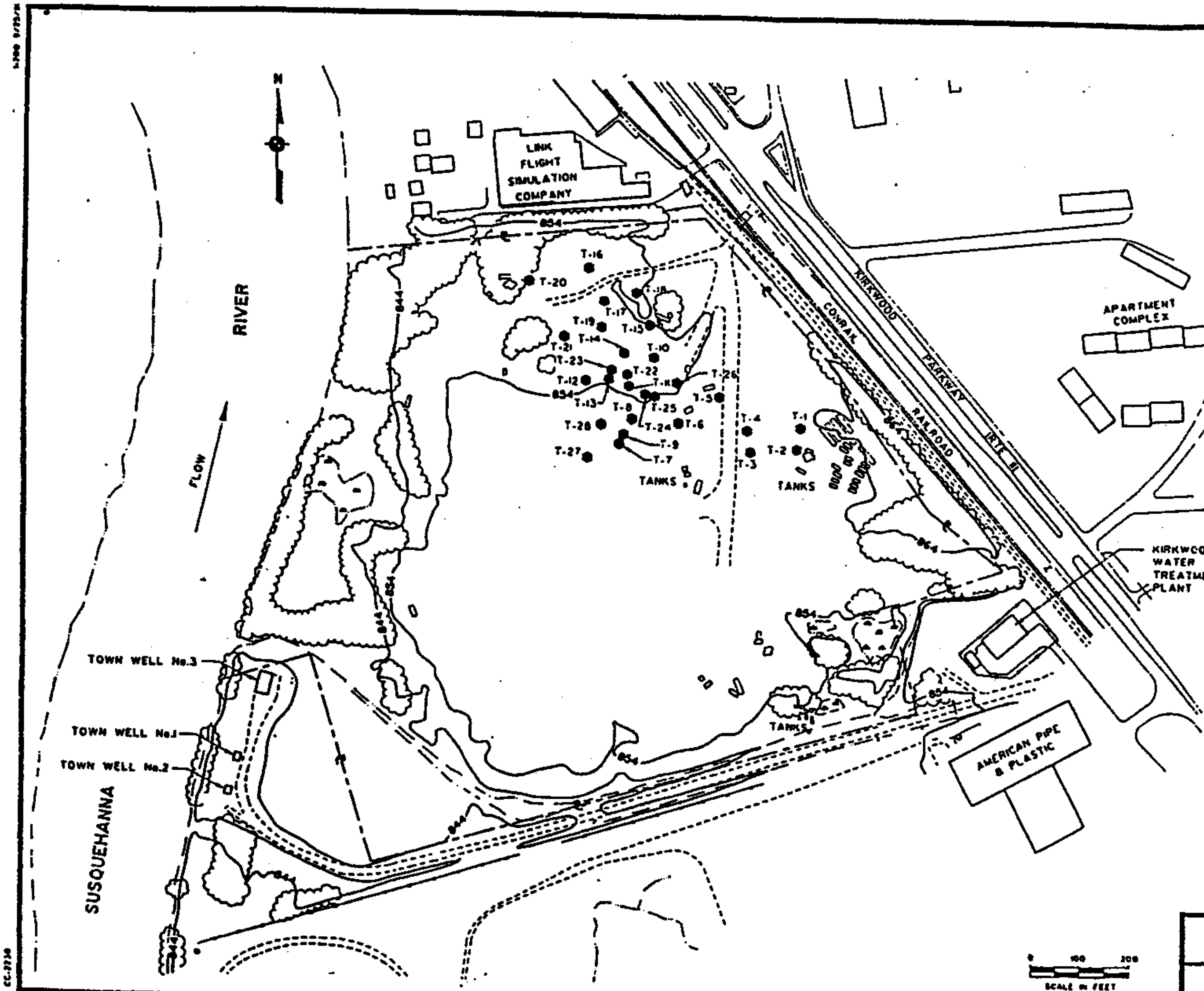
All monitoring wells were also sampled for semi-VOCs, pesticides, PCBs and metals. Metals and phenol were the only compounds detected, but not at levels of concern.

<u>Surface Water</u>: Sediments and surface water samples were collected from the drainage stream south of the site and the Susquehanna River. Based on these results, the site is not causing significant surface water contamination, nor were the sediments of the river or drainage ditch found to be significantly contaminated. Although VOCs from the site are migrating to the Susquehanna River these contaminants are not detectable due to the high degree of dilution and relatively low groundwater flow rate, but nonetheless ultimately discharging to the river/aquifer.

* * * * * *

SECTION 4: ENFORCEMENT STATUS

The current operator of the landfill is still Gorick Construction Company, Inc. Ownership of the property is under Stephanie and Alfred Gorick. In 1988, Gorick was issued a cease-and-desist order to stop all activities at the landfill. Dumping was stopped but the owner retained the right to enter the site to remove metal and other objects from the landfill. In February 1989 the site was classified as a Class 2 inactive hazardous waste site. Gorick the NYSDEC, therefore, in May 1989, the site was referred to the NYSDEC for remediation



NOTES:

1. MAPPING BASE IS FROM AERIAL PHOTOGRAPHY DATED APRIL 1, 1990 AND COMPILED BY LOCKWOOD MAPPING, ROCHESTER, NEW YORK.

2. PROPERTY LINES SHOWN ARE APPROXIMATE, FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR CONVEYANCE OF REAL PROPERTY. PROPERTY LINES WERE INTERPOLATED FROM A TAX MAP PREPARED BY BROOME COUNTY, NEW YORK.

TEST TRENCH LOCATIONS

URS CONSULTANTS, INC.

FIGURE 3

under Superfunds, and in November 1989, URS Consultants, Inc. was awarded the contract to perform the RI/FS for the site. URS was also awarded a separate contract for the design and installation of an IRM.

The State will seek to recover costs it has incurred in the work to date and implementation of the selected remedy.

* * * * * *

SECTION 5: GOALS FOR THE REMEDIAL ACTION

Goals for the remedial program are established under the broad guidelines of meeting all standards, criteria, and guidance (SCGs) and protecting human health and the environment. The major objective of the Feasibility Study (FS) was the reduction of elevated concentrations of contaminants in the aquifer and the abatement and reduction of contaminated groundwater entering the Susquehanna River. The contaminants of primary concern are VOCs, primarily trichloroethylene (TCE) and 1,2-Dichloroethene (DCE).

The carcinogenic risk posed by human ingestion of <u>untreated</u> contaminated groundwater is considered significant. The contaminants that are almost entirely responsible for the high carcinogenic risk are TCE and 1,2-DCE. Therefore, the primary remedial action objectives for the Gorick C&D Landfill site are as follows:

- Reduce TCE and DCE concentrations in the groundwater utilized to acceptable levels (Part 5 Drinking Water Standards).

- Reduce migration of groundwater contaminated with TCE and DCE from the site into the Susquehanna River and/or the aquifer beneath it to below applicable standards and criteria.

* * * * * *

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

For each remedial action objective identified for the Gorick site a general response action was identified. Available remedial technologies were then reviewed and applicable technologies were selected for each general response action. Corresponding processes options were then listed for each remedial technology. A summary of this technology screening process is presented in appendix 2, Table 9-1.

The technologies or process options were screened to eliminate those technologies that are not technically implementable at the site. Vertical barriers, such as slurry walls, to reduce off site migration of contaminants were not given further consideration since construction of a vertical barrier through the sand and gravel aquifer to the required depths beneath the site would be very difficult and is considered not feasible.

Construction of a Part 360 or Modified Part 360 cap would be greatly complicated at this site by the need to construct a portion of the cap on the 100-year floodplain of the Susquehanna River. In addition to the difficulty complying with the regulatory requirements for such construction, the question of cap effectiveness arises, since, during a flood event, groundwater would be expected to rise beneath the cap, carrying off contaminants by saturating the fill. In short, a cap at this site is likely to do little to stop the contamination of groundwater by contaminated soil or fill. Despite these probable difficulties, the capping option was included in one of the alternatives for purposes of comparison and due to the greater protection it would provide.

The technologies surviving the screening were developed into remedial action alternatives, which were then subject to a detailed evaluation in order to determine the most appropriate and cost-effective remedy for the site. The alternatives involve no-action, groundwater collection/treatment, or containment. All alternatives include monitoring of groundwater and continued operation of the air strippers on the municipal wells. The four alternatives evaluated are described below. Figures depicting alternatives 2-4 are in Appendix 1.

1. <u>Alternative 1 - No Further Action (Existing Remedial Measures in Place)</u>: This alternative provides a baseline against which other remedial action alternatives may be assessed. This alternative would not address the source of the groundwater contamination itself. The further spread of groundwater contamination would not be controlled. In this alternative, monitoring of groundwater and the operation and maintenance of the air stripper being carried out by the Town of Kirkwood will be continued.

2. <u>Alternative 2 - Groundwater Pump and Treatment</u>: This alternative will include installation of groundwater extraction wells and pumps along the northwest side of the landfill. These pumps will be placed and operated so as to intercept contaminated groundwater flowing from the landfill before it reaches the river or aquifer. Extracted water will be treated on site then discharged to the river.

3. <u>Alternative 3 - Groundwater Pump and Treat with Reinjection for Soil Flushing</u>: This alternative includes the same groundwater extraction and treatment features as Alternative 2. Instead of being discharged to the river, however, the treated groundwater will be reintroduced to the landfill, to "wash" contaminants from the fill and attack the problem at its source. Reintroduction will be achieved by the construction of low berms and percolation trenches, and subsequent flooding of the bermed area with treated groundwater for percolation into the fill and ultimately re-extraction and re-treatment. The bermed area will be constructed outside the boundaries of the 100-year floodplain.

4. <u>Alternative 4 - Landfill Cap, Groundwater Pump and Treat</u>: This alternative will include a 6NYCRR Modified Part 360 cap over the entire landfill area, and groundwater extraction and full treatment. Discharge will be to the river. The Modified Part 360 cap will significantly reduce infiltration of water through the waste/fill to the groundwater but will not significantly reduce the quantity of water to be treated. The groundwater collection wells will be placed downgradient of the site to intercept the contaminated groundwater flowing towards the Susquehanna River, into the aquifer, and towards the Town wells.

To determine the best alternatives for the site a weighted matrix scoring system in accordance with the NYSDEC technical and administrative guidance memorandum (TAGM) No. 4030 is used to assign numerical values to each alternatives capacity to satisfy the evaluation criteria (TAGM scoring Tables are in Appendix 2). The highest scoring alternative is Alternative 3. The results of the comparison of the four alternatives is as follows:

The first two evaluation criteria are termed threshold criteria, indicating that each alternative evaluated at this stage must satisfy the criteria.

1. <u>Overall Protection to Human Health and the Environment</u>: This criterion is an overall assessment of protection based on a composite of all other evaluation criteria. Because all four alternatives involve the continued operation of the IRM air stripper, all four alternatives are protective of human health. The groundwater contamination under the site does not present an exposure pathway to the human population. Alternative 4 provides added protection because it also involves capping the site which would prevent contact with surface soils. However, health impacts due to contact with surface soils will be mitigated by proper landfill closure pursuant to 6NYCRR Part 360. All alternatives are equally protective to the environment.

2. <u>Compliance with Applicable Standards, Criteria, and Guidance (SCGs)</u>: Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. Each alternative will meet New York State Drinking water standards, due to operation of the stripper. All alternatives except no action would have the goal of meeting groundwater standards on site, however, the ability of a pump and treat system to attain this goal is questionable. Each alternative is expected to meet all other SGCs, as based on the current situation no other standards are violated.

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

3. <u>Short-term Impacts and Effectiveness</u>: The adverse impacts to the community, remedial workers, and the environment resulting from the implementation of each remedy are compared. Also, the estimated time necessary to implement each remedy is considered in comparing the time periods associated with the adverse impacts.

   The highest scoring alternative in this category is the no further action alternative. All other alternatives involve on-site treatment which involves excavation and treatment which could release vapors and odors. Although these releases could probably be easily controlled, compared to no further action, alternatives 2, 3 and 4 are less effective in the short term.

4. <u>Long-term Effectiveness and Permanence</u>: If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: a) the magnitude of the remaining risks, b) the adequacy of the controls intended to limit the risk, and c) the reliability of these controls.

All alternatives are equally effective at meeting the second remediation goal of reducing migration of contaminants to the river/aquifer to below standards, since standards are not being exceeded in the river/aquifer. The treatment Alternatives 2, 3 and 4 are more effective than no action at attempting to achieve standards under and down gradient of the landfill, however, because there are no existing exposure points all alternatives are equally protective of human health and environment in the long-term. None of the remedies are considered permanent.

5. Reduction of Toxicity, Mobility or Volume: In the remedy selection process, preference is given to alter-natives that permanently reduce the toxicity, mobility or volume of the wastes at the site.

   The IRM which will be in place under any alternative, including no further action will provide a baseline level of reduction in toxicity, mobility, and the volume of contaminants. The treatment alternatives 2, 3 and 4 provide some additional reduction in toxicity, mobility and volume of contaminants.

6. Implementability: This criterion compares the technical and administrative difficulties in implementing each alternative.

   All alternatives can be implemented with relative ease, however, the no further action alternative is the most easily implementable.

7. Cost: The total cost for each alternative are compare on a present-worth basis. The present worth costs include capital costs and operational maintenance (O&M) costs. Initial estimates for the range of costs for the on-site treatment alternatives are from $1.7 million to $22 million. The no further action alternative is the lowest cost alternative at $0.6 million for long-term monitoring. Table 1 presents a comparative summary of the costs for each alternative. Detailed cost estimates for the four alternatives evaluated are presented in the Feasibility Study Report.

* * * * * *

SECTION 7: SUMMARY OF THE GOVERNMENT'S DECISION

The preferred alternative is Alternative 1, No Further Action. This alternative involves continued operation of the existing Interim Remedial Measure (IRM) air stripper without the addition of further remedial measures. Groundwater monitoring will continue indefinitely to track contaminants in the groundwater under the site. If at any time during monitoring the groundwater contamination is found to have significantly increased or migration resulted in new exposures the remedy will be reevaluated. Since this remedy results in hazardous wastes remaining on site above established criteria and/or health based levels, this remedy will also be subject to a minimum five year review of its effectiveness at meeting the remedial goals. The review is conducted to evaluate whether the implemented remedy continues to provide adequate protection of human health and the environment. No additional conceptual design is required to define this alternative or to prepare for any future action. The present worth cost of a 30 year groundwater monitoring program is estimated to be $610,000.

This recommendation does not take into account the surface soil contamination at this site. This soil contamination is not within the scope of the Feasibility Study, and will be addressed upon landfill closure pursuant to Part 360.

Because of the operation of the existing IRM stripper to treat groundwater, Alternative 1, no further action, addresses the only documented exposure point to human health. The only additional benefits for the costs associated with Alternatives 2 through 4 is to speed up the treatment of the groundwater under the site and to prevent, to a varying degree, contamination from going into the river. However, significant contaminant levels have not been measured leaving the site, only immediately adjacent to the landfill. Therefore, the no further action alternative meets the remedial goal of reducing the migration of contaminants off site to below standards and the treatment of contaminated groundwater to below drinking water standards.

These facts, in addition to the relatively higher cost associated with the implementation of the higher scoring alternatives and their relatively minor impact on the contaminated groundwater remediation, make Alternative 1 the recommended alternative.

This remedy will require continued restrictions on the future use of this site and the groundwater underneath the site. Deed restrictions, or other appropriate measures shall be instituted to prohibit future use as residential and to inform future owners of the conditions.

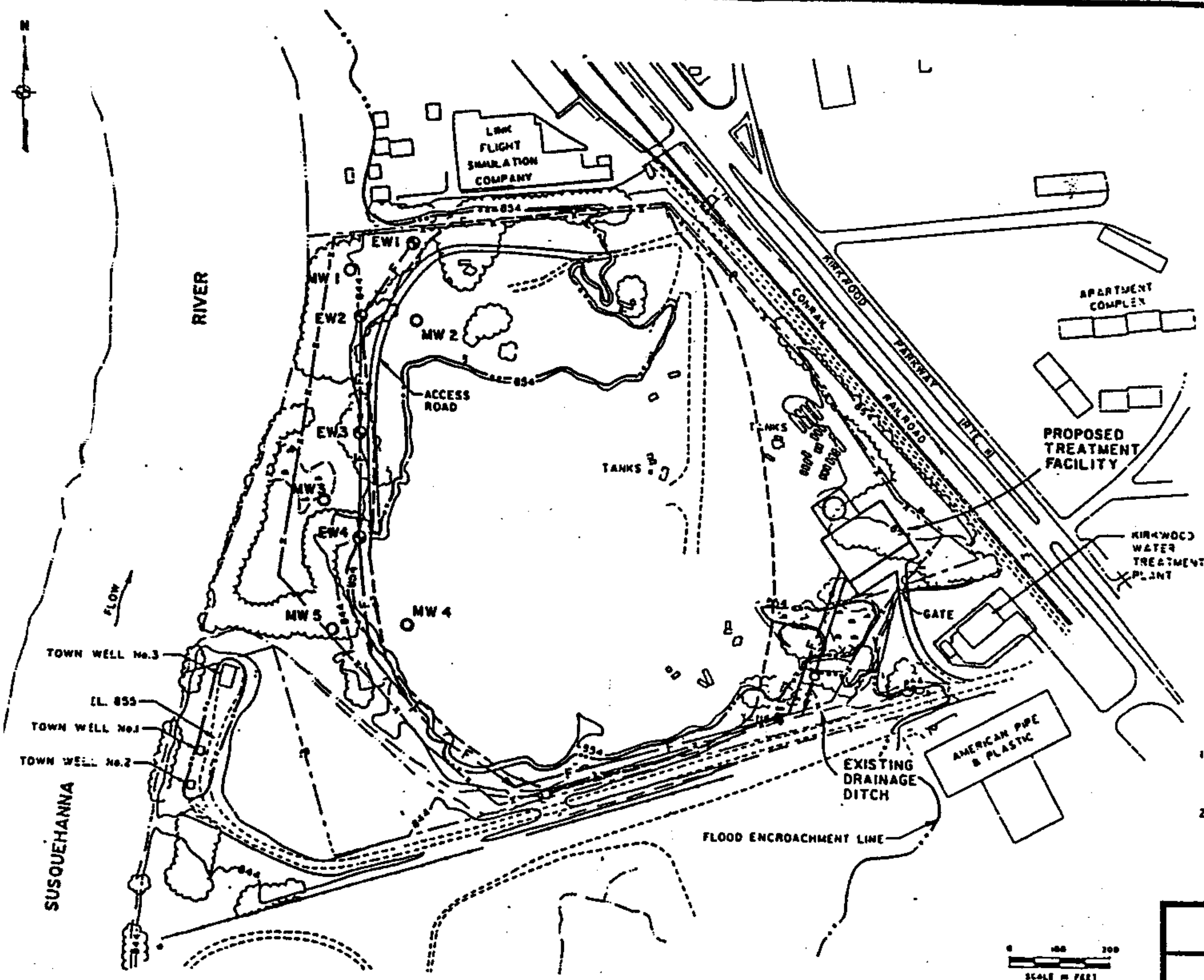
TABLE 1

Gorick C&D Landfill
Cost Estimates for Remedial Alternatives

ITEM	ALT. 1	ALT. 2	ALT. 3	ALT. 4
CAPITAL COSTS				
1. Modified Part 360 Cap				5,970,000
2. Groundwater Collection and Transfer		80,000	80,000	130,000
3. Groundwater Treatment		580,000	900,000	4,000,000
4. Groundwater Monitoring		35,000	35,000	35,000
5. Aquifer Recharge			470,000	
6. Fencing		120,000	120,000	120,000
TOTAL CAPITAL COST		$815,000	$1,605,000	$10,255,000
OPERATIONS AND MAINTENANCE COSTS				
1. Modified Part 360 Cap				$72,500
2. Groundwater Collection and Transfer		$4,000	$4,000	$6,500
2. Groundwater Treatment		$52,000	$70,000	$1,124,000
3. Longterm Monitoring	$65,200	$43,400	$43,400	$43,400
TOTAL ANNUAL O & M COST	$65,200	$99,400	$117,400	$1,246,400
PRESENT WORTH OF O & M COST	$616,000	$939,000	$1,109,000	$11,771,000
PRESENT WORTH OF TOTAL COST (CAPITAL PLUS O & M)	$616,000	$1,754,000	$2,714,000	$22,026,000

NOTE: Present worth analysis is based on a 30-year performance period at 10% interest per year

APPENDIX 1



PROPOSED DESIGN FEATURES LEGEND

- EXTRACTION WELLS
- NEW MONITORING WELLS
- LIMIT OF FILL
- * APPROXIMATE 100-YEAR FLOOD ENCROACHMENT LINE (ELEV. 853.5±)
- OUTFALL
- FORCEMAIN
- CHAIN LINK FENCE

* SOURCE:
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (TOWN OF KIRKWOOD, BROOME COUNTY: FLOOD BOUNDARY AND FLOODWAY MAP - 6/1/77)

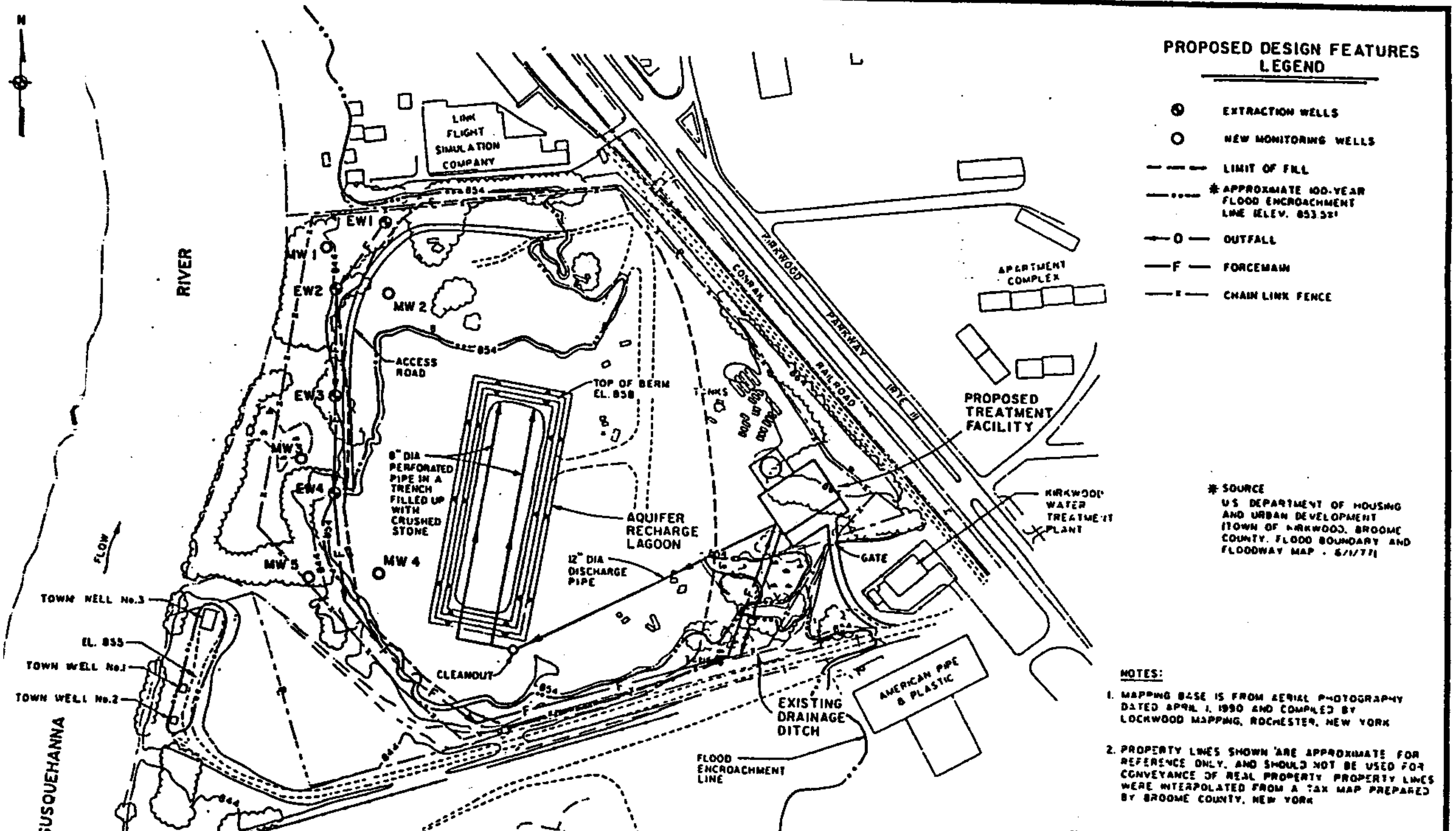
NOTES:

1. MAPPING BASE IS FROM AERIAL PHOTOGRAPHY DATED APRIL 1, 1990 AND COMPILED BY LOCKWOOD MAPPING, ROCHESTER, NEW YORK.
2. PROPERTY LINES SHOWN ARE APPROXIMATE, FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR CONVEYANCE OF REAL PROPERTY. PROPERTY LINES WERE INTERPOLATED FROM A TAX MAP PREPARED BY BROOME COUNTY, NEW YORK.

ALTERNATIVE 2

URS CONSULTANTS, INC.

FIGURE 10-2



ALTERNATIVE 3

URS CONSULTANTS, INC

FIGURE 10-3

APPENDIX 2

TABLE 9-1

TECHNOLOGY SCREENING SUMMARY

ENVIRONMENTAL MEDIA	REMEDIAL ACTION OBJECTIVES	GENERAL RESPONSE ACTIONS	REMEDIAL TECHNOLOGIES	PROCESS OPTIONS
Groundwater	Reduction of Contaminants in Groundwater and Prevention of their Migration to the River / Aquifer	No Further Action	No Further Action	No Further Action
		Institutional Action	Institutional Action	Deed Restrictions
				Long-term Monitoring
		Containment	Capping	6 NYCRR Part 360 Cap
				6 NYCRR Modified Part 360 Cap
			Vertical Barriers	Slurry Walls/Sheet Pile Walls
				Partial Slurry Walls/Sheet Pile Wals
		Collection and Treatment	Extraction	Extraction Wells
				Interceptor Trenches
			Onsite Treatment with Onsite Discharge	Specific Process Options,with Discharge to River
				Specific Process Options,with Recharging into Aquifer
			Offsite Treatment with Offsite Discharge	Specific Process Options,with Discharge to POTW
				Discharge Contracted to Commercial Facility
Surface Soils	Prevention of Human Contact	No Action	No Action	No Action
		Institutional Action	Deed Restrictions	6 NYCRR Part 360 Cap
		Containment	Capping	6 NYCRR Modified Part 360 Cap

TABLE31.WK1/DMc

TABLE 10-1

WEIGHTED-MATRIX SCORING SYSTEM FOR REMEDIAL ALTERNATIVES

ALTERNATIVE 1:	No Action (Present Situation)
ALTERNATIVE 2:	Groundwater Treatment Extraction & Partial Treatment
ALTERNATIVE 3:	Groundwater Extraction, Partial Treatment and Aquifer Recharge
ALTERNATIVE 4:	6 NYCRR Part 360 Cap (Modified) & Full Treatment

A. SHORT-TERM EFFECTIVENESS (Weight = 10)

FACTOR	BASIS FOR EVALUATION	WEIGHT	ALTERNATIVE			
			1	2	3	4
1. *Protection of community during remedial actions*	- Are there significant short-term risks to the community that must be addressed? (If no, go to factor 2).	Yes - 0 No - 4	4	4	0	0
	- Can the risk be easily controlled?	Yes - 1 No - 0	0	0	1	1
	- Does the mitigative effort to control risk impact the community lifestyle?	Yes - 0 No - 2	0	0	2	2
2. Environmental Impacts	- Are there significant short-term risks to the environment that must be addressed? (If no, go to factor 3)	Yes - 0 No - 4	4	4	0	0
	- Are the available mitigative measures reliable to minimize potential impacts?	Yes - 3 No - 0	0	0	3	3
3. Time to implement the remedy	- What is the required time to implement the remedy?	<2 yr - 1 >2 yr - 0	1	0	0	0
	- Required duration of the mitigative effort to control short-term risk.	<2 yr - 1 >2 yr - 0	1	1	1	1
SUBTOTAL (MAXIMUM = 10)			10	9	7	7

TABLE 10-1

WEIGHTED-MATRIX SCORING SYSTEM FOR REMEDIAL ALTERNATIVES

B. LONG-TERM EFFECTIVENESS AND PERMANENCE (Weight = 15)

FACTOR	BASIS FOR EVALUATION	WEIGHT	ALTERNATIVE			
			1	2	3	4
1. Permanence of the remedial alternative	– Will the remedy be classified as permanent in accordance with Section 2.1(a),(b) or (c) of the NYSDEC TAGM for the "Selection of Remedial Actions at Inactive Hazardous Waste Sites", Sept. 13, 1989? (if yes, go to factor 3)	Yes – 5 No – 0	0	0	0	0
2. Lifetime of remedial actions	– Expected lifetime or duration of effectiveness of the remedy	25–30 yr – 4 20–25 yr – 3 15–20 yr – 2 <15 yr – 0	0	4	4	4
3. Quantity and nature of waste or residual left at the site after remediation	i. Quantity of untreated hazardous waste left at the site	None – 3 <25% – 2 25–50% – 1 >50% – 0	0	0	1	0
	ii. Is there any treated residual left at the site? (if no, go to factor 4)	Yes – 0 No – 2	2	2	2	2
	iii. Is the treated residual toxic?	Yes – 0 No – 1	–	–	–	–
	iv. Is the treated residual mobile?	Yes – 0 No – 1	–	–	–	–
4. Adequacy and reliability of controls	i. Operation and maintenance required for a period of:	<5 yr – 1 >5 yr – 0	0	0	0	0
	ii. Are environmental controls required as a part of the remedy to handle potential problems? (if no, go to "iv")	Yes – 0 No – 2	0	0	0	0
	iii. Degree of confidence that controls can adequately handle potential problems	Moderate to very confident – 1 Somewhat to not confident – 0	1	1	1	1
	iv. Relative degree of long-term monitoring required (compare with other alternatives)	Minimum – 2 Moderate – 1 Extensive – 0	1	1	1	1
SUBTOTAL (MAXIMUM = 15)			4	8	9	8

TABLE 10-1

WEIGHTED-MATRIX SCORING SYSTEM FOR REMEDIAL ALTERNATIVES

C. REDUCTION OF TOXICITY, MOBILITY OR VOLUME (Weight = 15)

FACTOR	BASIS FOR EVALUATION	WEIGHT	ALTERNATIVE			
			1	2	3	4
1. Volume of hazardous waste reduced (reduction in volume or toxicity)	i. Quantity of hazardous waste destroyed or treated	100% - 10 80-99% - 8 60-80% - 6 40-60% - 4 20-40% - 2 <20% - 0	0	2	4	2
	ii. Are there any concentrated hazardous wastes produced as a result of (i)? (if no, go to factor 2)	Yes - 0 No - 2	2	2	2	2
(If subtotal = 12, go to factor 3)	iii. How is the concentrated hazardous waste stream disposed?	On-site land disposal - 0 Off-site secure land disposal - 1 On-site or off-site destruction or treatment - 2	-	-	-	-
2. Reduction in mobility of hazardous waste	i. Method of Reduction - Reduced mobility by containment - Reduced mobility by alternative treatment technology	 1 3	3	3	3	3
	ii. Quantity of wastes immobilized	<100% - 2 >60% - 1 <60% - 0	0	0	0	0
3. Irreversibility of the destruction or treatment of hazardous waste	- Completely irreversible - Irreversible for most of the hazardous waste constituents - Irreversible for only some of the hazardous waste constituents - Reversible for most of the hazardous waste constituents	3 2 1 0	2	2	2	3
SUBTOTAL (MAXIMUM = 15)			7	9	11	10

TABLE 10-1
WEIGHTED-MATRIX SCORING SYSTEM FOR REMEDIAL ALTERNATIVES

D. IMPLEMENTABILITY (Weight = 15)

FACTOR	BASIS FOR EVALUATION	WEIGHT	ALTERNATIVE 1	2	3	4
1. Technical Feasibility						
a. Ability to construct technology	i. Not difficult to construct. No uncertainties in construction ii. Somewhat difficult to construct. No uncertainties in construction iii. Very difficult to construct and/or significant uncertainties in construction	3 2 1	3	2	2	2
b. Reliability of technology	i. Very reliable in meeting the specified process efficiencies or performance goals ii. Somewhat reliable in meeting the specified process efficiencies or performance goals	3 2	3	3	3	3
c. Schedule of delays due to technical problems	i. Unlikely ii. Somewhat likely	2 1	2	1	1	1
d. Need of undertaking additional remedial action, if necessary	i. No future remedial action may be anticipated ii. Some future remedial actions may be necessary	2 1	1	2	2	2
2. Administrative Feasibility a. Coordination with other agencies	i. Minimal coordination is required ii. Required coordination is normal iii. Extensive coordination is required	2 1 0	2	1	1	1
3. Availability of Services and Materials						
a. Availability of prospective technologies	i. Are technologies under consideration generally commercially available for the site-specific application?	Yes – 1 No – 0	1	1	1	1
	ii. Will more than one vendor be available to provide a competitive bid?	Yes – 1 No – 0	1	1	1	1
b. Availability of necessary equipment and specialists	i. Additional equipment and specialists may be available without significant delay	Yes – 1 No – 0	1	1	1	1
SUBTOTAL (MAXIMUM = 15)			14	12	12	12

TABLE 10-1

WEIGHTED-MATRIX SCORING SYSTEM FOR REMEDIAL ALTERNATIVES

E. COMPLIANCE WITH ARARS (Weight = 10)

FACTOR	BASIS FOR EVALUATION	WEIGHT	ALTERNATIVE			
			1	2	3	4
1. Compliance with chemical-specific ARARs	Meets chemical-specific ARARs	Yes - 2.5 No - 0	0	0	2.5	2.5
2. Compliance with action-specific ARARs	Meets action-specific ARARs	Yes - 2.5 No - 0	2.5	2.5	2.5	2.5
3. Compliance with location-specific ARARs	Meets location-specific ARARs	Yes - 2.5 No - 0	2.5	2.5	2.5	2.5
4. Compliance with appropriate criteria, advisories and guidelines	The alternative meets all relevant and appropriate Federal and State guidelines that are not promulgated	Yes - 2.5 No - 0	0	0	0	0
SUBTOTAL (MAXIMUM = 10)			5.0	5.0	7.5	7.5

F. PROTECTION OF HUMAN HEALTH & THE ENVIRONMENT (Weight = 20)

FACTOR	BASIS FOR EVALUATION	WEIGHT	ALTERNATIVE			
			1	2	3	4
1. Use of site after remediation	Unrestricted use of the land and water (if yes, go to end of table)	Yes - 20 No - 0	0	0	0	0
2. Human health and the environment exposure after the remediation	i. Is the exposure to contaminants via air route acceptable?	Yes - 3 No - 0	3	3	3	3
	ii. Is the exposure to contaminants via groundwater/surface water acceptable?	Yes - 4 No - 0	0	4	4	4
	iii. Is the exposure to contaminants via sediments/ soil acceptable?	Yes - 3 No - 0	0	0	0	3
3. Magnitude of residual public health risks after the remediation	i. Health risk ii. Health risk	<1 in 1,000,000 - 5 <1 in 100,000 - 2	2	2	2	5
4. Magnitude of residual environmental risks after the remediation	i. Less than acceptable ii. Slightly greater than acceptable iii. Significant risk still exists	5 3 0	3	3	3	5
SUBTOTAL (MAXIMUM = 20)			8	12	12	20

G. COST (Weight = 15)

FACTOR	BASIS FOR EVALUATION	WEIGHT	ALTERNATIVE			
			1	2	3	4
Overall (MAXIMUM = 15)	Scored on a linear scale with 0 and 15 assigned to the highest and the least cost alternatives respectively.	Lowest - 15 Others - Relative	15	14	13	0

TABLE 10-1
WEIGHTED-MATRIX SCORING SYSTEM FOR REMEDIAL ALTERNATIVES

SUMMARY

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4
A. SHORT-TERM EFFECTIVENESS (Weight = 10)	10	9	7	7
B. LONG-TERM EFFECTIVENESS AND PERMANENCE (Weight = 15)	4	8	9	8
C. REDUCTION OF TOXICITY, MOBILITY OR VOLUME (Weight = 15)	7	9	11	10
D. IMPLEMENTABILITY (Weight = 15)	14	12	12	12
E. COMPLIANCE WITH ARARS (Weight = 10)	5	5	7.5	7.5
F. PROTECTION OF HUMAN HEALTH & THE ENVIRONMENT (Weight = 20)	8	12	12	20
G. COST (Weight = 15)	15	14	13	0
TOTAL SCORE (Maximum = 100)	63	69	71.5	64.5

SCORING.WK1 10-Jan-92

APPENDIX 3

TABLE 4.7: GROUNDWATER ANALYTICAL RESULTS
PHASE II

SAMPLE-ID		MW-14I	MW-14D	MW-31	MW-32	MW-33	MW-34	MW-35	MW-36	PW-1A	TP3-1
COLLECTION DATE		6/28/91	6/28/91	6/26/91	6/26/91	6/26/91	6/26/91	6/27/91	6/27/91	6/27/91	6/10/91
PARAMETER	TYPE										
Chloromethane	VOC										
Bromomethane	VOC										
Vinyl Chloride	VOC								6 J		
Chloroethane	VOC										
Methylene Chloride	VOC										
Acetone	VOC		97						R	R	R
Carbon Disulfide	VOC										
1,1-Dichloroethene	VOC										
1,1-Dichloroethane	VOC										
1,2-Dichloroethene (Total)	VOC				14	5		9	130	3 J	
Chloroform	VOC										
1,2-Dichloroethane	VOC										
2-Butanone	VOC										
1,1,1-Trichloroethane	VOC										
Carbon Tetrachloride	VOC										
Vinyl Acetate	VOC										
Bromodichloromethane	VOC										
1,2-Dichloropropane	VOC										
cis-1,3-Dichloropropene	VOC										
Trichloroethene	VOC				24			14	310	4 J	
Dibromochloromethane	VOC									3 J	
1,1,2-Trichloroethane	VOC										
Benzene	VOC		2 J								
trans-1,3-Dichloropropene	VOC										
Bromoform	VOC									2 J	
4-Methyl-2-Pentanone	VOC										
2-Hexanone	VOC										
Tetrachloroethene	VOC										
1,1,2,2-Tetrachloroethane	VOC										
Toluene	VOC										
Chlorobenzene	VOC										
Ethylbenzene	VOC										
Styrene	VOC										
Total Xylenes	VOC										
Total Phenols (mg/l)	MCP	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

All results in μg/l (ppb), unless otherwise noted.
Only detected results are reported.
NA – Not Analyzed

J – Indicates the result is less than sample quantitation limit but greater than zero.
R – Analyte rejected due to blank contamination.

TABLE 4.8: GROUNDWATER ANALYTICAL RESULTS COMPARISON
PHASE I AND II

SAMPLE-ID		MW-1S		MW-2S		MW-3S		MW-4S		MW-4I		MW-5S		MW-5I	
COLLECTION DATE		12/7/90	6/28/91	12/5/90	6/27/91	12/5/90	6/26/91	12/4/90	6/27/91	12/4/90	6/27/91	12/6/90	6/27/91	12/6/90	6/27/91
PARAMETER	TYPE														
Chloromethane	VOC														
Bromomethane	VOC														
Vinyl Chloride	VOC														
Chloroethane	VOC														
Methylene Chloride	VOC	R						R							
Acetone	VOC	R	44			R				R		R	R	R	R
Carbon Disulfide	VOC													R	
1,1-Dichloroethene	VOC														
1,1-Dichloroethane	VOC													0.9 J	
1,2-Dichloroethene (Total)	VOC				3 J					22	66	5	7	64	49
Chloroform	VOC														
1,2-Dichloroethane	VOC														
2-Butanone	VOC														
1,1,1-Trichloroethane	VOC									1 J				6	5
Carbon Tetrachloride	VOC														
Vinyl Acetate	VOC														
Bromodichloromethane	VOC														
1,2-Dichloropropane	VOC														
cis-1,3-Dichloropropene	VOC														
Trichloroethene	VOC									29	150	7	9	110	95
Dibromochloromethane	VOC														
1,1,2-Trichloroethane	VOC														
Benzene	VOC									2 J					
trans-1,3-Dichloropropene	VOC														
Bromoform	VOC														
4-Methyl-2-Pentanone	VOC														
2-Hexanone	VOC														
Tetrachloroethene	VOC														
1,1,2,2-Tetrachloroethane	VOC														
Toluene	VOC				1 J					2 J					
Chlorobenzene	VOC														
Ethylbenzene	VOC														
Styrene	VOC														
Total Xylenes	VOC														
Total Phenols (mg/l)	MCP		NA		NA		NA	0.012		0.009			NA		NA

All results in µg/l (ppb),
unless otherwise noted.
Only detected results are reported.
R - Analyte rejected due to
blank contamination.
NA - Not Analyzed

J - Indicates the result is less than sample quantitation limit
but greater than zero.

TABLE 4.8: GROUNDWATER ANALYTICAL RESULTS COMPARISON PHASE I AND II

SAMPLE-ID		MW-5D		MW-6S		MW-6I		MW-6D		MW-7S		MW-8S		MW-9S	
COLLECTION DATE		12/6/90	6/27/91	12/7/90	6/27/91	12/7/90	6/27/91	*	6/27/91	12/6/90	6/26/91	12/6/90	6/28/91	12/6/90	6/28/91
PARAMETER	TYPE														
Chloromethane	VOC														
Bromomethane	VOC														
Vinyl Chloride	VOC								7 J	R		R		R	
Chloroethane	VOC									R		R		R	
Methylene Chloride	VOC														
Acetone	VOC	R	R	R	R	R	R		R						
Carbon Disulfide	VOC	R													
1,1-Dichloroethene	VOC					3 J	4 J					1 J			
1,1-Dichloroethane	VOC				2 J	3 J	6 J								
1,2-Dichloroethene (Total)	VOC	29	10	6	31	78	260		1 J	8		58	70	14	110
Chloroform	VOC														
1,2-Dichloroethane	VOC														
2-Butanone	VOC														
1,1,1-Trichloroethane	VOC	3 J		1 J	13	31	57		33					2 J	
Carbon Tetrachloride	VOC														
Vinyl Acetate	VOC														
Bromodichloromethane	VOC														
1,2-Dichloropropane	VOC														
cis-1,3-Dichloropropene	VOC														
Trichloroethene	VOC	49	23	9	57	140	78			2 J		130	130	33	230
Dibromochloromethane	VOC														
1,1,2-Trichloroethane	VOC														
Benzene	VOC						4 J		0.8 J						
trans-1,3-Dichloropropene	VOC														
Bromoform	VOC														
4-Methyl-2-Pentanone	VOC														
2-Hexanone	VOC														
Tetrachloroethene	VOC					2 J									
1,1,2,2-Tetrachloroethane	VOC														
Toluene	VOC						2 J								
Chlorobenzene	VOC														
Ethylbenzene	VOC														
Styrene	VOC														
Total Xylenes	VOC	2 J													
Total Phenols (mg/l)	MCP		NA		NA		NA		NA		NA		NA		NA

All results in μg/l (ppb), unless otherwise noted.
Only detected results are reported.
R - Analyte rejected due to blank contamination.
NA - Not Analyzed

J - Indicates the result is less than sample quantitation limit but greater than zero.

* - Well not installed until Phase II.

TABLE 4.8: GROUNDWATER ANALYTICAL RESULTS COMPARISON
PHASE I AND II

SAMPLE-ID		MW-10S		MW-11S		MW-11I		MW-12S		MW-12D		MW-14D		MW-14I	
COLLECTION DATE		12/6/90	6/28/91	*	6/28/91	*	6/28/91	*	7/11/91	*	7/11/91	*	6/28/91	*	6/28/91
PARAMETER	TYPE														
Chloromethane	VOC														
Bromomethane	VOC														
Vinyl Chloride	VOC	R													
Chloroethane	VOC	R													
Methylene Chloride	VOC														
Acetone	VOC														
Carbon Disulfide	VOC												97		
1,1-Dichloroethene	VOC														
1,1-Dichloroethane	VOC														
1,2-Dichloroethene (Total)	VOC														
Chloroform	VOC														
1,2-Dichloroethane	VOC														
2-Butanone	VOC														
1,1,1-Trichloroethane	VOC														
Carbon Tetrachloride	VOC														
Vinyl Acetate	VOC														
Bromodichloromethane	VOC														
1,2-Dichloropropane	VOC														
cis-1,3-Dichloropropene	VOC														
Trichloroethene	VOC														
Dibromochloromethane	VOC														
1,1,2-Trichloroethane	VOC														
Benzene	VOC														
trans-1,3-Dichloropropene	VOC												2 J		
Bromoform	VOC														
4-Methyl-2-Pentanone	VOC														
2-Hexanone	VOC														
Tetrachloroethene	VOC														
1,1,2,2-Tetrachloroethane	VOC														
Toluene	VOC														
Chlorobenzene	VOC														
Ethylbenzene	VOC														
Styrene	VOC														
Total Xylenes	VOC														
Total Phenols (mg/l)	MCP		NA		NA		NA		NA		NA		NA		NA

All results in μg/l (ppb), unless otherwise noted.
Only detected results are reported.
R - Analyte rejected due to blank contamination.
NA - Not Analyzed

J - Indicates the result is less than sample quantitation limit but greater than zero.

* - Well not installed until Phase II.

TABLE 4.8: GROUNDWATER ANALYTICAL RESULTS COMPARISON
PHASE I AND II

SAMPLE-ID		MW-31		MW-32		MW-33		MW-34		MW-35		MW-36		PW-1A		TP3-1
COLLECTION DATE		12/5/90	6/26/91	12/5/90	6/26/91	12/5/90	6/26/91	12/5/90	6/26/91	12/5/90	6/27/91	12/5/90	6/27/91	12/7/90	6/27/91	6/10/91
PARAMETER	TYPE															
Chloromethane	VOC															
Bromomethane	VOC															
Vinyl Chloride	VOC												6 J			
Chloroethane	VOC															
Methylene Chloride	VOC			R												
Acetone	VOC	R				R				R		R	R	R	R	R
Carbon Disulfide	VOC															
1,1-Dichloroethene	VOC															
1,1-Dichloroethane	VOC					0.8 J										
1,2-Dichloroethene (Total)	VOC	2 J		4 J	14	18	5			5	9	52	130	3 J	3 J	
Chloroform	VOC															
1,2-Dichloroethane	VOC															
2-Butanone	VOC															
1,1,1-Trichloroethane	VOC					3 J						2 J				
Carbon Tetrachloride	VOC															
Vinyl Acetate	VOC															
Bromodichloromethane	VOC															
1,2-Dichloropropane	VOC															
cis-1,3-Dichloropropene	VOC															
Trichloroethene	VOC	2 J		5	24	21				8	14	85	310	4 J	4 J	
Dibromochloromethane	VOC														3 J	
1,1,2-Trichloroethane	VOC															
Benzene	VOC															
trans-1,3-Dichloropropene	VOC															
Bromoform	VOC														2 J	
4-Methyl-2-Pentanone	VOC															
2-Hexanone	VOC															
Tetrachloroethene	VOC															
1,1,2,2-Tetrachloroethane	VOC															
Toluene	VOC	1 J										1 J				
Chlorobenzene	VOC															
Ethylbenzene	VOC															
Styrene	VOC															
Total Xylenes	VOC															
Total Phenols (mg/l)	MCP		NA		NA		NA		NA		NA		NA	NA	NA	NA

All results in $\mu g/l$ (ppb), unless otherwise noted.
Only detected results are reported.
R – Analyte rejected due to blank contamination.
NA – Not Analyzed

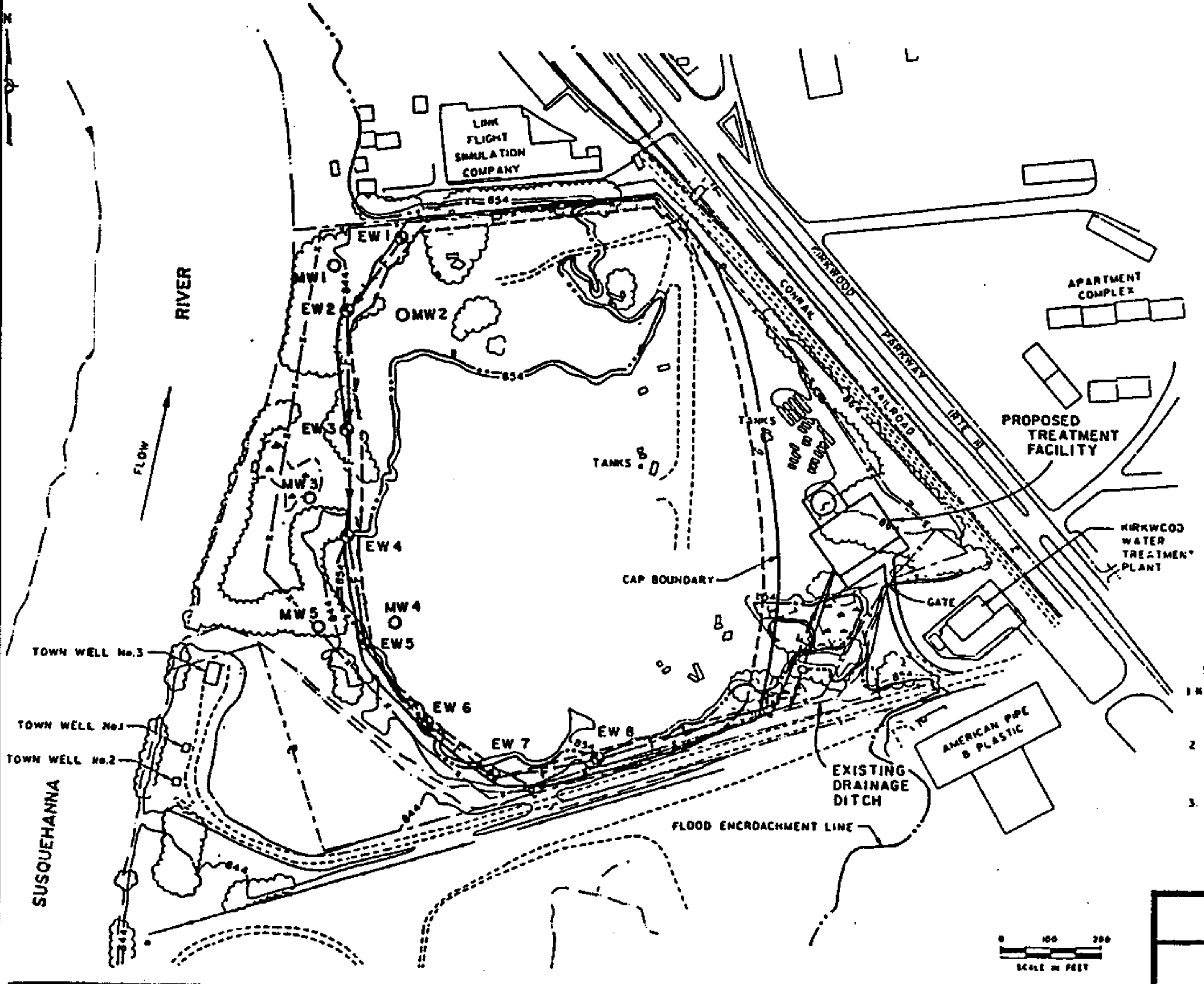
J – Indicates the result is less than sample quantitation limit but greater than zero.

TABLE 4.3: WASTE ANALYTICAL RESULTS
PHASE II

SAMPLE-ID		TP2-11-1	TP2-11-2	TP2-24-1
COLLECTION DATE		6/12/91	6/12/91	6/13/91
PARAMETER	TYPE		TCLP	
Chloromethane	voc		NA	
Bromomethane	voc		NA	
Vinyl Chloride	voc			
Chloroethane	voc		NA	
Methylene Chloride	voc	R	NA	R
Acetone	voc	R	NA	R
Carbon Disulfide	voc		NA	
1,1-Dichloroethene	voc			
1,1-Dichloroethane	voc		NA	
1,2-Dichloroethene (Total)	voc		NA	
Chloroform	voc			
1,2-Dichloroethane	voc			
2-Butanone	voc	R	R	
1,1,1-Trichloroethane	voc		NA	
Carbon Tetrachloride	voc			
Vinyl Acetate	voc		NA	
Bromodichloromethane	voc		NA	
1,2-Dichloropropane	voc		NA	
cis-1,3-Dichloropropene	voc		NA	
Trichloroethene	voc			
Dibromochloromethane	voc		NA	
1,1,2-Trichloroethane	voc		NA	
Benzene	voc	21000 J		
trans-1,3-Dichloropropene	voc		NA	
Bromoform	voc		NA	
4-Methyl-2-Pentanone	voc	990000 B	NA	
2-Hexanone	voc		NA	
Tetrachloroethene	voc	8800 J		
1,1,2,2-Tetrachloroethane	voc		NA	
Toluene	voc	550000	NA	1700000 B
Chlorobenzene	voc	34000 J		
Ethylbenzene	voc	58000	NA	970000
Styrene	voc		NA	
Total Xylenes	voc	870000	NA	4800000 B

All results in $\mu g/kg$ (ppb) except for TCLP in $\mu g/l$ (ppb).
Only detected results are reported.
B - Value is less than quantitation limit but greater than instrument detection limit.
J - Indicates the result is less than sample quantitation limit but greater than zero.
R - Analyte rejected due to blank contamination.

APPENDIX 4



PROPOSED DESIGN FEATURES LEGEND

- EXTRACTION WELLS
- WASTE FILL TO BE RELOCATED
- LIMIT OF FILL
- LIMIT OF CAP (6NYCRR PART 360 MODIFIED)
- OUTFALL
- FORCEMAIN
- NEW MONITORING WELLS
- * APPROXIMATE 100-YEAR FLOOD ENCROACHMENT LINE (ELEV. 853.5±)
- CHAIN LINK FENCE

NOTES

1. * SOURCE: US DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT (TOWN OF KIRKWOOD, BROOME COUNTY FLOOD BOUNDAR AND FLOODWAY MAP - 6/1/77)
2. MAPPING BASE IS FROM AERIAL PHOTOGRAPHY DATED APRIL 1, 1990 AND COMPILED BY LOCKWOOD MAPPING, ROCHESTER, NEW YORK.
3. PROPERTY LINES SHOWN ARE APPROXIMATE, FOR REFERENCE ONLY, AND SHOULD NOT BE USED FOR CONVEYANCE OF REAL PROPERTY. PROPERTY LINES WERE INTERPOLATED FROM A TAX MAP PREPARED BY BROOME COUNTY, NEW YORK.

ALTERNATIVE 4

URS CONSULTANTS, INC.

FIGURE 10-4