CRATWICK RIVERSIDE PARK 1991

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GRATWICK RIVERSIDE PARK

Site No. 9-32-060

RECORD of DECISION

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Section 1 - Site Location and Description

The Gratwick Riverside Park Site is a 53 acre piece of land located along the Niagara River in the City of North Tonawanda. Approximately half of the site is an active public park with a boat launch. The other half is a combination of an overgrown uneven area and a dog walk area. The park area is grassy with shallow depressions caused by differential settling. The shoreline area has eroded causing a drop off of 5-10 feet to the Niagara River (see attached Figure 1-1 for site location).

Section 2 - Site History

From historical aerial photographs it appears that landfilling in the area occurred between 1938 and 1968. Most of the area is underlain by a metallurgical slag layer. Above the slag is municipal/industrial waste. The area was used as a municipal landfill during the 1960's until it was closed in 1968. During this time the City of North Tonawanda operated the landfill. According to the Report of the Interagency Task Force (IATF) on Hazardous Waste (1979) the site, in addition to municipal waste, accepted industrial waste. The list of potentially responsible parties (PRPs) includes: Niagara Mohawk Power Corporation (owner), the City of North Tonawanda (operator), the Durez Division of Hooker Chemical, Bell Aerospace-Textron, Browning Ferris Industries and Booth Oil Company.

The landfill was closed in 1968 and the area was covered and seeded. It was reopened in 1969 by the City of North Tonawanda as a public park. In 1979 the City of North Tonawanda retained Recra Research, Inc., to install and sample five (5) groundwater monitoring wells at the site (one upgradient and four onsite). The wells are identified as MW-10 through MW-14 (see attached Figure 1-2). The groundwater collected from the onsite wells contained phenol concentrations as high as 63.1 mg/l and total halogenated organics (THO) concentrations as high as 1.1 mg/l. The analytical results for the upgradient well indicated that phenol and THO concentrations were below detection and below 0.00005 mg/l, respectively. The results of subsequent analyses of samples from two of the wells showed the presence of a number of organic compounds. Recra Research, Inc., concluded that the groundwater below the site was contaminated and that the hydraulic gradient was towards the Niagara River.

The Niagara County Health Department (NCHD) conducted site investigations, involving a site inspection and well sampling in 1981. Groundwater samples were analyzed for five metals, THO scan and phenol. The metal concentrations were very low (generally below detection); THO concentrations reached .035 mg/l and phenol, 17 mg/l. As a result of a site inspection, 33 drums exposed by erosion along the shoreline and containing fully cured phenolic resin were removed in 1982 by Niagara Mohawk. The locations are shown in Figure 1-2.

A monitoring well (identified as USGS-1, Figure 1-2) was installed onsite in early 1982 by the U.S. Geological Survey (USGS) as part of a joint NYSDEC, U.S. Environmental Protection Agency (USEPA), and USGS study of

waste disposal sites along the Niagara River. As part of this study the new well and four of the Recra wells were sampled in July 1982, and the samples analyzed for inorganic and organic constitutents. Several inorganic/organic constitutents (including iron, lead, mercury, phenol and tetrachloroethylene) in the groundwater obtained from onsite wells exceeded USEPA limits for drinking water and/or New York standards for maximum permissible concentrations in groundwater.

The USGS installed two additional wells (identified as USGS-SA-5 and SA-5A in Figure 1-2) in November 1982 to characterize the regional geology/hydrogeology/groundwater chemistry. A single groundwater sample was collected from USGS-SA-5 on November 13, 1982. Parameters which exceeded USEPA limits for drinking water or New York State limits for groundwater, as referenced in USEPA, 1985, included arsenic (.002 mg/l), cadmium (.02 mg/l), lead (.22 mg/l), and alpha-chlordane (.001 mg/l). Other organic priority pollutants which were detected included methylene chloride (.11 mg/l), toluene (.17 mg/l), and dibutylphthalate (.011 mg/l).

In July 1983, Roy F. Weston, Inc., performed a shoreline assessment for USEPA which included analysis of soil samples taken from along the river, and limited well sampling. High Total Organic Carbon (TOC) readings (to 80,000 ppm) at MW-14 (upgradient of site) led investigators to believe that most of the organic carbon contamination was coming from offsite. MW-13, however, showed onsite contamination both from volatiles and semi-volatiles, some of which were absent at MW-14. Soil samples were collected by Weston at seven points along the river, at one point near River Road (considered as background), and one residue sample at an exposed drum area. The shoreline samples, however, were collected in an area partially excavated in 1982 during the drum removal operations where clean backfill was added. These samples contained phenols (to 1.2 mg/kg) and no detectable PCBs. Levels of metals, with the exception of copper and lead, were measurable but generally low. (Lead was measured at a maximum concentration of 4,910 mg/kg and copper at 6,440 mg/kg each about and order of magnitude above the background level in S-7). Pesticide levels were less than 1 ppm with the exception of endosulfan at 1.24 mg/kg. Polynuclear aromatic hydrocarbon (PAH) concentrations to 1.24 mg/kg were found (fluoranthene). The Weston report concluded that the environmental impact of contaminants at the Gratwick Riverside Site upon the Niagara River "would be insignificant" (Weston, 1983).

Late in 1983, nine drums containing solid phenolic resin were discovered by NCHD near River Road, having "floated" to the surface. The drums were subsequently removed in 1983.

In September 1984, three borings were completed near River Road, just north of the Ward Road entrance, for a private party (by Pittsburgh Testing Laboratory). Analysis by Ecology and Environment, Inc., showed no volatiles, semi-volatiles, pesticides or PCBs in the two soil samples analyzed from the three borings. A number of HSL metals were detected, however, with lead levels being measured at 461 mg/kg.

In 1986 three freshly exposed drums were removed from the shoreline by Niagara Mohawk at the direction of NCHD. Analysis by Recra of the drummed

material showed it to be fully cured phenolic resin, non-hazardous by RCRA definition.

The most recent environmental sampling, prior to the Remedial Investigation, occured in October 1986. Twenty soil samples were taken by the NCHD (analysis by New York State Department of Health), and twenty by Niagara Mohawk (analysis by Recra Environmental). Niagara Mohawk (NiMo) obtained 10 individual samples along the shoreline, and 10 composite samples in zones at the south end of the park; NCHD obtained 13 individual samples just back from the shoreline, and 7 composite samples in zones in the middle and northern end of the park (Figure 1-3).

Few volatiles were found in the soil samples. A large number of semi-volatiles were found to be present across the site in the ppb and ppm range; however, many of the organic parameter results from NCHD are listed as "not confirmed" and possibly erroneous. Pesticides and PCBs were found in almost all samples (again, some NCHD samples are listed at "not confirmed"). Areas of highest concentrations (ppm range) are along the shoreline at locations 1 (endosulfan sulfate) and 13 (PCB-1242, PCB-1254) and in zone 32 (chlordane, PCB-1260). Metals appear to be present across the site ranging in concentration from not detected to 14,700 ppm (copper at shoreline location 11).

Section 3 - Current Status

During the Remedial Investigation (RI), initiated during the late summer of 1987, the site was both physically and chemically characterized. The site consists of approximately 13 feet of fill material underlain by 30 feet of lacustrine silt and clay/till lying on Camillus Shale. The fill material is very permeable with hydraulic conductivity (k) of $> 10^{-3}$ cm/s. The till acts as an aquitard to downward migration and has a k value of approximately 5×10^{-7} cm/s (see Table 4-11). The top 10 feet of the Camillus Shale is weathered and as a result has a k value of about 7×10^{-3} cm/s. As expected, the groundwater flow in the park area is influenced by the Niagara River. There is an occasional groundwater flow reversal caused by the fluctuations in the level of the Niagara River (depending on how much water the hydroelectric power projects are drawing from the river; see attached Figures 4-7, 4-8 from RI). This reversal has been found to diminish within the fill unit and showed no apparent influence on groundwater levels at GW-3S located approximately 250 feet inland of GW-6S (located near the shoreline). This groundwater reversal indicates a periodic flushing of the nearshore upper aquifer.

During the RI samples were taken of the surface soil, shoreline soil, subsurface soil, sediment, surface water and groundwater (for a summary of the results see attached Tables 5-8, 5-12, 5-17, 5-22, 5-30, and 5-31; Table 5-33 contains a comparison of the groundwater standards and the levels of specific contaminants in the ground water). The surface soil showed elevated levels of PAHs with an average concentration of 11 parts per million (ppm). The shoreline soil showed elevated levels of lead, phenol as well as some PAHs. There was no evidence of a contribution of contaminants to surface water/sediment as a result of the three storm sewers that pass through the site. The results from the groundwater analyses showed the presence of total phenols as well as a number of other volatile organics and

some metals. The highest levels for organics were those for 4-methyl-2-pentanone (16 ppm), acetone (8.1 ppm) and phenol (5.8 ppm). Some of the highest values for metals, relative to their ground water standards, were barium (7.01 ppm), iron (8,900 ppm) and manganese (734 ppm). The average concentration of Target Compound List (TCL) organics and metals in the shallow groundwater was approximately 2 ppm and 1.5 ppm, respectively. Based on groundwater modelling the estimated contaminant loadings to the Niagara River are 2.6 lb/day of organics and 2.0 lb/day of metals.

During the initial field work for the RI a magnetometer survey was conducted across the entire site. The results of this survey showed rather unusual linear anomolies in the area between the park and the dog walk. In May of 1989 a test pit investigation was conducted to investigate this area in an attempt to determine if they corresponded to areas of past drum disposal. A total of seven test pits were dug, six of them in areas of magnetic highs, and one away from the magnetic highs to be used as a control. The test pit investigation showed no correlation between the magnetic highs and buried drums. In the six test pits dug in areas of magnetic highs a lot of metal debris, such as metal cable and bed springs, was found that was not encountered in the seventh test pit. Fiber drums were encountered in some of the test pits. The contents of these drums was the cured phenolic resin material, similar to what has been encountered in drums along the shoreline (previously removed by Niagara Mohawk).

During a July 1989 shoreline inspection by the Niagara County Health Department a black tar-like substance was encountered. At the end of July 1989 the State Department of Health took a sample of this tar. The analyses showed a PCB level of 16,000 ppm. A shoreline removal was carried out at the end of August 1989 using a NYSDEC standby spill contractor. The area affected was near the northwestern extent of the park by the sheltered picnic area. A total of approximately 50 cubic yards of material was removed and disposed of.

At the time of the shoreline removal a "pothole" was noticed in the park access road near the removal area. The pothole had a viscous black oil at a level of about one foot below the road surface. A sample was taken which showed a level of 10,000 ppm phenols and 7,900 ppm PCBs. In April 1990 boreholes were drilled radially around the pothole. An estimate of the volume and extent of the contamination was determined. The findings of the shoreline removal and the pothole investigation indicated two separate source areas which did not overlap. Samples were taken during the pothole investigation. Analyses of these samples showed high levels of phenols (up to 23,000 ppm) along with detected levels of dioxin (2,3,7,8-TCDD). Dioxin was detected at a level of 5 ppb. The Federal Government has set 1 ppb as a level of concern for dioxin in residential surface soils. The contaminated soils are all below the surface of the park and there is no current risk of anyone coming in contact with the material. The Department of Health and the NYSDEC will regularly inspect the park to ensure that this material does not become exposed along the shoreline. This area will be addressed either as an Interim Remedial Measure (IRM) or during the remedial design. A limited source removal will be considered, however it is very difficult to transport and dispose of material that is contaminated with dioxin (2,3,7,8-TCDD). If a removal is not possible actions will be taken to encapsulate the material on-site.

The Health Risk Assessment indicated a worst case baseline incremental cancer risk of 7×10^{-4}. The entire incremental risk is associated with ingestion and dermal contact with surface soils. In addition, as previously mentioned, there is currently an estimated loading of TCL organics and inorganics of approximately 4.6 lbs/day to the Niagara River from the shallow groundwater aquifer.

A more detailed list of site contamination is included in the attached tables. The tables include contaminants found in each matrix as well as a comparison of contaminant levels to State Standards, Criteria and Guidelines (SCGs).

Section 4 - Enforcement Status

A list of potentially responsible parties (PRPs) has been developed for the Gratwick Riverside Park Inactive Hazardous Waste Site. The list of PRPs includes: Niagara Mohawk Power Corporation, the City of North Tonawanda, the Durez Division of Hooker Chemical, Bell Aerospace - Textron, and Booth Oil Company. In 1986 the PRPs were offered the opportunity to enter into a Consent Order for the performance of the RI/FS. When they did not step forward to perform the work a State funded RI/FS was undertaken.

At this stage in the process the PRPs will be offered the opportunity to perform the remedial design and construction of the chosen remedial alternative.

Section 5 - Goals for the Remedial Actions

The goals of the remedial program are media specific. As previously discussed 100% of the incremental health risk is due to ingestion and dermal contact of surface soils. In addition, the shallow groundwater is contributing a loading of approximately 4.6 lbs/day of TCL compounds to the Niagara River. An additional contaminant loading to the Niagara River may be caused by erosion of shoreline soils.

A report entitled "Reduction of Toxic Loadings to the Niagara River from Hazardous Waste Sites in the United States" was written by USEPA and NYSDEC and is dated November 1989. In that report the Gratwick Park site is listed as a contributor of one or more of the ten identified persistent toxic chemicals for the Niagara River. Sites on the list have been grouped into three categories: Category I - sites contributing >50 lbs./day to the river; Category II - sites contributing 1-50 lbs./day to the river; and Category III - sites contributing <1 lb./day to the river. Estimates have placed Gratwick Park at the lower end of Category II. The goals of the report have been included in the goals for the remediation of Gratwick Park.

The fact that this site is an active public park allowing recreational access to the Niagara River has not been lost in the process. During the evaluation of the remedial alternatives one thing that was considered was the ability to return this site to a public park following the completion of the remedial construction. The proposed remediation of Gratwick Park should not prevent the site from being used as a park after the remediation. However, the extent of the site's use as a public park will be fully evaluated during the design of the remediation and once the site remediation has been completed.

Based upon the discussion above, the following remedial action objectives have been established for the Gratwick Park Site:

1. Prevent direct human contact with on-site surface soils thereby reducing the total incremental health risk.

2. Prevent erosion of contaminated on-site surficial and shoreline soil from the Gratwick Site into the Niagara River, and

3. Limit the migration of contaminated groundwater from the site into the Niagara River based on the findings of the "Reduction of Toxic Loadings to the Niagara River from Hazardous Waste Sites in the United States" Report.

4. Reduce contaminant levels in the ground water in order to achieve ground water standards.

Section 6 - Description and Evaluation of Remedial Alternatives

During a routine inspection of the shoreline, conducted in July of 1989, a black tar-like substance was encountered near the northern extent of the park. The Department of Health (NYSDOH) found high levels of PCBs. A removal action was carried out by a NYSDEC standby contractor. In the same general area a "pothole" in the middle of the park access road was found to contain a black viscous liquid. The NYSDOH took a sample of this substance and it was found to contain very high levels of PCBs and phenols. In April of 1990 an investigation of the area around the pothole was carried out. The extent of the contamination around the pothole was determined. The analysis of samples from the area of the pothole showed levels of total phenols up to 23,000 ppm and dioxin (2,3,7,8-TCDD) at a level of 5 ppb. A limited source removal in the area of the pothole would remove a concentrated source of contamination. However, material contaminated with dioxin is very difficult to dispose of. The contaminated material is below the surface and as a result does not pose a significant health threat as long as that situation does not change. The Department of Health and NYSDEC will conduct routine inspections of the shoreline to make sure that the material does not become exposed. Since the RI/FS was nearly complete, the remediation of this source area will be addressed either as an Interim Remedial Measure (IRM) or as a part of the Remedial Design.

Remedial alternatives, ranging from no action to onsite treatment to onsite containment, were evaluated during the "Development and Screening of Remedial Alternatives" carried out during the Feasibility Study (FS). A table has been attached (Table 3-1 from FS) listing the remedial alternatives identified in the initial screening phase. After the list of general response actions was developed (Table 3.1) it was reviewed to determine what process options could be ruled out immediately. The process options which were applicable for the Gratwick Park Site are listed in Table 3-2 (from the FS). These process options were combined into six Remedial Alternatives (Table 3-3 from FS) to be carried through to the detailed analysis. The alternatives that carried through to the detailed analysis of alternatives were isolation and control technologies. Due to the nature of the site (it

is a a 53 acre former municipal landfill) the consideration of removal and/or treatment technologies for the entire waste volume is not practical. The on-site waste was calculated to be approximately 1.3 million cubic yards.

Preliminary cost estimates for on-site treatment technologies (immobilization/stabilization, bioreclamation, vitrification, incineration) of $78,000,000 to $481,000,000, eliminated them from any kind of detailed evaluation.

The six alternatives in Table 3-3 were carried through and a detailed analysis was performed on them. The scoring system present in the Division of Hazardous Waste Remediation Technical and Administrative Guidance Memorandum, on the Selection of Remedial Actions (TAGM HWR-89-4030), was used as an aid during the evaluation process. Alternative 6 from Table 3-3 was originally excluded from a detailed evaluation. However, after further thought it was decided that it should be carried through for continued consideration. The alternatives listed in Table A are discussed in further detail below.

The first thing to be discussed will be descriptions of the various components of the remedial alternatives. The various remedial components will initially be described and then they will be combined into the six remedial alternatives which have been carried into the detailed analysis phase of the FS.

Multilayered Cap with a Synthetic Geomembrane (MSG Cap)

A multilayered cap with a synthetic geomembrane would permanently and significantly decrease infiltration into the soil and thereby reduce the mobility of the hazardous substances at the site. This type of cap would also provide permanent protection to human health and the environment against the risks associated with contact with the contaminated soil and migration of the hazardous substances. Multilayered caps with synthetic geomembranes are recommended by the NYSDEC as an effective environmental control for landfills and are thus considered a successfully proven capping option. This cap is also much thinner than the RCRA cap or the multilayered cap with a low permeability soil layer and would therefore be much easier to key into the existing grade. Synthetic geomembranes are quickly and easily installed compared to low permeability soil layers and are also less expensive.

Soil Cap

A topsoil cap with site regrading would provide protection to human health and the environment against the risks associated with contact with the contaminated soil and erosion of the contaminated soil. A soil cap would not provide an impermeabile layer to reduce infiltration significantly and permanently.

Slurry Walls

Slurry walls constructed on the upgradient, north or south boundaries of the site are considered to be potentially feasible. A slurry wall on the downgradient side of the site adjacent to the Niagara River is not technically due to the extension of fill into the River bed.

Two types of slurry walls technically feasible for the site are soil-bentonite and cement-bentonite. While a cement-bentonite wall is more capable of handling weight-bearing loads (i.e. traffic), a soil-bentonite wall is considered more appropriate for the site because of its lower permeability, lower cost, and higher degree of chemical resistance. (Cement-bentonite is susceptible to attack by strong acids and bases and in seven of the nine on-site monitoring walls the pH was >11.)

Sheet Pile Breakwater

A sheet pile breakwater constructed along the entire shoreline of the site would also significantly reduce the mobility of the hazardous substances at the site by preventing erosion of the shoreline soil and migration of the hazardous substances in the groundwater. Moreover, the environmental risks posed by the migration of the hazardous substances would be significantly reduced through sheet piling. Sheet piling is used extensively as both an erosion control and containment system and is therefore considered to be an effective and successfully proven option. Installation of sheet piling would not require excavation of the contaminated soil as is required with the other erosion control options and thus construction costs would be lower, health and environmental risks minimized, and implementation simplified. An asphalt or concrete walkway could be placed over the sheet pile breakwater to provide further erosion protection.

Subsurface Drain and Withdrawal System

Groundwater extraction may be performed through a subsurface drain or an active withdrawal system (i.e. pumping wells). For the bedrock aquifer, this system is not technically feasible. While the installation of subsurface drains is technically feasible for the upper aquifer, the aquifer already consists of fill material across the site with an average hydraulic conductivity of greater than 10^{-3} cm/sec. The benefits associated with the costly excavation of contaminated soil to install subsurface drains having a hydraulic conductivity of 10^{-1} cm/sec would be marginal. Therefore, a subsurface drain was rejected.

Withdrawal Wells

A series of properly-spaced withdrawal wells across the downgradient edge of the site would be both feasible and cost-effective in extracting groundwater from the upper and/or bedrock aquifers.

On-Site Groundwater Treatment

A large number of biological and physical/chemical processes are available, and have been used, for treatment of contaminated water. Based on groundwater data from on-site wells that were sampled for both BOD and COD,

the BOD/COD ratio is approximately 0.55 indicating that a large portion of organic material is not readily biodegradable. In addition, it is possible that some of the TCL organics or other TCL compounds such as cyanide may be biotoxic and thus inhibit the biological system. Because of the likely inefficiency of the biological system and the possibility of system upsets, a biological system is not considered feasible at the Gratwick Site.

The process train considered most feasible at the Gratwick Site consists of physical/chemical unit operations including: flow equalization, cyanide reduction, neutralization, precipitation/flocculation/sedimentation, air stripping, and aqueous phase carbon adsorption. The objective of flow equalization is to dampen fluctuations in influent flow and contaminant concentrations and thereby improve downstream process performance. Equalization should be considered in the planning and design of all leachate treatment facilities since the composition and volume of leachate will fluctuate with time. The relatively high cyanide concentrations in the groundwater would require treatment with an existing agent such as sodium hypochlorite. The cyanide destruction can be accomplished effectively at pH greater than 11 s.u. The pH at seven of the nine on-site shallow wells sampled during the first round of groundwater sampling was above 11.0 s.u. Therefore, neutralization will be required following cyanide destruction to reduce groundwater pH before discharge. Precipitation/flocculation/ sedimentation is required to remove metals from the groundwater prior to discharge. Air stripping is recommended since it is the simplest and most economical method of removing volatile organics. Carbon adsorption will be utilized to remove semi-volatile organics and any residual volatile organics that are not effectively removed by the air stripper.

As part of the design phase for on-site groundwater treatment, bench-scale or pilot-scale testing would be required to determine the effectiveness of selected unit processes, individually and collectively, with actual groundwater from the Gratwick Site and to establish final design parameters for these processes. Based upon the testing program, certain processes might have to be added, deleted or modified.

Off-Site Groundwater Treatment

Off-site treatment of groundwater collected by a groundwater extraction system involves the off-site transportation of the groundwater to a publicly owned treatment works (POTW) or private treatment facility. Approximately 15,768,000 (30 gpm) to 105,120,000 (200 gpm) gallons of leachate would require treatment each year depending on the remedial measure implemented at the site (see Appendix G for details). The cost for disposing of leachate at a POTW or private hazardous waste treatment facility is highly variable. It depends not only upon the chemical nature of the leachate, but also: the size, design and operating condition of the plant; the regulatory status of the plant regarding acceptance of extraneous waste streams; the owner of the facility generating leachate (e.g., public or private); and, to some extent, the overall political and economic climate at the time of disposal.

The local POTW in the area of the Gratwick Site, i.e. the North Tonawanda Treatment Plant, is a physical/chemical plant. The major removal operations include primary clarification, sand filtration and carbon adsorption. A pretreatment program has been implemented and ordinance limits

have been established for a number of parameters including metals (viz. cadmium, total chromium, copper, lead, mercury, nickel, zinc, arsenic, silver, and beryllium), total cyanide, phenol, and oil and grease. Since the treatment plant is a physical/chemical operation, organics are generally not a concern at the plant. If groundwater is discharged to the North Tonawanda Treatment Plant pretreatment may nor may not be required depending on whether the concentrations of parameters of concern to the treatment plant are below acceptable limits.

The six remedial alternatives which were carried through to the detailed evaluation are discussed below relative to the evaluation criteria. The evaluation criteria discussed below is self explanatory except for the fifth one, "Compliance with SCGs". SCGs are the New York State Standards, Criteria, and guidelines that are appropriate for the site. There are three general categories for SCGs (modeled after the Federal ARARs - Applicable or Relevant and Appropriate Requirements) : Chemical specific - for example, the chemical specific ground water standards which were evaluated for the contaminants present at the site; Location specific - for example, special requirements may be necessary due to the location of this site along the Niagara River. At Gratwick Park there may be interaction with the Corps of Engineers since the shoreline of the Niagara River will be altered if the installation of the sheet pile breakwater is chosen as a part of the selected alternative; and Action specific - the potential of discharging ground water to the publicly owned treatment works (POTW) will depend on interaction with local officials to insure that the POTW can accept the ground water.

Alternative 1 - No Action

Short-term Impacts and Effectiveness: Since no construction is required to implement this alternative, there are no associated risks to the community, environment or workers.

Long-term Effectiveness and Permanence: This alternative is neither an effective nor permanent remedy to the risks posed by the contaminants at the site. However, points were given for relatively low O&M requirements.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative does not reduce the toxicity, mobility nor the volume of hazardous waste at the site.

Implementability: The no action alternative is easily implemented compared to the other alternatives. However, it fails to provide a reliable remedy to the problem. Moreover, it does not provide any means by which to monitor contaminant levels or mobility. The potential need for future remedial action is not addressed under this alternative.

Compliance with SCGs: Implementation of this alternative would not result in compliance with chemical-specific New York State Standards, Criteria and Guidance (SCGs) nor any appropriate agency advisories, guidelines or objectives.

Overall Protection of Human Health and the Environment: If this alternative were implemented, the risks to human health and the environment posed by the contaminants at the site would remain.

Cost: Their is no cost associated with this alternative.

Alternative 2 - Institutional Action (deed restrictions and long term monitoring)

Short-term Impacts and Effectiveness: Since minimal construction would be required to implement this alternative (assuming that existing groundwater monitoring wells can be used for the long-term monitoring program), there would be few associated risks to the community, environment or to workers.

Long-term Effectiveness and Permanence: This alternative is neither an effective nor permanent remedy to the risks posed by the contaminants at the site.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative does not reduce the toxicity, mobility nor the volume of hazardous waste at the site.

Implementability: Although this alternative can be implemented without difficulty, it fails to provide a reliable remedy to the problem. The need for future remedial action is not addressed although long-term monitoring is included under this alternative.

Compliance with SCGs: Implementation of this alternative would not result in compliance with chemical-specific SCGs or any appropriate agency advisories, guidelines or objectives. However, location and action-specific SCGs would be met.

Overall Protection of Human Health and the Environment: If this alternative were implemented, the risks to human health and the environment posed by the contaminants at the site would remain.

Cost: The present worth of the capital and operation & maintenance (O & M) costs is approximately $170,000.

Alternative 3 - Sheet Pile Breakwater/MSG Cap/Withdrawal Wells/ Groundwater Treatment

Short-term Impacts and Effectiveness: The intrusive (i.e. below ground) work required for the construction of the sheet pile breakwater, withdrawal wells or the groundwater treatment facility may cause contaminant migration and thus create short-term risks. However, it is anticipated that effective mitigative efforts can be implemented to control these risks. These mitigative efforts will include the containment of contaminated soil on-site and the collection and treatment of contaminated groundwater caused by construction activities. No environmental risk is anticipated. The disadvantage of this alternative is that the time for implementation is expected to be approximately 2 years.

Long-term Effectiveness and Permanence: In order to achieve long-term effectiveness and reliability of this alternative an efficient operation and maintenance program is required to ensure continuing control. In particular, the MSG cap would require routine inspection to locate and repair break-throughs caused by drums or differential settling of the site. Since the only means by which the contaminants in the soil can be removed is by the leaching action of infiltration and groundwater flow, it is anticipated that some contaminants will remain. Moreover, the mobility of remaining contaminants is controlled only by the sheet pile breakwater.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative will result in a significant reduction in the volume of contaminated groundwater migrating from the site and complete mitigation of the principal threats posed by these contaminants. However, as discussed above, some risk may remain at the site following remediation because the mobility of the hazardous wastes may not be effectively controlled.

Implementability: Problems may be caused by the nature of the buried material at the site, which includes construction debris and drums, particularly when excavating through this material and compacting fill over this material. Construction delays may occur.

Compliance with SCGs: This alternative will result in substantial compliance with chemical-specific SCGs as well as agency advisories, guidance and objectives. Special considerations and permits may be required to circumvent action and location-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative will result in appreciable reduction in leachable contaminants and control of remaining contamination. Residual risks to health and the environment will be minimal and therefore limited future use of ths site is possible.

The present worth of the capital and O & M costs is approximately $22,160,000.

Alternative 4 - Sheet Pile Breakwater/Slurry Wall/MSG Cap/Withdrawal Wells/Groundwater Treatment

Short-term Impacts and Effectiveness: The intrusive activities required to implement this alternative - the slurry wall in particular - may result in risks to the community, environment and to workers as excavation of contaminated soil may cause migration of or exposure to hazardous waste. Furthermore, the mitigative effors required may not provide total protection. Implementation of this alternative is expected to require more than 2 years. Since this alternative may create short-term risks during construction, it would not be effective until implemented.

Long-term Effectiveness and Permanence: This alternative is expected to provide long-term effectiveness but would require an intensive operation and maintenance program to ensure continual control. In particular, the

MSG cap would require routine inspection to locate and repair breakthroughs caused by drums and/or the differential settling of the site. Although it is expected that this alternative will provide adequate and reliable control of the contaminants at the site, it will not remove all contaminants from the soil or reduce the toxicity of the remaining contaminants. However, the remaining contaminants will be effectively contained at the site in the long-term.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative will not significantly reduce the volume or toxicity of the hazardous waste at the site but it will effectively reduce its mobility and thereby eliminate the principal threats associated with these contaminants.

Implementability: Implementation of this alternative will be difficult because of the intrusive work required. This may result in schedule delays as well. The ability to monitor the effectiveness of this alternative will greatly facilitate any assessment of the need for future remedial action.

Compliance with SCGs: This alternative would result in compliance with chemical-specific SCGs. Special considerations and permits may be required to circumvent action and location-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative will effectively control the contamination at the site thereby minimizing residual health and environmental risks. However, to ensure this, future use of the site following remediation will have to be limited to keep the system of controls intact.

The present worth of the capital and O & M costs is approximately $22,840,000.

Alternative 5 - Sheet Pile Breakwater/Slurry Wall/Soil Cap/Withdrawal Wells/Groundwater Treatment

Short-term Impacts and Effectiveness: The intrusive activities required to implement this alternative - the slurry wall in particular - may result in risks to the community, environment and to workers as excavation of contaminated soil may cause migration of or exposure to hazardous waste. Furthermore, the mitigative effors required may not provide total protection. Implementation of this alternative is expected to require more than 2 years. Since this alternative may create short-term risks during construction, it would not be effective until implemented.

Long-term Effectiveness and Permanence: Since the long-term effectiveness and reliability of this alternative is uncertain an efficient operation and maintenance program would be required to ensure continual control. The soil cap may require periodic repair during the performance period. The permeability of the soil cap will permit a significant amount of the infiltration into the contaminated soil. This may promote further leaching of contaminants to the groundwater that will be collected and treated and thus reduce the amount of leachable

contaminants remaining at the site following remediation. Any remaining contaminants will be effectively contained at the site in the long-term.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative will not significantly reduce the volume or toxicity of the hazardous waste at the site but it will effectively reduce its mobility and thereby eliminate the principal threats associated with these contaminants.

Implementability: Implementation of this alternative will be difficult because of the intrusive work required. This may result in schedule delays as well. The ability to monitor the effectiveness of this alternative will greatly facilitate any assessment of the need for future remedial action.

Compliance with SCGs: This alternative would result in compliance with chemical-specific SCGs. Special considerations and permits may be required to circumvent action and location-specific SCGs. It also complies with appropriate agency advisories, guidelines and objectives.

Overall Protection of Human Health and the Environment: This alternative will effectively control the contamination at the site thereby minimizing residual health and environmental risks. However, to ensure this, future use of the site following remediation will have to be limited to keep the system of controls intact.

Cost: The present worth of the capital and O & M costs is approximately $19,980,000.

Alternative 6 - Sheet Pile Breakwater/Soil Cap/Withdrawal Wells/ Groundwater Treatment

Short-term Impacts and Effectiveness: The intrusive (i.e. below ground) work required for the construction of the sheet pile breakdown, withdrawal wells or the groundwater treatment facility may cause contaminant migration and thus create short-term risks. However, it is anticipated that effective mitigative efforts can be implemented to control these risks. These mitigative efforts will include the containment of contaminated soil on-site and the collection and treatment of contaminated groundwater caused by construction activities. No environmental risk is anticipated. The disadvantage of this alternative is that the time for implementation is expected to be approximately 2 years.

Long-term Effectiveness and Permanence: Since the long-term effectiveness and reliability of this alternative is uncertain, particularly with respect to the soil cap, an efficient operation and maintenance program would be required to ensure continual control. The soil cap may require periodic repair during the performance period. The permeability of the soil cap will permit a significant amount of the infiltration into the contaminated soil. This may promote further leaching of contaminants to the groundwater that will be collected and treated and thus reduce the amount of leachable contaminants remaining at the site following remediation.

Reduction in Toxicity, Mobility and Volume of Hazardous Waste: This alternative will not significantly reduce the volume or toxicity of the hazardous waste at the site but it will effectively reduce its mobility and thereby eliminate the principal threats associated with these contaminants.

Implementability: Implementation of this alternative will be difficult because of the intrusive work required. This may result in schedule delays as well. The ability to monitor the effectiveness of this alternative will greatly facilitate any assessment of the need for future remedial action.

Compliance with SCGs: This alternative would result in compliance with chemical-specific SCGs. Special considerations and permits may be required to circumvent action and location-specific SCGs.

Overall Protection of Human Health and the Environment: This alternative will result in appreciable reduction in leachable contaminants and control of remaining contamination. A permeable soil cap will allow infiltration to flush contaminants out of the soil. These contaminants will then be captured by the groundwater pumping wells. The sheet pile breakwater will eliminate the erosion of the contaminated shoreline soils and will help to reduce the migration of ground water to the Niagara River. Deed restrictions will be needed in order to maintain the integrity of the components of this remedial alternative. Residual risks to health and the environment will be minimal and therefore future use of the site is possible.

Cost: The present worth of the capital and O & M costs is approxiamately $18,110,000.

The Draft Final Feasibility Study (FS) was submitted by URS in December of 1989. Since that time we have met with them and had numerous telephone conversations to discuss the remedial approach for this site. The contaminant loadings to the Niagara River have been discussed in detail and revised. Also, the goals of the Niagara River Toxics Committee were also considered during the remedial alternative evaluation process. The various groundwater pumping options were modeled by URS and the results submitted to this office and evaluated. Tables have been attached which detail the various pump and treat options, the residual contaminant loadings to the Niagara River and associated costs for the remedial options (URS Table 1 4/3/90; URS 4/27/90; URS 5/7/90; FS Table 10-14). In May of 1990 URS submitted a table for the six pumping scenarios which were still being actively considered.

Section 7 - Summary of the Government's Decision

The chosen remedial action is identified above as Alternative 6 (URS 5/7/90; groundwater modeling Alternative L1). This alternative includes: downgradient sheet pile (along the Niagara River shoreline); soil cap; withdrawal wells with partial pumping to control groundwater contaminant source areas; and groundwater pretreatment prior to discharge to the North Tonawanda publicly owned treatment works (POTW). A discussion of the individual components of the chosen remedial action has been presented earlier in this document.

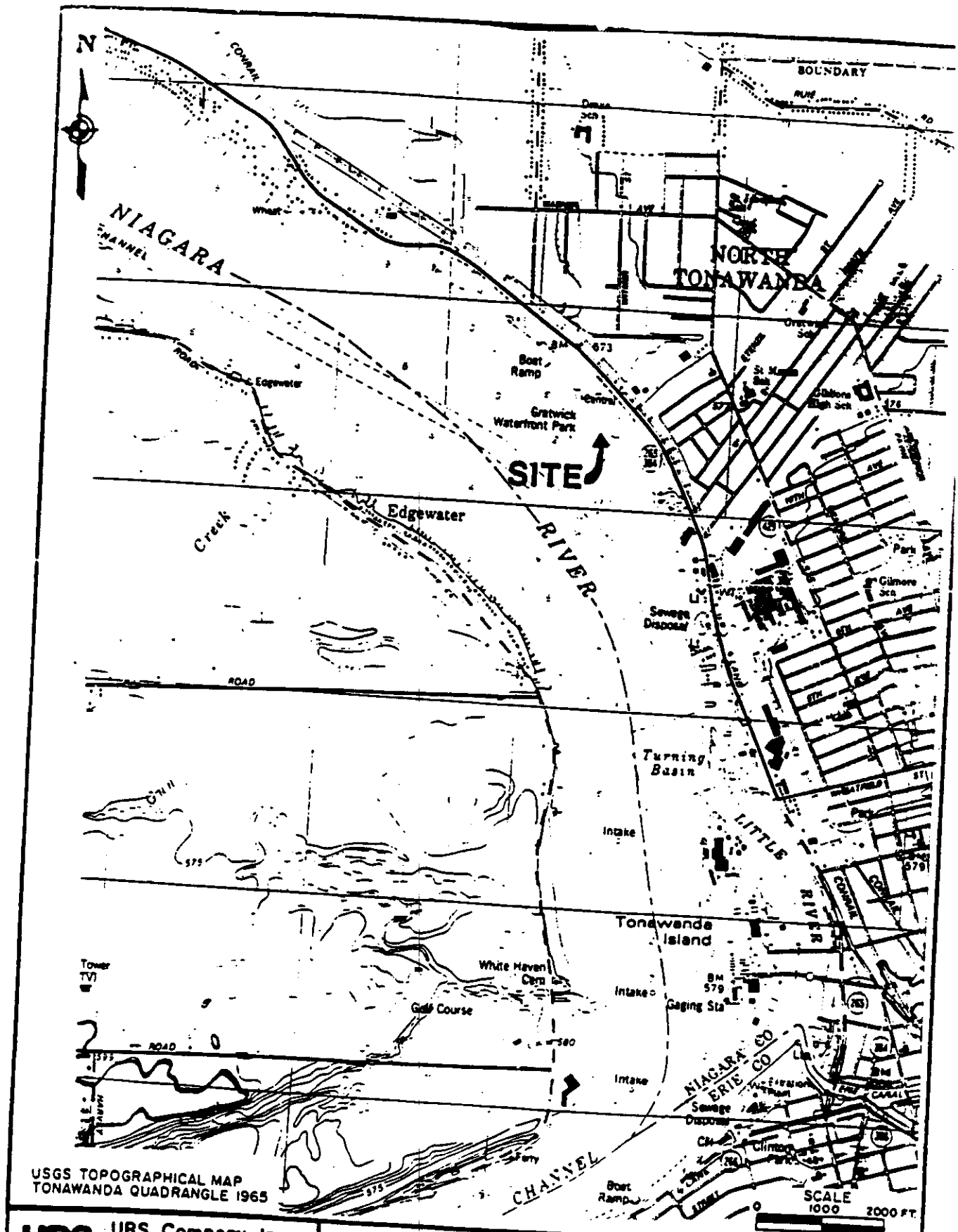
The downgradient sheet pile will be installed to eliminate any further erosion of the shoreline soils/waste. The upgradient side of the sheet pile will also have bentonite slurry placed to help reduce the contaminant loadings to the Niagara River. In addition, within the permeable backfill behind the sheet piling, a drainage system will be placed. This drainage system will be used if and when the groundwater pumping is terminated (termination will be based on evaluation of groundwater sampling performed as a part of the long term monitoring program). The purpose of this drainage system will be to prevent any potential groundwater mounding behind the sheet piling once groundwater pumping stops. A soil cap will be placed over the site to eliminate any direct contact with the surface soils. The soil cap will consist of at least twelve inches of general fill covered by at least six inches of topsoil. The area will be graded first to allow for the placement of the soil cap. Filter fabric will be placed below the soil cap. The purpose of which will be to differentiate between the current surface soils and the soil cap. This filter fabric will be visual evidence that the integrity of the cap is or is not intact. The advantages of a soil cap are that: the installation of a soil cap would achieve the goal of eliminating possible contact with surface soils while allowing to maintain many of the current park features (pavillion, large trees, etc.); the soil cap also allows infiltration to pass through the waste material and flush contamination from the unsaturated soils; this leachate would then be collected by the withdrawal wells and receive pre-treatment prior to being discharged to the North Tonawanda POTW. The pre-treatment scheme for the groundwater is presented in Figure 4-1 from the FS, a copy of which has been attached.

As a part of the long term monitoring program at this site, water level measurements as well as analyses of groundwater samples will be used to determine if the remedial action is achieving its intended goals. These measurements and groundwater samples will be taken from existing monitoring wells at the site. If additional monitoring wells are determined to be necessary, they will be added during the remedial design phase. The Remedial Design will include provisions for the regular Operation and Maintenance (O & M) of the components of the remedial action once it is in place. This will include regular inspections (and repair when necessary) of the soil cap to monitor for erosion and/or settling. These inspections may be incorporated into the regular maintenance of the park. In addition, the remedial design will include provisions for the O & M of the groundwater pumping and pre-treatment system.

Attachment 1

Index of Figures/Tables	Source
Site Location Map	RI, Figure 1-1
Map of Historical Monitoring Wells/Drum Removals	RI, Figures 1-2
Soil Sampling Locations from Previous Investigations	RI, Figure 1-3
Summary of Hydraulic Properties of Major Hydrogeologic Units	RI, Table 4-11
24 Hour Groundwater Level Monitoring (6/2/88 and 5/18/89)	RI, Figure 4-7 & 4-8
Results from 1986 Surface Soil Sampling, Niagara County Health Department/Niagara Mohawk	RI, Table 5-2 & 5-3
Frequency and Maximum Concentrations of Compounds Detected in Subsurface Soil Samples, RI	RI, Table 5-8
Frequency and Maximum Concentrations of Compounds Detected in Surface Soil Samples, RI	RI, Table 5-12
Results from 1986 Shoreline Soil Sampling	RI, Table 5-15
Frequency and Maximum Concentrations of Compounds Detected in Shoreline Soil Samples, RI	RI, Table 5-17
Frequency and Maximum Concentrations of Compounds Detected in Surface Water Samples, RI	RI, Table 5-22
Comparison of Compounds Detected in Upper Aquifer Monitoring Wells, RI	RI, Table 5-30
Comparison of Compounds Detected in Lower Aquifer Monitoring Wells, RI	RI, Table 5-31
Observed Contaminant Concentrations vs. Available SCG Values	RI, Table 5-33
Contaminants that Exceeded SCGs	RI, Table 5-34
Remedial Action Objectives, General Response Actions, Remedial Technologies and Process Options	FS, Table 9-1
Summary of Selected Remedial Technologies and Process Options	FS, Table 9-2
Remedial Alternatives	FS, Table 9-3
Detailed Analysis of Remedial Alternatives	DEC, Table A
Groundwater Simulations	URS, 4/3/90, Table 1

Index of Figures/Tables	Source
Estimate of Contaminant Loadings to the Niagara River from Groundwater Flow Simulations	URS, 4/27/90
Cost Estimates for Additional Alternatives	URS, 5/7/90
Cost Estimates for Remedial Alternatives	FS, Table 10-14



USGS TOPOGRAPHICAL MAP
TONAWANDA QUADRANGLE 1965

URS Company, Inc. CONSULTING ENGINEERS NEW YORK NEW JERSEY	SITE LOCATION	FIG. 1-1

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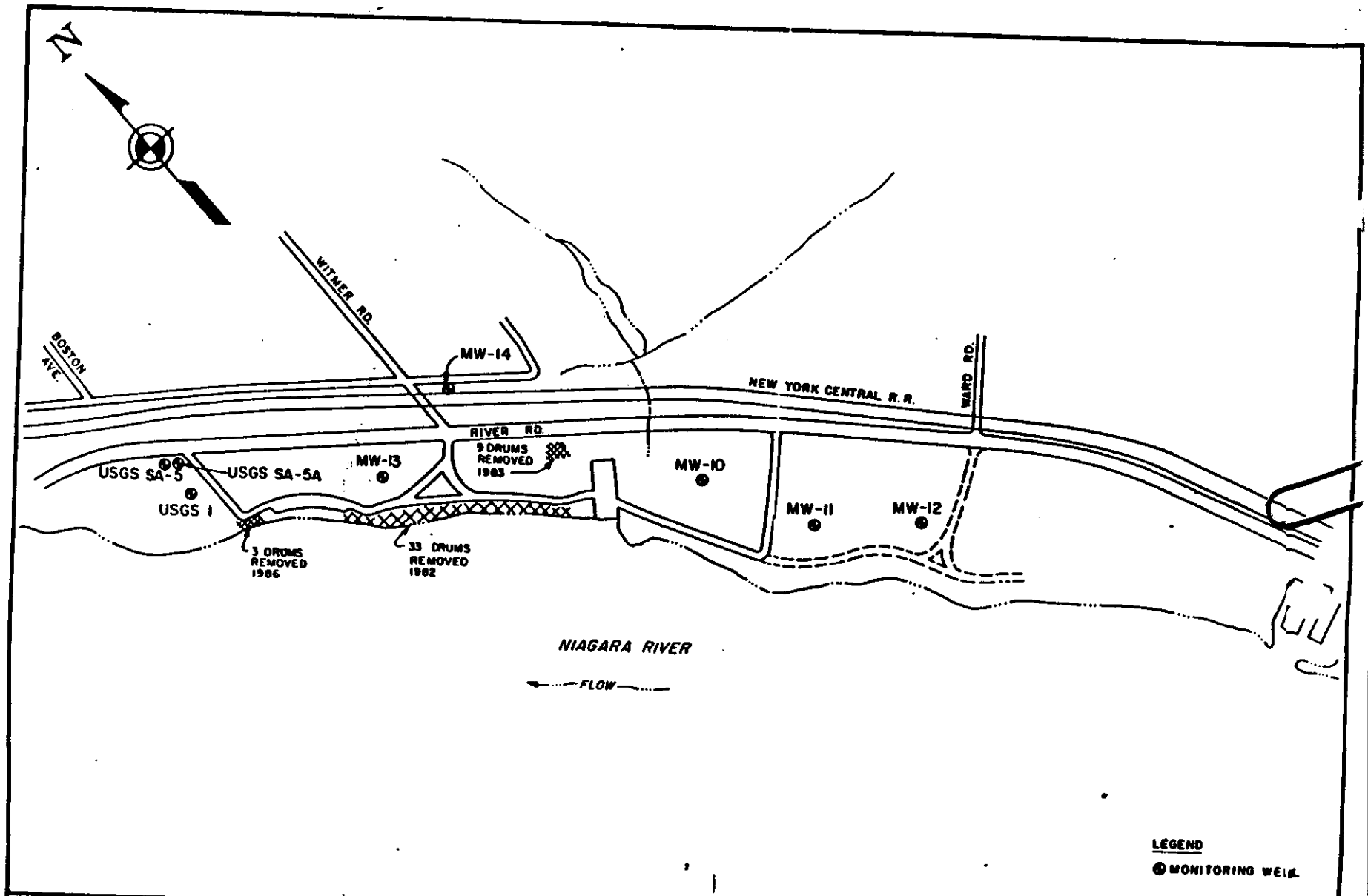

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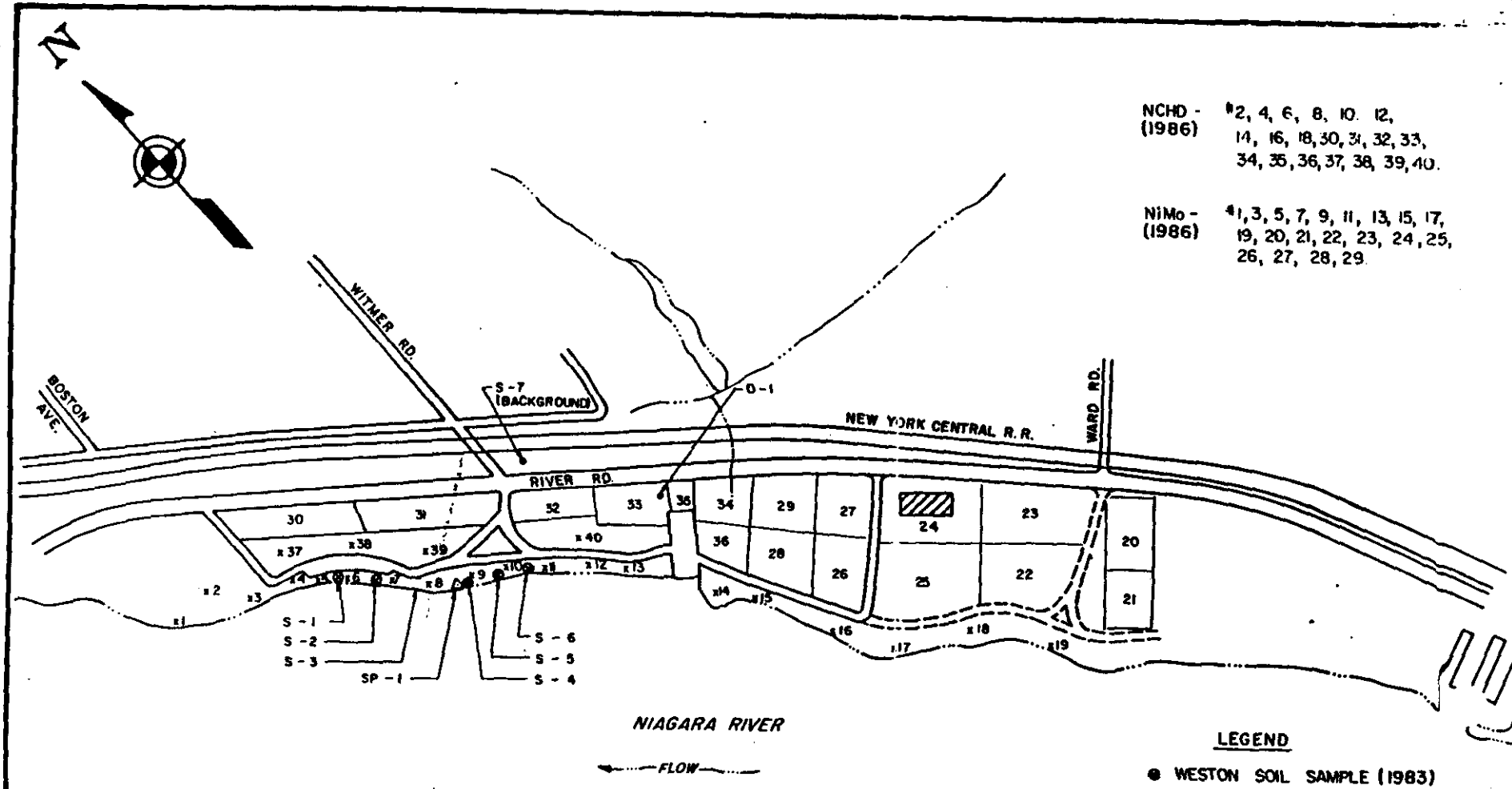
PREVIOUS INVESTIGATIONS
DRUM & MONITORING WELL SAMPLING LOCATIONS

FIGURE 1-2

A-2606



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CONSULTING ENGINEERS
NEW YORK NEW JERSEY

PREVIOUS INVESTIGATIONS
SOIL SAMPLING LOCATIONS

FIGURE 1-3

GRATWICK PARK REMEDIAL INVESTIGATION
SAMPLE LOCATIONS
(GROUNDWATER/SHORELINE SOIL/SURFACE WATER/TEST PITS)

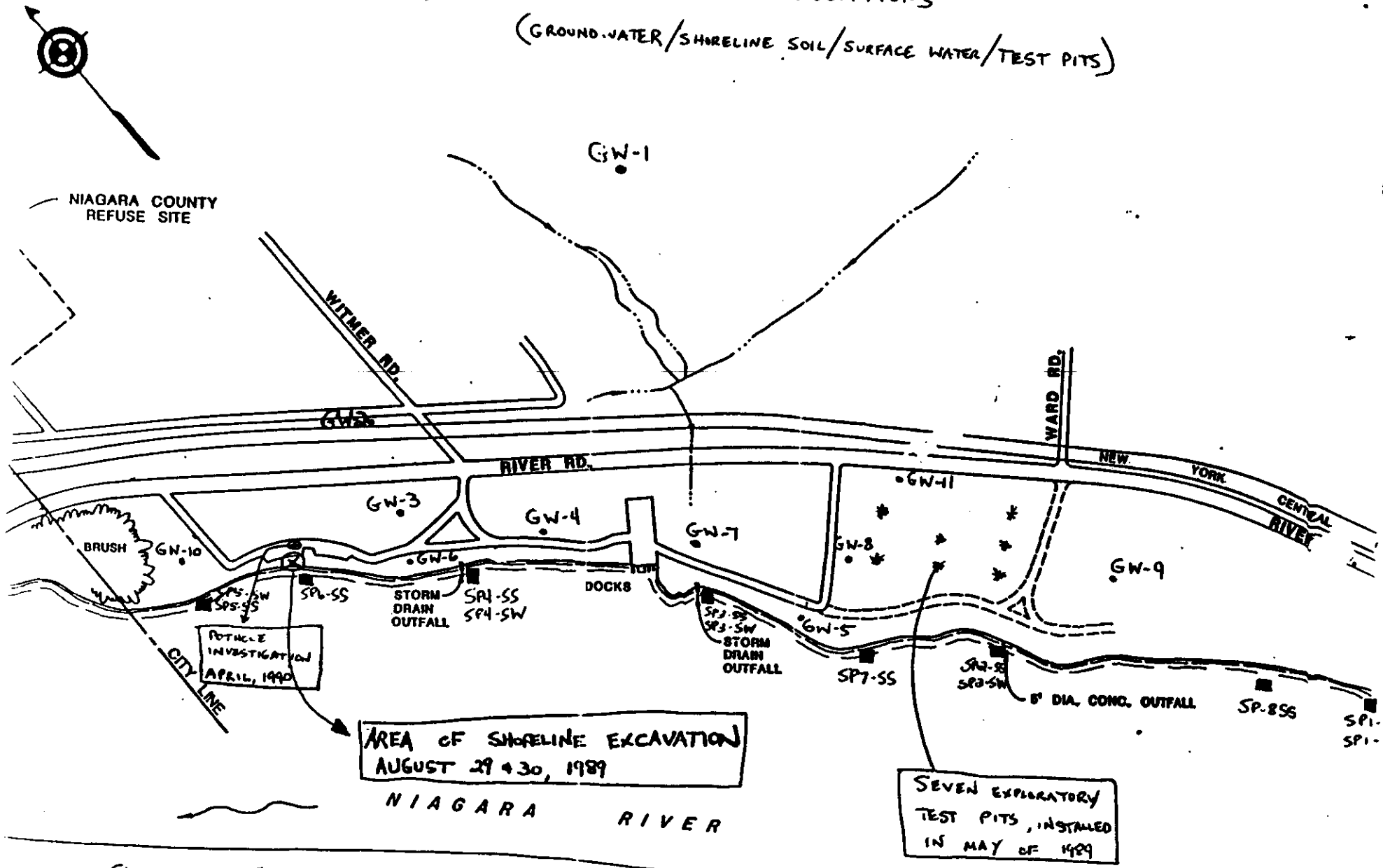
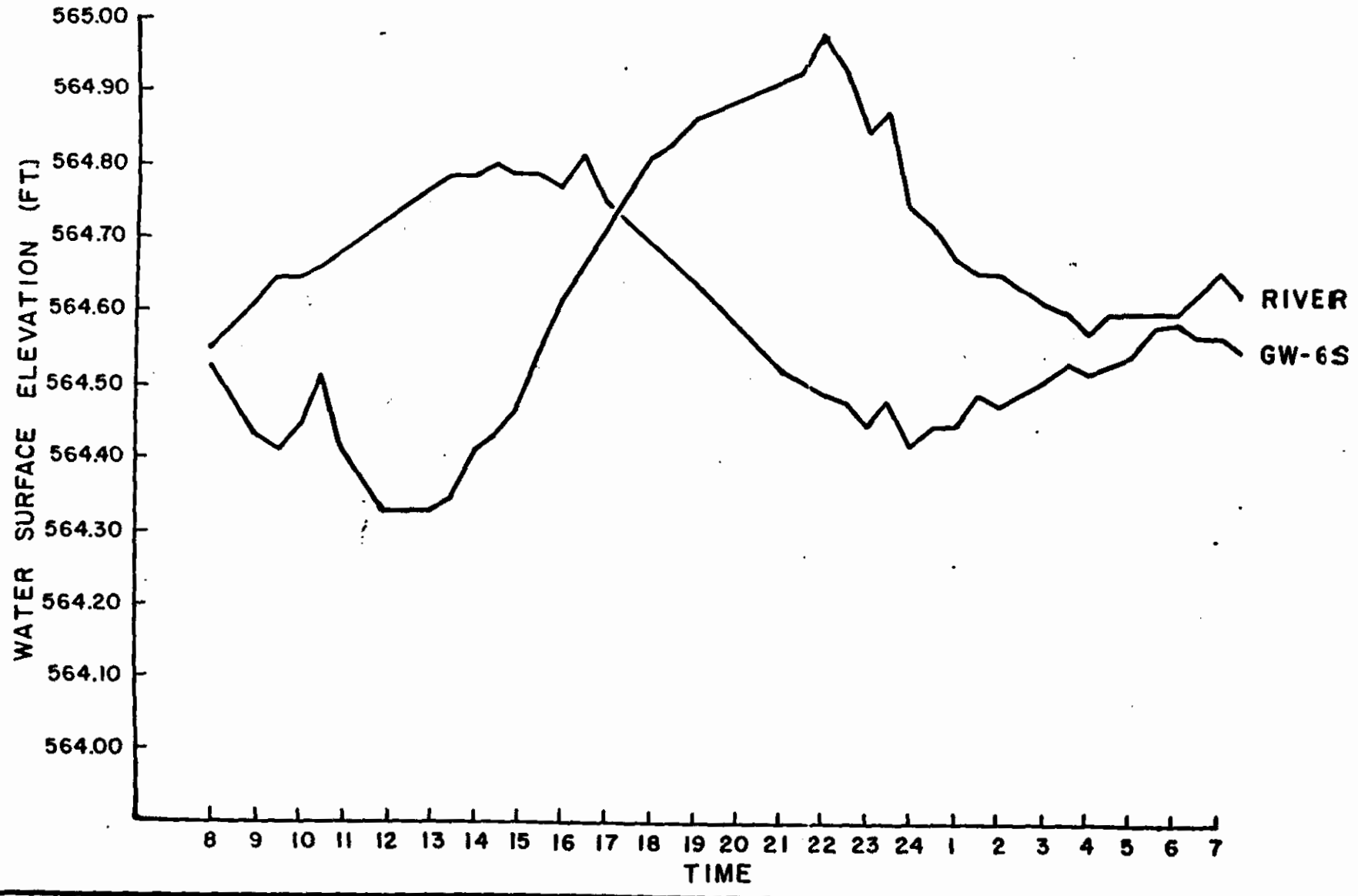


TABLE 4-11
SUMMARY OF HYDRAULIC PROPERTIES OF MAJOR HYDROGEOLOGIC UNITS

HYDROSTRATIGRAPHY	Physical Properties			Groundwater Flow Characteristics			
Units o geologic components	Thickness (ft) (m)	Hydraulic Conductivity(k) (cm/s)	Porosity (n)	Principal Flow Direction	Average Hydraulic Gradient (i) (3/7/88)	Specific Discharge (v=ki) (m/s)	Average Linear Velocity (v=v/n) (m/s)
Upper Aquifer o fill o lacustrine fine sand	13.4(4.1)	$>2.3\times10^{-3}$	0.30(2)	lateral towards Niagara River	.005	1.1×10^{-7}	3.8×10^{-7}
Confining Unit o lacustrine silt and clay o till	31.7 (9.7)	4.8×10^{-7}	0.19 (till) to 0.49 (clay)	inland vertical downward shoreline vertical variable	.38 .006	1.8×10^{-9} 2.8×10^{-11}	3.6×10^{-9} to 9.4×10^{-9} 5.8×10^{-9} to 1.4×10^{-10}
Bedrock Aquifer o fractured shale bedrock	10(1) (3.0)	7.4×10^{-3}	0.05(3)	lateral primarily towards Niagara River	.0001	7.4×10^{-7}	1.5×10^{-5}

Notes:

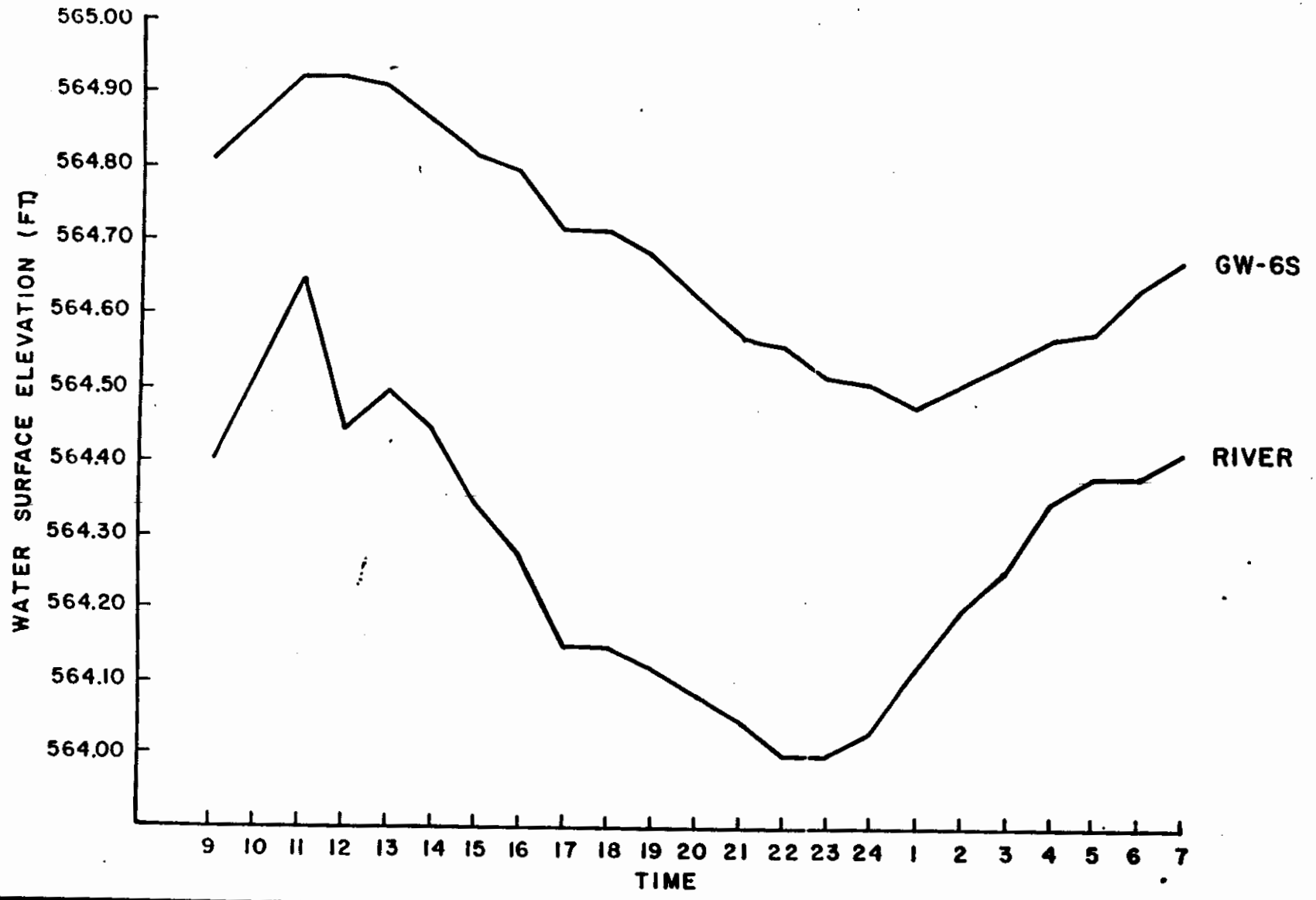
(1) assumed thickness of weathered shale based on regional observations (Johnston, 1964)
(2) assumed porosity value - considerable textural variability
(3) assumed fracture porosity value based on values presented in Freeze and Cherry (1979)



URS CONSULTANTS

24 HOUR WATER LEVEL MONITORING 6/2/88

FIGURE 4-7



URS CONSULTANTS

24 HOUR WATER LEVEL MONITORING 5/18/89

FIGURE 4-8

TABLE 5-2

HIGHEST LEVEL OF CONTAMINANTS DETECTED BY
NIAGARA MOHAWK (1986) IN TEN COMPOSITED SURFACE SOIL SAMPLES

SEMI-VOLATILES

Compound	Sample ID(s)	Concentration (ug/g=ppm)
acenaphthene	20,21,22,24	0.33
acenaphthylene	21,29	0.33
anthracene	21	4.5
benzo(a)anthracene*	29	3.2
benzo(a)pyrene	21	4.3
benzo(b)fluoranthene**	21	2.7
di-n-butylphthalate	20	3.3
fluoranthene	21	6.0
naphthalene	21	0.43
phenanthrene	21	9.6
pyrene	21	3.0
1,2,4-trichlorobenzene	22	0.33
bis(2-ethylhexyl)phthalate	28	1.1
diethylphthalate	25,26,27,28,29	0.33
benzo(g,h,i)perylene	29	0.84
dibenz(a,h)anthracene	29	0.33
indeno(1,2,3-cd)perylene	29	1.1

Note: No volatile organic compounds were detected.

* Chromatographically, benzo(a)anthracene and chrysene coelute, the reported value is therefore an "and/or" value.

** Chromatographically, benzo(b)fluoranthene and benzo(k)fluoranthene coelute, the reported value is therefore an "and/or" value.

TABLE 5-2 - Continued

HIGHEST LEVEL OF CONTAMINANTS DETECTED BY
NIAGARA MOHAWK (1986) IN TEN COMPOSITED SURFACE SOIL SAMPLES

PESTICIDES AND POLYCHLORINATED BIPHENYLS

Compound	Sample ID(s)	Concentration (ug/g=ppm)
Delta-BHC	20	0.020
4,4'-DDD****	20	0.11
4,4'-DDE	20	0.24
4,4'-DDT	20	0.94
aldrin	28	0.014
endosulfan sulfate	29	0.28
endrin ketone	29	0.059
endosulfan I	27	0.061
heptachlor epoxide	24	0.053
beta-BHC	24	0.0087
endrin aldehyde	26	0.064
heptachlor	27	0.037
aroclor-1260	27	0.45

**** Chromatographically, 4,4'-DDD and endosulfan II coelute. The reported value is therefore an "and/or" value.

TOTAL METALS

total arsenic	27	28
total beryllium	27	1.86
total chromium	23	75
total copper	20	51
total lead	21	368
total mercury	22	0.781
total nickel	21	18
total zinc	22	254
total cadmium	29	3.24

MISCELLANEOUS

Total recoverable phenolics	20	1.1
total cyanide	23,26	1.3

TABLE 5-3

HIGHEST LEVEL OF CONTAMINANTS DETECTED BY NIAGARA COUNTY HEALTH DEPARTMENT (1986) IN SEVEN COMPOSITED SURFACE SOIL SAMPLES

Compound	Sample ID(s)	Concentration (ug/g=ppm)
VOLATILES		
methylene chloride	32	0.05
1,1,1-trichloroethane	32	0.04
SEMI-VOLATILES		
phenol	38	23
2-chlorophenol	32	13
2,4-dinitrophenol	32	1.1
4-nitrophenol	32	0.64
pentachlorophenol	40	2.3
n-nitrodiphenylamine	40	0.55
1,2-diphenylhydrazine	40	0.55
hexachlorobenzene	40	0.93
phenanthrene	40	2.4
anthracene	40	0.62
di-n-butylphthalate	32	1.7
fluoranthene	40	7.1
pyrene	40	8.4
benzidine	40	17
butylbenzylphthalate	32	3.1
benzo(a)anthracene	40	10
chrysene	40	11
bis(2-ethylhexyl)phthalate	32	6.0
di-n-octylphthalate	32,36	1.8
benzo(b)fluoranthene	32	0.86
benzo(k)fluoranthene	40	17
indeno(1,2,3-cd)pyrene	32	2.2
dibenzo(a,h)anthracene	32	1.3
benzo(g,h,i)perylene	32	0.95
bis(2-chloroethoxy)methane	32	0.64
diethylphthalate	40	1.2
fluorene	40	0.53
PESTICIDES AND POLYCHLORINATED BIPHENYLS		
delta-BHC	38	0.52
chlordane	32	3.5
4,4'-DDD	32	0.25
4,4'-DDE	32	0.15
4,4'-DDT	32	0.6
PCB-1260	32	2.5

total nickel	32	60
total selenium	31,35	1.3
total silver	32	6
total zinc	32	700

TABLE 5-15 - Continued

HIGHEST LEVEL OF CONTAMINANTS DETECTED IN
1986 SHORELINE SOIL SAMPLES

TOTAL METALS: Continued

Compound	Sample ID(s)	Concentration (ug/g=ppm)
Total Copper	11	14,700
Total Lead	3	11,100
Total Mercury	6	1.5
Total Nickel	11	194
Total Selenium	12	1.2
Total Silver	1	2.9
Total Zinc	11	2,960

TABLE 5-17

FREQUENCY AND MAXIMUM CONCENTRATIONS OF
COMPOUNDS DETECTED IN SHORELINE SOIL SAMPLES

Compounds	No. of Detections (Max. 8)	Maximum Concentration (ppb)
Methylene Chloride*	8	40
Acetone*	8	54
Chloroform	8	49
2-Butanone*	8	55
1,1,1-Trichloroethane	2	10
Toluene*	4	2.0
Phenol	2	2,100
Naphthalene	3	190
Dibenzofuran	3	1,000
Fluorene	2	180
Phenanthrene	7	1,500
Anthracene	4	340
Di-n-butylphthalate*	8	620
Fluoranthene	7	1,100
Pyrene	7	1,300
Benzo(a)anthracene	5	740
Bis(2-ethylhexyl)phthalate*	7	820
Chrysene	7	840
Di-n-octylphthalate*	6	600
Benzo(b)fluoranthene	8	1,100
Benzo(a)pyrene	6	840
Indeno(1,2,3-cd)pyrene	6	750
Dibenz(a,h)anthracene	4	210
Benzo(g,h,i)perylene	6	670
4,4'-DDT	2	19,000
HxCDF	2	6.48
HpCDF	2	20.7
OCDF	2	26.7

* Common laboratory contaminant

LEAD	DETECTED AT >500ppm 3 TIMES	MAXIMUM CONCENTRATION 6410 ppm

TABLE 5-17

FREQUENCY AND MAXIMUM CONCENTRATIONS OF
COMPOUNDS DETECTED IN SHORELINE SOIL SAMPLES

Compounds	No. of Detections (Max. 8)	Maximum Concentration (ppb)
Methylene Chloride*	8	40
Acetone*	8	54
Chloroform	8	49
2-Butanone*	8	55
1,1,1-Trichloroethane	2	10
Toluene*	4	2.0
Phenol	2	2,100
Naphthalene	3	190
Dibenzofuran	3	1,000
Fluorene	2	180
Phenanthrene	7	1,500
Anthracene	4	340
Di-n-butylphthalate*	8	620
Fluoranthene	7	1,100
Pyrene	7	1,300
Benzo(a)anthracene	5	740
Bis(2-ethylhexyl)phthalate*	7	820
Chrysene	7	840
Di-n-octylphthalate*	6	600
Benzo(b)fluoranthene	8	1,400
Benzo(a)pyrene	6	840
Indeno(1,2,3-cd)pyrene	6	750
Dibenz(a,h)anthracene	4	210
Benzo(g,h,i)perylene	6	670
4,4'-DDT	2	19,000
HxCDF	2	6.48
HpCDF	2	20.7
OCDF	2	26.7

* Common laboratory contaminant

TABLE 5-22

FREQUENCY AND MAXIMUM CONCENTRATIONS OF COMPOUNDS
DETECTED IN SURFACE WATER SAMPLES

Compound	No. of First Round Detections (Max. 7)**	No. of Second Round Detections (Max. 4)***	Maximum Concentration (ppb)	Sample I.D.
Methylene Chloride*	7	0	7	SP9-SW
Acetone*	7	0	21	SP3-SW
Trans-1,2-Dichloroethene	1	1	11	SP4-SW
Vinyl Chloride	0	1	2	SP4-SW
2-Butanone*	7	0	23	SP3-SW
Toluene*	4	0	3	SP2-SW, SP3-SW, SP4-SW, SP5-SW
Diethylphthalate*	3	0	2	SP3-SW
Di-n-butylphthalate*	7	0	15	SP1-SW
Bis(2-ethylhexyl)phthalate*	7	1	1,300	SP4-SW
Di-n-octylphthalate*	7	0	78	SP11-SW

* Common laboratory contaminant.

** Two of the seven samples, SP9-SW and SP11-SW, are considered offsite samples.

*** One of the four samples, SP9-SW, is considered an offsite sample.

TABLE 5-30
COMPARISON OF COMPOUNDS DETECTED IN UPPER AQUIFER MONITORING WELLS

Upgradient Wells: GW-1S and GW-2S

Compound	No. of First Round Detections (Max. 2)	No. of Second Round Detections (Max. 1)*	Max. Concentration (ppb)	Sample I.D.
Methylene Chloride	1	0	1.0	GW-2S
Acetone	2	0	40	GW-1S
2-Butanone	1	0	9	GW-2S
Toluene	2	0	1.0	GW-1S,GW-2S
Di-n-butylphthalate	2	-	4.0	GW-1S
Bis(2-ethylhexyl)phthalate	2	-	14	GW-1S
Di-n-octylphthalate	2	-	74	GW-1S

Downgradient Wells: GW-3S, GW-4S, GW-5S, GW-6S, GW-7S, GW-8S, GW-9S, GW-10S, GW-11S**

	(Max. 9)	(Max. 10)***		
Vinyl Chloride	3	3	120	GW-9S
Chloroethane	1	0	4.0	GW-7S
Methylene Chloride	5	0	43	GW-9S
Acetone	9	1	8,100	GW-7S P
Carbon Disulfide	1	0	4.0	GW-7S
1,1-Dichloroethane	2	3	320	GW-7S
Trans-1,2-dichloroethene	6	6	1,300	GW-9S
Chloroform	1	1	2.0	GW-4S
1,2-Dichloroethane	0	1	150	GW-7S
2-Butanone	3	2	3,300	GW-7S P
1,1-Trichloroethane	1	2	390	GW-7S P
Trichloroethene	6	6	2,200	GW-9S
Benzene	4	2	98	GW-7S, GW-7S P
4-Methyl-2-pentanone	0	2	16,000	GW-7S P
Tetrachloroethene	6	5	930	GW-9S
Toluene	7	5	370	GW-7S
Chlorobenzene	1	2	85	GW-9S P
Ethylbenzene	5	5	80	GW-9S
Styrene	0	1	22	GW-9S
Total Xylenes	4	5	270	GW-7S
Phenol	5	5	5,800	GW-7S P
2-Chlorophenol	0	1	280	GW-9S, GW-9S P
1,4-Dichlorobenzene	0	2	7.0	GW-9S
1,2-Dichlorobenzene	0	3	4.0	GW-9S
2-Methylphenol	5	5	1,500	GW-9S
4-Methylphenol	5	4	1,900	GW-7S P

TABLE 5-30 - Continued

COMPARISON OF COMPOUNDS DETECTED IN UPPER AQUIFER MONITORING WELLS

Downgradient Wells: GW-3S, GW-4S, GW-5S, GW-6S, GW-7S, GW-8S, GW-9S, GW-10S, GW-11S**

Compound	No. of First Round Detections (Max. 9)	No. of Second Round Detections (Max. 10)***	Max. Concentration (ppb)	Sample I.D.
Isophorone	1	2	53	GW-7S P
2,4-Dimethylphenol	4	5	630	GW-7S P
Benzoic Acid	0	2	600	GW-7S P
1,2,4-Trichlorobenzene	0	1	1.0	GW-5S
Naphthalene	3	4	30	GW-7S
2-Methylnaphthalene	2	3	12	GW-7S
N-nitrosodiphenylamine	0	1	2.0	GW-9S
Di-n-butylphthalate	7	0	15	GW-4S
Bis(2-ethylhexyl)phthalate	7	0	17	GW-7S
Di-n-octylphthalate	7	0	24	GW-8S
Diethylphthalate	1	0	1.0	GW-5S

* GW-2S not sampled in second round because the well was damaged (bent casing and riser). GW-1S analyzed for volatiles only.

** GW-3S not sampled during second round because the lock on the well was violated. First round samples GW-11S data not useable due to holding time violations.

*** GW-7S and GW-9S organics were collected in 2 phases due to the suspected pressence of dense, non-aqueous phase liquids. A P refers to the sample taken prior to purging of the well. The well was then purged and sampled similar to the remaining wells. GW-4S and GW-11S were sampled for volatiles only due to insufficient sample volume.

TABLE 5-31

COMPARISON OF COMPOUNDS DETECTED IN LOWER AQUIFER MONITORING WELLS

Upgradient Wells: GW-1D and GW-2D

Compound	No. of First Round Detections (Max. 2)	No. of Second Round Detections (Max. 2)	Max. Concentration (ppb)	Sample I.D.
Methylene Chloride	2	0	5.0	GW-1D
Acetone	2	2	73	GW-2D
2-Butanone	1	0	12	GW-2D
Toluene	1	0	1.0	GW-2D
Downgradient Wells: GW-5D and GW-6D				
Vinyl Chloride	1	0	12	GW-6D
Methylene Chloride	2	0	1.0	GW-5D, GW-6D
Acetone	2	0	43	GW-5D
2-Butanone	2	0	10	GW-5D
Trans-1,2-dichloroethene	0	1	41	GW-6D
Trichloroethene	0	1	71	GW-6D
Benzene	0	11	3.0	GW-6D
Tetrachloroethene	0	1	40	GW-6D
Ethylbenzene	0	1	2.0	GW-6D
Total Xylenes	0	1	10	GW-6D
Naphthalene	0	1	2.0	GW-6D

TABLE 5-33

Chemical Specific SCG Observed Versus

Allowable Contaminant Concentrations

SUBSTANCE	CLASS	GROUNDWATER MAX CONC. (UG/L)	GROUNDWATER SCG value	GROUNDWATER SOURCE	SURFACE WATER MAX CONC. (UG/L)	SURFACE WATER SCG value	SURFACE WATER SOURCE	SHORELINE MAX CONC. (UG/KG)	SOIL/SUBSF MAX CONC. (UG/KG)	SOIL/SURF MAX CONC. (UG/KG)
Chloromethane	VOC	4	5	x						
Methylene Chloride	VOC	43	5	x	7	50	c	40	22	22
Carbon Disulfide	VOC	4	50	x	21				26	
Acetone	VOC	8,100	50	x				54	310	150
1,1-Dichloroethane	VOC	320	33 ng/l	h	11	50	c			
1,2-Dichloroethene (total)	VOC	1,300	5	x				3	2	
1,2-Dichloroethane	VOC	150	0.8	c		0.94	i			
Chloroform	VOC	2	0.19	g		0.19	i	49	1	2
Vinyl Chloride	VOC	3	2	c	2	0.3	c			
2-Butanone (or MEK)	VOC	3,300	50	x	23			55	84	93
Trichloroethene	VOC	2,200	0	g		0.28	i	1	1	13
1,1,1-Trichloroethane	VOC	390	5	x		50	c	10		
Benzene	VOC	98	ND	b		1	c		4	
Tetrachloroethene	VOC	930	0.7	d@		0.7	c		3	96
Toluene	VOC	370	5	x	3	14.3	i	2	10	1
Ethylbenzene	VOC	80	5	x		5	a		9	
Total Xylenes	VOC	270	50	c		50	c	3	22	5
Chlorobenzene	VOC	85	5	x		5	d	2		
Styrene	VOC	22	5	x						
Phenol	VOC	5,800	1	c		5	a*			
2-Chlorophenol	SEMI	280	5	d*		0.1	i			
1,4-Dichlorobenzene	SEMI	7	4.7	d+		5	d@			
1,2-Dichlorobenzene	SEMI	4	4.7	d+		5	d@			
2-Methylphenol	SEMI	1,500	1	c		5	a*			
4-Methylphenol	SEMI	1,900	1	c		5	a*			
Benzoic Acid	SEMI	600	50	x						
1,2,4-Trichlorobenzene	SEMI	1	5	x		5	a@			
Naphthalene	SEMI	30	10	c		10	d	190	4,000	260
2-4-Dimethylphenol	SEMI	630	5	d*		5	a*			
Dimethyl Phthalate	SEMI		50	x		50	c	42	84	
2-Methylnaphthalene	SEMI	12	50	x					1,700	200
Acenaphthylene	SEMI		50	x				50	840	170
Acenaphthene	SEMI		20	c		20	d	2	3,600	210
N-Nitroso sodiphenylamine	SEMI	2	50	x						
Dibenzofuran	SEMI		50	x				1,000	4,500	240
Diethylphthalate	SEMI	1	50	c	2	50	c		140	
Flourene	SEMI		50	x		50	c	180	7,700	450
Phenanthrene	SEMI		50	c				1,500	49,000	4,500
Anthracene	SEMI		50	x		50	c	340	13,000	1,300
Di-n-butlyphthalate	SEMI	15	50	x	15			620	540	710
4-methyl-2-pentanone	SEMI	16,000	50	x						
Fluoranthene	SEMI		50	c		50	c	1,100	54,000	8,700

ALL VALUES GIVEN IN ug/l OR ug/kg

@ Guideline or standard applies to sum of isomers

+ Standard applies to sum of para (1,4-) and ortho (1,2-) isomers.

TABLE 5-33 (continued)

SUBSTANCE	CLASS	GROUNDWATER MAX CONC. (UG/L)	GROUNDWATER SCG value	GROUNDWATER SOURCE	SURFACE WATER MAX CONC. (UG/L)	SURFACE WATER SCG value	SURFACE WATER SOURCE	SHORELINE MAX CONC. (UG/KG)	SOIL/SUBSF MAX CONC. (UG/KG)	SOIL/SURF MAX CONC. (UG/KG)
Pyrene	SEMI		50	c		50	c	1,300	29,000	13,000
Butylbenzylphthalate	SEMI		50	a		50	c			100
Benzo(a)anthracene	SEMI		0.002	c		0.0(2	c	740	19,000	9,000
Chrysene	SEMI		0.002	c		0.0(2	c	840	18,000	8,000
bis(2-ethyl hexyl)phthalate	SEMI	17	50	a	1,300	0.(	a	820	1,200	800
Di-n-octyl Phthalate	SEMI	74	50	c	78	50	c	400	100	440
Benzo(b)fluoranthene	SEMI		0.002	c		0.0(2	c	1,400	310	10,000
Benzo(a)pyrene	SEMI		nd	b		0.00'2	c	840	19,000	9,500
Indeno(1,2,3-cd)Pyrene	SEMI		0.002	c		0.0(2	c	750	11,000	9,900
Dibenz(a,h)anthracene	SEMI		50	a				210	3,200	2,000
Benzo(g,h,i)perylene	SEMI		50	a				670	7,600	8,300
Isophorone	SEMI	53	50	a		50	c			
4-4' DDT	PEST		nd	b		0.00(	a	19,000		270
4-4' DDE	PEST		nd	c		0.00(	a	30		
Aroclor-1252	PCB		0.1	b		0.00(	a			1,700
Aroclor-1260	PCB		0.1	b		0.00(	a			7,200
TCDD	DIOXIN		0.000035	b		0.000'01	b		0.32	
HxCDD	DIOXIN							3.82		
HpCDD	DIOXIN							3.78		
OCDD	DIOXIN							3.22		
HxCDF	FURAN							6.48		
HpCDF	FURAN							20.7		
OCDF	FURAN							26.7		
Aluminum	MCP	361,000			3,940	103	a	83,700	69,100	30,600
Antimony	MCP		3	c		3	c	94		
Arsenic	MCP	172	2.5 mg/l	b		2.2	f	22	153	13
Barium	MCP	7,010	1,000	b	97	1,000	d	849	3,060	851
Beryllium	MCP	48.2	3.9 mg/l	b		3.7	f		13.2	1.3
Cadmium	MCP	487	10	b		10	d	23		17
Calcium	MCP	640,000			107,000			89,000	292,000	90,000
Chromium	MCP	1,440	50	bS		50	d	284	27.0	45
Cobalt	MCP	97.7				5	a	8.2	13.7	19
Copper	MCP	105	200	f	21	200	d	4,290	111	151
Iron	MCP	8,900,000	300	b	4,490	200	d	165,000	39,100	101,000
Lead	MCP	150	25	b	30	50	f	6,410	151	747
Magnesium	MCP	1,670,000	35,000	c	30,400	35,000	d	57,300	79,400	29,000
Manganese	MCP	734,000	300	b	556	300	d	3,420	31,400	1,500
Mercury	MCP	0.81	2	b		0.2	c	1.3	0.33	0.43
Nickel	MCP	827	13.4	b		44.0	aU	301	33.3	49
Potassium	MCP	241,000			19,100			1,440	5,250	7,530
Silver	MCP	74.4	50	b		0.1	a	10	5.13	0.6
Sodium	MCP	1,270,000	20,000	f	219,000			1,430	1,790	588
Vanadium	MCP	1,950				14	a	124	39.8	44
Zinc	MCP	5,900	300	f	223	30	a	2,720	285	1,070
Cyanide	MCP	70	100	f		5.2	d*	29	18.0	3.9
Phenols, Total	MCP	17	1	b	0.016	6.0	a	2.1	0.10	

METALS, CYANIDE, AND PHENOLS OF SEDIMENTS AND SOILS ARE GIVEN IN mg/kg ALL OTHER PARAMETERS AND WATERS GIVEN AS ug/L OR ug/kg

Standard calculated with minimum hardness value for the surface water samples tested
S Standard applies to hexavalent chromium
D Standard applies to dissolved arsenic
* Standard applies to free cyanide

a - NYSDEC Surface Water Quality Standards (6 NYCRR, Part 701)
b - NYSDEC Groundwater Quality Regulations (6 NYCRR, Part 703)
c - NY State Ambient Water Quality Guidance Values (April 1, 1987)
d - NY State Ambient Water Quality Standards (April 1, 1987)
e - NYSDOH Maximum Contaminant Levels for Public Water Supplies (10 NYCRR, Subpart 5-1)
f - NYSDOH Standards, Sources of Water Supply (10 NYCRR, Part 170)
g - USEPA (SMCL) Maximum Contaminant Level Goals (40 CFR, Part 141, Subpart F)
h - Clean Water Act, Water Quality Criteria for Human Health (Drinking water only; USEPA, 1985)
i - Clean Water Act, Water Quality Criteria for Human Health (Fish and Drinking Water; USEPA, 1985)

TABLE 5-34

CONTAMINANTS THAT EXCEEDED SCGs

GROUNDWATER

Methylene Chloride
Acetone
1,1-Dichloroethane
1,2-Dichloroethene (total)
1,2-Dichloroethane
Chloroform
Vinyl Chloride
2-Butanone
Trichloroethene
1,1,1-Trichloroethane
Benzene
Tetrachlorethane
Toluene
Ethylbenzene
Total Xylenes
Chlorobenzene
Stryrene
Phenol
2-Chlorophenol
1,4-Dichlorobenzene
2-Methyl phenol
4-Methyl phenol
Benzoic Acid
Naphthalene
2,4 - Dimethylphenol
4-methyl-2-pentanone
Di-n-octyl phthalate
Isophorone
Arsenic
Barium
Beryllium
Cadmium
Chromium
Iron
Lead
Magnesium
Manganese
Nickel
Silver
Sodium
Zinc
Phenols, Total

Surface Water

Vinyl Chloride
bis(2-ethylhexyl) phthalate
Di-n-octylphthalate
Aluminum
Copper
Iron
Zinc
Magnesium
Manganese

TABLE 3-1 (page 1 of 3)

REMEDIAL ACTION OBJECTIVES, GENERAL RESPONSE ACTIONS, REMEDIAL TECHNOLOGIES AND PROCESS OPTIONS

Environmental Media	Remedial Action Objectives	General Response Actions	Remedial Technologies	Process Options
Soil				
	No Action	No Action	No Action	- No Action
	Human Health			
	Prevent direct human contact	Institutional Action	Institutional Action	- Deed Restrictions
		Containment	Capping	- RCRA - Multilayered with low permeability soil layer - Multilayered with synthetic geomembrane - Soil

TABLE 3-1 (Cont.) (page 2 of 3)

Environmental Media	Remedial Action Objectives	General Response Actions	Remedial Technologies	Process Options
Soil (cont.)	Environmental Protection			
	Prevent erosion of on-site surficial and shoreline soil into the Niagara River	Physical Controls	Erosion Controls	- Rip Rap - Dikes - Trees - Structural Development - Sheet Pile Breakwater
		Containment	Capping	see above
	Prevent leaching of contaminants to groundwater	Excavation/Removal	Excavation and Off-site Disposal	- Excavation and Disposal at a RCRA or commercial facility
		Treatment	Biological Treatment	- Bioreclamation
			Physical/Chemical Treatment	- In-situ chemical treatment - Soil Flushing - Solidification/stabilization - Vitrification
			Thermal Treatment	- Incineration - Infrared

TABLE 3-1 (Cont.) (page 3 of 3)

Environmental Media	Remedial Action Objectives	General Response Actions	Remedial Technologies	Process Options
Groundwater				
	No Action	No Action	No Action	No Action
	Human Health			
	Prevent direct human contact	Institutional Action	Institutional Action	- Deed Restrictions - Long-term Monitoring
	Environmental Protection			
	Prevent migration of contaminated groundwater	Containment	Vertical Barriers	- Sheet piling - Slurry wall
		Collection	Groundwater Extraction	- Subsurface drain/ Withdrawal System - Withdrawal Wells
		Treatment	Off-site Treatment	- POTW - Commercial Facility
			On-site Treatment	Site-specific Process Options

TABLE 3-2

SUMMARY OF SELECTED REMEDIAL TECHNOLOGIES
AND PROCESS OPTIONS

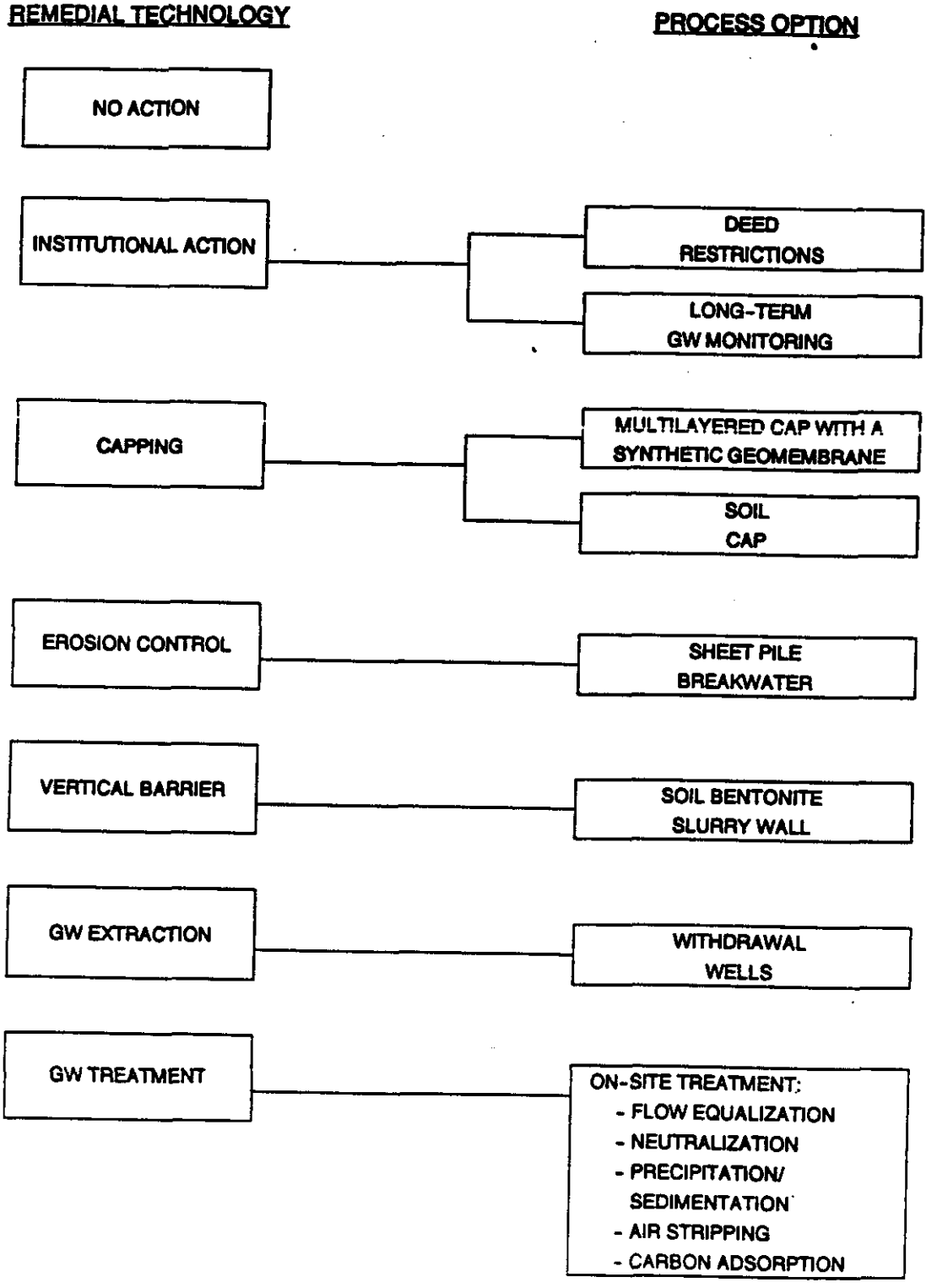


TABLE 3-3

REMEDIAL ALTERNATIVES

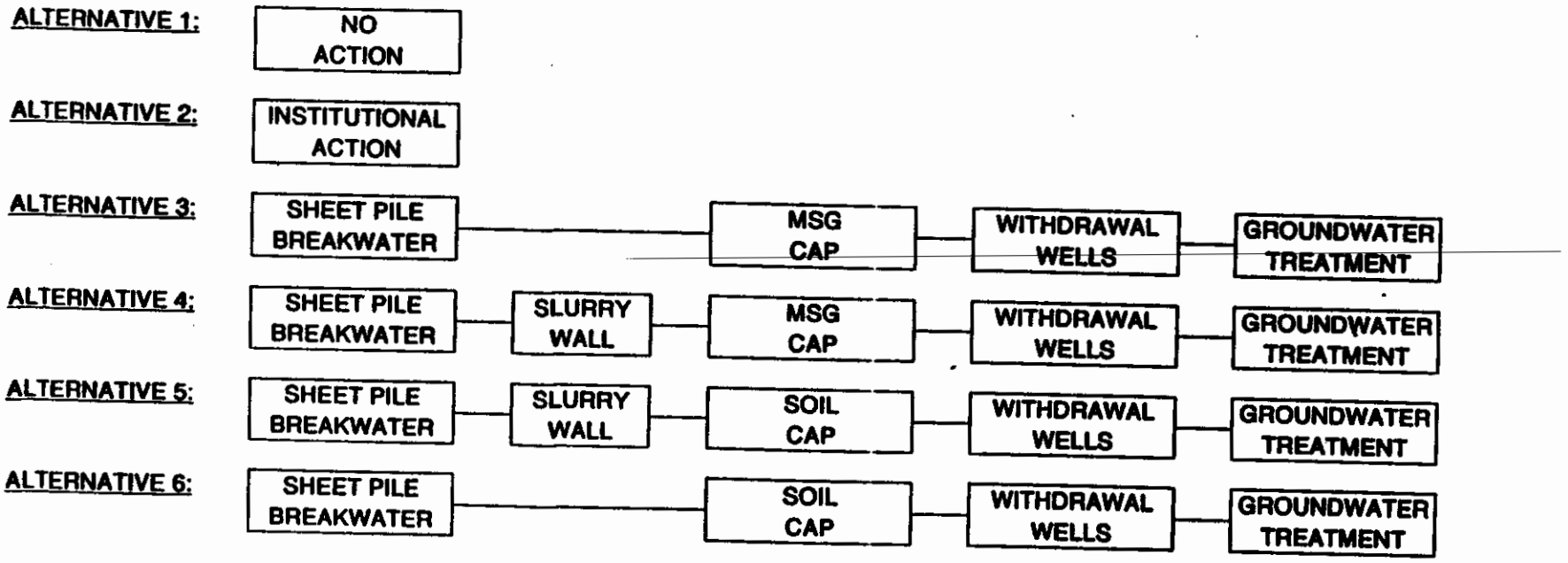


TABLE A

Detailed Analysis of Remedial Alternatives (Part 1)

Remedial Alternatives	Short Term Impacts/ Effectiveness (RW = 10)	Long Term Effectiveness/ Permanence (RW = 15)	Reduction in Toxicity, Mobility, and Volume (RW = 15)	Implementability (RW = 15)	Compliance with Standards, Criteria and Guidance (RW = 10)	Overall Protection of Human Health and Environment (RW = 20)	Cost (RW = 15)	TOTAL
1. No Action	10	2	0	10	5	0	15	42
2. Institutional Action	9	2	0	11	5	0	15	42
3. -Sheet Pile Breakwater -Multilayered Cap w/ Synthetic Geomembrane (MSG Cap) -Withdrawal Wells -Groundwater Treatment	6	6	9	10	9	12	1	53
4. -Sheet Pile Breakwater -Slurry Wall -MSG Cap -Withdrawal Wells -Groundwater Treatment	3	9	10	9	9	13	0	53
5. -Sheet Pile Breakwater -Slurry Wall -Soil Cap -Withdrawal Wells -Groundwater Treatment	3	8	8	8	8	12.	2	49
6. -Sheet Pile Breakwater -Soil Cap -Withdrawal Wells -Groundwater Treatment	6	5	8	11	8	12	4	54

TABLE 1

GRATWICK RIVERSIDE PARK GROUNDWATER SIMULATIONS

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
SOIL CAP	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
VERTICAL BARRIERS																
Upgradient	x	x	x	x	x	x									x	x
Sides			x			x	x	x	x	x					x	x
Downgradient							x	x	x	x	x	x				
Slurry Wall	x	x	x				x	x							x	x
Sheet Piling				x	x	x	x	x	x	x	x	x				
EXTRACTION																
No Pumping	x			x			x		x		x				x	
Partial Pumping		x			x			x		x		x	x			x
Full Pumping			x			x								x		

SIMULATIONS ALREADY PERFORMED

	17	18	19
SOIL CAP	x	x	x
VERTICAL BARRIERS			
Upgradient	x	x	
Sides	x	x	
Downgradient	x	x	x
Slurry Wall		x	
Sheet Piling	x	x	x
EXTRACTION			
No Pumping			
Partial Pumping			
Full Pumping	x	x	x

#5 #6

ESTIMATE OF CONTAMINANT LOADINGS TO THE NIAGARA RIVER FROM GROUNDWATER FLOW SIMULATIONS

Run	Total Flow to River	Withdrawal Rate	AVERAGE LOADINGS TO THE NIAGARA RIVER				
			Volatile Organics	Semi-volatile Organics	Total Organics	Total Metals	Total Organics & Metals
	gpm	gpm	(lb/day)	(lb\day)	lb\day	lb\day	lb/day
Existing Conditions	116	0	1.6	1.0	2.6	2.0	4.6
A	41	0	0.6	0.4	1.0	0.7	1.7
B1	17	53	0.2	0.2	0.4	0.3	0.7
B2	18	44	0.2	0.2	0.4	0.3	0.7
B3	19	32	0.3	0.2	0.5	0.3	0.8
C	0	83	0.0	0.0	0.0	0.0	0.0
D	66	0	0.9	0.6	1.5	1.1	2.6
E1	24	68	0.3	0.2	0.5	0.4	0.9
E2	25	59	0.3	0.2	0.5	0.4	0.9
E3	26	47	0.4	0.2	0.6	0.4	1.0
F	0	128	0.0	0.0	0.0	0.0	0.0
G	43	0	0.6	0.4	1.0	0.7	1.7
H1	8	100	0.1	0.1	0.2	0.1	0.3
H3	8	105	0.1	0.1	0.2	0.1	0.3
I	46	0	0.6	0.4	1.0	0.8	1.8
J1	10	102	0.1	0.1	0.2	0.2	0.4
J2	2	127	0.0	0.0	0.0	0.0	0.0
J3	8	104	0.1	0.1	0.2	0.1	0.3
J4	4	128	0.1	0.0	0.1	0.1	0.2
J5	4	118	0.1	0.0	0.1	0.1	0.2
K	57	0	0.8	0.5	1.3	1.0	2.3
L1	19	100	0.3	0.2	0.5	0.3	0.8
L3	18	102	0.2	0.2	0.4	0.3	0.7
M1	41	100	0.6	0.4	1.0	0.7	1.7
M2	40	110	0.5	0.4	0.9	0.7	1.6
N1	0	192	0.0	0.0	0.0	0.0	0.0
N2	2	181	0.0	0.0	0.0	0.0	0.0
O	31	0	0.4	0.3	0.7	0.5	1.2
P1	9	53	0.1	0.1	0.2	0.2	0.4
P2	8	65	0.1	0.1	0.2	0.1	0.3

NOTE: Average volatile organics concentration: 1.13 ppm
Average semi-volatile organics concentration: 0.75 ppm
Average total organics concentration: 1.88
Average total metals concentration: 1.4 ppm
Above average concentrations are calculated using data from Rounds 1 and 2 of ground water sampling and analysis.

GRATWICK-RIVERSIDE PARK
COST ESTIMATES FOR ADDITIONAL ALTERNATIVES

	ALTERNATIVE					
	D	E3	J5	L1	M1	N2
CAPITAL COSTS						
-Groundwater Monitoring Wells	$8,000	$8,000	$9,000	$8,000	$8,000	$8,000
-Groundwater Diversion Trench	$329,000	$329,000	NA	NA	NA	NA
-Sheet Piling	$3,674,400	$3,674,400	$5,731,300	$5,132,000	NA	NA
-Soil Cap	$9,700,000	$9,700,000	$9,700,000	$9,700,000	$9,700,000	$9,700,000
-Withdrawal Wells	NA	$126,500	$134,100	$126,500	$126,500	$164,800
-Groundwater Pretreatment	NA	$614,100	$1,038,400	$930,800	$930,800	$1,346,400
TOTAL CAPITAL COST	$13,711,000	$14,452,000	$16,612,000	$15,897,000	$10,765,000	$11,219,000
ANNUAL O & M COSTS						
-Groundwater Monitoring	$17,000	$17,000	$17,000	$17,000	$17,000	$17,000
-Soil Cap	$68,000	$68,000	$68,000	$68,000	$68,000	$68,000
-Groundwater Pretreatment	NA	$126,200	$232,300	$202,600	$202,600	$326,400
TOTAL ANNUAL O & M COST	$85,000	$211,000	$317,000	$288,000	$288,000	$411,000
PRESENT WORTH OF O & M COST	$801,000	$1,989,000	$2,988,000	$2,715,000	$2,715,000	$3,874,000
PRESENT WORTH OF TOTAL COST (CAPITAL PLUS O&M)	$14,512,000	$16,441,000	$19,600,000	$18,612,000	$13,480,000	$15,093,000

NOTES:

Present worth analysis based on a 30 year performance period at 10% interest per year

NA – Not Applicable

Alt. D – Upgradient Sheet Pile, Soil Cap, Groundwater Diversion Trench

Alt. E3 – Upgradient Sheet Pile, Soil Cap, Groundwater Diversion Trench, Withdrawal Wells (partial pumping), Groundwater Pretreatment

Alt. J5 – Downgradient and Side Sheet Pile, Soil Cap, Withdrawal Wells (partial pumping), Groundwater Pretreatment

Alt. L1 – Downgradient Sheet Pile, Soil Cap, Withdrawal Wells (partial pumping), Groundwater Pretreatment

Alt. M1 – Soil Cap, Withdrawal Wells (partial pumping), Groundwater Pretreatment

Alt. N2 – Soil Cap, Withdrawal Wells (full pumping), Groundwater Pretreatment

5/7/90

OCT 0 5 1990

TABLE 10-14

GRATWICK-RIVERSIDE PARK
COST ESTIMATES FOR REMEDIAL ALTERNATIVES

COST	ALTERNATIVE					
	1	2	3	4	5	6
CAPITAL COSTS						
-Groundwater Monitoring Wells	NA	$8,000	$8,000	$8,000	$8,000	$8,000
-Sheet Pile Breakwater	NA	NA	$5,132,000	$5,132,000	$5,132,000	$5,132,000
-Slurry Wall	NA	NA	NA	$2,184,000	$2,184,000	NA
-MSG Cap	NA	NA	$13,240,000	$13,240,000	NA	NA
-Soil Cap	NA	NA	NA	NA	$9,700,000	$9,700,000
-Withdrawal Wells	NA	NA	$129,000	$129,000	$129,000	$129,000
-Groundwater Treatment (Pretreatment)	NA	NA	$931,000	$452,000	$685,000	$783,000
TOTAL CAPITAL COST	NA	$8,000	$19,440,000	$21,145,000	$17,838,000	$15,752,000
ANNUAL O & M COSTS						
-Groundwater Monitoring Wells	NA	$17,000	$17,000	$17,000	$17,000	$17,000
-MSG Cap	NA	NA	$69,000	$69,000	NA	NA
-Soil Cap	NA	NA	NA	NA	$68,000	$68,000
-Groundwater Treatment (Pretreatment)	NA	NA	$203,000	$94,000	$142,000	$165,000
TOTAL ANNUAL O&M COST	NA	$17,000	$289,000	$180,000	$227,000	$250,000
PRESENT WORTH OF O & M COST	$0	$161,000	$2,724,000	$1,697,000	$2,140,000	$2,357,000
PRESENT WORTH OF TOTAL COST (CAPITAL PLUS O&M)	$0	$169,000	$22,164,000	$22,842,000	$19,978,000	$18,109,000

NOTE Present worth analysis based on a 30 year performance period at 10% interest per year
NA - Not Applicable
Alt 1. - No Action
Alt 2. - Institutional Action
Alt 3. - Sheet Pile Breakwater, MSG Cap, Withdrawal Wells, Groundwater Pretreatment
Alt 4. - Sheet Pile Breakwater, Slurry Wall, MSG Cap, Withdrawal Wells, Groundwater Pretreatment
Alt 5. - Sheet Pile Breakwater, Slurry Wall, Soil Cap, Withdrawal Wells, Groundwater Pretreatment
Alt 6. - Sheet Pile Breakwater, Soil Cap, Withdrawal Wells, Groundwater Pretreatment

Attachment 2

Administrative Record

Groundwater Sampling & Analyses	-	Carried out by Recra Research, Inc. for the City of North Tonawanda, July 1979.
Phase I Report	-	Prepared by Engineering Science, Inc. in association with Dames & Moore for the New York State Department of Environmental Conservation, June 1983.
Site Assessment	-	Prepared by Roy F. Weston, Inc. for the USEPA, September 1983.
Preliminary Evaluation of Chemical Migration to Groundwater and the Niagara River from Selected Waste Disposal Sites.	-	Prepared by the U.S. Geological Survey (USGS) in cooperation with NYSDEC for the USEPA, March 1985.
Phase II Report	-	Prepared by Wehran Engineering, P.C. for the New York State Department of Environmental Conservation, June 1985.
Gratwick Riverside Park	-	RI/FS Correspondence File.
Surface Soil and Shoreline Soil Sampling & Analysis.	-	Carried out by the Niagara County Health Department and Niagara Mohawk Power Corporation in October 1986; results are dated July 1987.
Public Participation Plan	-	Prepared by NYSDEC, Sepgember 1987.
Surface Geophysical Studies Report - Carried out as a part of RI/FS.	-	Conducted by Hager-Richter Geoscience, Inc. for URS, September 1987.
Draft Remedial Investigation	-	Prepared by URS Consultants for the New York State Department of Environmental Conservation, dated October 1989.
Reduction of Toxic Loadings to the Niagara River from Hazardous Waste Sites in the United States.	-	A Report by the USEPA and the NYSDEC, November 1989.
Draft Feasibility Study	-	Prepared by URS Consultants for the New York State Department of Environmental Conservation, dated December 1989.

Gratwick Park - Groundwater Modeling - Groundwater Flow and Contaminant Loadings to the Niagara River.	-	Conducted by URS Consultants; Correspondence dated: 4/3/90, 4/10/90, 4/24/90 and 5/7/90.
Results of Test Boring Program Near "Pothole" - Gratwick Riverside Park.	-	Conducted by URS Consultants, 5/2/90.
Project Information Sheets	-	Prepared by NYSDEC, July 1987, November 1987, April 1988, August 1988, April 1989, May 1989, November 1990.
Responsiveness Summaries Documenting Public Meetings	-	Prepared by NYSDEC, September 1987, May 1989, December 1990.
Transcript from December 6, 1990 Public Meeting on the Proposed Remedial Aciton Plan	-	Prepared for NYSDEC, December 1990.
Review and Response to Substantive Comments Received on Proposed Remedial Action Plan.	-	Prepared by NYSDEC, included as a part of February 1991, Record of Decision.

Attachment 3

RESPONSIVENESS SUMMARY FOR COMMENTS RECEIVED DURING
PUBLIC COMMENT PERIOD FOR THE GRATWICK PARK
PROPOSED REMEDIAL ACTION PLAN

A public meeting was held on December 6, 1990 to present the Gratwick Park Proposed Remedial Action Plan (PRAP). The public comment period remained open until January 8, 1991. During that time period two comment letters were received (presented in Appendix A). The concerns presented in those letters have been addressed in the responsiveness summary presented below.

Response to January 7, 1991 Letter from Occidental Chemical Corporation (OCC)

The following responses correspond directly to Attachment 1 of the above-referenced letter, which details the rationale for the comments provided by OCC (letter is attached as Appendix A).

A) Draft RI/FS Risk Assessment

The assumptions made as a part of the exposure scenario were made based on professional judgement and are meant to provide a conservative estimate of the worst case situation.

1. Exposure Time

The Gratwick Riverside Park Site is a public park that is regularly used for leisure and recreational activities including boating, sports and picnics. This usage of the site greatly increases the possibility of human exposure to site contaminants. However, specific guidance on exposure time is not presented in the EPA guidance documents utilized to prepare health risk assessments. Consequently, estimating human exposure is largely dependent on professional judgement and involves characterization of human behavioral patterns that must be approximated into the relatively distant future, e.g. 70 years. In preparing the risk assessment, the EPA's concept of Reasonable Maximum Exposure (RME), that is the highest exposure that is reasonably expected to occur at the site, was utilized to estimate human exposure. It is our position that the assumptions made regarding exposure are appropriate to the use of the site and are in keeping with the concept of reasonable maximum exposure.

2. Dermal Exposure

No specific value for absorption factor is presented in the EPA guidance documents. This factor is a chemical specific value, and in general, information to support a determination of the absorption factor is limited. The absorption factor utilized for the health risk assessment was obtained from a commonly used reference for health risk assessments, i.e. Hawley, 1985. (The complete citation for this document is given in the RI.) There

are a range of values for the absorption factor presented in this document. This value, along with other factors utilized for determination of dermal exposure to soil, were selected based on the concept of reasonable maximum exposure as presented in the EPA guidance for health risk assessment.

3. Non-Carcinogenic Exposure to Surface Soil

An RfD for lead of 1.4E-03 is obtained using the current MCL for lead, i.e. 50 ug/1. An RfD of 1.4E-04 is obtained when the proposed MCL (5 ug/1) is utilized. In order to be protective of human health and to conform with the concept of reasonable maximum exposure presented in the EPA guidance, the RfD value based on the proposed MCL was used.

B) Proposed Remedial Action Plan

"Slurry Wall" Behind Sheet Pile Wall

In the PRAP it is proposed that a bentonite slurry be injected on the landward side of the sheet piling in order to reduce the effective permeability of the sheet piling. The effect of decreasing the permeability will:

- Reduce groundwater flow from the park to the Niagara River.

- Once pumping begins it will reduce the amount of Niagara River water introduced to the groundwater withdrawal system; by doing so less withdrawal wells will have to be installed, a greater hydraulic influence can be achieved by the pumping wells and less contaminated water will have to be treated.

It is correctly stated in OCC's comments that the discharge of groundwater to the Niagara River does not provide an additional incremental cancer risk and that a majority of the chemical load is expected to be captured based on groundwater simulations. In response, the purpose of our program is to address environmental and health risks associated with inactive hazardous waste sites. One document which was considered in order to establish remedial goals was the report entitled, "Reduction of Toxic Loadings to the Niagara River from Hazardous Waste Sites in the United States." In that report Gratwick Park was "... targeted for prompt reductions in the loading of toxics to the Niagara River..." Groundwater modelling was carried out based on the injection of a bentonite slurry on the backside of the sheet piling.

The favored alternative presented in the OCC was to install a collection tile along the shoreline rather than injecting the bentonite slurry behind the sheet piling. In order to effectively reduce the migration of water from the Niagara River to the groundwater withdrawal system the tile would have to be installed below the current ground surface. This would mean the water collected on the collection tile would need to be treated because of potential contact with fill/contaminated groundwater. In addition, installation of the collection tile would require upgraded health and safety measures

causing an increased short term health risk as well as increased costs. An increased cost would also be added due to the need to handle the excavated material as hazardous waste. These factors make this alternative less effective in addressing the goals of this remedial program.

Soil Cap

In OCC's letter they propose grid sampling the surface soil (100' x 100' grid) and placing 18 inches of soil in areas of elevated PAHs with six inches placed elsewhere. The heterogeneous nature of the contamination at the site prevents absolute characterization of the contamination using any type of grid sampling program.

Collection and Pumping of Overburden Groundwater

It is agreed that pump tests will be required during the design. However, based on groundwater modelling, the installation of a tile drain was shown to be ineffective because the high permeability of the fill material. The tile drain system would have a limited capture zone since it would not significantly increase permeability relative to the permeability of the fill material. In addition, the installation of a tile drain would require strict health and safety requirements (increasing costs) and would produce increased short term impacts. In addition the excavated material would be handled as hazardous waste which would further increase costs. These factors prevent replacing the proposed withdrawal well system with a tile drain.

Monitoring

In Table 10-3 of the September 1990 Draft Final FS samples taken for long term monitoring purposes are listed as being analyzed for the full TCL. The purpose of identifying a price quote for the full TCL is to provide a conservative estimate for the costs associated with long term monitoring. A site specific parameter list (SSPL) will be used during long term monitoring. However, reviewing Table 5-34 from the RI it will be necessary to analyze the samples for volatiles, semi-volatiles and metals. As a result, incorporting current costs for TCL analyses is a reasonable estimate.

Cost Review

The costs presented were based on conservative estimates and are appropriate as long as cost comparisons between different alternatives are all based on the same assumptions. There is more on this point in the discussion of the weighted matrix scoring for cost, which is presented below.

Modified Alternative

The responses to the individual components of the "Modified Alternative" are presented above. Below is a listing of the scores given to the proposed alternative in the PRAP and the scores given to the OCC proposal taken from Appendix B of their January 7, 1991 correspondence.

	PRAP (FS Alternative 6)	OCC Proposal
Short Term Impacts & Effectiveness (max. - 10)	6	7
Long Term Effectiveness & Permanence (max. - 15)	5	6
Reduction in Toxicity/Mobility/Volume (max. - 15)	8	8
Implementability (max. - 15)	11	10
Compliance with Federal ARARs & State SCGs (max. - 10)	8	9
Overall Protection of Human Health and the (max. - 20)	12	10
Cost (max. - 15)	4	11

Below is an evaluation of these scores relative to each other:

Short Term Impacts and Effectiveness

The OCC score should be, at the most, the same as the PRAP score. If the OCC proposal for a tile drain is carried through then this score would decrease based on the discussion presented above.
OCC Proposal - 6 (relative to the PRAP score of 6).

Long Term Impacts and Effectiveness

Again, the OCC score should be, at the most, the same as the PRAP score. With a less extensive cap the potential for failure increases and reduces the score for long term effectivess.
OCC Proposal - 4 (relative to the PRAP score of 5).

Reduction of Toxicity/Mobility/Volume

No comment.
OCC Proposal - 8 (relative to the PRAP score of 8).

Implementability

The score given by OCC is appropriate unless the tile drain option is chosen. If the tile drain is used the score would decrease.
OCC Proposal - 10 (relative to the PRAP score of 11).

Compliance with ARARs/SCGs

The score for the OCC proposal should be less than that for the PRAP score because OCC's proposal is less responsive in addressing requirements for a variance from a Part 360 type cap. Even though the PRAP cap is not specifically a Part 360 type cap, it meets the requirements of a Part 360 variance.
OCC Proposal - 6 (relative to the PRAP score of 8).

Overall Protection of Human Health and the Environment

No comment.
OCC Proposal - 10 (relative to the PRAP score of 12).

Cost

When evaluating costs, the alternative with the lowest present worth shall be given the highest score of 15. The other alternatives shall be assigned the cost score inversely proportional to their present worth. Since this scoring is a relative scoring based on the range of costs of the alternatives, the frame of reference for assigning costs will affect the scoring. When the alternatives were originally scored for COST (presented in the PRAP), the NO ACTION alternative was retained and used as the low end frame of reference. This alternative, as well as the INSTITUTIONAL ACTION alternative, cannot realistically be selected for this site. In addition, since OCC used a different basis for determining their estimated costs it is difficult to give exact scoring across the range of alternatives considered viable (alternatives 3-6 in FS and OCC alternative). A range of approximately $10 million for the OCC proposal to $15 million for FS Alternative 3 is a very conservative revision of costs using OCC's basis for estimation. Based on this the following cost scores result:
OCC Proposal - 15 (relative to PRAP score of 12).

The following scoring summary results:

	PRAP (FS Alternative 6)	OCC Proposal
Short Term Impacts & Effectiveness	6	6
Long Term Effectiveness & Permanence	5	4
Reduction in Toxicity/Mobility/Volume	8	8
Implementability	11	10
Compliance with Federal ARARs & State SCGs	8	6
Overall Protection of Human Health and the	12	10
Cost	12	15
TOTAL SCORE:	62	59

Response to December 27, 1990 Letter from Mr. Edward Kuczkowski

Question: What will be the height of the sheet piling at the river's edge?

Answer: It is anticipated that the top of the sheet piling could be as much as ten feet above the river.

Concern: Mr. Kuczkowski expressed a concern about the ability to fish from the park as well as the need to install a railing if the top of the wall was more than approximately four feet above the river.

Response: It is understood that the park is visited by a large number of people for recreational purposes, including fishing from the shoreline. At the December 6, 1990 public meeting Mr. Eisenhauer, North Tonawanda City Engineer, expressed a similar concern about the future use of the site. The NYSDEC appreciates the desire to maintain this site as a public park. The goals of the NYSDEC are to use its resources to perform the work needed to remediate inactive hazardous waste sites. If additional measures are needed to keep the park open, the PRPs (responsible parties) may have to become involved to achieve that goal. Your concern about the need for railings along the shoreline is appreciated and will be taken into account as things develop during the remedial design.

Concern: Mr. Kuczkowski re-emphasized his concern over the condition of the onsite storm sewers as well as the need to avoid restricting flow of upgradient surface runoff as it moves to the river.

Response: A response to this concern, was presented in the December 21, 1990 letter summarizing the December 6, 1990 public meeting. The issue of directing storm water flow is very relevant to this site. The proposed remedial action includes surface water drainage around the perimeter of the soil cap. During the remedial design the surface water drainage presently passing through the onsite storm sewers will be addressed in order to prevent any interruption in the flow of the surface water to the river.

APPENDIX A

OxyChem®

January 7, 1991

Mr. James A. Moras
Project Manager
NYS Department of Environmental Conservation
Room 222
50 Wolf Road
Albany, New York
12233-7010

Re: Gratwick - Riverside Park,
Draft RI/FS and Draft PRAP

Dear Mr. Moras:

Occidental Chemical Corporation (OxyChem) wishes to make the following comments on the Gratwick-Riverside Park Proposed Remedial Action Plan (PRAP) dated August 1990, and the Draft Final Remedial Investigation and Feasibility Study (RI/FS) at the Gratwick - Riverside Park Site dated September 1990.

The incremental health risk has been overestimated by the risk assessment included in the Draft RI/FS (Chapter 6). The incremental cancer risk posed by the conditions at the Site has been reassessed and found to be on the order of 5E-06 not 6.5E-05 as presented in the Draft RI/FS. The principal reason for the difference in cancer risks estimated is due to incorrect exposure scenarios used in the RI/FS.

Based on a reassessment of the risk, OxyChem believes that a more limited remedial alternative can be considered.

Based on the identified site conditions, such as localized areas with elevated chemical concentration, OxyChem believes that the PRAP presented by DEC can be improved by making the following changes without reducing the overall effectiveness of the system.

Soil Cap

- collection and analysis of surficial soil samples to identify areas of elevated PAH presence (full 18" cap in elevated areas; modified cap in other areas)
- cap 50% of the Park Area (assumed for the purpose of cost estimation)
- no underlying geotextile.

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Sheet Pile Wall	-	no bentonite slurry wall - retain option of supplementing sheet pile wall as necessary to lower hydraulic conductivity if economically justified based upon identified flow conditions.
Groundwater Collection	-	retain option of tile collection system.
Monitoring	-	Site Specific Indicators (SSI) only.

In addition, the option of a tile collection system in place of the proposed well system should be retained as a possible alternative. It is possible that a tile collection system may prove to be more effective depending upon the hydrogeologic nature of the overburden waterbearing regime.

A detailed review of the risk assessment and PRAP modifications are presented in the attached comments.

If you have any questions regarding this submission, please do not hesitate to call.

Sincerely yours,

Diane Schmidtke

for Alan F. Weston, Ph.D.
Manager, Analytical Services
Special Environmental Program

AFW/cdd
Attachments

c.c. The Honorable Elizabeth C. Hoffman, Mayor (City of North Tonawanda)
John M. Toennies (Niagara Mohawk Power Corporation)
John W. Siedlecki (Bell Aerospace-Textron)

ATTACHMENT I

OXYCHEM COMMENTS ON GRATWICK-RIVERSIDE PARK PROPOSED REMEDIAL ACTION PLAN (AUGUST, 1990) AND DRAFT FINAL REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE GRATWICK-RIVERSIDE PARK SITE (SEPTEMBER 1990)

A) DRAFT RI/FS RISK ASSESSMENT

Assumptions used in the RI/FS soil exposure scenario were overly conservative resulting in an incremental cancer risk and a total chronic hazard index that are too high. Therefore,the risk has been reassessed (see Appendix A) using more appropriate exposure scenarios.

Futhermore, according to the draft RI/FS, all of the incremental cancer risk at the site is associated with either ingestion or dermal contact of surficial soils and was essentially due to the presence of PAH's and PCB's (approximately 97 and 98 percent for the RI/FS representative and worst case scenarios, respectively). These chemicals are not components of wastes attributable to OxyChem.

Review of RI/FS Risk Assessment Assumptions

1) Exposure Time

Exposure time for adults and older children involves 4 days per week for approximately 7 months for their entire lifetime period. This assumption is unrealistic since it assumes that the individual spends enough time in the park to have skin become soiled and have enough inadvertent hand-to-mouth contact or other opportunities for soil ingestion to consume 100 mg of soil. Such exposure would require some extensive physical activity, not simply a walk through the park. Four days per week would be precluded for older children during much of the 7 months because of school. Similarly, it is precluded for adults for most of their lives because of work schedules.

The number of months spent in the park also may exceed what is a reasonable maximum (May through September for infants and April through October for adults and older children) based on obvious competing demands for the individual's time and for the weather conditions in this area.

As a result, the combination of the increased days and months could exaggerate the expected reasonable maximum exposure by a factor of 10 or more.

2) Dermal Exposure

The dermal exposure is over-stated. In the RI/FS assessment, the dermal exposure and oral ingestion exposure are approximately the same while previous experience demonstrates that the ingestion portion of the exposure to surface soil would be much higher than the dermal portion. This is particularly true of the chemicals of concern (PAHs, PCBs and dioxins/furans) which are large molecules with a high tendency to adsorb to soil and a low tendency to be absorbed through the skin. The dermal exposure and oral ingestion exposure similarity may be related to several assumptions including the "absorption factor" which is high.

3) Non-Carcinogenic Exposure to Surface Soil

This Hazard Index value is too high. Part of the excess may be related to the dermal absorption of lead. If it occurs at all, the absorption would be very low for the metals. It also appears that the reference dose (RfD) may be in error. Source references indicate the RfD for lead is 1.4E-03 while the RI/FS assessment used an RfD of 1.4E-04. Use of the RfD in the RI/FS would increase the Hazard value for lead by a factor of 10. Since lead accounts for nearly all the Hazard Index for soil exposure, this in turn would exaggerate the Hazard Index by a factor of 10.

Reassessment of Risk

From the evaluation of the source of the risk, both with respect to the location of hot spots and the distinction between surficial soil and shoreline soil, it appears that remediation could be limited to comparatively restricted areas to lower the estimated potential health effects, if such remediation is deemed necessary. The remainder of the site may reflect the background condition in major areas in the general vicinity of the site, not the deposition of chemical wastes at the site.

The risk reassessment estimated an incremental cancer risk on the order of 5E-06. Specifics of the risk reassessment are presented in Appendix A.

Need for Remediation Based on the Risk Reassessment

Considering the estimated risk levels presented on Table A-1 of Appendix A and the estimated risks presented in the draft RI/FS, the Site-related estimated risk based on average concentrations reported in surface soil would be approximately 5E-06. This exceeds the 1E-06 by only a factor of 5. Even

applying the maximum concentrations reported, the reassessed risk does not exceed the 1E-04 level. Therefore, a more limited remedial alternative can be considered.

If the exposure and toxicity factor changes presented in Appendix A are made, the Hazard Index would be less than 1.0 and would not indicate a level of concern.

B) PROPOSED REMEDIAL ACTION PLAN

The following comments are presented on the Proposed Remedial Action Plan.

Slurry Wall Behind Sheet Pile Wall

To decrease the quantity of River water captured by the pumping wells, the PRAP proposed the installation of a slurry wall against the landward side of the sheet pile wall. The installation of such a slurry wall is to be performed by drilling and injecting bentonite slurry. The method of injection grouting has not been selected (Personal communication, J. Moras - Dec. 3, 1990).

Since the overburden groundwater discharges do not provide an additional incremental cancer risk, and the majority of the chemical load is expected to be captured (based on modeled simulations presented in the draft RI/FS) using only the proposed sheet pile wall and pumping well system, the need of a slurry wall does not appear beneficial in light of the cost of such installation.

If the objective is to stop all overburden groundwater discharges to the River, the following alternate techniques are available:

i) more pumping wells adjacent to the shoreline; or

ii) collection tile along the shoreline;

The first alternative could be installed with minimal additional cost. The second would be relatively expensive and may require upgraded health and safety measures and the handling of larger volumes of construction wastes and remedial water. Depending on the number of additional wells required, it may prove to be more economical to actually install a tile collection system. A tile system would undoubtedly be far more economical from an operation and maintenance perspective than a well system due to the significant reduction in the number of required pumping wells (ie. one or two wet wells

in a tile system compared to an individual pump for each well in a pumping well system).

Since it is uncertain at this time how effective a sheet pile barrier wall would be in preventing River water migration to the collection well system, any decision on the need for supplementing the sheet pile wall with some bentonite injection wall sections should be made after the sheet pile wall and groundwater collection system are in place and operative. This will allow an informed decision as to whether and where such supplemental wall construction is required.

Consequently, there is no need for a slurry wall behind the sheet pile barrier wall at this time.

Soil Cap

The proposed grading (1 percent minimum) and soil cap (12 inches common fill and 6 inches topsoil with vegetation cover) are presented in the PRAP as the minimum requirements that are technically appropriate.

While the surficial soil sampling locations from the draft RI/FS (≈20) are relatively sparse, PAHs were detected in all samples except one (SPS-1). Five surface soil sample locations had elevated PAH's. These were SPS-2, SPS-3, SPS-4, SPS-8, and SPS-9. There is no definitive spatial pattern for the five sample locations, ie. they are randomly distributed throughout the site. Historical results from samples collected in 1986 also indicate the presence of PAHs. Thus, it was assumed that the entire surface had chemical presence.

The risk reassessment presented in Appendix A shows that reduction of the incremental cancer risk to the target limit can be accomplished by addressing only those surficial areas with elevated PAH chemical concentrations. Therefore, it may be economically advantageous to perform additional surficial soil sampling for PAH analyses only, to more fully define the areal extent of PAH presence in the surface soils. The estimated sample collection and analysis costs for 200 x 200 foot and 100 x 100 foot grids are $22,000 and $88,000, respectively. For estimating purposes, it is assumed that 50% of the site will require capping due to elevated PAH presence. The 50% number is not based on the risk reassessment but is an assumed number for cost estimating purposes only. In these areas, an 18" soil cap (as specified in the draft RI/FS) is appropriate. For other areas of the site, only 6 inches of topsoil and whatever common fill is necessary to fulfill grading concerns need be installed.

The installation of an underlying filter fabric for the stated purpose of providing a boundary between existing fill and the constructed cap for visually observing cap failures is not necessary. First, due to the required import of common fill materials to achieve the minimum 1 percent grade, the cap thickness throughout the majority of the park will be in excess of 18 inches. Second, the major type of breaches expected are the potential migration of drums to the ground surface due to frost uplift action and differential settlement of the site.

The first type of cap breach is only visible at the surface and thus the filter fabric is ineffective for its stated purpose. In the case of differential settlement, depressions and potholes would be expected to appear in the surface prior to complete failure of the cap and will be repaired before cap breaching occurs.

Collection and Pumping of Overburden Groundwater

Pump tests will be required to determine the zones of capture of the well system and a monitoring program is required to allow assessment of the system to evaluate if any modifications are needed to meet the stated objectives.

If the pump tests show that a considerable number of additional wells would be required to achieve the stated objectives, consideration should be given to replacing the proposed well system with a tile or french drain collection system.

As the number of wells increases, so do the capital costs of construction and annual operation and maintenance costs. Consequently, if a considerable expansion of the well system is required, a tile collection system may be more cost effective. Considering that some imported fill material will be required to be brought to the site for grading purposes, the construction of a tile collection could provide a portion of this material, thus reducing the net cost of the tile collection system. In addition, the operation and maintenance of a tile system is considerably less expensive and far more hydraulically effective than a well system.

Monitoring

Analysis for the full TCL list is not justified. Sufficient data is available to select a Site Specific Indicator (SSI) list.

Cost Review

Three general items are overestimated. These are:

i) Mobilization/Demobilization (5 percent);

ii) Level "C" Health and Safety (40 percent); and

iii) Bonds and Insurance (10 percent).

Typical percentage costs for these three items are on the order of 3 percent, 10 percent and 1 percent, respectively. In addition, the inclusion of the mark-up of 25 percent (contractor overhead and profit) is inappropriate since most of the costs are referenced in the individual tables as coming from Means 1989 and already include overhead and profit. A comparison of estimated costs for the PRAP using original and revised costs is listed on Table 1. This table indicates the present worth costs have been overestimated by approximately $7 million.

Modified Alternative

Based upon review of the PRAP the following modifications are recommended:

Soil Cap	- collection and analysis of surficial soil samples to identify areas of elevated PAH presence (full 18" cap in elevated areas; modified cap in other areas) - cap 50% of the Park area - no underlying geotextile
Sheet Pile Wall	- no bentonite slurry wall - retain option of supplementing sheet pile wall as necessary to lower hydraulic conductivity if economically justified based upon identified groundwater flow conditions.
Groundwater Collection	- retain option of tile collection system
Monitoring	- Site Specific Indicators (SSI) only.

APPENDIX A

OxyChem®

January 7, 1991

Mr. James A. Moras
Project Manager
NYS Department of Environmental Conservation
Room 222
50 Wolf Road
Albany, New York
12233-7010

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Draft RI/FS and Draft PRAP

Dear Mr. Moras:

Occidental Chemical Corporation (OxyChem) wishes to make the following comments on the Gratwick-Riverside Park Proposed Remedial Action Plan (PRAP) dated August 1990, and the Draft Final Remedial Investigation and Feasibility Study (RI/FS) at the Gratwick - Riverside Park Site dated September 1990.

The incremental health risk has been overestimated by the risk assessment included in the Draft RI/FS (Chapter 6). The incremental cancer risk posed by the conditions at the Site has been reassessed and found to be on the order of 5E-06 not 6.5E-05 as presented in the Draft RI/FS. The principal reason for the difference in cancer risks estimated is due to incorrect exposure scenarios used in the RI/FS.

Based on a reassessment of the risk, OxyChem believes that a more limited remedial alternative can be considered.

Based on the identified site conditions, such as localized areas with elevated chemical concentration, OxyChem believes that the PRAP presented by DEC can be improved by making the following changes without reducing the overall effectiveness of the system.

Soil Cap

- collection and analysis of surficial soil samples to identify areas of elevated PAH presence (full 18" cap in elevated areas; modified cap in other areas)
- cap 50% of the Park Area (assumed for the purpose of cost estimation)
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Groundwater Collection	-	retain option of tile collection system.
Monitoring	-	Site Specific Indicators (SSI) only.

In addition, the option of a tile collection system in place of the proposed well system should be retained as a possible alternative. It is possible that a tile collection system may prove to be more effective depending upon the hydrogeologic nature of the overburden waterbearing regime.

A detailed review of the risk assessment and PRAP modifications are presented in the attached comments.

If you have any questions regarding this submission, please do not hesitate to call.

Sincerely yours,

Diane Schmidtke

for Alan F. Weston, Ph.D.
Manager, Analytical Services
Special Environmental Program

AFW/cdd
Attachments

c.c. The Honorable Elizabeth C. Hoffman, Mayor (City of North Tonawanda)
John M. Toennies (Niagara Mohawk Power Corporation)
John W. Siedlecki (Bell Aerospace-Textron)

ATTACHMENT I

OXYCHEM COMMENTS ON GRATWICK-RIVERSIDE PARK PROPOSED REMEDIAL ACTION PLAN (AUGUST, 1990) AND DRAFT FINAL REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE GRATWICK-RIVERSIDE PARK SITE (SEPTEMBER 1990)

A) DRAFT RI/FS RISK ASSESSMENT

Assumptions used in the RI/FS soil exposure scenario were overly conservative resulting in an incremental cancer risk and a total chronic hazard index that are too high. Therefore,the risk has been reassessed (see Appendix A) using more appropriate exposure scenarios.

Futhermore, according to the draft RI/FS, all of the incremental cancer risk at the site is associated with either ingestion or dermal contact of surficial soils and was essentially due to the presence of PAH's and PCB's (approximately 97 and 98 percent for the RI/FS representative and worst case scenarios, respectively). These chemicals are not components of wastes attributable to OxyChem.

Review of RI/FS Risk Assessment Assumptions

1) Exposure Time

Exposure time for adults and older children involves 4 days per week for approximately 7 months for their entire lifetime period. This assumption is unrealistic since it assumes that the individual spends enough time in the park to have skin become soiled and have enough inadvertent hand-to-mouth contact or other opportunities for soil ingestion to consume 100 mg of soil. Such exposure would require some extensive physical activity, not simply a walk through the park. Four days per week would be precluded for older children during much of the 7 months because of school. Similarly, it is precluded for adults for most of their lives because of work schedules.

The number of months spent in the park also may exceed what is a reasonable maximum (May through September for infants and April through October for adults and older children) based on obvious competing demands for the individual's time and for the weather conditions in this area.

As a result, the combination of the increased days and months could exaggerate the expected reasonable maximum exposure by a factor of 10 or more.

2) Dermal Exposure

The dermal exposure is over-stated. In the RI/FS assessment, the dermal exposure and oral ingestion exposure are approximately the same while previous experience demonstrates that the ingestion portion of the exposure to surface soil would be much higher than the dermal portion. This is particularly true of the chemicals of concern (PAHs, PCBs and dioxins/furans) which are large molecules with a high tendency to adsorb to soil and a low tendency to be absorbed through the skin. The dermal exposure and oral ingestion exposure similarity may be related to several assumptions including the "absorption factor" which is high.

3) Non-Carcinogenic Exposure to Surface Soil

This Hazard Index value is too high. Part of the excess may be related to the dermal absorption of lead. If it occurs at all, the absorption would be very low for the metals. It also appears that the reference dose (RfD) may be in error. Source references indicate the RfD for lead is 1.4E-03 while the RI/FS assessment used an RfD of 1.4E-04. Use of the RfD in the RI/FS would increase the Hazard value for lead by a factor of 10. Since lead accounts for nearly all the Hazard Index for soil exposure, this in turn would exaggerate the Hazard Index by a factor of 10.

Reassessment of Risk

From the evaluation of the source of the risk, both with respect to the location of hot spots and the distinction between surficial soil and shoreline soil, it appears that remediation could be limited to comparatively restricted areas to lower the estimated potential health effects, if such remediation is deemed necessary. The remainder of the site may reflect the background condition in major areas in the general vicinity of the site, not the deposition of chemical wastes at the site.

The risk reassessment estimated an incremental cancer risk on the order of 5E-06. Specifics of the risk reassessment are presented in Appendix A.

Need for Remediation Based on the Risk Reassessment

Considering the estimated risk levels presented on Table A-1 of Appendix A and the estimated risks presented in the draft RI/FS, the Site-related estimated risk based on average concentrations reported in surface soil would be approximately 5E-06. This exceeds the 1E-06 by only a factor of 5. Even

applying the maximum concentrations reported, the reassessed risk does not exceed the 1E-04 level. Therefore, a more limited remedial alternative can be considered.

If the exposure and toxicity factor changes presented in Appendix A are made, the Hazard Index would be less than 1.0 and would not indicate a level of concern.

B) PROPOSED REMEDIAL ACTION PLAN

The following comments are presented on the Proposed Remedial Action Plan.

Slurry Wall Behind Sheet Pile Wall

To decrease the quantity of River water captured by the pumping wells, the PRAP proposed the installation of a slurry wall against the landward side of the sheet pile wall. The installation of such a slurry wall is to be performed by drilling and injecting bentonite slurry. The method of injection grouting has not been selected (Personal communication, J. Moras - Dec. 3, 1990).

Since the overburden groundwater discharges do not provide an additional incremental cancer risk, and the majority of the chemical load is expected to be captured (based on modeled simulations presented in the draft RI/FS) using only the proposed sheet pile wall and pumping well system, the need of a slurry wall does not appear beneficial in light of the cost of such installation.

If the objective is to stop all overburden groundwater discharges to the River, the following alternate techniques are available:

i) more pumping wells adjacent to the shoreline; or

ii) collection tile along the shoreline;

The first alternative could be installed with minimal additional cost. The second would be relatively expensive and may require upgraded health and safety measures and the handling of larger volumes of construction wastes and remedial water. Depending on the number of additional wells required, it may prove to be more economical to actually install a tile collection system. A tile system would undoubtedly be far more economical from an operation and maintenance perspective than a well system due to the significant reduction in the number of required pumping wells (ie. one or two wet wells

in a tile system compared to an individual pump for each well in a pumping well system).

Since it is uncertain at this time how effective a sheet pile barrier wall would be in preventing River water migration to the collection well system, any decision on the need for supplementing the sheet pile wall with some bentonite injection wall sections should be made after the sheet pile wall and groundwater collection system are in place and operative. This will allow an informed decision as to whether and where such supplemental wall construction is required.

Consequently, there is no need for a slurry wall behind the sheet pile barrier wall at this time.

Soil Cap

The proposed grading (1 percent minimum) and soil cap (12 inches common fill and 6 inches topsoil with vegetation cover) are presented in the PRAP as the minimum requirements that are technically appropriate.

While the surficial soil sampling locations from the draft RI/FS (≈20) are relatively sparse, PAHs were detected in all samples except one (SPS-1). Five surface soil sample locations had elevated PAH's. These were SPS-2, SPS-3, SPS-4, SPS-8, and SPS-9. There is no definitive spatial pattern for the five sample locations, ie. they are randomly distributed throughout the site. Historical results from samples collected in 1986 also indicate the presence of PAHs. Thus, it was assumed that the entire surface had chemical presence.

The risk reassessment presented in Appendix A shows that reduction of the incremental cancer risk to the target limit can be accomplished by addressing only those surficial areas with elevated PAH chemical concentrations. Therefore, it may be economically advantageous to perform additional surficial soil sampling for PAH analyses only, to more fully define the areal extent of PAH presence in the surface soils. The estimated sample collection and analysis costs for 200 x 200 foot and 100 x 100 foot grids are $22,000 and $88,000, respectively. For estimating purposes, it is assumed that 50% of the site will require capping due to elevated PAH presence. The 50% number is not based on the risk reassessment but is an assumed number for cost estimating purposes only. In these areas, an 18" soil cap (as specified in the draft RI/FS) is appropriate. For other areas of the site, only 6 inches of topsoil and whatever common fill is necessary to fulfill grading concerns need be installed.

The installation of an underlying filter fabric for the stated purpose of providing a boundary between existing fill and the constructed cap for visually observing cap failures is not necessary. First, due to the required import of common fill materials to achieve the minimum 1 percent grade, the cap thickness throughout the majority of the park will be in excess of 18 inches. Second, the major type of breaches expected are the potential migration of drums to the ground surface due to frost uplift action and differential settlement of the site.

The first type of cap breach is only visible at the surface and thus the filter fabric is ineffective for its stated purpose. In the case of differential settlement, depressions and potholes would be expected to appear in the surface prior to complete failure of the cap and will be repaired before cap breaching occurs.

Collection and Pumping of Overburden Groundwater

Pump tests will be required to determine the zones of capture of the well system and a monitoring program is required to allow assessment of the system to evaluate if any modifications are needed to meet the stated objectives.

If the pump tests show that a considerable number of additional wells would be required to achieve the stated objectives, consideration should be given to replacing the proposed well system with a tile or french drain collection system.

As the number of wells increases, so do the capital costs of construction and annual operation and maintenance costs. Consequently, if a considerable expansion of the well system is required, a tile collection system may be more cost effective. Considering that some imported fill material will be required to be brought to the site for grading purposes, the construction of a tile collection could provide a portion of this material, thus reducing the net cost of the tile collection system. In addition, the operation and maintenance of a tile system is considerably less expensive and far more hydraulically effective than a well system.

Monitoring

Analysis for the full TCL list is not justified. Sufficient data is available to select a Site Specific Indicator (SSI) list.

Cost Review

Three general items are overestimated. These are:

i) Mobilization/Demobilization (5 percent);

ii) Level "C" Health and Safety (40 percent); and

iii) Bonds and Insurance (10 percent).

Typical percentage costs for these three items are on the order of 3 percent, 10 percent and 1 percent, respectively. In addition, the inclusion of the mark-up of 25 percent (contractor overhead and profit) is inappropriate since most of the costs are referenced in the individual tables as coming from Means 1989 and already include overhead and profit. A comparison of estimated costs for the PRAP using original and revised costs is listed on Table 1. This table indicates the present worth costs have been overestimated by approximately $7 million.

Modified Alternative

Based upon review of the PRAP the following modifications are recommended:

Soil Cap	- collection and analysis of surficial soil samples to identify areas of elevated PAH presence (full 18" cap in elevated areas; modified cap in other areas) - cap 50% of the Park area - no underlying geotextile
Sheet Pile Wall	- no bentonite slurry wall - retain option of supplementing sheet pile wall as necessary to lower hydraulic conductivity if economically justified based upon identified groundwater flow conditions.
Groundwater Collection	- retain option of tile collection system
Monitoring	- Site Specific Indicators (SSI) only.

Due to the sparse nature of the surface soil sampling locations and the random distribution of locations with elevated chemical concentrations (primarily PAH's) that contributed to the incremental cancer risk, it is recommended that surficial soil sample collection and analysis on a 100 x 100-foot grid to delineate the areas that require capping to reduce the incremental cancer risks to the target limit (1.0E-06) be performed. For estimating purposes it is assumed that 50% of the site area will require capping.

The full 18" cap cross-section design will be used for areas exhibiting elevated PAH concentrations. All other areas will receive 6 inches of topsoil and be filled with common fill as needed to maintain the proposed drainage configuration. Breaching of the cap by differential settlement and drum migration to the surface are slow processes and visible only at the surface. Therefore, the underlying geotextile proposed in the PRAP is not required for the purpose stated in the PRAP.

A slurry wall behind the sheet pile is not recommended since the effectiveness of a slurry wall installed by drilling and injection methods in reducing the quantity of river water collected by the well system is uncertain. The sheet pile wall may provide sufficient hydraulic control to accomplish this purpose. If system effectiveness monitoring indicates that a further reduction of collected river water is required, the bentonite slurry wall or other appropriate wall (ie. grout injection) could still be installed at a later date by drilling and injection methods with minimal surficial disturbance.

It is anticipated that the monitoring program will allow evaluation of the effectiveness of the well system to determine what modifications, if any, may be required to the initial system. The option of a tile collection system should be retained in the event the well system becomes more expensive than a tile collection system. The number of wells required to adequately contain the groundwater at the park may become excessive due to the long narrow physical nature of the site and the site hydrogeologic characteristics. This would greatly increase the installation costs (ie. number of wells and pumps required) and annual O&M costs (pump maintenance, power requirements etc.) of a well system.

The estimated present worth cost of this alternative is $10,279,000 (see Table 1).

In order to compare the modifed alternative with the PRAP, the modified alternative has been scored using the weighted matrix scoring system utilized in the draft RI/FS. The scoring is presented in Appendix B. The combined

score of the modified alternative is 61. The compares to a score of 54 for the alternative recommended in the PRAP. The principal factor for the higher score are the decreased estimated cost of the modified alternative.

TABLE 1
Proposed Alternative Cost Estimates

		PRAP		*Modified PRAP*
		Original Estimate	*Revised Estimate*	
A) Soil Cap	100%	9,700,000	5,570,000	NA
	50%	NA	NA	4,406,000
PAH Analysis				
100 x 100' Grid		NA	NA	88,000
Annual O & M		67,600	67,600	67,000
B) Sheet Pile Wall		5,132,000	2,079,000	2,079,000
Slurry Wall		328,300	328,300	NA
C) Groundwater Collection Pumping Wells		129,000	131,000	131,000
D) Pretreatment Discharge to POTW				
Capital Costs		783,000 (1)	783,000 (1)	931,000 (2)
Annual O & M		165,000 (1)	165,000 (1)	203,000 (2)
E) Monitoring Programs				
Capital Costs		8,000	6,500	6,500
Annual O & M		17,000	9,800	9,800
Total Capital		$16,080,300	$8,897,800	$7,641,100
Annual O & M		$249,600	$242,400	$279,800
Present Worth (30 years @ 10%)		$18,433,300	$11,182,900	$10,278,800

Notes:

(1) Groundwater Collection Flows = 150 gpm
(2) Groundwater Collection Flows = 200 gpm

APPENDIX A

Gratwick-Riverside Park Site
Reassessment of Risk

The following risk assessment was performed using more realistic and appropriate exposure scenarios than those used in the draft RI/FS. The risk assessment has been performed by combining the shoreline and surficial soil data, as was done in the RI/FS. The exposure scenario (see Table A-2) is presented to allow comparison with the scenario used in the RI/FS.

In the scenarios, Level 1 (representative) and Level 2 (95th percentile) exposure assumptions were applied to average concentrations calculated from Table 5-11 (Surface Soil, RI/FS) and Table 5-16 (Shoreline Soil, RI/FS) data. Since detection limits were not identified in these tables, non-detect values were assigned a value of zero. Level 3 evaluated maximum concentrations and applied Level 2 (95th percentile) exposure assumptions.

Table A-1 presents the results of the risk reassessment of the combined shoreline and surficial soil data using the scenario and assumptions for exposure to soil in a parkland area presented in Table A-2. This varies in some aspects from the scenario used in the draft RI/FS, but since the CSF and RfD factors multiplied by the concentrations reported determine the comparative contribution of each chemical, the percentage contribution would be the same regardless of the exposure factors applied.

From Table A-1, it is apparent that the PAHs present the greatest percentage of the total risk from exposure to surface soil. The risk from PCBs is 15% to 18% and PCDD/PCDFs account for 8% to 11% of the total risk, depending on which data set is chosen. The Level 2 (average concentrations and 95th percentile assumptions in the scenario) evaluation is the most appropriate for comparison with the RI/FS and under these assumptions, PAHs, PCBs and PCDD/PCDFs account for 77%, 15% and 8% of the total risk, respectively. This evaluation indicates that the high concentrations of PAHs at SPS-9 were responsible for a significant part of the total risk attributed to the site surface soils. It is important to note that the draft RI/FS report did not specify which PCDD and PCDF isomers were present. Since the separate isomers have significantly different toxic potential, it is not possible to estimate the potential risk without making assumptions regarding the isomers present. The isomers with chlorine in the 2,3,7,8-positions are the most toxic. The first listing of the PCDD/PCDFs on Table A-1 assumes that all the PCDD/PCDFs present are the 2,3,7,8-isomer. The second listing assumes that none of the PCDD/PCDFs are the 2,3,7,8-isomer. The true condition would fall somewhere between these extremes. Applying average soil concentrations,

the PCDD/PCDFs would account for between 0.2% (all non-2,3,7,8) and 8.1% (all 2,3,7,8) of the estimated risk.

Conclusion

If more appropriate assumptions are applied to average concentrations reported in surface soil, the estimated risks related to exposure to surface soil would fall within an acceptable range and the present conditions could be considered protective of public health.

Extent of Remediation Required

Three shoreline sample locations, SP4-SS, SP5-SS, and SP6-SS, had by far the highest concentrations and were the only locations where PCDD/PCDFs were reported.

The PAH concentrations in the shoreline samples are not as high as those in on-site surficial samples. The PAH concentrations are also more uniform in the shoreline samples. This may indicate that the PAHs in the shoreline samples may be from sediment deposited by the River (background) and not related to surface contamination and runoff from the Site. Because of the low solubility and high Koc values for PAHs, they are not expected to migrate as solutes in groundwater and are adsorbed to suspended sediments in surface water.

Reassessment of Risk

From the evaluation of the source of the risk, both with respect to the location of hot spots and the distrinction between surficial soil and shoreline soil, it appears that remediation could be limited to comparatively restricted areas to lower the estimated potential health effects, if such remediation is deemed necessary. The remainder of the site may reflect the background condition in major areas in the general vicinity of the site, not the deposition of chemical wastes at the site.

The risk reassessment estimated an incremental cancer risk on the order of 5E-06.

DECLARATION STATEMENT - RECORD OF DECISION

Gratwick Riverside Park
North Tonawanda, New York
Site No. 9-32-060

STATEMENT OF PURPOSE

This Record of Decision (ROD) sets forth the selected Remedial Action Plan for the Gratwick Riverside Park 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 Record of the New York State Department of Environmental Conservation (NYSDEC) for the Gratwick Riverside Park Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A copy of all the pertinent documents is on file at the North Tonawanda Public Library, 505 Meadow Drive, North Tonawanda, New York and at the offices of the NYSDEC, 600 Delaware Avenue, Buffalo, New York and 50 Wolf Road, Albany, New York. A bibliography of the documents included as a part of the Record is included in Attachment 2.

DESCRIPTION OF SELECTED REMEDY

The selected remedial action plan will control the off-site migration of contaminants from the site and will provide for the protection of public health and the environment. It is technically feasible and it complies with statutory requirements. Briefly, the selected remedial action plan includes the following:

- Approximately six overburden withdrawal wells (final number and location will be based on remedial design pump test) installed within the park along a line parallel to the Niagara River. Collected groundwater will be pre-treated on site and then discharged to the North Tonawanda Waste Water Treatment Plant.

- A sheet pile breakwater will be installed along the entire length of the shoreline (approximately 4,900 linear feet). The sheet piling will act to prevent erosion of contaminated shoreline soils as well as reducing the hydraulic connection between the on-site overburden groundwater and the Niagara River.

- A permeable soil cap will be placed over the site. The cap will consist of twelve inches of general fill and six inches of topsoil. The cap will also have a gradual slope to enhance runoff. The cap will prevent contact with the current surface soils and it will allow infiltration to percolate through the

fill, flushing contamination, after which it will be collected by the groundwater withdrawal wells.

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 contaminants with a direct pathway of migration to the Niagara River (groundwater and shoreline soils); by allowing infiltration to percolate through a permeable cap to flush contaminants and reduce the volume; and by treating contaminated groundwater to reduce the toxicity. The long term health risk associated with contact with the surface soils will be eliminated by the installation of the soil cap.

_____ Date

_____ Edward O. Sullivan

SCHASE → Hyde

NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/300 ERIE BOULEVARD WEST, SYRACUSE, N.Y. 13202/TELEPHONE (315) 474-1511

November 25, 1991

Maura C. Desmond, Esq.
Senior Attorney
Division of Environmental Enforcement
Dept. of Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202-1073

Dear Ms. Desmond:

As previously communicated to you by letter dated November 4, 1991, from Jeffrey N. Mis, Attorney for the City of North Tonawanda, the informal Gratwick-Riverside Park PRP Group has undertaken to develop and submit a Scoping Document as specified in your letter to the undersigned dated September 16, 1991.

This letter accompanies the requested Scoping Document, prepared on behalf of the Group by Conestoga-Rovers & Associates, Ltd.

Also enclosed is a separate document addressing the Group's recommended Interim Corrective Measure in connection with the 1990 pothole investigation area.

Please contact Mr. Mis at 716-695-8590 to schedule a meeting for discussion of the enclosed documents subsequent to review of same by the Department.

We trust you will find this submittal responsive to the requirements of the Department in connection with the proposed Remedial Action.

Sincerely yours,

William C. Weiss

WCW/tmm
xc: M. Harris, Esq.
J. Kay, P.E.
J.A. Mack, Esq.
J.N. Mis, Esq.
D.L. Roach, Esq.
M.B. Wasser, Esq.

North Tonawanda to participate in Gratwick cleanup

13

By Glen White
Niagara Gazette

OCT 2 1991

NORTH TONAWANDA — North Tonawanda lawmakers on Tuesday agreed to help pay for the planned cleanup of contamination at Gratwick-Riverside Park, a move that will allow the city to be reimbursed for 75 percent of its costs from the state.

The Common Council unanimously voted to participate in the State Department of Environmental Conservation's planned $18 million cleanup of the River Road park and seek the 75 percent funding through the state's 1986 Environmental Quality Bond Act.

Before Tuesday, city lawmakers had been uneasy about joining in the cleanup, seeing the move as admitting liability for the city's role in operating the site as a landfill in the 1960s. But the DEC was ready to take legal action against the city, and the city would have lost the chance for the reimbursement if it chose not to participate in the cleanup.

The other parties potentially responsible for the cleanup are Occidental Chemical Corp., Bell Aerospace Textron, Booth Oil and Niagara Mohawk Power Corp. The city and the companies are negotiating a split of the costs.

Niagara Mohawk, which currently leases the park to the city, is ready to donate it to the city after the cleanup, City Attorney Jeffrey N. Mis said. Mis also noted the council can back out of the cleanup if the negotiated allocation is not to its liking.

The DEC plans to cap the park with topsoil and build wells to pump out contaminated ground water. Toxic dioxin and PCBs are among the contaminants buried in the park's soil.

In other action, the council unanimously voted to override Mayor Elizabeth C. Hoffman's veto of its approval of a revised city code of ethics.

Hoffman had said the revisions of the 1978 code were premature because a state commission is writing a new state code of ethics. She also said the public should participate in revising the code.

But Alderman Thomas M. Jaccarino, D-Fifth Ward, said the revised code is needed until the state Legislature adopts a new code. At that time, he said, the council will amend the city code again.

15 (12-75)

1-Hyde
1-File

New York State Department of Environmental Conservation

NOT FOIL
Red Folder
James A. Moras

MEMORANDUM

TO: Maura Desmond, Division of Environmental Enforcement, Region 9
FROM: James A. Moras, Environmental Engineer, Remedial Action Section B
SUBJECT: Gratwick Riverside Park, Niagara County, Site No. 9-32-060

DATE: SEP 12 1991

I have reviewed the September 6, 1991 letter from Mr. William C. Weiss (Niagara Mohawk Power Corporation). The letter indicates that the City of North Tonawanda is planning to propose a resolution to authorize the application for Bond Act money at their September 17, 1991 City Council meeting. This step indicates the City's willingness to participate in the Remedial Design/Remedial Construction (RD/RC) at Gratwick Park.

In the past the responsible parties (PRPs) for Gratwick Park have indicated the need for the City to participate prior to any commitment by any of the other individual PRPs. Once the City authorizes the intent to apply for Bond Act money, the PRPs must proceed with steps to initiate the RD. At the PRP meeting scheduled for September 30, 1991, the PRPs will begin to discuss the allocation of responsibility and the technical aspects of the RD.

By November 1, 1991 the PRP committee should submit a Scoping Document. This Scoping Document should include:

- the agreed upon allocation of responsibility;
- the Scope of Work for the RD with cost estimates;
- a schedule for the submission of detailed Work Plans/Design Specifications;
- plans for an Interim Remedial Measure (IRM) to be conducted in the area of the April 1990 pothole investigation (park access road near northern end of the park).

Within a month after the submission of the Scoping Document the PRPs should be prepared to meet with NYSDEC to discuss the contents of the document. The PRP committee should also keep the State informed as to the progress of the negotiations during the five week period between September 30 and November 1, 1991.

If you have any questions feel free to contact me at 518/457-0315.

JAM/kd
bcc: E. Belmore
C. Allen
J. Sciascia
J. Moras

J. SCIMECA — 8/11

MEMORANDUM

NIAGARA COUNTY HEALTH DEPARTMENT

To Mr. James Moras, Hazardous Waste Remediation/Albany

Date September 6, 1991

From Mr. Paul Dicky

Subject Gratwick Park #932060

Thank you for your very prompt action to eliminate potential public exposures to the tarry substances which were noted surfacing along the shoreline during an August 5, 1991 inspection by this department.

Enclosed is your copy of the receipt for the August 15, 1991 delivery of #3 and 4 mix crushed stone to the Gratwick Park shoreline.

The stone was spread to our satisfaction by the City of North Tonawanda.

PD:ms

cc: Mr. A. Wakeman
Mr. P. Buechi
Mr. D. Marshall/North Tonawanda Engineer

File - FOIL [redacted] Gratwick

New York State Department of Environmental Conservation
600 Delaware Avenue, Buffalo, New York 14202

Thomas C. Jorling
Commissioner

May 1, 1991

Mr. Bruce Robbibaro
Technical Claims Specialist
Liberty Mutual Insurance Group/Boston
Robinson Plaza II, Route 60
Robinson Township
Pittsburgh, Pa. 15205

Ref: Gratwick Riverside Park
North Tonawanda, N.Y.
N.Y. State DEC Site No. 932060
Your FOIL Request Gratwick
P889-98542-01

Dear Mr. Robbibaro:

As requested during our April 24 telephone conversation on the above referenced FOIL Request, copies of Pages 1 through 6 and 14 through 16 of the Gratwick Riverside Park February, 1991 Record of Decision are enclosed. This should provide the information you requested that is currently available. If you require additional information or have further questions, please contact us.

Sincerely yours,

John W. Hyden, PhD, P.E.
Environmental Engineer II

FLN06001

FOIL REQUEST
RESPONSE ASSIGNMENT

	LEAD	SUPPORT
Shattuck		
Doster	X	
Sicascia		
Mitrey		
Violanti		

Robinson Plaza II, Route 60
Robinson Township
Pittsburgh, Pennsylvania 15205
Telephone: (412) 787-7375

1 – J. Wilding – Please copy
2 – ... – Please ...

LIBERTY MUTUAL.

September 10, 1990

New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, NY 14202
Attn: Waste Management Division

RE: FOIA REQUEST GRATWICK
P889-98542-01

To Whom It May Concern,

Under the Freedom of Information Act, I would like information on the Gratwick Site located in the State of New York.

Please provide me with the following information.

1. A site history.

2. Test results of when the site was tested for contamination either soil or groundwater, and specifically the results of those tests. I am looking for the first proven (through test results) contamination at the site.

3. I would like a copy of the PRP list.

4. A generator list with percentages of waste in.

If there is a charge for this information, please send it along with the information and it will be very promptly paid. Please place the site names on the postcard that you send back to me so that I have a reference to place it to. If all of the information about the site is not available, please send what is available.

I thank you in advance for your anticipated cooperation.

Sincerely,

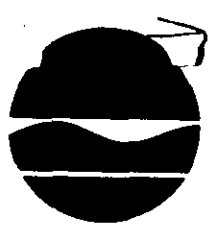
Bruce Robbibaro

Bruce Robbibaro
Technical Claims Specialist

/cls

cc: Home Office Claims - Steve Brody

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



Thomas C. Jorling
Commissioner

MAR 12 1991

Dear Interested Citizen:

On December 6, 1990 a public meeting was held by the New York State Department of Environmental Conservation (NYSDEC) to present the Proposed Remedial Action Plan (PRAP) for the Gratwick Riverside Park Site. The public comment period was open until January 8, 1991. At that point in time the comments received during the public comment period were addressed and incorporated into the Record of Decision (ROD). The ROD document builds upon the PRAP by addressing and incorporating any public comments into the decision document. On February 14, 1991 Deputy Commissioner Sullivan signed the ROD for Gratwick Park. A copy of the ROD has been sent to the document repository at the North Tonawanda Public Library on Meadow Drive and is available for public review.

At this point in time negotiations will be carried out with the responsible parties to determine who will fund the remedial design and the remedial construction phases for the site. It is anticipated that the project will move into the design phase later this year. Actual construction is not anticipated until some time in 1993.

If you have questions or would like more information you can contact me at 518/457-0315, Mr. John Hyden at 716/847-4585 or call us toll free at 1-800/342-9296, leave a short message and we will get back to you as soon as possible.

Sincerely,

James A. Moras

James A. Moras
Project Manager
NYS Department of Environmental
Conservation
Room 222
50 Wolf Road
Albany, NY 12233-7010

URS
CONSULTANTS, INC.
570 DELAWARE AVENUE
BUFFALO, NY 14202
TEL: (716) 883-8525
FAX: (716) 883-0764

LETTER OF TRANSMITTAL

DHL

DATE	JOB NO.
3/11/91	35149

ATTENTION: Jim Moras

RE: GRATWICK RIVERSIDE PARK SITE
RI/FS

TO NYSDEC

PLEASE REFER TO THIS TRANSMITTAL NUMBER ON ALL FUTURE CORRESPONDENCE. _____

GENTLEMEN:

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications

☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
2	3/91		Part 1 Remedial Investigation
2	3/91		Appendices A thru F
2	3/91		Feasibility Study with Appendix G

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ No Exceptions Taken ☐ Resubmit ____ copies for approval

☐ For your use ☐ Revise as Noted ☐ Submit ____ copies for distribution

☐ As requested ☐ Amend and Resubmit ☐ Return ____ corrected prints

☒ For review and comment ☐ Rejected-See Remarks ☐ _____

☐ FOR BIDS DUE _____ 19 ____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS 1 Copy on Sheet
1 Copy to P. Nelson
1 Copy to D. Lewis

MAR 12 1991
ENVIRONMENTAL CONSERVATION

COPY TO Mr. Joe Suascia (2 sets) ✓

SIGNED: Project Secretary

If enclosures are not as noted, kindly notify us at once.

00-17-1 (5-76)
Formerly GA-4

NE RK STATE DEPARTMENT OF ENVIRONMENTAL CON. TION

1 – Hayden
2 – File

TRANSMITTAL SLIP

TO Joe S.

FROM PN

DATE 3/7/91

RE: ~~Gatwick~~

This letter will be sent 3/8 to the Gatwick mail list by Albany as per Jim Moran

FOR ACTION AS INDICATED:

- ☐ Please Handle
- ☐ Prepare Reply
- ☐ Prepare Reply for _____ Signature
- ☐ Information
- ☐ Approval
- ☐ Prepare final/draft in _____ Copies
- ☐ Comments
- ☐ Signature
- ☐ File
- ☐ Return to me
- ☐ _____
- ☐ _____

DRAFT

Dear Interested Citizen:

On December 6, 1990 a public meeting was held by the New York State Department of Environmental Conservation (NYSDEC) to present the Proposed Remedial Action Plan (PRAP) for the Gratwick Riverside Park Site. The public comment period was open until January 8, 1991. At that point in time the comments received during the public comment period were addressed and incorporated into the Record of Decision (ROD). The ROD document builds upon the PRAP by addressing and incorporating any public comments into the decision document. On February 14, 1991 Deputy Commissioner Sullivan signed the ROD for Gratwick Park. A copy of the ROD has been sent to the document repository at the North Tonawanda Public Library on Meadow Drive and is available for public review.

At this point in time negotiations will be carried out with the responsible parties to determine who will fund the remedial design and the remedial construction phases for the site. If an agreement cannot be reached with the responsible parties the State will proceed with the work and pursue the responsible parties to recover any costs incurred. It is anticipated that the project will move into the design phase later this year. Actual construction is not anticipated until some time in 1993.

If you have questions or would like more information you can contact me at 518/457-0315, Mr. John Hyden at 716/847-4585 or call us toll free at 1-800/342-9296, leave a short message and we will get back to you as soon as possible.

Sincerely,

James A. Moras
Project Manager
NYS Department of Environmental
Conservation
Room 222
50 Wolf Road
Albany, NY 12233-7010

1-Hyden
& file

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

Thomas C. Jorling
Commissioner

MAR 0 5 1991

Ms. Janet McKenna
General Services Librarian
North Tonawanda Public Library
505 Meadow Drive
North Tonawanda, NY 14120

Dear Ms. McKenna:

Re: Gratwick Riverside Park, Niagara County, Site No. 9-32-060

Enclosed you will find a signed copy of the Record of Decision (ROD) for the Gratwick Riverside Park Site. Please add this to the document repository which you are maintaining for this site.

Thank you for your cooperation. If you have any questions feel free to contact me at 518/457-0315 or Ms. Patricia Nelson at 716/847-4585.

Sincerely,

James A. Moras

James A. Moras
Environmental Engineer
Division of Hazardous Waste
Remediation

Enclosure

cc: P. Nelson

JAM/kd
bcc: E. Belmore
C. Allen
J. Sciascia
J. Moras

New York State Department of Environmental Conservation

FILE

Thomas C. Jorling
Commissioner

M E M O R A N D U M

TO: Richard D. Foley, DRA
FROM: John W. Hyden
SUBJECT: City of North Tonawanda
Boat Launch Rehabilitation
DATE: February 26, 1991

This memorandum provides our comments on the DRA Permit for the above referenced project. Essentially, the scope of this project is to rehabilitate the boat launch facilities at a city park located on Tonawanda Creek at the foot of Service Drive. The dredge spoil is to be placed at this park, and the concrete spoil from the demolition of the existing boat ramp is to be placed at Gratwick Riverside Park, on the Niagara River.

Construction and spoils placement at the park on Tonawanda Creek has no effect on any of our solid and hazardous waste remediation projects. On the other hand, Gratwick Riverside Park is a listed hazardous waste landfill, and design of the remediation project is currently underway. The proposed remediation measures include a system of leachate pumping wells on the park site, and placement of a steel sheet pile retaining wall along the Niagara River shoreline. Thus, we request that we have the opportunity to review the proposed location at Gratwick Riverside Park of the concrete spoils from the Tonawanda Creek park. Our purpose of this review is to ensure that the spoils will not interfere with the installation of the remediation measures. If you have questions on this correspondence, please contact us.

33-19-1 (11/87)—9d

NEW YORK STATE DEPA. .NT OF ENVIRONMENTAL CONSERVATION

APPLICATION FOR ACCESS TO RECORDS

(See Instructions on Reverse Side)

NUMBER

APPLICANT

• **TO THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION:**

I hereby apply to inspect the following records under the provisions of the Freedom of Information Law:

The following were copied for applicant by In & Out Printing.

- 915063 Nia Mo Chemy Farm RI/FS and ROD
- 915128 Union Rd RI/FS
- 932043 Frontier-Pendleton RI
- 932060 Gratwick-Riverside Park RI/FS ROD

After inspection, should I desire copies of all or part of the records inspected, I will identify the records to be copied and hereby offer to promptly pay the established fees. (Cost of reproduction or 25¢ per page as applicable). Contact me if cost will exceed $ _____.

Name (Print or type) Michael P. Gauchat Telephone No. _____

~~Attention~~ of: Jaeckle, Fleischmann and Mugel

Mailing Address Norstar Building, 12 Fountain Plaza, Bfo., NY 14202

Signature _____ Date _____

RECORDS CUSTODIAN

• **TO THE APPLICANT:**

—Records Provided

☐ The reproduction costs for the records provided are $ _____

☐ Records have been (partially, fully) provided. (If not fully provided, date when records are expected to be fully provided: _____)

—Records Not Available

☐ Records cannot be found after diligent search

☐ The Department is not the custodian for records indicated

—Records Denied

I hereby certify that access to the records—or part of the records—circled above has been denied to the applicant for the reason(s) checked below:

☐ Specifically exempt by other statute

☐ Unwarranted invasion of personal privacy

☐ Would impair present or imminent contract awards or collective bargaining negotations

☐ Are examination questions or answers

☐ Are inter-agency or intra-agency materials that are not:
- statistical or factual tabulations or data
- instructions to staff that affect the public
- final agency policy or determinations; or
- external audits,including but not limited to audits performed by the comptroller and the federal government

☐ Are trade secrets

☐ Would endanger the life or safety of any person

☐ Are compiled for law enforcement purposes and which, if disclosed would:
- interfere with law enforcement investigations or judicial proceedings
- deprive a person of the right to a fair trial or impartial adjudication
- identify a confidential source or disclose confidential information relating to a criminal investigation, or
- reveal criminal investigative techniques or procedures, except routine techniques and procedures

☐ Are computer access codes

Identification of records withheld (attach listing if additional space is required) and/or explanation if appropriate:

_____

_____

_____

Records Custodian Signature _____ Title _____ Date _____

DEC clears the way for cleanup of 2 sites polluting the Niagara

By PAUL MacCLENNAN
News Environmental Reporter

Cleanup plans for two properties along the Niagara River were announced today by state Environmental Commissioner Thomas C. Jorling.

Both cleanups — Cherry Farm in the Town of Tonawanda and Gratwick-Riverside Park in North Tonawanda — will total $35 million. The cleanups will take two to three years.

The sites, both owned by Niagara Mohawk Power Corp., were polluted by others. They have been identified by the United States and Canada as sources of contamination of the Niagara River.

Cherry Farm

The Town of Tonawanda and Niagara Mohawk are cooperating on plans for a waterfront park and boat-launching ramp on the 54-acre site. It would be the first full-scale park along the four miles of Niagara River bordering the town and is included in the Horizons Waterfront Commission plan.

The cost of cleanup is estimated at $17 million. Those dumping there include Occidental Chemical Corp., General Motors Corp. and Dow Chemical Corp.

Cherry Farm was an industrial dump from 1963 until the utility bought it in 1970. Tests have identified various organic compounds, including some cancer-causing chemicals.

Gratwick-Riverside Park

The 53-acre park contains waste buried 10 to 20 feet deep along the Niagara River. Those dumping there include Occidental's Durez Division and Bell Aerospace Textron. The cost of the cleanup is $18 million.

The site served as a municipal dump during the 1960s but was closed and converted to a park in 1968. Testing has disclosed the presence of dioxin, lead, PCBs, phenols, oil and grease. Levels of phenol, iron and lead in ground water exceed state standards.

A U.S.-Canadian Niagara River Toxics Management Committee says 500 pounds of chemicals leak from the site into the river every year.

"This clears the way for the state to ask the responsible parties to clean up the sites, and if they refuse the state will go ahead and do the work," said Peter Buechi, head of state Department of Environmental Conservation's regional solid and hazardous waste division.

Spokesman E. Alfred Osborne said Niagara Mohawk has agreed to carry out the cleanup at Cherry Farm.

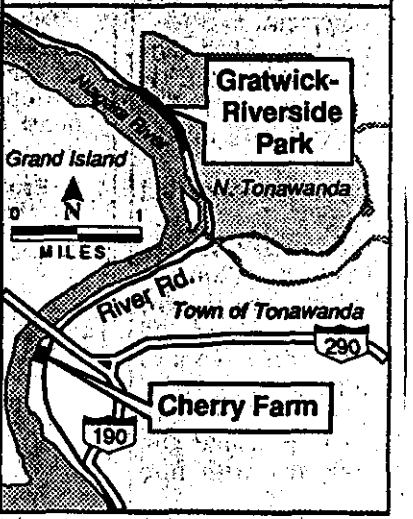
"We haven't been approached yet about Gratwick-Riverside, where we own the site, but lease it to North Tonawanda for park purposes," he said.

The utility acquired Cherry Farm as a potential site for disposal of incinerator ash from its nearby Huntley Generating Station.

The plan is to place a clay cap over the site, install a barrier wall along the water to prevent migration and install pumps to remove and treat contaminated ground water.

$35 MILLION CLEANUP

Park, utility land targeted



3-12-91

DRAFT #1 3/4/91

BAM1 (also on BEN6)

GRATWICK

FOR RELEASE: IMMEDIATE

Environmental Conservation Commissioner Thomas C. Jorling announced today that plans have been chosen to end contamination stemming from hazardous waste disposal at two sites in Niagara and Erie counties.

Remedial plans have been selected for the Gratwick Riverside Park site in North Tonawanda, Niagara County, and the Niagara Mohawk-Cherry Farm site in Tonawanda, Erie County. Both sites are listed on DEC's registry of inactive hazardous waste sites under classification "2", meaning that they pose a significant threat to public health or the environment and require remedial attention.

"Selection of remedial plans for these sites shows that New York is making substantial progress in its commitment to correct the legacy of improper toxic waste disposal that has plagued the Niagara Frontier for so long," Commissioner Jorling said.

The Gratwick Riverside Park site, located along the Niagara River, was a municipal landfill during the 1960's. In 1968, the landfill was closed and turned into a public park. Numerous investigations have confirmed the presence of phenolic resins and molding compounds, oil and grease, and PCBs. Groundwater monitoring wells have shown levels of phenols, iron and lead exceeding state standards and low levels of halogenated organics.

The chosen remedial plan includes a sheet pile breakwater along 4,900 feet of the Niagara River shore, soil cap to prevent rain and snow from percolating down through the landfill, wells to control migration of contaminated groundwater, and on-site pretreatment of groundwater and discharge to the local wastewater treatment plant. Estimated cost of the remediation project is $18 million.

The Niagara Mohawk-Cherry Farm site, also located along the Niagara River, was an industrial landfill from 1963 until it was purchased by the Niagara Mohawk Power Corp. in 1970. A remedial investigation conducted by Niagara Mohawk confirmed the disposal of foundry sand and slag from a steel making process and phenol tars, (some of which may have contained chlorinated benzenes,) from other sources. & WAS THIS EVER CONFIRMED)

The plan chosen to remediate this site includes capping the landfill to contain the deposited materials and collection and treatment of contaminated groundwater. The project cost is estimated at $17 million.

The selected remedial plans are incorporated within Records of Decision (RODs), administrative documents that present the remedial actions chosen for inactive hazardous waste sites and the information and rationale used to arrive at the decisions.

Records of Decision for the Gratwick Riverside Park and Niagara Mohawk-Cherry Farm sites were signed for Commissioner Jorling by Deputy Commissioner Edward O. Sullivan.

-30-

FOR FURTHER INFORMATION, CALL:

Benjamin A. Marvin (518) 457-5400

91-

March [illegible]

Jack:

Don Fingerlow called about the article in the Daily Tomahawk News about Schuck Iron & Metal.

He wants to explain about conditions when he left the company. He was a former manager of the company.

He also knows locations of disposal areas at Wetlands Park site.

His number is 693-3119.

Tom Johnson

RESULTS OF CALL

Schueck's

PRESS PIT EMPTY IN 1980-
BARRELS BURIED
ABOUT 20' DEEP
BEHIND PRESS TOWARD
TONDISCO & LAWLESS
ABOUT 20' FROM PRESS
PIT
BURIED ABOUT '84

GRATWICK RIVERSIDE-
DONNER'S CK AREA-
ACROSS FROM JUNKYARD

1 - Heyda
3 - File

JAM/kd
bcc: M. O'Toole
C. Goddard
E. Belmore (2)
C. Allen
J. Sciascia
D. Rourke
J. Moras

TO: Benjamin Marvin, Office of Public Affairs
FROM: Edward R. Belmore, Director, Bureau of Western Remedial Action
SUBJECT: Press Release

FEB 21 1991

Edward R. Belmore

Project Description:

The Record of Decision (ROD) has been signed by Deputy Commissioner Sullivan for the Gratwick Riverside Park Site, located in North Tonawanda, Niagara County. Gratwick Park is located along the Niagara River off of River Road in North Tonawanda. The site acted as a municipal landfill during the 1960's until it was closed in 1968 and converted into a public park. The Remedial Investigation/Feasibility Study (RI/FS) was initiated in July 1987. The ROD signifies the culmination of the RI/FS process and the selection of the chosen remedial alternative. The chosen remedial alternative includes: sheet pile breakwater along 4,900 feet of shoreline with the Niagara River; a soil cap; withdrawal wells to control offsite migration of contaminated groundwater; onsite pretreatment of groundwater followed by discharge to the local waste water treatment plant. At this point the project will move into the design of the chosen remedial alternative. Actual construction is not anticipated until 1993. The projected cost for the remediation of this site is approximately $18 million.

Consulting Engineer:

URS Consultants, Inc., of Buffalo, New York performed the RI/FS. The total cost for the RI/FS was approximately $750,000.

Estimated Total Project Cost:

As stated above, the RI/FS cost is approximately $750,000. The projected cost for remediation of the site is approximately $18 million.

Department Contact:

DHWR Engineer - James A. Moras
Telephone - 457-0315

cc: E. Sullivan
J. Spagnoli, Region 9
M. Lewis

~~[illegible]~~ —
1 - Hylan
2 - File

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

Thomas C. Jorling
Commissioner

TO: Benjamin Marvin, Office of Public Affairs
FROM: Edward R. Belmore, Director, Bureau of Western Remedial Action
SUBJECT: Press Release

Edward R. Belmore

FEB 2 1 1991

Project Description:

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Consulting Engineer:

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Estimated Total Project Cost:

As stated above, the RI/FS cost is approximately $750,000. The projected cost for remediation of the site is approximately $18 million.

Department Contact:

DHWR Engineer - James A. Moras
Telephone - 457-0315

cc: E. Sullivan
J. Spagnoli, Region 9
M. Lewis

Joe S.
Jim Moras
2 Files

New York State Department of Environmental Conservation

Thomas C. Jorling
Commissioner

TO: Ben Marvin, Press Office
FR: Patti Nelson, Reg. 9, CPS P. Nelson
RE: Press releases for Gratwick Riverside Park and Ni Mo Cherry Farm
DATE: February 6, 1991

Please be advised that the Record of Decision packages for both Gratwick and Ni Mo Cherry Farm will probably be sent to Commissioner Jorling's office later this week.

I spoke to Jim Moras (Gratwick project manager) and Mike Brinkman (Ni Mo project manager) on Monday, February 4; you can get more information on these projects from them.

Please let me know if the Region can provide you with any other information.

cc: M. O'Toole
J. Sciascia
B. Bentley

New York State Department of Environmental Conservation
600 Delaware Avenue, Buffalo, New York 14202
716/847-4551

Thomas C. Jorling
Commissioner

February 8, 1991

The Honorable Elizabeth C. Hoffman
Mayor of the City of North Tonawanda
216 Payne Avenue
North Tonawanda, New York 14120

Application ID 9-2912-00060/00001-0
Proposed Concrete Riprap
Gratwick Riverside Park
City of North Tonawanda
Niagara County

Dear Mayor Hoffman:

This letter was prepared after my February 5, 1991 discussion with Mr. Michael Eisenhauer, Assistant Civil Engineer, who I believe understands our concerns regarding the City's present application referenced above:

1. In order to continue processing the application, this office needs:

   a. Appropriate plans and specifications, which are prepared and certified by a N.Y. State licensed Professional Engineer and which provide the following information: (1) The existing shoreline and extent of existing concrete riprap (plan and cross-sectional views with dimensions); (2) the extent of proposed concrete riprap (cross-sectional views and dimensions, concrete size and weight, filter fabric specification and placement, etc.); (3) the plans should include the U.S.G.S. or I.G.L.D. Mean High Water elevations and extent of riprap should be shown by distances from durable landmarks.

   b. Method of concrete riprap installation. (It is our understanding that work would be done by hand, employing summer work crews. If limiting public exposure to contaminants is a purpose of the project, how will the workers be protected from exposure?)

Will the City require a worker health and safety plan? Are there any OSHA requirements to protect workers?

Why can't the site be signed and fenced off to protect the public?

2. Where would the concrete riprap come from? How will the City control the quality of the concrete?

3. Since the exact location of the permanent shoreline protection - sheet pile wall - and details of construction, including possible tiebacks are unknown, placement of the concrete riprap may create a significant obstacle to the breakwall, thereby causing additional expense (i.e. double handling) and also worker exposure.

   The concrete riprap is supposed to be a temporary measure, until the permanent sheet pile is installed by the State during site remediation activities. In the event that the sheet piling project does not occur, the proposed concrete riprap would not be substantial enough to provide durable protection or prevent movement during winter ice flows.

On the basis of these factors, it is my belief that this office will deny the present Protection of Waters Permit Application, since I believe there are more effective alternatives to prevent public exposure and provide erosion protection.

I trust you understand from the items presented that there are many issues to be addressed and, from a legal perspective, those issues are too great to be resolved adequately by the present proposal. I am hopeful, therefore, that you will reconsider the present application and withdraw it.

In the event you still wish to pursue the project, the City will have to provide the requested information. If you decide to submit that information, when you have properly prepared it, please contact Ms. Mary Ketter of my staff by telephoning (716)847-4551 to schedule a meeting for discussion purposes. Thank you for your cooperation.

Respectfully,

Steven J. Doleski

Steven J. Doleski
Regional Permit Administrator

cc: Mr. Michael Eisenhauer - Assistant Civil Engineer
Mr. Paul Dickey - Niagara County Health Department

bcc: Mr. John Spagnoli
Mr. Peter Buechi/Dr. John Hyden
Mr. James Moras

MEK/SJD/kah

NOTIFICATION OF AVAILABILITY FOR REVIEW

Please return this form to: RICHARD D FOLEY
DRA
Phone: NYS DEPT OF ENVIRONMENTAL CONSERVATION
REGION 9 BUFFALO
600 DELAWARE AVE
BUFFALO NEW YORK 14202-1073

Application ID: 9-2912-00072/00001-0 **Batch ID:** 66528

Permits Applied for:
1 EXCAVATION AND FILL IN NAVIGABLE WATERS
1 WATER QUALITY CERTIFICATION

Applicant-Permittee-Owner: **Owner ID:** 11219
NORTH TONAWANDA - C

Facility-Project:
TONAWANDA CREEK (NYS BARGE CANAL)

Program ID:

County: NIAGARA **Town:** NORTH TONAWANDA

NYTM-E: 185.9 **NYTM-N:** 4770.2

Description:
THE APPLICANT PROPOSES TO REPLACE TWO EXISTING DETERIORATED BOAT LAUNCH RAMPS WITH JOINED PRECAST CONCRETE SLABS, AND THE ADDITION OF A NEW STEEL STRINGER AND PIPE PILE DOCK WITH WOOD DECK. THE PROJECT IS LOCATED ON TONAWANDA CREEK AT SWEENEY AND SERVICE DRIVE. DREDGE

Sender Comments:
Any concerns?

Distribution:

Date Sent for Review	01/23/91		
Date Due Back	02/15/91		
Reviewer sent to	DFW	DOW	DSW
This Copy for			X ✓

Reviewer Comments:

Prepared by: _____
(name)

_____ _____ _____
(unit) (phone) (date)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NOTICE OF COMPLETE APPLICATION

APPLICANT:

NORTH TONAWANDA - C
CITY HALL
NORTH TONAWANDA, NY 14120

Date: 01/23/91

APPLICATION ID: 9-2912-00072/00001-0

PERMITS APPLIED FOR:

1 ARTICLE 15, TITLE 5: EXCAVATION AND FILL IN NAVIGABLE WATERS
1 SECTION 401 - CLEAN WATER ACT: WATER QUALITY CERTIFICATION

PROJECT IS LOCATED IN NORTH TONAWANDA IN NIAGARA COUNTY.

PROJECT DESCRIPTION:

THE APPLICANT PROPOSES TO REPLACE TWO EXISTING DETERIORATED BOAT LAUNCH RAMPS WITH JOINED PRECAST CONCRETE SLABS, AND THE ADDITION OF A NEW STEEL STRINGER AND PIPE PILE DOCK WITH WOOD DECK. THE PROJECT IS LOCATED ON TONAWANDA CREEK AT SWEENEY AND SERVICE DRIVE. DREDGE SPOIL WILL BE DISPOSED OF ON PARK LAND ADJACENT TO THE PROJECT SITE.

STATE ENVIRONMENTAL QUALITY REVIEW (SEQR) DETERMINATION:

SEQR - 3B Project is an unlisted action and will not have a significant impact on the environment. A negative declaration is on file. No coordinated review was performed.

SEQR LEAD AGENCY None Designated

STATE HISTORIC PRESERVATION ACT (SHPA) DETERMINATION:

SHPA - 2 A Structural-Archaeological Assessment Form has been completed. The proposed activity will not have any impact on registered, eligible or inventoried archaeological sites or historic structures. No further review in accordance with SHPA is required.

AVAILABILITY FOR PUBLIC COMMENT:

Comments on this project must be submitted in writing to the Contact Person no later than 02/15/91

CONTACT PERSON:

RICHARD D FOLEY
600 DELAWARE AVE
BUFFALO, NY 14202-1073

TO THE APPLICANT:

1. **THIS IS NOT A PERMIT**
2. This is to advise you that your application is complete and a review has commenced. Additional information may be requested from you at a future date, if deemed necessary, in order to reach a decision on your application.
3. Your project is classified MAJOR. Accordingly, a decision will be made within 90 days of the date of this Notice. If a public hearing is necessary, you will be notified within 60 days and the hearing will commence within 90 days of the date of this notice. If a hearing is held, the final decision will be made within 60 days after the hearing is completed.
4. Publication of this Notice in a newspaper is required. Consult the accompanying Instructions for Newspaper Publication.

SEND TO:

R9DSW

CC: Chief Executive Officer
Environmental Notice Bulletin, Room 509, 50 Wolf Road, Albany, N.Y. 12233-4500
File
R9DFW
R9DOW
R9DSW
M KANE N C

Nussbaumer & Clarke, Inc.
Consulting Engineers Surveyors
310 Delaware Avenue Buffalo, New York 14202
(716) 853-7582

134 Water Street
P.O. Box 162
Oswego, New York 13126
(315) 342-3010

December 18, 1990

Mr. Richard D. Foley
Regional Permit Administrator
NYS Department of Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202

Re: City of North Tonawanda
Launch Ramp Rehabilitation Project
Sweeney Street at Service Drive
COE Permit Application No. 90-260-26
DEC Application ID 9-2912-00072/00001-0
NCI File No. 90-128

Dear Mr. Foley:

Nussbaumer & Clarke, Inc. (NCI) is hereby forwarding Final Contract Documents on behalf of the City of North Tonawanda, in reference to permit applications submitted regarding the above-referenced project. Enclosed please find the following:

Three sets of the Contract Drawings, dated November 1990
Three copies of the Specifications and Contract Documents
Three copies of the Engineer's Design Report, dated December 1990
Three copies of the Project Location Map

Comments contained in your Notice of Incomplete Application dated August 3, 1990 (copy attached) have been addressed as follows, in the same numbering order:

1. Dredge spoil will be disposed of on park land adjacent to the project site, as outlined in the Engineer's Report and Specifications. Solid concrete spoil from demolition of the existing launching ramps will be disposed of at Gratwick Riverside Park, River Road, North Tonawanda, under the terms and conditions of U.S. Army Corps of Engineers Permit No. 89-621-55, effective June 29, 1990 (NYSDEC Application ID. 9-2912-00060/00001-0).

> Money to be in handling application

2. A dewatered cofferdam of the type described in the Specifications and as shown on the Plans is proposed to be used. A hydraulic backhoe will be used to remove material within the limits shown on the Plans. A haybale dike and siltation fence will be installed along the water's edge at the locations shown on the Plans for the duration of the fill activity.

3. As a result of using the dewatered cofferdam, no concrete leachate will be entering the water.

Comments received from NYSDOT and the U.S. Army Corps of Engineers regarding the project have also been addressed and are reflected in this submittal.

The City of North Tonawanda has set January 7, 1991 as the Bid Date for the Project. NCI respectfully requests, if possible, that you expedite your review of this submittal so that approval for the Project may be obtained on or before that date.

Should you have any further comments or questions, please do not hesitate to contact our office.

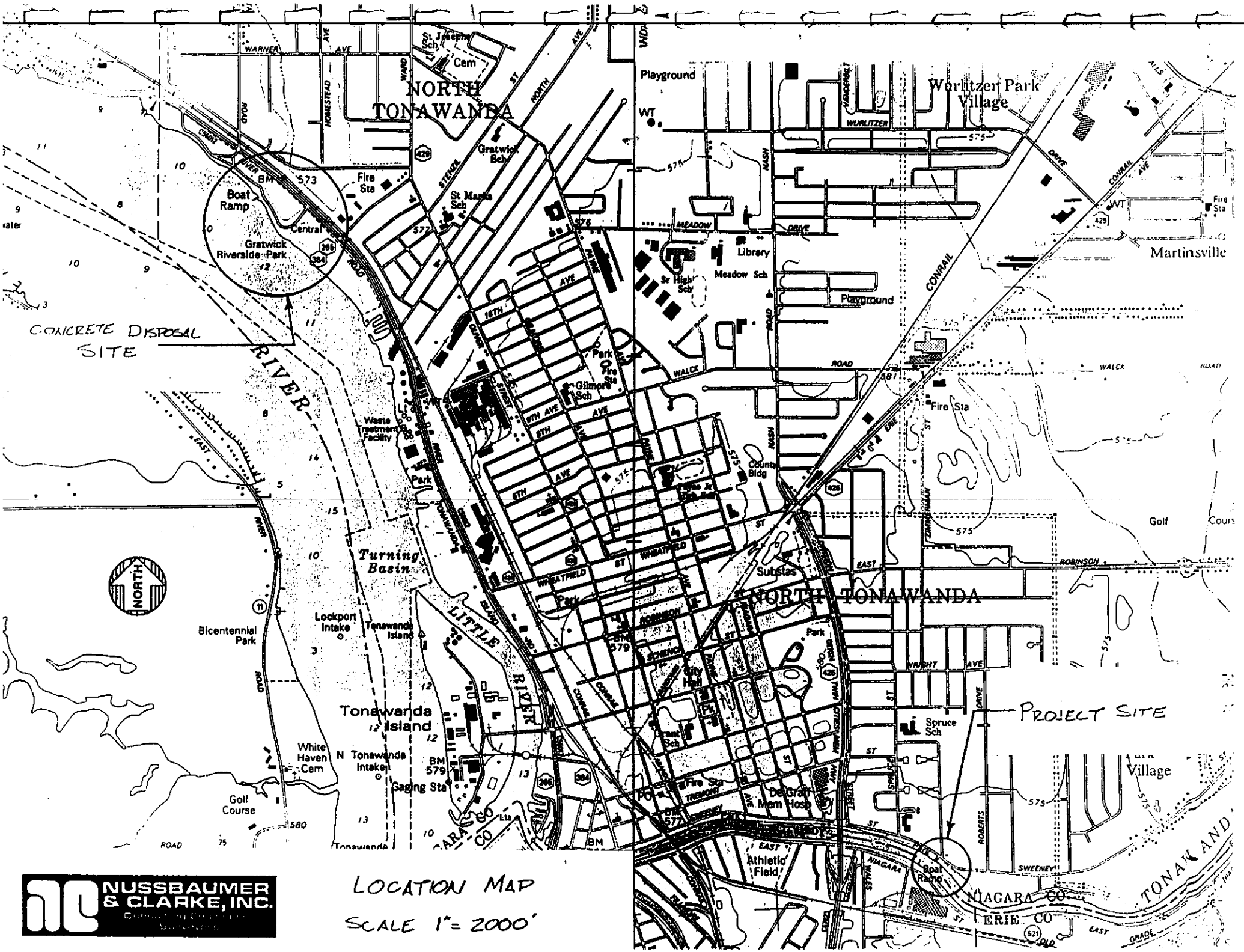
Yours truly,

NUSSBAUMER & CLARKE, INC.

Michael P. Kane

Michael P. Kane, I.E.

Enclosures
c: Michael R. Eisenhauer, City of North Tonawanda



NUSSBAUMER & CLARKE, INC.

LOCATION MAP

SCALE 1"= 2000'

1 - D. Hydle
2 - File

Mr. Jim Moras, Div. of Hazardous Waste Remed.-Albany
Mr. Mike Wilkinson, Region 9 Fisheries Unit
Fisheries Comments on Gratwick Riverside Park Proposed Remedial Action Plan (PRAP)
January 14, 1991

I have reviewed the above-mentioned PRAP, and fisheries comments are provided below. These comments have been reviewed by pertinent Regional Hazardous Waste Remediation staff.

First, I would like to emphasize the importance of the Niagara River as a sport fishery. A recent angler survey (NYSDEC, 1990) indicated that the Niagara River is ranked sixth statewide in number of anglers and fifth statewide in number of angler days. The survey probably does not take into account all angling activity by Canadians and other non-residents, so actual angler usage may be much greater than estimated in the report. Therefore, we are concerned about any activities which might potentially adversely affect the quality of the fishery.

One of our concerns regarding the proposed remedial action plan is the potential for disturbance and/or loss of nearshore shallow water habitat. Along much of the Gratwick Park shoreline, there are submerged aquatic plants and other shallow-water habitat conditions which are used for fish spawning and for rearing of young fishes. This littoral zone is critical for the development of fish fry and subsequent survival to adulthood of many fish species. If these habitats are diminished or degraded, the productivity of affected fish species will be diminished.

Based on information presented in the report, there are several specific concerns regarding the proposed alternative as follows. First there is concern about the potential loss of shallow water habitat by encroachment of the sheetpile bulkhead and backfill into the Niagara River. The proposed length of the sheetpiling (approx. 4900 ft.) poses significant potential for loss of habitat unless encroachment into the River is minimized. The Fisheries Unit prefers that no fill or sheetpiling be placed waterward of the mean high water elevation. More specifically, we prefer that the sheetpiling be located at least approximately 50 feet landward of the mean high water elevation to facilitate development of a vegetated (trees and shrubs) buffer zone along the river shoreline. The vegetated buffer zone will provide a number of benefits to park users and to fish and wildlife. Second, there is concern about the potential for the sheetpiling and/or other shore protection measures to induce scouring (by ice and

waves) or erosion of nearshore shallows. Third, there is concern about potential degradation of shallow-water habitat if material is dredged from the River for the purposes of obtaining backfill. Fourth, there is concern about loss of shallow-water habitat if dredging is required to facilitate access to the site by barge or boat-mounted equipment (for example sheetpile driving equipment).

There is also concern regarding the potential presence of contaminated sediments/substrate in the Niagara River adjacent to the landfill site. Has any sampling been done to assess whether contaminated sediments are present offshore of the landfill and whether these contaminants (if present in significant concentrations) might be attributable to the landfill site? If significant contaminant concentrations are present in nearshore sediments, shouldn't the plan address remediation of these sediments/substrates?

There are concerns regarding potential water-quality impacts during construction such as siltation, migration of grout leachate, migration of contaminants and spills or leakage of a variety of potentially adverse materials (such as paints, solvents, lubricants, hydraulic fluid etc.).

The Regional Fisheries Unit will recommend prohibition of in-stream activity during the spring and early summer period. The tentative work prohibition period is April 15 to July 1.

The Regional Fisheries Unit prefers that boat launch facilities be available during and after remedial activities to facilitate boat-based angler access to the River. We prefer that no loss of boat launching opportunities occur as a result of this project. How will the sheetpiling alternative be designed to facilitate continued usage of the boat launch ramp?

The Regional Fisheries Unit prefers that access be maintained for shore-based anglers.

We suggest that the following organizations be given an opportunity to comment on the PRAP.

- NYSDEC, Reg. 9 Wildlife Unit, Attn: Mr. Terry Moore
- NYSDEC, Bureau of Environmental Protection, Albany
- NYSDOS, Coastal Zone Management

°U.S. Army Corps of Engineers, Buffalo District

°U.S. Fish and Wildlife Service, Cortland, New York

°Niagara River Anglers Association, Attn: Mr. Joe Urso

As you may be aware, a D.E.C. Protection of Waters Permit (Article 15), may be required for disturbance of the bed and/or banks of the Niagara River.

We are aware that additional planning, review and design work remain to be done on this project. We hope to be provided the opportunity for additional input as the project evolves.

Information Source:

New York State Department Environmental Conservation, 1990, New York Statewide Angler Survey 1988, 158 pages.

MAW:slc

cc: Mr. Steve Mooradian, Region 9 Fisheries Manager
Mr. Joseph Sciascia, Div. of Haz. Waste Remed.-Reg. 9 ✓

1 - Hydro
2 - rad

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

Thomas C. Jorling
Commissioner

JAN 0 3 1991

Mr. Carl M. Schmidli
Race Chairman
Niagara Frontier Boat Racing Association, Inc.
5269 Tonawanda Creek Road North
North Tonawanda, NY 14120

Dear Mr. Schmidli:

Re: Gratwick Riverside Park, Niagara County, Site No. 9-32-060

During our December 27, 1990 telephone conversation we discussed the anticipated schedule for remedial activities at the above-referenced site. As you stated in your December 28, 1990 letter, your association is interested in determining the status of the remedial program at Gratwick. A Proposed Remedial Action Plan (PRAP) has been presented to the public and the comment period will close on January 8, 1991. Enclosed you will find a summary of the December 6, 1990 public meeting where the PRAP was presented. Once the PRAP is finalized we will negotiate with the PRPs to determine who will fund the remedial design and construction. After the negotiations are completed the project will move into the remedial design phase. The remedial construction will not take place during 1991 and probably will not begin until the 1993 construction season.

If you have any questions or need any additional information feel free to contact me at 518/457-0315.

Sincerely,

James A. Moras

James A. Moras
Environmental Engineer
Division of Hazardous Waste
Remediation

Enclosure

JAM/kd
bcc: E. Belmore
C. Allen
J. Sciascia
J. Moras

TABLE: A-1
SITE : CRATWICK-RIVERSIDE
SECTOR : TOTAL
LOCATION : ON-SITE
MEDIA : SURFACE SOIL
POPULATION : GENERAL
EXPOSURE SCENARIO : PARKLAND

A. CARCINOGENIC POTENTIAL

CHEMICAL	ESTIMATED TOTAL SOIL CONCENTRATION (mg/kg)			CHRONIC DAILY INTAKE (mg/kg-day)			CANCER SLOPE FACTOR	LIFETIME UPPER BOUND EXCESS CANCER RISK			PERCENT OF TOTAL RISK	
	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 1	LEVEL 2	LEVEL 3	(mg/kg-day)-1	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 2	LEVEL 3
TRICHLOROETHENE	7.86E-04	7.86E-04	1.30E-02	6.03E-11	1.73E-10	2.86E-09	1.10E-02	6.64E-13	1.90E-12	3.14E-11	0.00	0.00
TETRACHLOROETHENE	6.14E-03	6.14E-03	9.60E-02	4.72E-10	1.35E-09	2.11E-08	5.10E-02	2.41E-11	6.89E-11	1.08E-09	0.00	0.00
CARCINOGENIC PAHs												
BENZO(a)PYRENE	8.81E-01	8.81E-01	9.50E+00	6.77E-08	1.94E-07	2.09E-06	1.15E+01	7.78E-07	2.23E-06	2.40E-05	39.78	34.83
BENZ[a]ANTHRACENE	7.56E-01	7.56E-01	8.80E+00	5.81E-08	1.66E-07	1.93E-06	1.67E+00	9.68E-08	2.77E-07	3.23E-06	4.95	4.68
BENZO(b&k)FLUORANTHENE	1.64E+00	1.64E+00	1.80E+01	1.26E-07	1.60E-07	3.96E-06	1.61E+00	2.03E-07	5.80E-07	6.37E-06	10.36	9.24
BENZO(ghi)PERYLENE	7.32E-01	7.32E-01	8.30E+00	5.62E-08	1.61E-07	1.82E-06	7.59E-01	4.27E-08	1.22E-07	1.38E-06	2.18	2.01
CHRYSENE	7.81E-01	7.81E-01	7.90E+00	6.00E-08	1.72E-07	1.74E-06	2.53E-01	1.52E-08	4.34E-08	4.39E-07	0.78	0.64
DIBENZO[ah]ANTHRACENE	2.03E-01	2.03E-01	2.80E+00	1.56E-08	4.46E-08	6.15E-07	1.28E+01	1.99E-07	5.69E-07	7.86E-06	10.16	11.48
INDENO[1,2,3-cd]PYRENE	8.40E-01	8.40E-01	9.90E+00	6.45E-08	1.85E-07	2.10E-06	2.67E+00	1.72E-07	4.93E-07	5.61E-06	8.80	8.42
										ALL PAHs	77.00	71.21
POLYCHLORINATED BIPHENYLS	4.94E-01	4.94E-01	7.20E+00	3.80E-08	1.09E-07	1.58E-06	7.70E+00	2.92E-07	8.37E-07	1.22E-05	14.94	17.68
HxCDF (ALL 2,3,7,8)	4.33E-04	4.33E-04	6.40E-03	3.33E-11	9.52E-11	1.42E-09	1.56E+03	5.19E-08	1.49E-07	2.22E-06	2.65	3.22
HepCDF (ALL 2,3,7,8)	1.31E-03	1.31E-03	2.07E-02	1.00E-10	2.87E-10	4.55E-09	1.56E+01	1.56E-09	4.48E-09	7.10E-08	0.08	0.10
HxCDD (ALL 2,3,7,8)	2.12E-04	2.12E-04	3.02E-03	1.63E-11	4.66E-11	8.40E-10	6.24E+03	1.02E-07	2.91E-07	5.24E-06	5.20	7.60
HepCDD (ALL 2,3,7,8)	2.10E-04	2.10E-04	3.70E-03	1.61E-11	4.62E-11	8.31E-10	1.56E+02	2.52E-09	7.20E-09	1.30E-07	0.11	0.19
TOTAL CDFs+CDDs										TOTAL %	8.06	11.11
NA : NOT AVAILABLE												
				TOTAL LIFETIME CANCER RISK :				1.96E-06	5.60E-06	6.89E-05	100.00	100.00
TCDD ALTERNATE CALCULATIONS												
HxDBF (ALL NON-2,3,7,8)	4.33E-04	4.33E-04	6.40E-03	3.33E-11	9.52E-11	1.42E-09	1.56E+01	5.19E-10	1.49E-09	2.22E-08	0.03	0.03
HepDBF (ALL NON-2,3,7,8)	1.31E-03	1.31E-03	2.07E-02	1.00E-10	2.87E-10	4.55E-09	1.56E+01	1.56E-09	4.48E-09	7.10E-08	0.08	0.11
HxCDD (ALL NON-2,3,7,8)	2.12E-04	2.12E-04	3.02E-03	1.63E-11	4.66E-11	8.40E-10	6.24E+01	1.02E-09	2.91E-09	5.24E-08	0.05	0.08
HepCDD (ALL NON-2,3,7,8)	2.10E-04	2.10E-04	3.70E-03	1.61E-11	4.62E-11	8.31E-10	1.56E+00	2.52E-11	7.20E-11	1.30E-09	0.00	0.00
										TOTAL %	0.17	0.23
				ADJUSTED TOTAL LIFETIME CANCER RISK				1.96E-06	5.60E-06	6.89E-05		

TABLE: A-2
PARKLAND EXPOSURE SCENARIO
INCLUDES INGESTION AND DERMAL CONTACT WITH CHEMICALS IN SOIL

$$\text{EQUATION : INTAKE (mg/kg-day)} = \frac{CS \times CF \times SA \times AF \times MF \times ABS \times EF \times ED}{BW \times AT} + \frac{CS \times IR \times CF \times ABS \times EF \times ED}{BW \times AT}$$

where :

CS = Chemical Concentration in Soil (mg/kg)
IR = Ingestion Rate (mg soil/day)
SA = Skin Surface Area Available for Contact (cm2/event)
CF = Conversion Factor (10E-06 kg/mg)
EF = Exposure Frequency (days/years)
ED = Exposure Duration (years)
BW = Body Weight (kg)
AT = Averaging Time (period over which exposure is averaged -- days)
AF = Soil to Skin Adherence Factor (mg/cm2)
ABS = Absorption Factor - %/100 of chemical absorbed which contacts skin or is ingested.
MF = Matrix Factor; part of chemical on soil that is in contact with skin (%/100)

Variable Values	LEVEL 1	LEVEL 2	LEVEL 3	REFERENCES
CS (mg/kg)	AVERAGE OF ALL VALUES*	AVERAGE OF ALL VALUES*	MAXIMUM REPORTED	
IR (1-6 YRS) (mg soil/day)	200	200	200	RAGS (1)
IR (OVER 6 YRS) (mg soil/day)	100	100	100	RAGS (1)
SA (1-6 YRS) (cm2)	1780	1780	1780	RAGS (1)
SA (OVER 6 YRS) (cm2)	1590	1590	1590	RAGS (1)
CF (kg/mg)	0.000001	0.000001	0.000001	SEAM (2)
EF (days/year)	26	52	52	RAGS & PROFESSIONAL JUDGEMENT
ED (CARCINOGEN) (years) ADULT	5	25	25	RAGS (1)
CHILD	5	5	5	
ED (NON-CARCINOGEN) (years) CHILD	1	1	1	PROFESSIONAL JUDGEMENT
BW (CHILD) (kg)	16	16	16	RAGS (1)
BW (ADULT) (kg)	70	70	70	RAGS (1)
AT (CARCINOGEN) (yrs x days/yr)	25550	25550	25550	RAGS (1)
AT (NON-CARCINOGEN) (yrs x days/yr)	365	365	365	RAGS (1)
AF (mg/kg)	1.45	1.45	1.45	SEAM (2)
MF (%/100)	0.15	0.15	0.15	HAWLEY (3)
ABS (%/100) SKIN	0.04	0.04	0.04	
INGESTION	1	1	1	

* TO CALCULATE AVERAGES, NDs WERE ASSUMED TO BE ZERO.

(1) EPA RISK ASSESSMENT GUIDANCE FOR SUPERFUND MANUAL, SEPTEMBER 1989; OSWER DIRECTIVE 9285.7-01A.
(2) EPA SUPERFUND EXPOSURE ASSESSMENT MANUAL, APRIL 1989; EPA/540/1-88/001.
(3) ASSESSMENT OF HEALTH RISK FROM EXPOSURE TO CONTAMINATED SOIL, HAWLEY, J.K., RISK ANALYSIS, VOL.4 NO.5, 1985.

APPENDIX B

Gratwick-Riverside Park Site
Weighted Matrix Scoring Evaluation
Modified Alternative

The following is the weighted matrix scoring evaluation of the modified remedial action alternative. The modifications recommended are listed below.

Soil Cap	- collection and analysis of surficial soil samples to identify areas of elevated PAH presence (full 18" cap in elevated areas; modified cap in other areas) - cap 50% of the Park Area - no underlying geotextile.
Sheet Pile Wall	- no bentonite slurry wall - retain option of supplementing sheet pile wall as necessary to lower hydraulic conductivity if economically justified based upon identified groundwater flow conditions.
Groundwater Collection	- retain option of tile collection system.
Monitoring	- Site Specific Indicators (SSI) only.

Short-Term Impacts and Effectiveness: Score - 7 out of 10

The below ground work required for the construction of the sheet pile wall, pumping wells and groundwater pretreatment facility has the potential to cause chemical migration and thus there are some short-term risks associated with this alternative. It is expected that effective mitigative efforts can be used to address any potential environmental risk. The time for implementation is expected to be approximately two years.

The duration of construction will be shorter than the PRAP alternative since the entire area will not be capped. Some additional effort for surficial soil sample collection and analysis will be required.

Long-Term Effectiveness and Permanence: Score - 6 out of 15

The long-term effectiveness and availability of this alternative is uncertain particularly with respect to the ability of the proposed collection well system to control and capture groundwater without the availability of pump test data. The sheet pile wall is not expected to require a large degree of annual maintenance; however, the longevity of the sheet pile wall is uncertain.

In addition, the quantity of river water collected by the wells is uncertain. However, it is expected that the sheet pile will form an effective physical barrier between the river and the pumping wells.

Reduction in Toxicity, Mobility and Volume of Hazardous Wastes: Score - 8 out of 15

The toxicity of the solid waste at the site will be reduced with time due to the leaching action of infiltration and groundwater and the subsequent withdrawal and treatment of groundwater which has contacted the waste. The leaching action will slowly, with time, reduce the volume of solid hazardous waste by leaching the hazardous compounds from the solid. The volume of groundwater migrating from the site will be reduced; however, some of the groundwater may not be captured by the proposed system.

Implementability: Score - 10 out of 15

The quantity of subsurface work is basically limited to the pumping wells, sheet pile wall and pretreatment facility. The quantity of intrusive subsurface work required by the pretreatment facility may be reduced dependent upon the location of the facility and the thickness of the imported materials required for site grading at that location.

Compliance with Federal ARARs and NYS SCGs: Score - 9 out of 10

This alternative would be essentially in compliance with the chemical-specific ARARs and SCGs. Special considerations and permits may be required to address action and location - specific ARARs and SCGs, ie. discharge to POTW and work adjacent to and in the river.

It is anticipated that all surficial soils defined as posing incremental cancer risks above the target limit (1.0E-06) will be identified during the additional sampling. For cost estimating purposes, it is assummed that capping 50% of the park area will address the areas posing the incremental cancer risk.

Overall Protection and Human Health and the Environment: Score - 10 out of 20

Direct exposure of the surficial soils posing an incremental cancer risk will be eliminated for the site. A significant reduction in groundwater migration to the river will be achieved by the groundwater wells. The volume and toxicity of solid hazardous waste will be slowly reduced with time due to the leaching action of infiltration and groundwater.

However, the quantity of river water captured by the pumping wells is highly uncertain. Land use (deed) restrictions will be required to maintain the integrity of the alternative components.

Cost: Score - 11 out of 15

The estimated present worth cost is $10,279,00 (see Table 1, Attachment 1).

Dec. 26, 1990
310 Hamilton
N. Tonawanda,
14120

James A. Moras
Project Manager
N.Y.S. Dept. of Environmental Cons.
Room 222
50 Wolf Rd.
Albany, N.Y. 12233-7010

Received
1/10/91

Dear Sir

I am writing in response to your letter of Dec. 21, 1990 which pertains to the Proposed Remedial Action Plan for Gratwick Riverside Park located in N. Tonawanda, N.Y.

First a question what will be the height of the steel sheet retaining wall at the river's edge?

This wall should adhere to the existing ground level of the river for the convenience of the fishermen who use the park for sport fishing. Also if the height of the sheet piling is going to be 4 ft. or higher along the river's edge handholds should be installed onto the sheet piling. The six to eight mile current of the river in this area is a safety factor that must be addressed if someone falls into the water. These handholds would provide

a means of getting out of the water and back onto ground level.

At the public meeting I raised the issue concerning the reliability of the storm sewer running through the park. I believe that any remediation of this problem should also address the problem of river wave and wind action which plugs the storm sewer outlet. (see enclosed picture). The storm sewers serve as the main outlet for storm waters for our area and U.S. Eng. Corps research shows that the Donner Ck outlet if restricted will cause greater flood in the area.

Yours truly,
Edwin J. Kuczkowski

95-20-6 (10/90)—25c NEW YOR[K] STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER
9-2912-00067/00001-0

FACILITY/PROGRAM NUMBER(s)

PERMIT
Under the Environmental Conservation Law (ECL)

EFFECTIVE DATE
February 12, 1991

EXPIRATION DATE
December 31, 1992

TYPE OF PERMIT (Check All Applicable Boxes)
☒ New ☐ Renewal ☐ Modification ☐ Permit to Construct ☐ Permit to Operate

X	Article 15, Title 5: Protection of Water		Article 17, Titles 7, 8: SPDES		Article 27, Title 9; 6NYCRR 373: Hazardous Waste Management
	Article 15, Title 15: Water Supply		Article 19: Air Pollution Control		Article 34: Coastal Erosion Management
	Article 15, Title 15: Water Transport		Article 23, Title 27: Mined Land Reclamation		Article 36: Floodplain Management
	Article 15, Title 15: Long Island Wells		Article 24: Freshwater Wetlands		Articles 1, 3, 17, 19, 27, 37; 6NYCRR 380: Radiation Control
	Article 15, Title 27: Wild, Scenic and Recreational Rivers		Article 25: Tidal Wetlands		Other: _____
X	6NYCRR 608: Water Quality Certification		Article 27, Title 7; 6NYCRR 360: Solid Waste Management		

PERMIT ISSUED TO
City of North Tonawanda, c/o Mayor Elizabeth Hoffman
TELEPHONE NUMBER
(716)695-8555

ADDRESS OF PERMITTEE
216 Payne Avenue, North Tonawanda, New York 14120

CONTACT PERSON FOR PERMITTED WORK
Krehbiel Associates, Inc. - Mr. William Rae
TELEPHONE NUMBER
(716)693-9300

NAME AND ADDRESS OF PROJECT/FACILITY
Northwest Storm Sewer, Phase I, Outfall to Niagara River

LOCATION OF PROJECT/FACILITY
See Attached Location Map

COUNTY	TOWN/CITY	WATERCOURSE/WETLAND NO.	NYTM COORDINATES
Niagara	North Tonawanda	Niagara River	E: 183.2 N: 775.0

DESCRIPTION OF AUTHORIZED ACTIVITY
Installation of twin 102-inch diameter RCP storm sewers which drain into an open channel area, constructed of sheet pile, into the Niagara River. Approximately 7,000 cubic yards of material will be excavated and rough graded on site.

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified **(See Reverse Side)** and any Special Conditions included as part of this permit.

PERMIT ADMINISTRATOR (Deputy)	ADDRESS	
Richard P. Sweeney	NYS Dept. of Environmental Conservation - Region 9 600 Delaware Ave., Buffalo, New York 14202-1073	
AUTHORIZED SIGNATURE Richard P. Sweeney	DATE FEB 12 1991	Page 1 of 11

GENERAL CONDITIONS

Inspections

1. The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3). A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

Permit Changes and Renewals

2. The Department reserves the right to modify, suspend or revoke this permit when:
   a) the scope of the permitted activity is exceeded or a violation of any condition of the permit or provisions of the ECL and pertinent regulations is found;
   b) the permit was obtained by misrepresentation or failure to disclose relevant facts;
   c) new material information is discovered; or
   d) environmental conditions, relevant technology, or applicable law or regulation have materially changed since the permit was issued.
3. The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms, fees or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.
4. The permittee must submit a renewal application at least:
   a) 180 days before expiration of permits for State Pollutant Discharge Elimination System (SPDES), Hazardous Waste Management Facilities (HWMF), major Air Pollution Control (APC) and Solid Waste Management Facilities (SWMF); and
   b) 30 days before expiration of all other permit types.
5. Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

Other Legal Obligations of Permittee

6. The permittee has accepted expressly, by the execution of the application, the full legal responsibility for all damages, direct or indirect, of whatever nature and by whomever suffered, arising out of the project described in this permit and has agreed to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from this project.
7. This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.
8. The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required for this project.

95-20-6a (10/90)—25c

Wat Quality Certification

ADDITIONAL GENERAL CONDITIONS FOR ARTICLES 15 (Title 5), 24, 25, 34, 36 and 6 NYCRR Part 608 (Protection of Water)

9. That if future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.
10. That the State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.
11. Granting of this permit does not relieve the applicant of the responsibility of obtaining any other permission, consent or approval from the U.S. Army Corps of Engineers, U.S. Coast Guard, New York State Office of General Services or local government which may be required.
12. All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.
13. Any material dredged in the prosecution of the work herein permitted shall be removed evenly, without leaving large refuse piles, ridges across the bed of a waterway or floodplain or deep holes that may have a tendency to cause damage to navigable channels or to the banks of a waterway.
14. There shall be no unreasonable interference with navigation by the work herein authorized.
15. If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.
16. If granted under Article 36, this permit does not signify in any way that the project will be free from flooding.
17. If granted under 6 NYCRR Part 608, the NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.
18. All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or his agent as part of the permit application.

Such approved plans were prepared by SEE SPECIAL CONDITION #1 BELOW on _____.

SPECIAL CONDITIONS

1. All work authorized under this permit shall be performed in strict accordance with the attached plans entitled "City of North Tonawanda, Northwest Storm Sewer", DRA No. 9-2912-00067/00001-0, Page 7 of 11 through Page 11 of 11 attached and approved plans prepared by Krehbiel Associates, Inc., "Northwest Storm Sewer Phase I", Sheet No. 2 dated 2/89, Sheet No. 7 dated 1/90, Sheet Nos. 8-10 dated 3/90.

2. No work shall occur during periods of high water or wave conditions. Work operations in the water are also prohibited from May 15th to July 1st to minimize adverse impacts that could affect fish.

3. The permittee's on-site construction coordinator/inspector for the Northwest Storm Sewer Construction shall report to this Department (specifically Dr. John Hyden, Division of Hazardous Waste, at 716/847-4585, Monday through Friday, 8:00 a.m. - 4:45 p.m.) any evidence of soil contamination (i.e. oily residue, chemical odors) or buried waste materials (i.e. drums, containers, barrels, etc.) encountered during construction.

DEC PERMIT NUMBER		
9-2912-00067/00001-0		
PROGRAM/FACILITY NUMBER		Page 3 of 11

SPECIAL CONDITIONS

For Article 15, Title 5 (Protection of Water)

6 NYCRR Part 608 (Water Quality Certification)

4. Visibly turbid discharges from dewatering operations or excavation activities shall not be allowed to enter the Niagara River. Any such discharge shall be: (1) retained in an appropriately maintained upland settling basin, (2) filtered through crushed stone, sand, haybales, filter fabric, etc., or (3) directed to a grassy upland area sufficiently distant from the Niagara River to preclude such entry.

5. Excavation of the open channel discharge area shall occur beginning from the inland end and proceed toward the Niagara River. At a minimum, a five-foot wide, undisturbed area shall be left in place at the River bank to forma plug between the open channel discharge area and the River until the sheet piling has been completed.

6. Dredging of the Niagara River at the storm sewer butlet shall occur from the bank of the Niagara River or from a barge. No side casting of dredged material is authorized.

7. Dredged and excavated materials shall be placed directly into the spoil area (noted on sheet 8 of 11), which is located more than 50 feet from the top of bank of the Niagara River.

8. All dredged and excavated materials which are placed in the spoil area shall be stabilized (coarse graded and seeded until a vegetative cover is established) so that it cannot reenter the Niagara River.

9. During bank sloping and grading operations, soil shall not be bulldozed into the streambank or in the flowing water.

10. All disturbed streambanks and upland areas from which soil could erode into the River shall be immediately seeded and mulched with hay or straw upon completion of site final grading.

SPECIAL CONDITIONS

For Article 15, Title 5 (Protection of Water)

6 NYCRR 608 (Water Quality Certification)

11. In order to contain sediments during near-shore dredging, a silt screen (maximum opening size of U.S. Sieve Number 20), weighted or anchored across the bottom and suspended on floats, shall be positioned to semi-enclose the work site before starting excavation in the water. The silt screen shall be positioned downstream (north) of the dredging zone, extending a minimum of 30 feet out into the Niagara River from the bank and then continuing approximately 70 feet upstream, parallel to the shoreline. The curtain shall remain in place for at least six hours after termination of dredging.

12. Rock riprap (300 lb. average weight) shall be placed along the length of the sheet pile wing walls, extending at least six feet beyond each return wall end and rising to within one foot of the top of the sheeting, to provide protection from flanking and erosion. Rock riprap shall not be placed on streambanks steeper than 1-foot vertical to 2 feet horizontal in slope. Prior to riprap installation, a layer of 4 to 6 inches of gravel shall be spread across the bank as a bedding foundation layer. The riprap shall be entrenched a minimum of 18 inches below the streambed.

13. The permittee and his contractor (if any) shall comply in all respects with the attached Supplementary Condition Sheet, which is a part of this permit.

cc: Mr. Michael Wilkinson - Region 9 Fisheries
Dr. John Hyden - Region 9 Division of Hazardous Waste
Mr. Robert Speed - Region 9 Water Division
Mr. Mark Kandel - Region 9 Bureau of Wildlife
Buffalo District Corps of Engineers
Mr. William Rae - Krehbiel Associates, Inc.
Mr. Michael Eisenhauer, Assistant Civil Engineer - City of North Tonawanda

MEK:kah

SUPPLEMENTARY CONDITIONS

DEC PERMIT NO. 9-2912-00067/00001-0

A. All debris incident to the project authorized by this permit shall be removed promptly from the work site and be disposed of properly in accordance with applicable state and local laws.

B. A copy of this permit, including all maps and drawings mentioned in the Special Conditions, shall be available on-site for inspection by DEC staff during all project work. Failure to produce a copy of the permit upon DEC request is a violation of this permit and is sufficient grounds for the Department to order immediate cessation of project work.

C. XX The permit sign shall be posted in a conspicuous location at the work site and be adequately protected from the weather

D. Prior to commencing project work, the permittee or his contractor is advised to obtain any permit or approval that may be required from the U. S. Department of Army, Corps of Engineers:

XX Buffalo District
Regulatory Branch
1776 Niagara Street
Buffalo, NY 14202
(716) 876-5454

___ Pittsburgh District
Regulatory Branch
2032 Federal Building
Pittsburgh, PA 15222
(412) 644-6874

E. In accordance with Article 8 (the State Environmental Quality Review Act) of the NYS Environmental Conservation Law:

___ the Department identified the project as an exempt, excluded or Type II action.

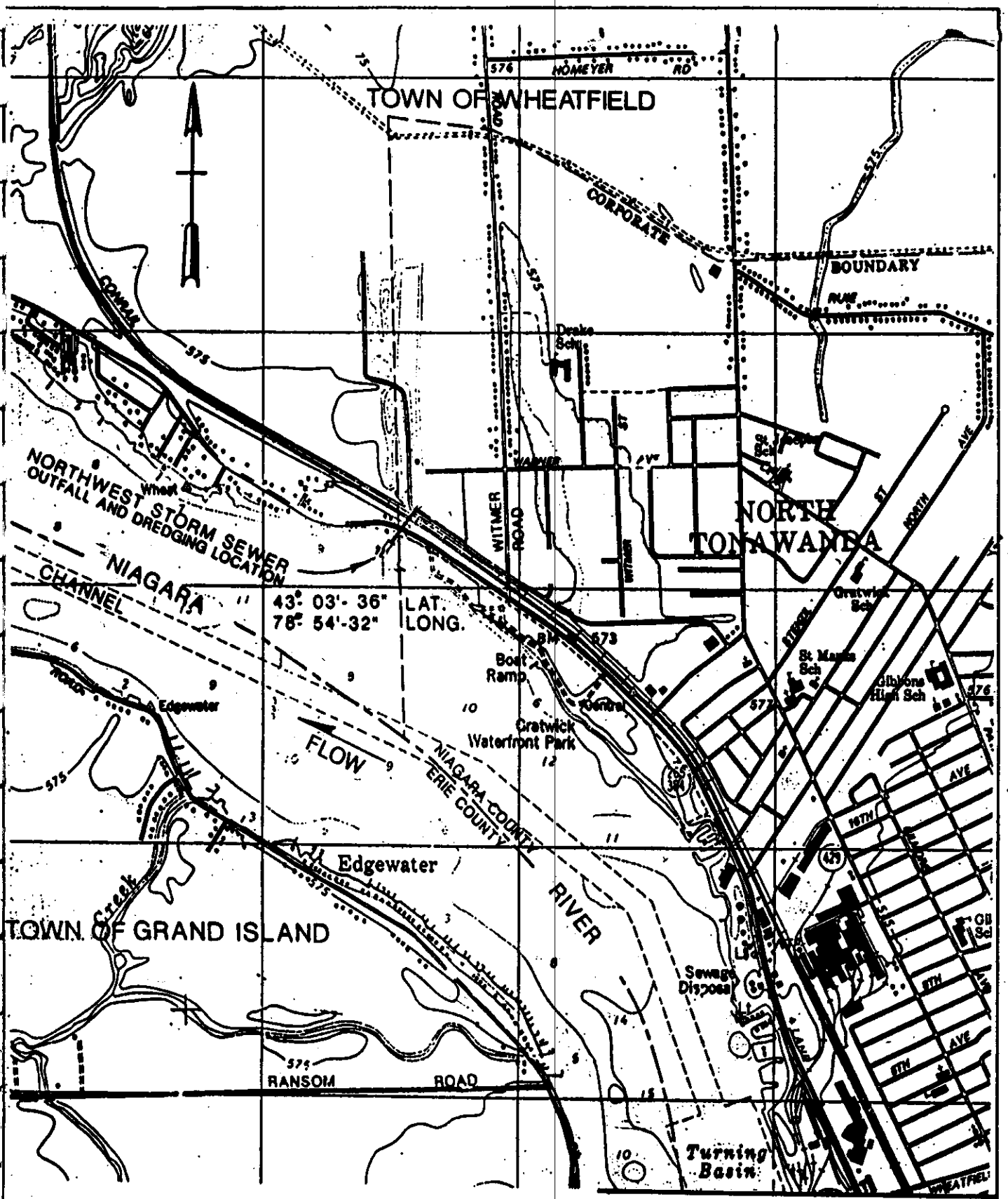
XX the Department categorized the project as an unlisted action, compared the project against applicable criteria, and determined that the action will not have a significant effect on the environment.

___ a Determination of Non-Significance was issued by _____ _____ as lead agency.

___ the Department prepared findings after review of the Final Impact Statement issued by _____ as lead agency.

F. If any permit conditions are unclear, the permittee shall contact:

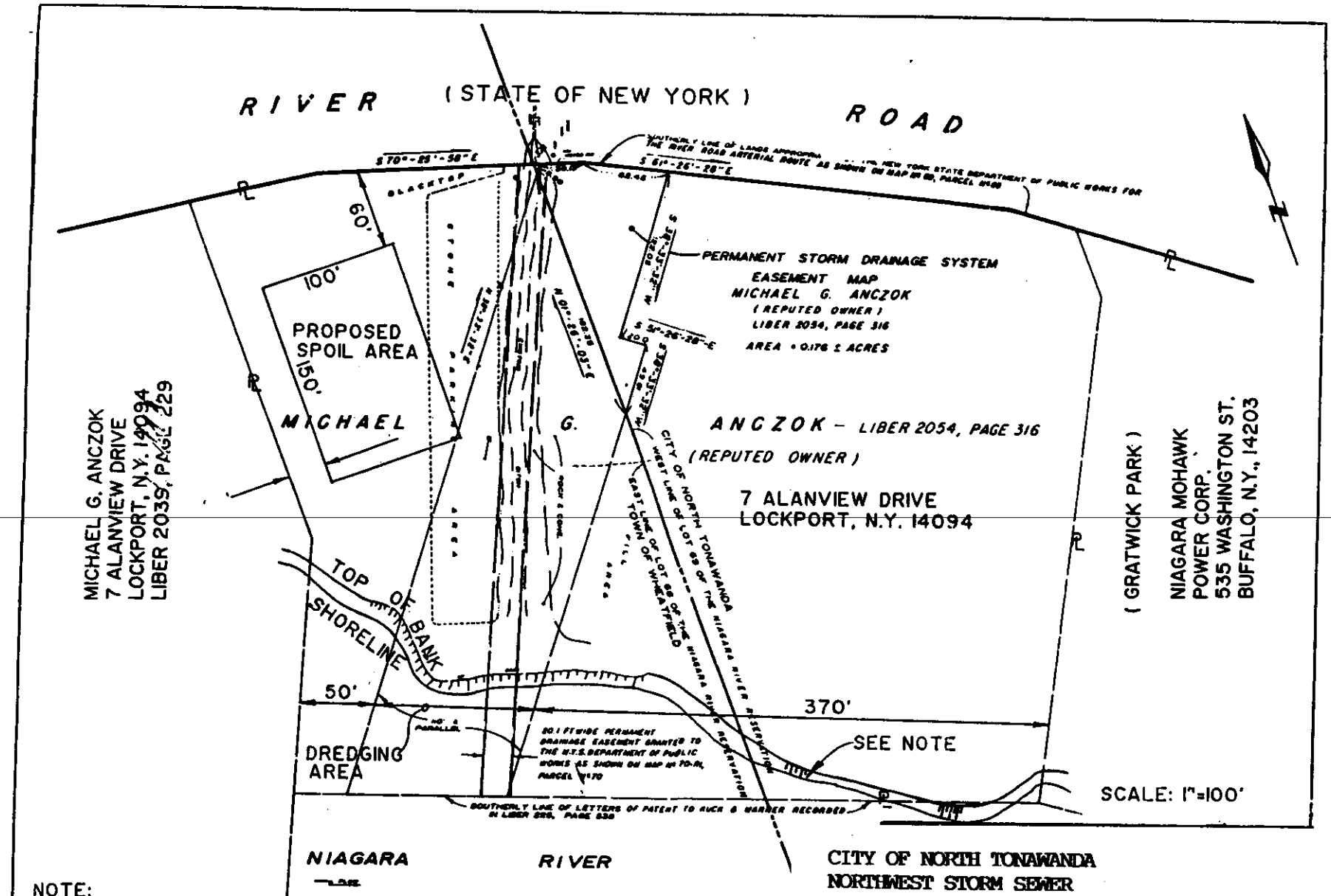
Regional Permit Administrator
New York State Department of Environmental Conservation
600 Delaware Avenue, Buffalo, NY 14202-1073
(716) 847-4551



SCALE: 1"=2000'±

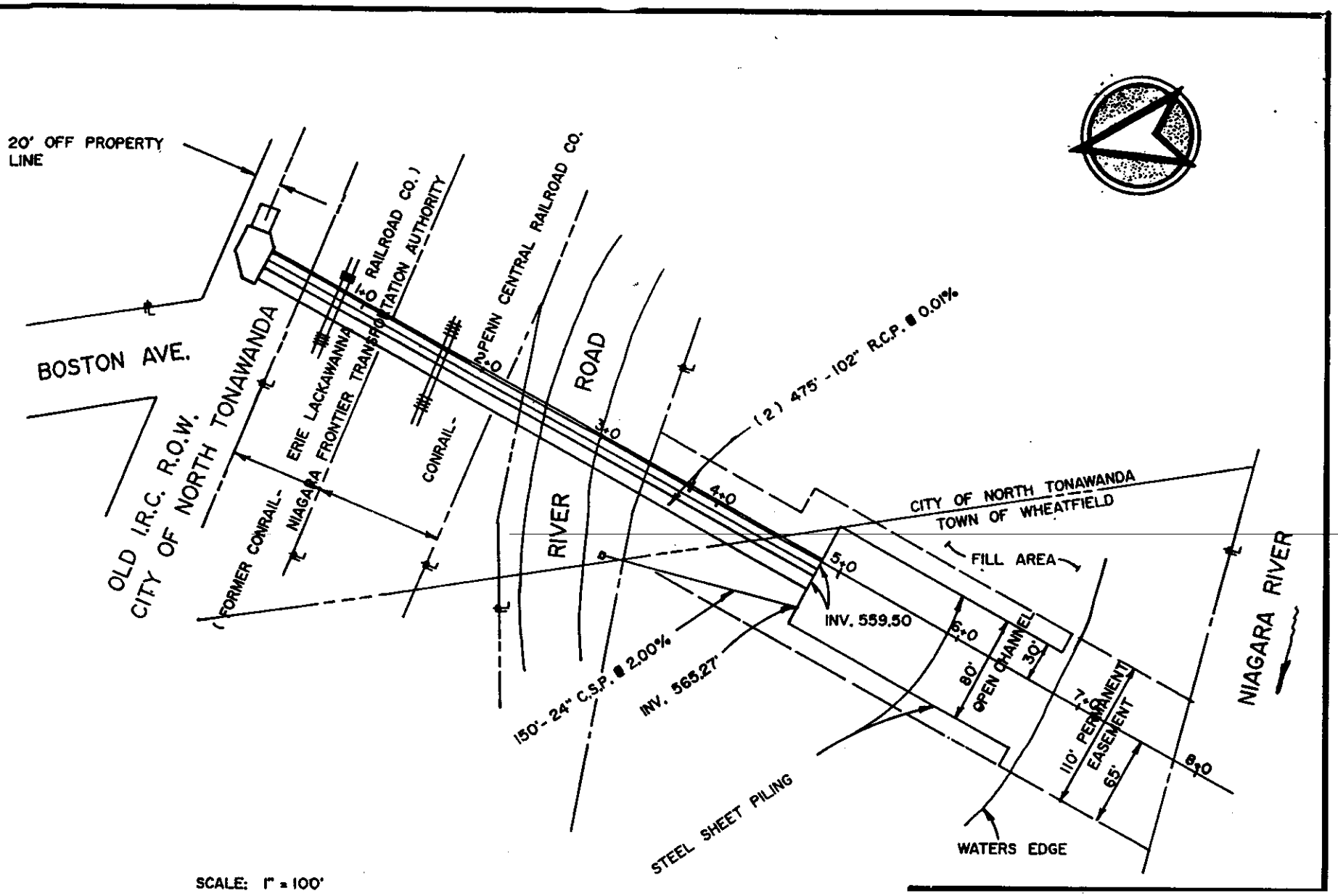
CITY OF NORTH TONAWANDA
NORTH WEST STORM SEWER
DRA NO. 9-2912-00067/00001-0
C/N TONAWANDA, NIAGARA COUNTY

LOCATION MAP



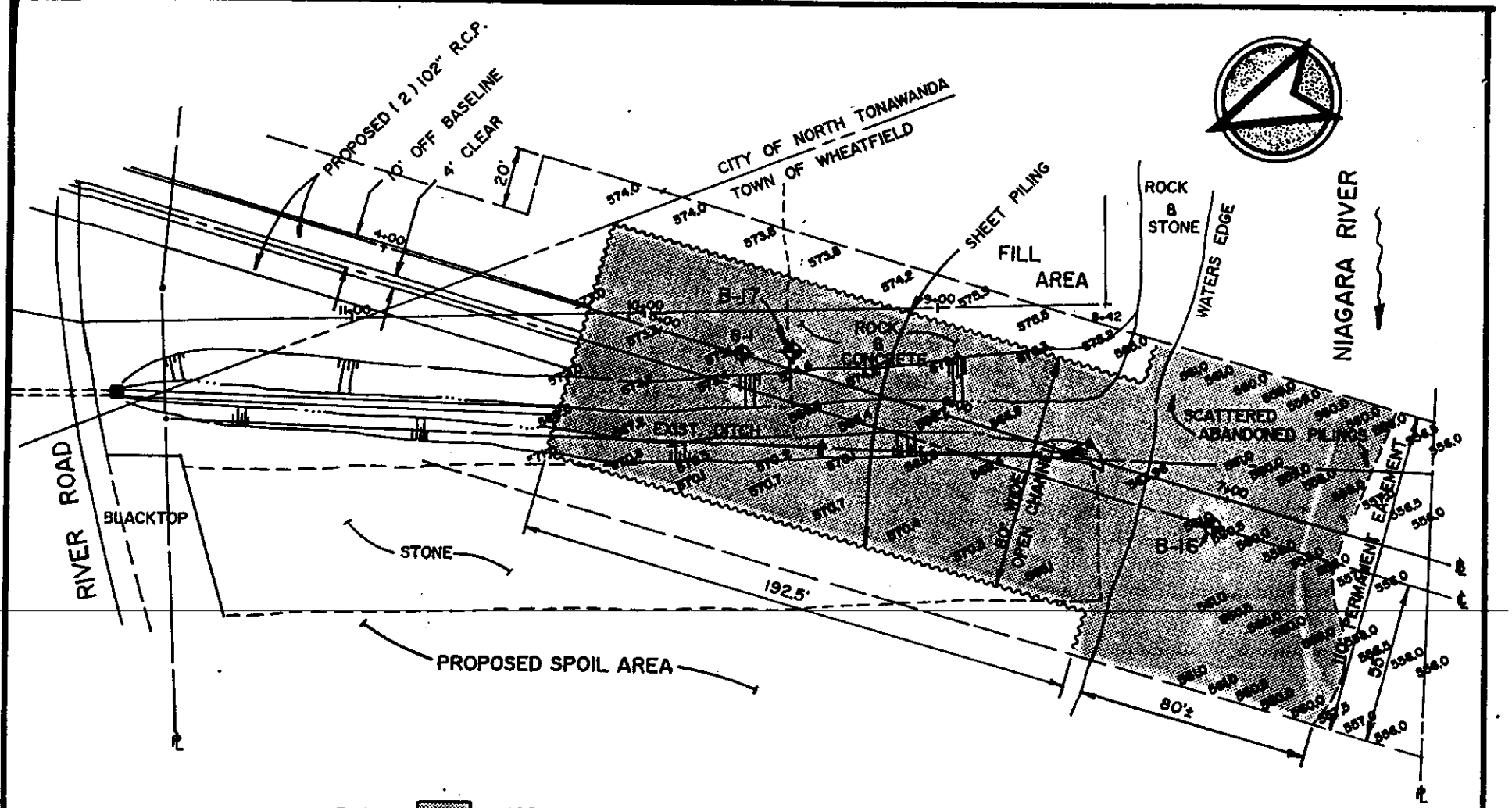
NOTE:
SHORELINE DISTANCE BETWEEN
PROPERTY LINES = 580'

CITY OF NORTH TONAWANDA
NORTHWEST STORM SEWER
DRA NO. 9-2912-00067/00001-0
CITY OF N TONAWANDA, NIAGARA COUNTY



CITY OF NORTH TONAWANDA
NORTHWEST STORM SEWER
DRA NO. 9-2912-00067/00001-0
CITY OF N TONAWANDA, NIAGARA COUNTY
SITE PLAN

9 - 11



LEGEND ▒▒ OPEN CHANNEL & RIVER BOTTOM AREA TO BE EXCAVATED & DREDGED TO ELEVATION 558.0

560.0 ELEVATION ON EXISTING RIVER BOTTOM OR GROUND

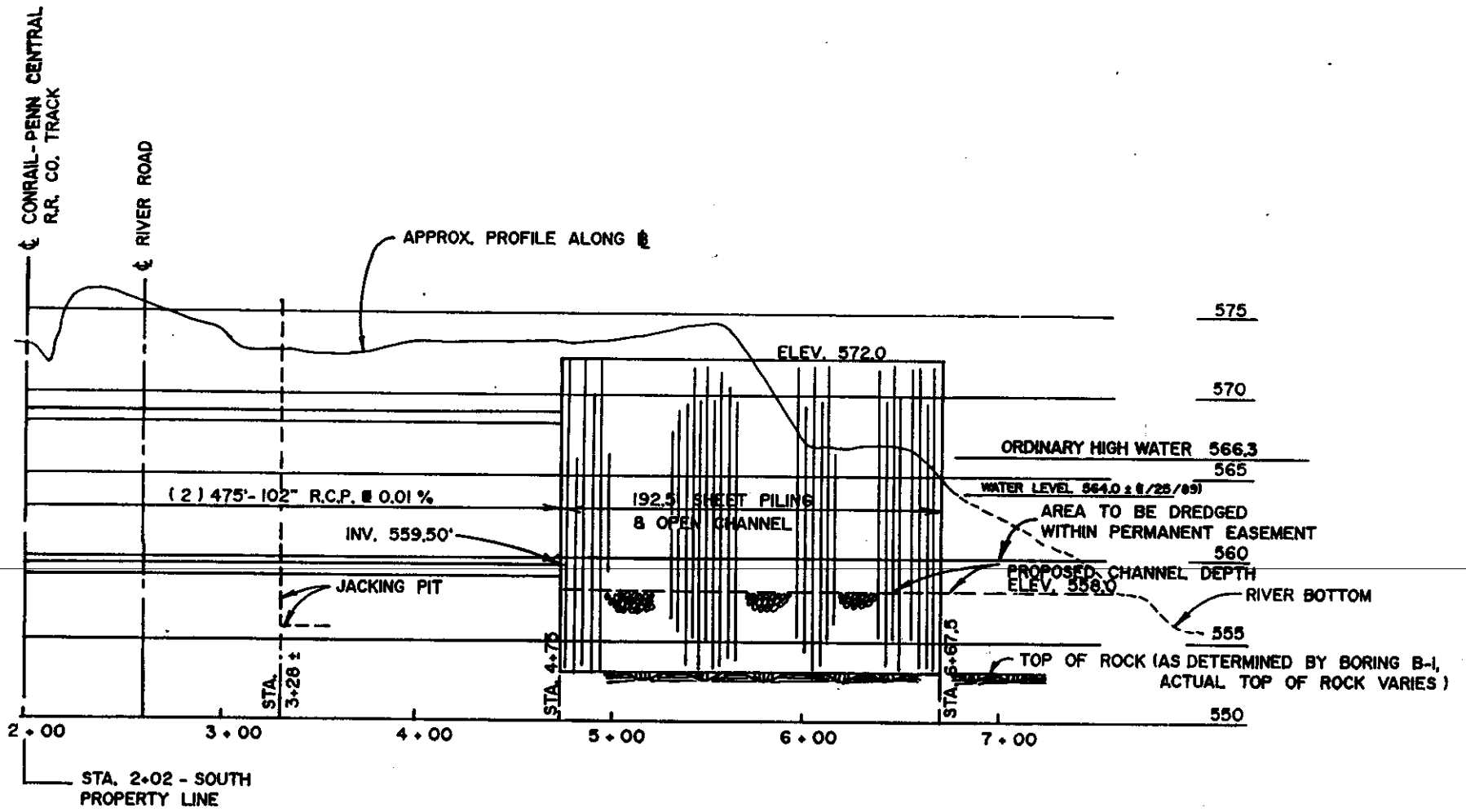
SCALE: 1"=50'

DATUM: NGVD 1929

NOTES:

1. NO WEED BEDS OBSERVED IN PROJECT AREA.
2. SOURCE OF ROCK & CONCRETE FILL AND YEAR PLACED NOT KNOWN.
3. AREA TO BE DREDGED BY BACKHOE AND BULLDOZER.

CITY OF NORTH TONAWANDA
NORTHWEST STORM SEWER
DRA NO. 9-2912-00067/00001-0
CITY OF N TONAWANDA, NIAGARA COUNTY



SCALE: 1"= 80' HORZ.
1"= 10' VERT.

DATUM: NGVD 1929

CITY OF NORTH TONAWANDA
NORTHWEST STORM SEWER
DRA NO. 9-2912-00067/00001-0
CITY OF N TONAWANDA, NIAGARA COUNTY

JAM/kd
bcc: E. Belmore
C. Allen
D. Mayack
J. Sciascia
C. Hurley, w/enc.
J. Moras

1 - Branch file
2 - Hayden
3 - File

TO: Michael Wilkinson, Region 9 - Fisheries Unit
FROM: James A. Moras, Environmental Engineer, Remedial Action Section B
SUBJECT: Proposed Remedial Action Plan, Gratwick Riverside Park, Niagara County, Site No. 9-32-060

DATE: FEB 08 1991

I have reviewed your January 14, 1991 memorandum which presents your comments on the above-referenced Proposed Remedial Action Plan (PRAP). I will address your specific concerns as they have been presented, beginning with the third paragraph of your January 14 memorandum.

Your concern over the encroachment on the near shore habitat of the Niagara River will be addressed during the design phase. As a result of your concern URS consultants have added the following discussion to Page 9-13 of the September 1990 Draft Final FS: "NYSDEC Region 9, Division of Fish and Wildlife, Bureau of Fisheries was contacted regarding the installation of a sheet pile breakwater along the shoreline. Of primary concern to the Region 9 Fisheries Unit is the potential for adversely impacting or loss of near shore shallow water habitat through the encroachment by the breakwater along the Niagara River shoreline. In order to assess the potential for habitat loss associated with the selection of this technology, the Region 9 Fisheries Unit has provided a list of items that should be addressed during design." During the design phase the following will be performed:

1. Representative cross sections across the shoreline showing the Niagara River bottom will be developed every 500 feet.

2. Near high water levels will be obtained from the Corps of Engineers, and

3. Near high water levels will be staked out at the site to enable NYSDEC to review the aquatic habitat and potential habitat encroachment.

It is anticipated that the sheet piling will not be placed below the water level. One purpose for installing the sheet piling is to prevent any further erosion of contaminated shoreline soils, caused primarily by the spring ice flow down the river. Placing of the sheet piling 50 feet landward would allow continued erosion of the shoreline as well as allowing groundwater in contact with the fill to freely migrate to the river. The second concern, relative to sheet piling causing near shore erosion, has already been addressed within the first concern. As stated above, the alternative to shoreline protection would be the continued erosion of the contaminated shoreline soils. Third and fourth, there are no plans to dredge material from the river to use as backfill.

In August 1989 a shoreline removal was carried out near the northern end of the park. For confirmatory purposes sediment sampling was conducted to ensure that the material had not migrated to the river. No contamination

1 - Hydro
3 - Fld

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

Thomas C. Jorling
Commissioner

JAN 0 3 1991

Mr. Carl M. Schmidli
Race Chairman
Niagara Frontier Boat Racing Association, Inc.
5269 Tonawanda Creek Road North
North Tonawanda, NY 14120

Dear Mr. Schmidli:

Re: Gratwick Riverside Park, Niagara County, Site No. 9-32-060

During our December 27, 1990 telephone conversation we discussed the anticipated schedule for remedial activities at the above-referenced site. As you stated in your December 28, 1990 letter, your association is interested in determining the status of the remedial program at Gratwick. A Proposed Remedial Action Plan (PRAP) has been presented to the public and the comment period will close on January 8, 1991. Enclosed you will find a summary of the December 6, 1990 public meeting where the PRAP was presented. Once the PRAP is finalized we will negotiate with the PRPs to determine who will fund the remedial design and construction. After the negotiations are completed the project will move into the remedial design phase. The remedial construction will not take place during 1991 and probably will not begin until the 1993 construction season.

If you have any questions or need any additional information feel free to contact me at 518/457-0315.

Sincerely,

James A. Moras

James A. Moras
Environmental Engineer
Division of Hazardous Waste
Remediation

Enclosure

JAM/kd
bcc: E. Belmore
C. Allen
J. Sciascia
J. Moras