RECORD OF DECISION

Dunlop Tire and Rubber

Site No. 915018A
Site No. 915018B
Site No. 915018C

Prepared by:

New York State
Department of Environmental Conservation

March 1993

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999

Thomas C. Jorling
Commissioner

DECLARATION STATEMENT - RECORD OF DECISION (ROD)

Dunlop Tire Corporation Inactive Hazardous Waste Sites
Sheridan Drive and River Road
Town of Tonawanda, Erie County, New York
Site Nos. 915018 A,B,C
Classification: 3

Statement of Purpose

This Record of Decision (ROD) sets forth the selected Remedial Action Plan for the three Dunlop Tire Corporation Inactive Hazardous Waste Sites (sites A, B, and C). 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 action complies to the maximum extent practicable with Applicable or Relevant and Appropriate Requirements (ARARs) of Federal and State Environmental Statues and would be protective of human health and the environment.

Statement of Basis

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Dunlop Tire Corporation Inactive Hazardous Waste Sites and upon public input to the Conceptual Design Capping Plan (CDCP) presented by the NYSDEC. A copy of the Administrative Record is available at the New York State Department of Environmental Conservation, 270 Michigan Avenue, Buffalo, New York, and copies of previous investigation reports and the CDCP are available at the Parkside Village Branch Library, 169 Sheridan Parkside Drive, Tonawanda, New York. The ROD includes a bibliography of those documents included as a part of the Administrative Record. Included is a Responsiveness Summary that documents the public's expressed concerns.

Description of the Selected Remedy

The selected remedy includes the following components:

- Capping the three landfills with eighteen inches of clay compacted to a minimum permeability of 1×10^{-7} cm/sec. The caps will be covered with six inches of soil amenable to plant growth, seeded and mulched.

- Areas overlying the three landfills associated with vehicle traffic were paved in the Fall of 1992. These areas include a parking lot partially covering Site B and a tractor-trailer staging area partially covering Site A. Surface water runoff is directed to catch basins that discharge to the plant settling pond. Monitoring of this pond occurs semiminthly as a SPDES permit condition.

- Post-closure maintenance and monitoring will be conducted for thirty years to ensure the long term effectiveness of the remedy and provide early detection should failure occur.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for these sites as protective of human health.

Declaration

The selected Remedial Action Plan is protective of human health and the environment by reducing the risk of direct contact exposures, and reducing the rate of contaminant migration to groundwater and surface water. There would be no reduction in the toxicity and volume of the contaminants, but mobility would be effectively reduced by limiting infiltration of water into the waste, and by preventing the runoff of contaminated soils. The selected remedial action has been used successfully at other inactive hazardous waste sites. The potential long term environmental and human health threats associated with the site will be reduced after the implementation of the remedy. The selection of this remedy follows a site investigation completed by Dunlop under Department oversight, and input from the community and local elected officials.

Date

Ann Hill DeBarbieri
Deputy Commissioner

DUNLOP TIRE CORPORATION
SITE NOS. 915018 A,B,C
RECORD OF DECISION

TABLE OF CONTENTS

SECTION 1: SITE DESCRIPTION

The Dunlop Tire Corporation property consists of 130 acres in an industrialized area of the Town of Tonawanda, Erie County, at the intersection of Sheridan Drive and River Road. The site is bordered on the north by the Polymer Applications, FMC, and O-Cel-O inactive hazardous waste sites; on the south by the DuPont inactive hazardous waste site; on the west by River Road and the Niagara River, and on the east by Niagara Mohawk property and Kenmore Avenue (Figure 1). The site consists of three Class 3 landfills that cover an area of approximately twenty-five acres (Figure 2). The topography of the site is relatively flat. Surface runoff from the three sites is either toward adjacent wetlands or an on-site settling pond monitored semimonthly as a SPDES permit condition. Surface water from the wetlands and settling pond generally flows toward the Niagara River, located approximately 1000 feet to the west.

SECTION 2: SITE HISTORY

2.1 General Background: The Dunlop Tire and Rubber Corporation was founded, and Buffalo operations were begun in 1920. The company has manufactured tires from 1923 to the present time. Other products made over the years include foam rubber, tennis balls, tennis rackets, golf balls, balata, blimps, urethane foam, duthane, and tire tubes. The three landfills were utilized for the disposal of manufacturing and process wastes beginning in 1921.

Disposal Site A was used for the disposal of various wastes including flyash, slag, carbon black, asphalt, foam, tires, coal, and construction and demolition debris. Dunlop discontinued use of this site in 1970, with only construction and demolition debris disposed until 1979.

Disposal Site B is now partially covered by a paved parking lot completed in 1970, and a paved parking lot expansion completed in the Fall of 1992. The site was used for the disposal of various solid wastes, including scrap rubber (natural and synthetic), slag, construction and demolition debris, coal, golf balls, plastics, carbon black, flyash, amines, antioxidants, and general refuse. Dunlop discontinued use of this site in 1970.

Disposal Site C was reportedly used as a coal ash landfill. Several Dunlop retirees, however, reported that it was common practice to dump waste of all types in this landfill, including drums, waste solvents and degreasers. Dunlop discontinued use of this site in 1973.

2.2 Summary of Previous Site Investigations: In 1982 the United States Geological Survey (USGS) collected four soil samples from the property. Detected contaminants were tentatively identified as chloroform, carbon tetrachloride, trichloroethylene, tetrachloroethylene, and phenols (Table 1). The USGS also conducted an electromagnetic conductivity survey that roughly delineated Sites B and C. Site A was not delineated as it did not produce any high conductivity responses.

During 1982 and 1983, Dunlop investigated the three landfills by installing six groundwater monitoring wells, and by sampling and analyzing surface soil, subsurface soil, surface water, and groundwater (Tables 1-3). To determine the extent of the landfills, twenty-six test pits were excavated by backhoe (Figures 3 and 4). The maximum fill thickness encountered during the site investigation was ten feet and consisted of ash, cinders, slag, gravel, rubber, wood, brick and metal fragments in a clay, sand or silt matrix. Several organic compounds including chloroform, trichloroethylene, tetrachloroethylene, and phenols were detected in both the soil and shallow groundwater samples.

The Investigation Report was reviewed by NYSDEC, and after further discussions, additional surface water and groundwater samples were collected during the summer and fall of 1985. Groundwater samples contained chloroform, tetrachloroethylene, phenols, and 2-butanone at low concentrations, while the surface water samples contained phenols at low concentrations (Tables 2 and 3).

In July 1986, NYSDEC required Dunlop to complete a plan for quarterly groundwater monitoring and to further address the issue of surface water contamination. Dunlop subsequently submitted a plan to NYSDEC in 1987 to address these issues, including the grading and capping of the landfills. Due to Department priorities no further action was taken until 1990, when the previously collected data were deemed incomplete by the agency. In April 1991 an Order on Consent was signed by Dunlop that required the company to complete further investigation of the landfills, and to draft a Groundwater Monitoring Plan and a Remedial Action Plan (capping) for agency review and eventual implementation.

SECTION 3: CURRENT STATUS

3.1 Site Investigation: During the 1991 Site Investigation, 6 additional monitoring wells were installed at upgradient and downgradient locations to evaluate the impact of the sites on groundwater and to determine the hydrogeologic characteristics of the area. The upgradient wells were installed to determine background water quality, and to allow estimates of the hydraulic gradient across the sites. The location of these wells along with shallow groundwater isopotential lines are shown in Figures 5 and 6. In addition to the monitoring wells, twenty-one test trenches were completed to define further the areal extent of the fill at Sites A, B and C. Environmental samples were obtained for chemical analysis from five sediment sampling locations, and from the twelve monitoring wells on site. The locations of the test trenches and sediments samples are shown on Figures 3 and 4. Air monitoring for volatile organic compounds was conducted during all intrusive activities. Volatile readings above background levels were not recorded during any of these activities.

1. Groundwater Investigation: Groundwater samples were collected from the six monitoring wells installed as part of this investigation, and from the six existing monitoring wells installed in 1983. All groundwater samples were analyzed for Target Compound List (TCL) analytes, Target Analyte List (TAL) metals, and cyanide. Table 4 summarizes the groundwater analytical results for wells at Sites A and B, and Table 5 summarizes the groundwater analytical results for wells at Site C. The corresponding NYSDEC Ambient Water Quality Standards and Guidance Values for Class GA groundwater, considered Applicable or Relevant and Appropriate Requirements (ARARs) for the site, are included as part of the tables.

a) Disposal Sites A and B: Six volatile compounds were detected among four of the six monitoring wells at Sites A and B. In monitoring well OMW-A3, 1,1,1-trichloroethane (80 ppb) and 1,1-dichloroethane (17 ppb) were detected at levels exceeding the respective ARAR values. In addition, chloroform and 1,1-dichloroethene were detected at 0.6 ppb and 5 ppb respectively in OMW-A3. Two other volatile compounds, 1,2-dichloroethane (6 ppb) in bedrock well BMW-1 and benzene (1 ppb) in OMW-B2, were detected above ARARs in these downgradient wells.

Acenaphthene (2 ppb) and bis(2-ethylhexyl)phthalate (2 ppb) were the only semivolatile compounds detected in groundwater samples collected from wells at Sites A and B. Both compounds were detected in OMW-B3, which is downgradient of Site A and the settling pond. Semivolatile compounds were not detected in any of the other groundwater samples collected from wells at these sites. In addition, only one pesticide (4,4'-DDE) was detected at 0.12 ppb in OMW-B3. Pesticides/PCBs were not detected in any of the other groundwater samples collected from wells at these sites.

Eleven metals were detected in the six groundwater samples collected from wells at Sites A and B at concentrations that exceeded ARAR values. Of the metals detected at concentrations exceeding ARARs, the metals of particular concern include antimony, arsenic, cadmium, chromium, copper, lead, and zinc, all of which were detected in downgradient well OMW-2. Cadmium, chromium, and lead were the only metals of concern detected in downgradient well OMW-B2. Cadmium, lead and zinc were detected in well OMW-1 which directly monitors the waste materials. The presence of these metals is likely associated with the ash materials within the disposal areas; however, leaching of zinc and cadmium from galvanized well screens may partially explain the presence of these compounds in the 1983 monitoring wells.

b) __Disposal Site C__: Only one volatile compound [benzene (5 ppb)] was detected in groundwater samples collected from wells at Site C. Since volatiles were not observed in upgradient monitoring well OMW-C1, or in down- gradient monitoring wells OMW-C5 and OMW-C6, it appears that volatile contam- ination is confined to the site. In addition, since groundwater flow is toward the west-southwest in the overburden aquifer, and westerly in the bedrock aquifer, it is likely that an upgradient offsite source(s) may be responsible for the benzene contamination within bedrock monitoring well BMW-2.

Bis(2-ethylhexyl)phthalate was the only semivolatile compound detected in the groundwater samples collected from wells at Site C. Semivolatile compounds were not detected in any of the other groundwater samples collected from wells at this site. Pesticides/PCBs were not detected in any of the groundwater samples collected from wells at Site C.

Eight metals were detected in the six groundwater samples collected from wells at Site C at concentrations that exceeded ARAR values. Of the metals detected at concentrations exceeding ARARs, the metals of particular concern include cadmium, chromium, copper, lead, and zinc, all of which were present in bedrock well BMW-2. None of these metals were detected in upgradient well OMW-C1 or downgradient wells OMW-C5 and OMW-C6 at concentrations exceeding ARARs. The highest concentrations of metals were detected in wells located near or within the disposal area. Since Site C contains a considerable amount of combustion ash, it is likely that this ash is responsible for metals contamination. Metals contamination in bedrock well BMW-2 is likely attributable, at least in part, to offsite sources, considering the well's hydrologic location with respect to the disposal area.

2. __Sediment Investigation__: Sediment samples were collected from ditches and/or drainage pathways at five locations (SS-102 through SS-106) throughout the Dunlop property (Figures 3 and 4). Sediment samples were analyzed for the TCL analytes, TAL metals, and cyanide. The analytical results for these samples are summarized in Table 6.

Five volatile compounds were detected in the sediment samples collected at the Dunlop site. Three of these compounds [1,2-dichloroethene (22 ppb), trichloroethene (6 ppb) and benzene (2 ppb)] were detected in SS-102. Both 2-butanone and 1,1,1-trichloroethane were detected in SS-104 at concentrations of 7 ppb and 5 ppb, respectively. Additionally, 2-butanone was detected at 7 ppb in SS-103 and 1,1,1-trichloroethane was detected at 4 ppb in SS-105.

Several polycyclic aromatic hydrocarbons (PAHs) were detected in the sediment samples. PAH concentrations ranged from 618 ppb in SS-104 to 22,876 ppb in SS-103. Except for SS-103, PAH concentrations are low. Sample SS-103 was collected from the drainage ditch leading to the settling pond, and the PAH contamination in this sample may be attributable to an oil spill that occurred at the Dunlop Plant on January 24, 1991. Approximately forty to fifty gallons of naphthenic oil migrated into the sewer network, and eventually discharged into the outfall above the settling pond where SS-103 was collected. Dunlop personnel were able to contain and absorb much of the oil within the outfall area. The NYSDEC Spill Response Program was notified of this spill. Other semivolatile compounds detected include benzyl alcohol, 4-methylphenol, hexachlorobutadiene, di-n-butylphthalate, and bis(2-ethylhexyl)- phthalate. These compounds were detected at low concentrations.

PCBs were not detected in any of the sediment samples. Twelve pesticides, however, were detected among four of the samples. Total concentrations ranged from 19.8 ppb in SS-105 to 488 ppb in SS-103. In general, detected concentrations of pesticides were low.

All metals except selenium and thallium were detected in the sediment samples. Cyanide was present in SS-103 at 2.4 ppm. Most metal concentrations were similar from sampling point to sampling point. One noteworthy exception is lead, which was present in SS-103 at 1,750 ppm, one to two orders of magnitude higher than concentrations detected at the other sampling locations.

3. <u>Contaminant Migration</u>: The data collected during the Site Investigation suggests that there is no significant contaminant migration from the sites. The most heavily contaminated groundwater is associated with monitoring wells installed directly in the fill materials. Contamination was detected in the downgradient monitoring wells but at much lower concentrations than detected in wells installed in the fill material.

The Site Investigation also revealed that the thick, native silty clay soil underlying the site is effectively preventing the vertical migration of contaminants to deeper groundwater. Any environmental impact, therefore, would be limited to surface water drainage from the landfill areas.

3.2 <u>Baseline Risk Assessments</u>: The 1991 Order on Consent did not require the completion of a Baseline Health Risk Assessment or a Baseline Environmental Risk Assessment; however, the concentrations of detected compounds are relatively low and tend to support the conclusion that the sites are not a significant threat to human health or the environment. For potential health risk concerns, the exposure routes at the Dunlop site are direct contact with contaminated soil, sediment and surface water, and inhalation of dust or vapor resulting from construction activities or other disturbances of the buried wastes. The remedial measure proposed for the sites will mitigate both the environmental and human health concerns.

SECTION 4: <u>ENFORCEMENT STATUS</u>

The New York State Department of Environmental Conservation (NYSDEC) has entered into an Order on Consent (Index #B9-0259-89-03) with Dunlop Tire

Corporation under Article 27 of the Environmental Conservation Law (ECL) entitled "Inactive Hazardous Waste Disposal Sites." The Order on Consent was signed by the Commissioner of NYSDEC on April 23, 1991. As stipulated by the Order, Dunlop is responsible for conducting a Site Investigation, and closing and monitoring the three sites by developing and implementing an Interim Remedial Measure (IRM) consisting of an approved landfill cover system. Post-closure groundwater monitoring will be required to evaluate the effectiveness of the caps and provide early detection should failure occur. Dunlop has been in compliance with this Order.

SECTION 5: GOALS FOR THE REMEDIAL ACTION

Goals for the remedial program have been established under the broad guidelines of meeting all standard, criteria, and guidances (SCGs), and protecting human health and the environment for all exposure pathways. The Site Investigation report concluded that the primary exposure pathways, which may cause human health risks are direct contact with contaminated soil, sediment and surface water, and the inhalation of dust or vapors resulting from disturbances of the buried waste. Environmental exposure to contaminated sediment and surface water in the wetland areas may cause chronic toxicity for wildlife living in these areas.

The following remedial action goals have been established for the Dunlop sites:

1. Prevent direct human contact with on-site waste thereby reducing human health risks.

2. Prevent the erosion and transport of contaminated soil from the site into surrounding wetland areas via overland runoff.

3. Control the migration of contaminated groundwater from the site by limiting infiltration into the waste.

4. Reduce environmental risk to wildlife living in the surrounding wetlands by reducing contaminant transport to those areas.

SECTION 6: SUMMARY OF THE EVALUATION OF REMEDIAL ALTERNATIVES

The Order on Consent between Dunlop and NYSDEC only required Dunlop to develop and implement an IRM landfill cover system for the three landfills under the requirements of 6 NYCRR Part 360 of the ECL, or by some modification acceptable to the Department. A Feasibility Study (FS) to screen proposed remedial alternatives was not required under this Order.

SECTION 7: SUMMARY OF THE SELECTED ALTERNATIVE

7.1 Description of the Remedial Alternative: Under the requirements of the Order on Consent, Dunlop submitted a Conceptual Design Closure Plan that detailed the closure of the three landfills. The caps proposed do not meet the full requirements of 6 NYCRR Part 360 of the ECL, however, the Department has determined that these caps are consistent with the Goals for the Remedial Action. A Monitoring and Maintenance Plan has been submitted to the Department to fulfill a requirement of the Order on Consent. This plan will be implemented for thirty years and will ensure the long term effectiveness of the caps, and provide early detection should failure occur. If during that time the

Department concludes that any element of the cover fails to perform as predicted, or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required.

Each landfill will be capped with eighteen inches of clay compacted to a minimum permeability of 1×10^{-7} cm/sec and covered with six inches of soil amenable to plant growth. Due to the low concentrations of volatile organic compounds detected at the sites, and the absence of volatile readings above background levels during intrusive activities, gas venting systems will not be required for any of the landfills. Slopes of the final landfill cover systems will range from about 4% to 33%. The Interim Remedial Measures to be implemented for each site will generally be consistent with the following:

1. <u>Disposal Site A Plan</u>:

- o No action is required for southern waste Site A (Figure 7) where clay cover thickness exceeds twelve inches and laboratory test data from undisturbed samples of the clay indicate hydraulic conductivities of 1×10^{-7} cm/sec and less. The clay in this area is covered with approximately six inches of topsoil and is well vegetated. The area encompasses approximately 1.2 acres.

- o No action, with provision for additional groundwater monitoring and/or test pitting is required for minor waste Site A (Figure 7). Investigation of this area has demonstrated two to three feet of clay cover, possibly from settling pond excavation, throughout most of the area. This area is well vegetated. Western minor waste Site A (Figure 7) is diversely vegetated with mature trees. A monitoring well will be installed downgradient of this area to monitor long-term groundwater quality and evaluate the need for future action.

- o Regrade the east-west swale separating southern and minor waste Site A from central waste Site A (Figure 7). Low-lying areas east of the site will be drained by extending the cover of the southern part of the site and diverting the drainage southwest into the settling pond. Any waste materials removed during this work will be placed within central waste Site A.

- o A part of the northerly and easterly parts of Site A was paved in the Fall of 1992 to provide needed tractor-trailer staging (Figure 7). Pavement consisted of eight inches of stone over prepared subbase and four inches of Type #6 binder. The existing access roadway was also expanded to cover the eastern part of the site. Grades were established to promote surface water drainage away from unpaved areas and into catch basins that discharge to the settling pond. Material excavated during construction of the subbase was staged at Site C and will be consolidated into this site during cover construction.

- o The northern part of waste Site A will either be excavated and consolidated into central waste Site A (Figure 7) or capped in place.

- o Waste located between central and southern waste Site A, and the paved tractor-trailer staging area (Figure 7) will be excavated and consolidated into central waste Site A.

- Dewatered sediment dredged from the settling pond will be consolidated into the central waste Site A and capped in place.

- Central waste Site A will be contoured as necessary to facilitate site drainage, cover placement and erosion control.

- Sufficient clay borrow will be added to regraded central waste Site A to constitute a continuous compacted clay soil layer eighteen inches thick. The cap will be covered with six inches of soil amenable to plant growth.

- Recontoured and disturbed areas will be seeded and mulched.

- Due to the presence of the impermeable underlying soils, the Site A closure does not require the installation of a groundwater or leachate collection/treatment system. Post-closure groundwater monitoring will be conducted to determine the effectiveness of the cap and provide early detection should failure occur.

2. <u>Disposal Site B Plan</u>:

- The gravel parking area and access road to Gate No. 3 along River Road (Figure 7) was paved in the Fall of 1992 with eight inches of stone over prepared subbase and three inches of Type #3 binder. Surface drainage has been directed to catch basins that discharge into the settling pond.

- Waste from Site B (south of the new parking area) and waste pulled back from the drainage ditch leading to the settling pond will be consolidated and capped.

- The waste from the southern part of Site B will be capped in place (Figure 7).

- The northern part of Site B will be contoured for drainage and sufficient soil will be added to constitute a continuous layer of compacted clay eighteen inches thick. The cap will be covered with six inches of soil amenable to plant growth.

- Recontoured and disturbed areas will be seeded and mulched.

- Due to the presence of the impermeable underlying soils, the Site B closure does not require the installation of a groundwater or leachate collection/treatment system. Post-closure groundwater monitoring will be conducted to determine the effectiveness of the cap and provide early detection should failure occur.

3. <u>Disposal Site C Plan</u>:

- The shallow fill from the southern margin of the site may be excavated and consolidated into this site prior to cap construction. A swale for east-west drainage will be established (Figure 8), and will discharge into the north-south trending drainage ditch which flows into the Town of Tonawanda storm sewer system. The topsoil, fill and clay subsoil materials will be segregated for site grading and cover purposes.

- Some consolidation of waste around the perimeter of Site C may take place.
- The western outlier of Site C will be capped in place (Figure 8).
- Six inches of existing soil cover from the main fill area will be removed and stockpiled, and the disposal area consolidated and regraded to achieve an acceptable slope for cover placement and erosion control. Minimal disturbance to the adjacent wetland areas (less than one acre) is anticipated.
- Sufficient soil will be added to constitute a continuous layer of compacted clay eighteen inches thick. The cap will be covered with six inches of stockpiled soil.
- Recontoured and disturbed areas will be seeded and mulched.
- Due to the presence of the impermeable underlying soils, the Site C closure does not require the installation of a groundwater or leachate collection/treatment system. Post-closure groundwater monitoring will be conducted to determine the effectiveness of the cap and provide early detection should failure occur.

7.2 <u>Evaluation of the Remedial Alternative</u>: The preferred alternative has been evaluated against the following criteria: (1) compliance with ARARs, (2) reduction of toxicity, mobility, and/or volume, (3) short term impact, (4) long term effectiveness and permanence, (5) implementability, (6) cost, (7) community acceptance, and (8) overall protection of human health and the environment. The preferred alternative described above adequately complies with these criteria. The cost of the alternative is comparable to the cost of other site remediations with similar levels of contamination.

1. <u>Compliance with ARARs</u>: The proposed cap does not meet the full requirements of 6 NYCRR Part 360 of the ECL; however, the cap will be protective of human health and the environment by eliminating direct contact exposures, and reducing impact on groundwater and surface water by limiting infiltration into the waste. A post-closure monitoring program will be developed to monitor the site boundary groundwater conditions, to evaluate the reduction in groundwater contamination in relation to groundwater standards, and to provide early detection should failure occur. A maintenance program also will be developed and implemented to ensure the long term effectiveness of the remedy.

2. <u>Reduction of Toxicity, Mobility, and/or Volume</u>: The preferred alternative requires the capping of the three landfills. There would be no reduction in the toxicity and volume of the contaminants, however, the remedy is considered long term. Mobility will be effectively reduced by limiting infiltration into the waste, and by preventing the transport of contaminated soils to surrounding areas.

3. <u>Short Term Impact</u>: Some potential short term impacts to the community, workers, or environment is associated with the remedy during excavation, handling, and transport of wastes during consolidation; and disruption of wastes during regrading and clay placement during construction of the cap. Effective measures including, but not limited to, air monitoring for particulates and organic vapors, wetting for dust control, and silt curtains for sediment control, are available to detect and mitigate such potential impacts. All work

during cap construction will be in accordance with a Health and Safety Plan developed to protect workers and the community.

4. Long Term Effectiveness and Permanence: The preferred alternative would be an effective long term remedy for the Dunlop Tire Corporation site. After execution of the preferred alternative, the sites will be properly closed and the potential threat to health and environment will be reduced substantially. The Order on Consent signed by Dunlop is a legally binding agreement that requires the company to inspect the final cover quarterly and maintain it for thirty years. This maintenance program, in combination with the post-closure monitoring program, will help ensure the long term effectiveness of the cap. If during that time the Department concludes that any element of the cover fails to perform as predicted, or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required. If Dunlop closes the facility, the Order on Consent requires the company to continue its maintenance and monitoring programs. If the property is sold, Dunlop must notify the Department within sixty days of closing and furnish the name(s) of the perspective new owner(s) of the property. In addition, Dunlop must inform the new owner(s) about the landfills and that an Order on Consent is in effect.

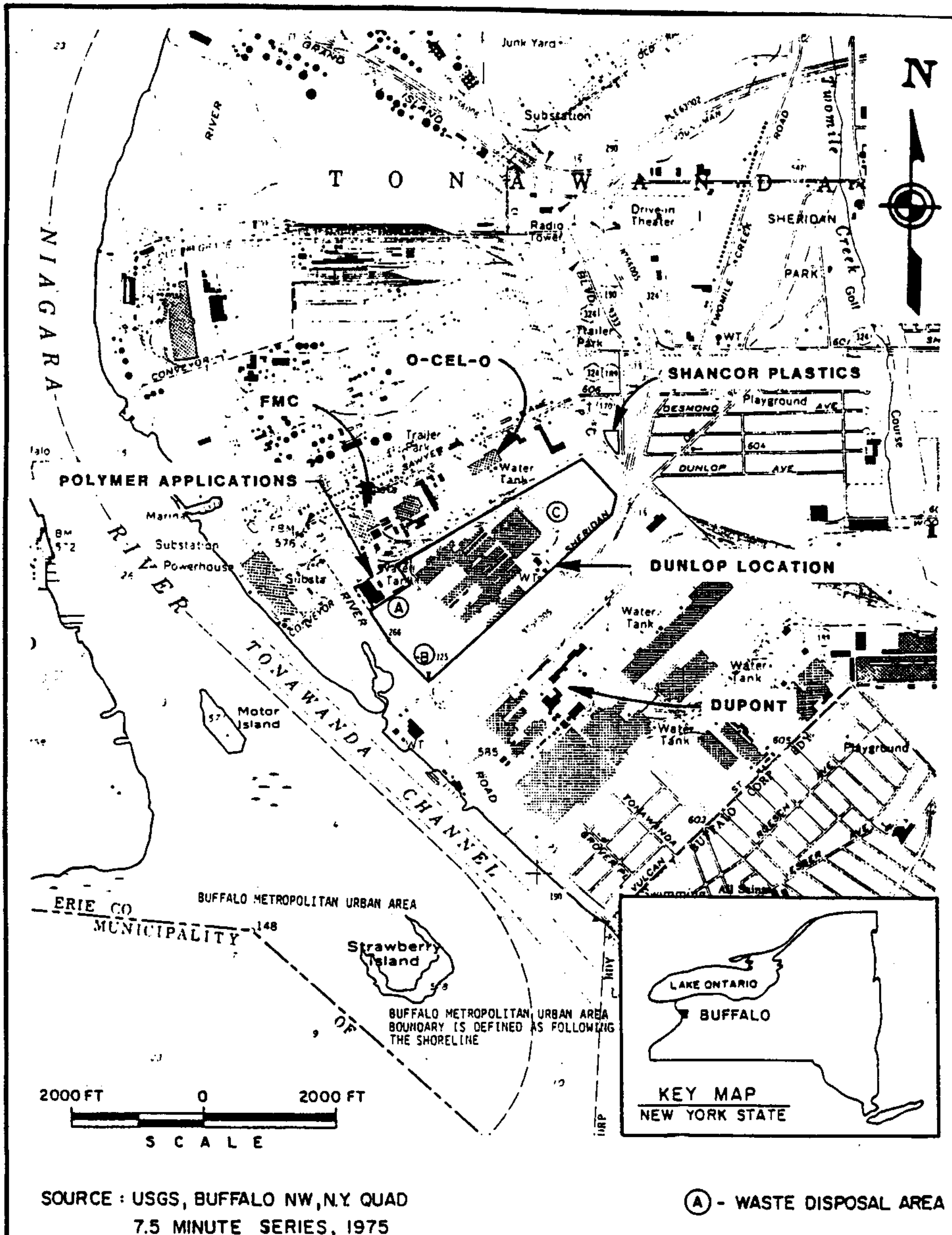
5. Implementability: The preferred alternative would be implementable, and would utilize commercially available and reliable technologies.

6. Cost: The estimated capital cost for implementation of the recommended remedial alternative is approximately $1.1 million. This cost represents engineering and construction expenses required to implement all phases of the recommended site remediation.

7. Community Acceptance: A public meeting was held on December 1, 1992 to discuss the Conceptual Design Capping Plan and to answer questions. The public comments period lasted from November 23 to December 22, 1992 (See Responsiveness Summary in Appendix D). Public concerns focused mainly on the waste material, contaminant migration, and the potential impact of the sites on nearby areas. The site investigations have not revealed extensive contaminant migration from the sites. The preferred alternative would further reduce potential impacts by limiting infiltration into the waste, and by preventing the transport of contaminated soils to surrounding areas. The potential for direct contact exposures with the waste also would be significantly reduced. Based on the public comments, it is concluded that the Conceptual Design Capping Plan is acceptable to the community.

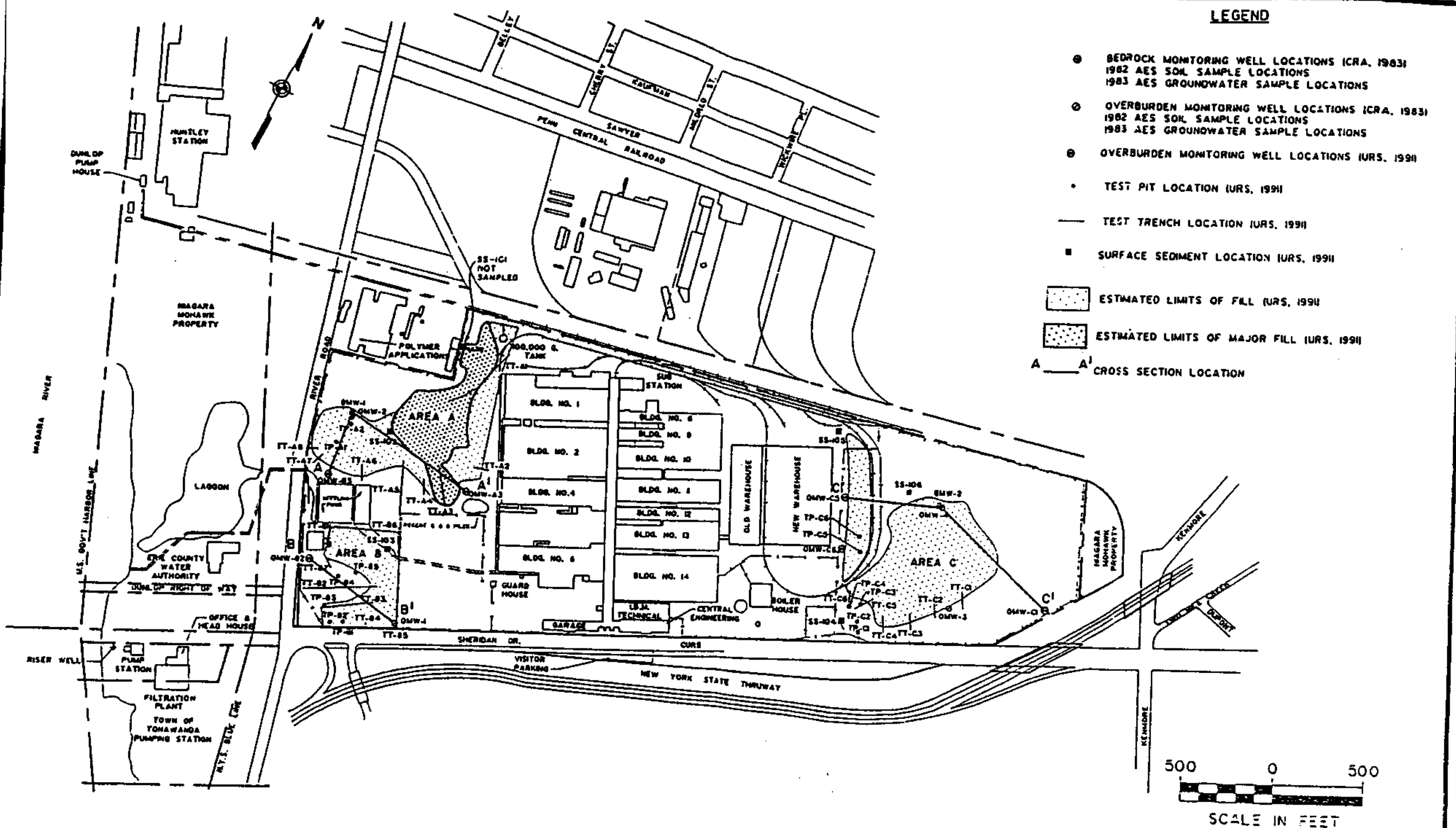
8. Overall Protection of Human Health and the Environment: Following execution of the preferred alternative human health and environmental risks would be substantially reduced. This action is appropriate for the site because it will eliminate or reduce direct contact exposures, infiltration of rain water, and the migration of contaminated groundwater. Post-closure monitoring and maintenance will allow the Department to evaluate the long term effectiveness and reliability of the remedial action.

APPENDIX A - FIGURES



URS CONSULTANTS, INC.	DUNLOP TIRE & RUBBER CORPORATION SITE LOCATION MAP	FIGURE 1

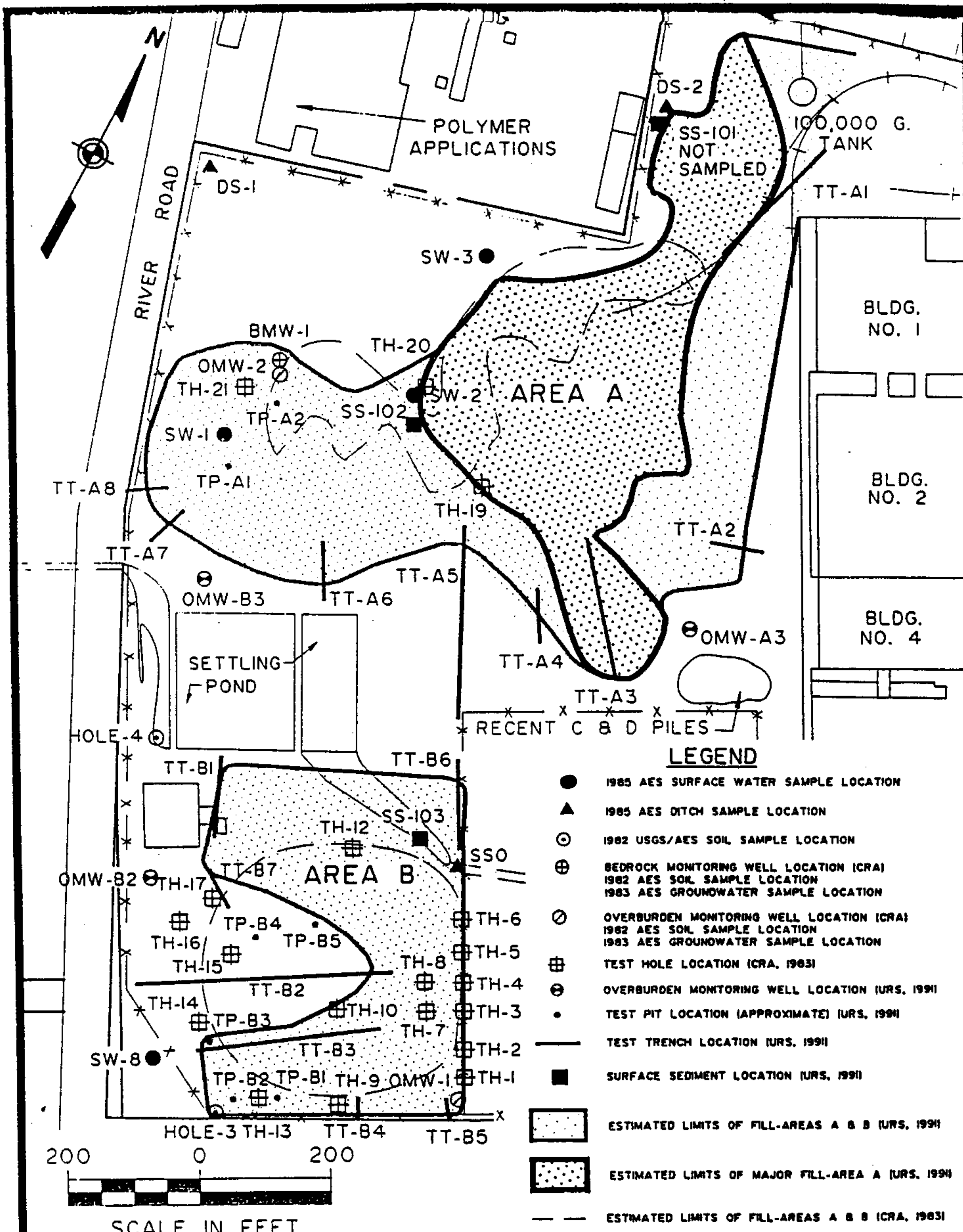
A-3546



SAMPLING LOCATION MAP

URS CONSULTANTS, INC.

FIGURE 2

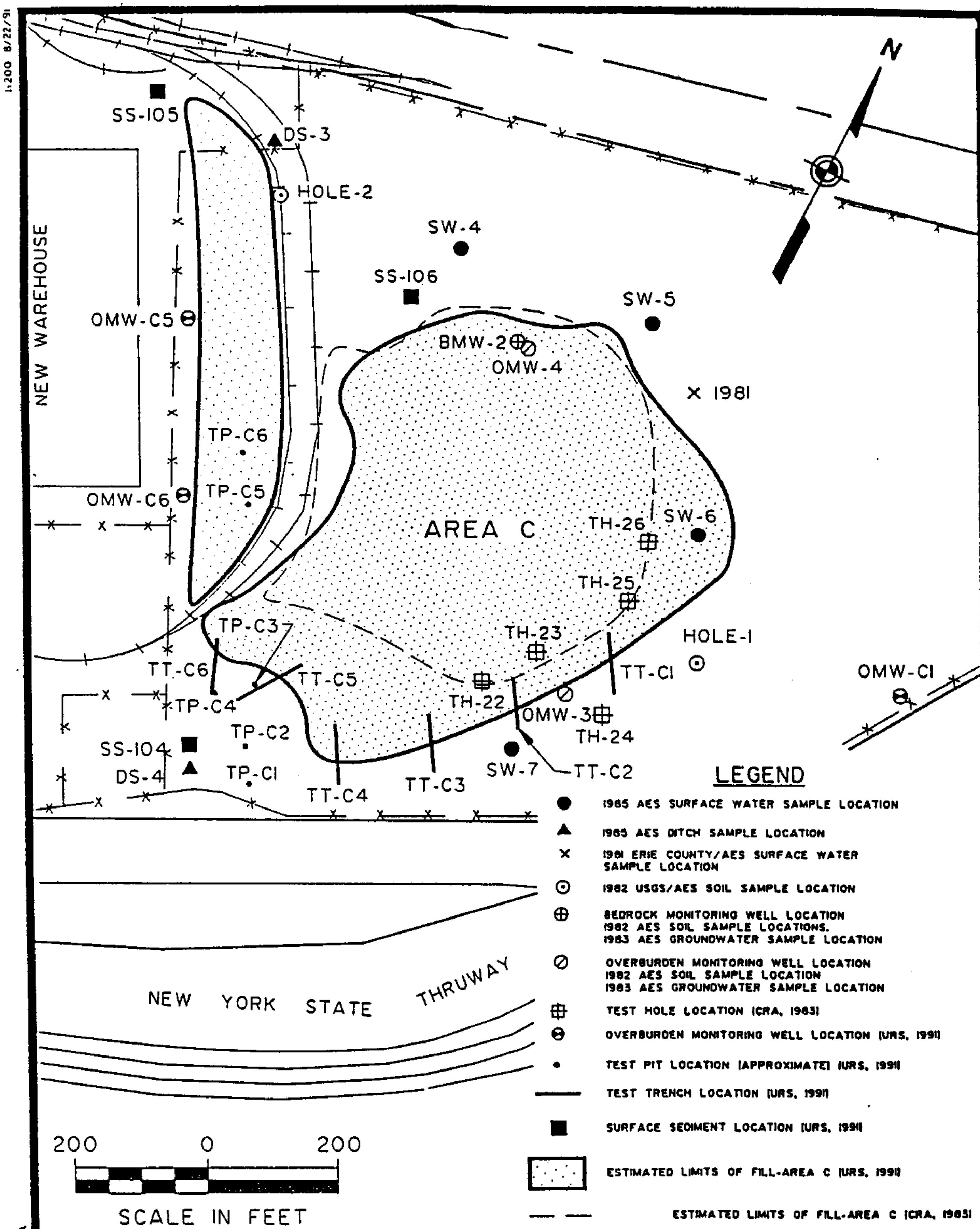


AC-3877A

URS CONSULTANTS, INC.

SITE MAP
AREAS A & B

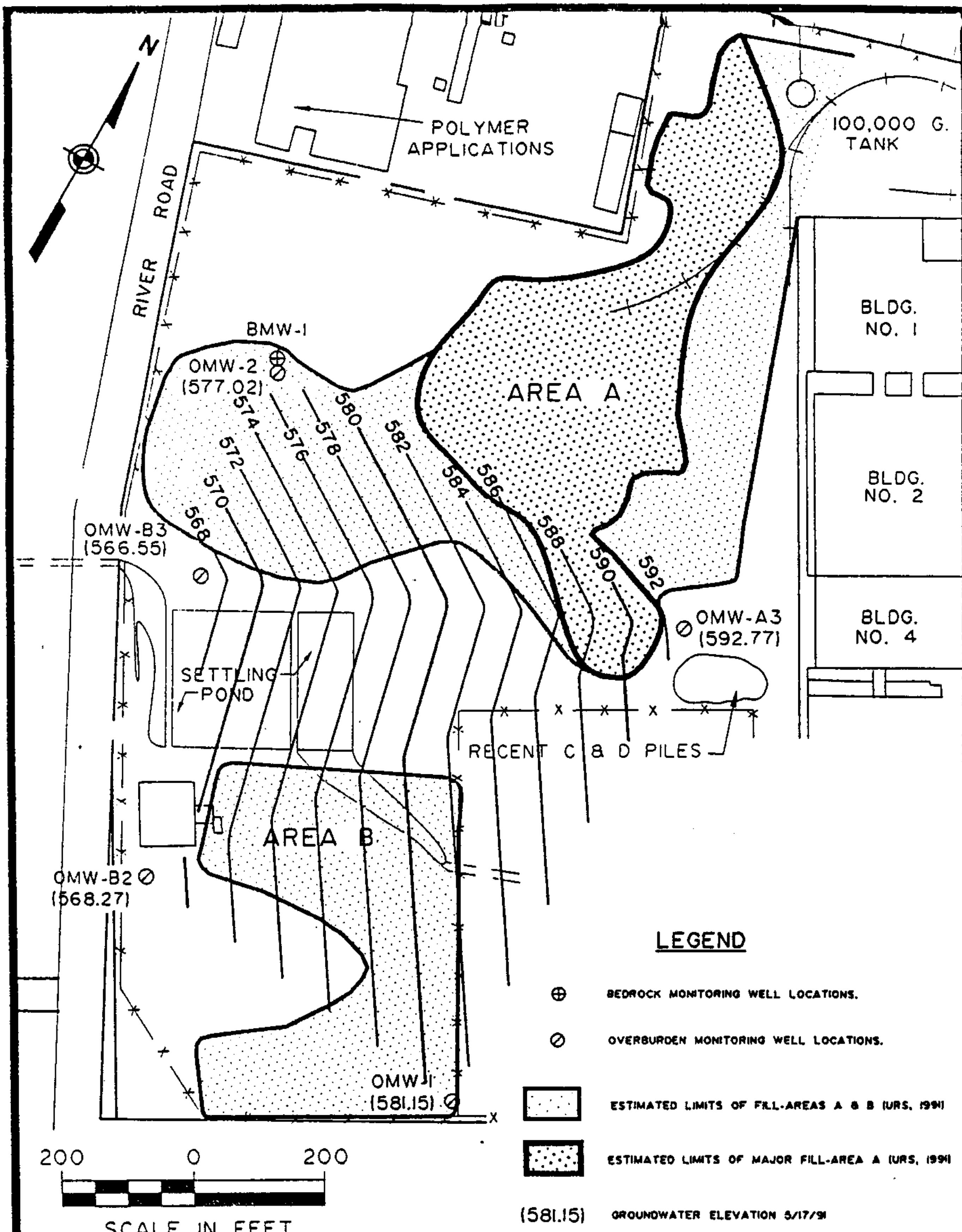
FIGURE 3



URS
CONSULTANTS, INC.

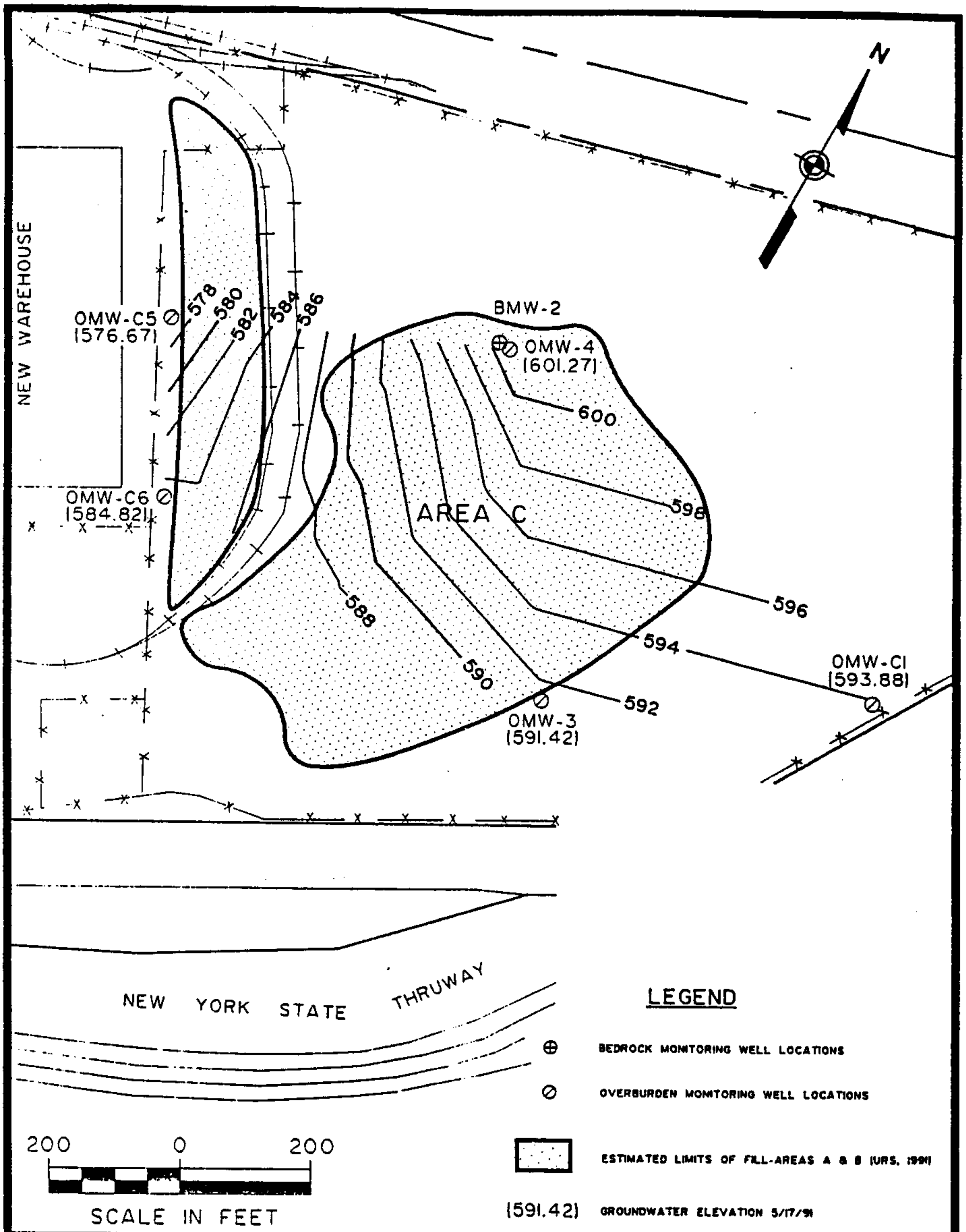
SITE MAP
AREA C

FIGURE 4



URS CONSULTANTS, INC.	GROUNDWATER CONTOUR MAP AREAS A & B	FIGURE 5

AC-3882

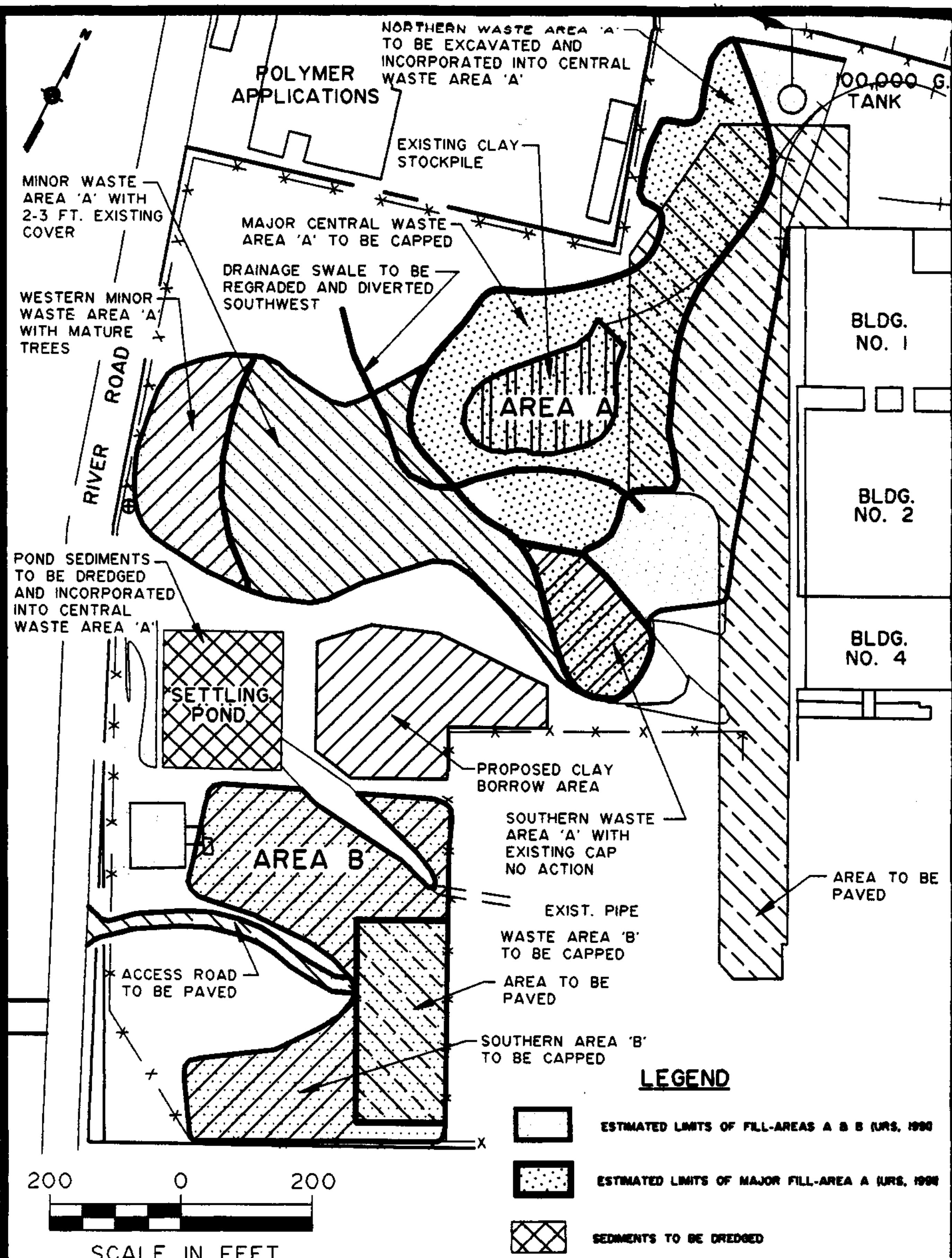


JC-3883

URS CONSULTANTS, INC.

GROUNDWATER CONTOUR MAP
AREA C

FIGURE 6



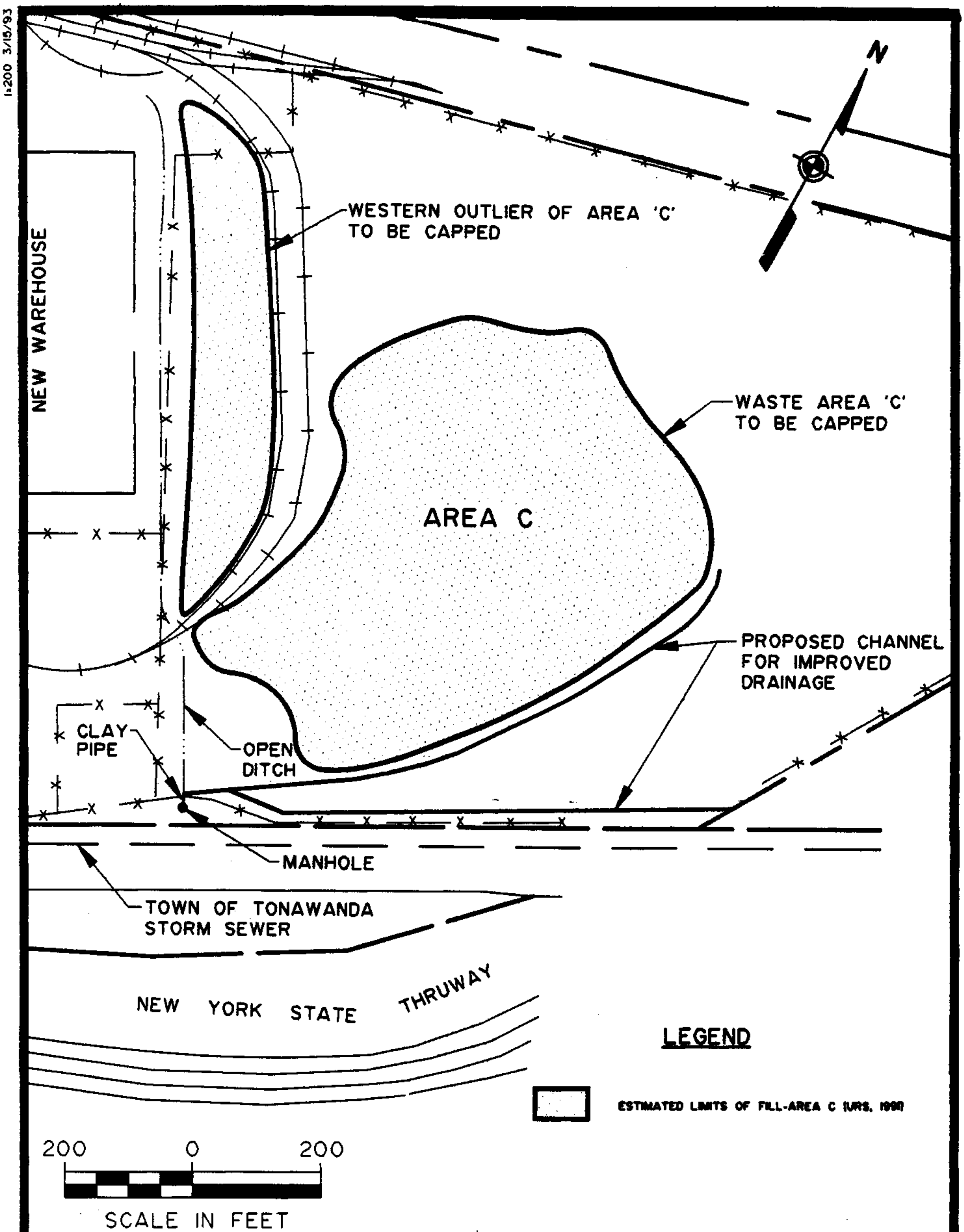
1=200 3/15/93

AC-4555/8

URS CONSULTANTS, INC.

REMEDIAL ACTION APPROACH AREAS A & B

FIGURE 7



URS CONSULTANTS, INC.

REMEDIAL ACTION APPROACH
AREA 'C'

FIGURE 8

APPENDIX B - TABLES

TABLE 1
SOIL RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SOIL (AES from USGS sample locations)				
TVHO	B	Hole 3	0.448 ppm	7/13/82
	B	Hole 4	0.082 ppm	
	C	Hole 1	1.071 ppm	
	C	Hole 2	0.351 ppm	
Phenols	B	Hole 3	0.194 ppm	
	B	Hole 4	0.196 ppm	
	C	Hole 1	0.188 ppm	
	C	Hole 2	0.219 ppm	
TKN	B	Hole 3	747 ppm	
	B	Hole 4	673 ppm	
	C	Hole 1	1,680 ppm	
	C	Hole 2	780 ppm	
SOIL (AES)				
Phenols	A	BMW-1 0-2'	0.11 ppm	12/8-17/82
	A	BMW-1 14-16'	0.03 ppm	
	A	BMW-1 60-62'	0.08 ppm	
	B	OMW-1 0-2'	0.32 ppm	
	B	OMW-1 8-10'	0.15 ppm	
	C	BMW-2 0-2'	0.35 ppm	
	C	BMW-2 16-18'	0.09 ppm	
	C	BMW-2 65-66'	0.32 ppm	
	C	OMW-3 0-2'	0.30 ppm	
	C	OMW-3 6-8'	0.14 ppm	

TABLE 1 (continued)
SOIL RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SOIL (AES) cont'd				
Carbon Tetrachloride	A	BMW-1 0-2'	BDL	12/8-17/82
	A	MW-1 14-16	BDL	
	A	BMW-1 60-6	BDL	
	B	OMW-1 0-2'	BDL	
	B	OMW-1 8-10	BDL	
	C	BMW-2 0-2'	BDL	
	C	BMW-2 16-1	BDL	
	C	BMW-2 65-6	BDL	
	C	OMW-3 0-2'	BDL	
	C	OMW-3 6-8'	BDL	
Chloroform	A	BMW-1 0-2'	20.6 ppb	
	A	MW-1 14-16	18.2 ppb	
	A	BMW-1 60-6	6.9 ppb	
	B	OMW-1 0-2'	14.5 ppb	
	B	OMW-1 8-10	1.5 ppb	
	C	BMW-2 0-2'	18.6 ppb	
	C	BMW-2 16-1	13.5 ppb	
	C	BMW-2 65-6	4.4 ppb	
	C	OMW-3 0-2'	38.9 ppb	
	C	OMW-3 6-8'	9.5 ppb	
Trichloroethylene	A	BMW-1 0-2'	5.5 ppb	
	A	MW-1 14-16	3.4 ppb	
	A	BMW-1 60-6	1.5 ppb	
	B	OMW-1 0-2'	6.3 ppb	
	B	OMW-1 8-10	0.5 ppb	
	C	BMW-2 0-2'	12.6 ppb	
	C	BMW-2 16-1	3.5 ppb	
	C	BMW-2 65-6	0.9 ppb	
	C	OMW-3 0-2'	7.3 ppb	
	C	OMW-3 6-8'	1.7 ppb	

TABLE 1 (continued)
SOIL RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SOIL (AES) cont'd				
Tetrachloroethylene	A	BMW-1 0-2'	7.4 ppb	12/8-17/82
	A	MW-1 14-16	2.6 ppb	
	A	BMW-1 60-6	2.6 ppb	
	B	OMW-1 0-2'	18.4 ppb	
	B	OMW-1 8-10	1.4 ppb	
	C	BMW-2 0-2'	30.9 ppb	
	C	BMW-2 16-1	2.9 ppb	
	C	BMW-2 65-6	1.1 ppb	
	C	OMW-3 0-2'	9.2 ppb	
	C	OMW-3 6-8'	3.0 ppb	
SOIL (AES)				
Toluene	A	Surface soil	BQL	10/25/88
Phenols	A	Surface soil	7 ppm	

TABLE 2
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SEDIMENT (Engineering-Science for Polymer)				
Phenols	Near A Border of Polymer	SED-3	--	6/26/90
	Near A Across River Rd.	SED-4	--	
Endosulfan II	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	32 ppb X	
Aroclor-1260	Near A Border of Polymer	SED-3	5,500 ppb	
	Near A Across River Rd.	SED-4	970 ppb	
Barium	Near A Border of Polymer	SED-3	310 ppb	
	Near A Across River Rd.	SED-4	457 ppb	
Cadmium	Near A Border of Polymer	SED-3	5.3 ppb	
	Near A Across River Rd.	SED-4	5.3 ppb	
Lead	Near A Border of Polymer	SED-3	56.3 ppb	
	Near A Across River Rd.	SED-4	27.8 ppb	
Silver	Near A Border of Polymer	SED-3	6.4 ppb	
	Near A Across River Rd.	SED-4	8.4 ppb	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (AES)				
Antimony	C	swampy area	--	7/16/81
Arsenic			0.022 ppm	
Beryllium			--	
Cadmium			--	
Chromium			--	
Copper			--	
Iron			13.5 ppm	
Lead			--	
Mercury			--	
Nickel			--	
Selenium			0.016 ppm	
Silver			--	
Thallium			--	
Zinc			0.135 ppm	
pH			6.84	
COD			134.8 ppm	
Specific Conduct.			450	
TKN			0.61 ppm	
TVHO			--	
THO (non-volatile)			--	
Total Phenol			9.9 ppb	
SURFACE WATER (Erie County)				
Cadmium	C	swampy area	--	7/16/81
Chromium			--	
Copper			0.14 ppm	
Iron			31.0 ppm	
Mercury			--	
Zinc			0.26 ppm	
Lead			--	
pH			7.3	
COD			24.0 ppm	
Specific Conduct.			426	
Pesticides			--	
PCBs			--	
Organic N			4.3 ppm	
Phenols			--	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (AES)				
Phenols	Storm Sewer Out	SSO	0.26 ppm	6/25/90
	Ditch Sample	DS2	0.58 ppm	(dry weather)
	Ditch Sample	DS3	0.49 ppm	
	Ditch Sample	DS4	0.30 ppm	
	C	SW4	0.48 ppm	
	C	SW6	0.15 ppm	
SURFACE WATER (AES)				
Phenols	Downstream A	DS1	0.06 ppm	11/4/85
	Upstream A	DS2	BDL	(after storm event)
	A	SW1	0.07 ppm	
	A	SW2	BDL	
	A	SW3	BDL	
	Near B	SSO	BDL	
	B	SW8	Dry	
	Downstream C	DS4	0.08 ppm	
	Upstream C	DS3	0.05 ppm	
	C	SW4	BDL	
	C	SW1	BDL	
	C	SW1	BDL	
	C	SW7	0.06 ppm	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (Engineering-Science for Polymer)				
Phenols	Near A Border of Polymer	SED-3	35 ppb	6/26/90
	Near A Across River Rd.	SED-4	2,000 ppb	
Methylene Chloride	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	--	
Acetone	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	32 ppb	
2-Methyl-2-Pentanone	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	--	
Xylenes	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	73 ppb	
Ethylbenzene	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	7 ppb	

TABLE 2 (continued)
SEDIMENTS/SURFACE WATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
SURFACE WATER (Engineering-Science for Polymer) cont'd				
Aroclor	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	--	
Beta-BHC	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	0.42 X	
Endosulfan I	Near A Border of Polymer	SED-3	--	
	Near A Across River Rd.	SED-4	--	

TABLE 3
GROUNDWATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
GROUNDWATER (AES)				
Phenols	A	BMW-1	0	1/13/83
	C	BMW-2	0	
Carbon Tetrachloride	A	BMW-1	--	
	C	BMW-2	--	
Chloroform	A	BMW-1	--	
	C	BMW-2	--	
Trichloroethylene	A	BMW-1	--	
	C	BMW-2	--	
Tetrachloroethylene	A	BMW-1	--	
	C	BMW-2	--	
GROUNDWATER (AES)				
Phenols	A	BMW-1	--	6/27/83 and 7/5/83
	C	BMW-2	--	
	A	OMW-2	4.76 ppb	
	B	OMW-1	7.28 ppb	
	C	OMW-3	7.18 ppb	
Carbon Tetrachloride	A	OMW-2	--	
	B	OMW-1	--	
	C	OMW-3	--	
Chloroform	A	OMW-2	0.07 ppb	
	B	OMW-1	0.09 ppb	
	C	OMW-3	0.08 ppb	
Trichloroethylene	A	OMW-2	0.06 ppb	
	B	OMW-1	0.09 ppb	
	C	OMW-3	0.06 ppb	
Tetrachloroethylene	A	OMW-2	0.16 ppb	
	B	OMW-1	0.38 ppb	
	C	OMW-3	0.08 ppb	

TABLE 3 (continued)
GROUNDWATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
GROUNDWATER (AES)				
Phenols	A	BMW-1	BDL	8/2/85
	A	OMW-2	BDL	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Carborn Tetrachloride	A	BMW-1	BDL	
	A	OMW-2	BDL	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Chloroform	A	BMW-1	BDL	
	A	OMW-2	3.43 ppb	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Trichloroethylene	A	BMW-1	BDL	
	A	OMW-2	BDL	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	
Tetrachloroethylene	A	BMW-1	BDL	
	A	OMW-2	1.36 ppb	
	B	OMW-1	BDL	
	C	BMW-2	BDL	
	C	OMW-3	BDL	
	C	OMW-4	Dry	

TABLE 3 (continued)
GROUNDWATER RESULTS
PREVIOUS ANALYTICAL DATA FROM DUNLOP SITES

CONTAMINANTS	SITE	POINT	VALUE	DATE OF SAMPLE
GROUNDWATER (Recra for NYSDEC)				
Phenols	A	BMW-1	.014 ppb	8/2/85
	C	BMW-2	BDL	
				(Volatiles
Acetone	A	BMW-1	320 ppb	extracted
	C	BMW-2	760 ppb	past holding
	A	OMW-2	150 ppb	time.)
Benzene	A	BMW-1	14 ppb	
	C	BMW-2	BDL	
	A	OMW-2	12 ppb	
Bromodichloro-methane	A	BMW-1	8.7 ppb	
	C	BMW-2	BDL	
	A	OMW-2	BDL	
2-butanone (MEK)	A	BMW-1	13 ppb	
	C	BMW-2	8.8 ppb	
Trichloroethylene	A	BMW-1	BDL	
	C	BMW-2	BDL	
Trichlorofluoro-methane	A	BMW-1	BDL	
	C	BMW-2	BDL	
	A	OMW-2	BDL	
Carbon disulfide	A	OMW-2	BDL	

TABLE 4
DUNLOP TIRE CORP.
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
FILL AREAS A AND B

SAMPLE-ID		* ARAR Value (ppb)	OMW-A3	OMW-2	OMW-B3	OMW-B2	OMW-1	BMW-1
SAMPLE TYPE			GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GOUNDWATER
LOCATION/SITE			UPGRADIENT/A	FILL/A	DOWNGRADIENT/A&B	DOWNGRADIENT/B	UPGRADIENT/B	FILL/A
PARAMETER	TYPE		5/30/91	5/30/91	5/28/91	5/28/91	5/30/91	5/30/91
ACETONE	VOC	50					7 BJ	
1,1-DICHLOROETHENE	VOC	5	5					
1,1-DICHLOROETHANE	VOC	5	17					
1,2-DICHLOROETHENE (TOTAL)	VOC	5						6
CHLOROFORM	VOC	100	0.6 J					
1,1,1-TRICHLOROETHANE	VOC	5	80					
BENZENE	VOC	ND				1		
ACENAPHTHENE	SEMI	20 G			2 J			
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	50			2 J			
4,4'-DDE	PST	ND			0.12 J			
ALUMINUM	MCP		264	12600	1070	13200	11300	
ANTIMONY	MCP	3 G		6 B				
ARSENIC	MCP	25		69	7 B			
BARIUM	MCP	1,000	100 B	70 B			80 B	
CADMIUM	MCP	10		330		14	99	7
CALCIUM	MCP		97000	141000	260000	377000	224000	490000
CHROMIUM	MCP	50		365		89.0	34	17
COBALT	MCP			117		49 B	21 B	
COPPER	MCP	200	46	1400	42	50	53	14 B
IRON	MCP	300 (a)	585	760000	5200	24400	246000	15200
LEAD	MCP	25	25	46	16	26	46	27
MAGNESIUM	MCP	35,000 G	124000	126000	118000	741000	192000	95100
MANGANESE	MCP	300 (a)	315	4000	1310	1900	3340	249
MERCURY	MCP	2	0.8	0.9		0.7	0.7	0.9
NICKEL	MCP			540	30 B	84	122	
POTASSIUM	MCP		8180	5400	10200	32600	6100	8160
SILVER	MCP	50		8 B	6 B	18	7 B	15
SODIUM	MCP	20,000	24200	109000	41000	448000	159000	305000
VANADIUM	MCP			87			38 B	
ZINC	MCP	300	7530	13700	78	159	16000	12 B

All results reported in μg/L (ppb).

VOC - Volatile Organic Compounds

SEMI - Semivolatiles

PST - Pesticides

MCP - Metals, Cyanide, Phenols

G - Guidance value

* - NYSDEC Ambient Water Quality Standards and Guidance Values, September 1990

ND - Non Detectable

(a) - Standard for the sum of iron and manganese is 500 ppb.

B (VOC) - Analyte also found in the associated method blank.

B (MCP) - Value is less than quantitation limit but greater than or equal to the instrument detection limit.

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

[shaded] - Exceeds ARAR Value

TABLE 5
DUNLOP TIRE CORP.
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
FILL AREA C

SAMPLE-ID		* ARAR	OMW-C1	OMW-3	OMW-4	OMW-C5	OMW-C6	BMW-2
SAMPLE TYPE		Value	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER	GROUNDWATER
LOCATION/SITE		(ppb)	UPGRADIENT	SIDEGRADIENT	FILL	DOWNGRADIENT	DOWNGRADIENT	FILL
PARAMETER	TYPE		5/28/91	5/30/91	5/28/91	5/28/91	5/28/91	5/29/91
ACETONE	VOC	50						10 B
BENZENE	VOC	ND						5
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	50						5 J
ALUMINUM	MCP		281	3700	285	10200	1380	1630
ARSENIC	MCP	25			7 B			
BARIUM	MCP	1,000						80 B
CADMIUM	MCP	10		51	102	8		22
CALCIUM	MCP		177000	261000	411000	189000	208000	353000
CHROMIUM	MCP	50		16	28	33	10	33
COBALT	MCP				113	19 B		21 B
COPPER	MCP	200	9 B	19 B	28	42	9 B	286
IRON	MCP	300 (a)	371	130000	256000	20600	2660	40500
LEAD	MCP	25	14	14	12	25	6	17200
MAGNESIUM	MCP	35,000 G	492000	568000	205000	231000	638000	106000
MANGANESE	MCP	300 (a)	163000	1610	14600	1750	712	375 B
MERCURY	MCP	2	0.5	0.8	0.6	0.6	0.7	0.7
NICKEL	MCP			45	545	49		57
POTASSIUM	MCP		9810	6770	11200	14400	16500	24600
SILVER	MCP	50	9 B	15	12.0	6 B	12	23
SODIUM	MCP	20,000	198000	207000	111000	115000	252000	381000
ZINC	MCP	300	19 B	7310	7120	116	37	4250

All results reported in µg/L (ppb).

VOC - Volatile Organic Compounds

SEMI - Semivolatiles

MCP - Metals, Cyanide, Phenols

G - Guidance value

* - NYSDEC Ambient Water Quality Standards and Guidance Values, September 1990

ND - Non Detectable

(a) - Standard for the sum of iron and manganese is 500 ppb.

B (VOC) - Analyte detected in associated method blank.

B (MCP) - Value is less than quantitation limit but greater than or equal to the instrument detection limit

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

- Exceeds ARAR Value.

TABLE 6
DUNLOP TIRE CORPORATION, TONAWANDA, N.Y.
Summary of Analytical Results - Sediment Samples

SAMPLE-ID		SS-102	SS-103	SS-104	SS-105	SS-106
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		4/18/91	4/18/91	4/18/91	4/18/91	4/18/91
PARAMETER	TYPE					
METHYLENE CHLORIDE	VOC	4 J	1 J	4 J	0.9 J	1 J
ACETONE	VOC	25 B	46 B	66 B	5 BJ	13 BJ
1,2-DICHLOROETHENE (TOTAL)	VOC	22	U	U	U	U
2-BUTANONE	VOC	U	7 J	7 J	U	U
1,1,1-TRICHLOROETHANE	VOC	U	U	5 J	4 J	U
TRICHLOROETHENE	VOC	6 J	U	U	U	U
BENZENE	VOC	2 J	U	U	U	U
BENZYL ALCOHOL	SEMI	40 J	U	U	U	U
4-METHYLPHENOL	SEMI	U	260 J	U	U	U
NAPHTHALENE	SEMI	190 J	210 J	U	U	120 J
HEXACHLOROBUTADIENE	SEMI	U	120 J	U	U	U
2-METHYLNAPHTHALENE	SEMI	160 J	100 J	37 J	U	110 J
ACENAPHTHENE	SEMI	U	330 J	U	U	U
DIBENZOFURAN	SEMI	U	290 J	U	U	U
FLUORENE	SEMI	U	420 J	U	U	U
PHENANTHRENE	SEMI	150 J	3300	140 J	290 J	150 J
ANTHRACENE	SEMI	U	940	U	U	U
DI-N-BUTYLPHTHALATE	SEMI	2200 B	770 B	880 B	680 B	320 BJ
FLUORANTHENE	SEMI	110 J	3700	140 J	400 J	190 J
PYRENE	SEMI	82 J	4600	99 J	300 J	160 J
BENZO(A)ANTHRACENE	SEMI	49 J	1900	57 J	150 J	89 J
CHRYSENE	SEMI	52 J	1800	58 J	160 J	100 J
BIS(2-ETHYLHEXYL)PHTHALATE	SEMI	180 J	470	U	91 J	92 J
BENZO(b)FLUORANTHENE	SEMI	47 J	2200	49 J	160 J	110 J
BENZO(K)FLUORANTHENE	SEMI	U	970	U	69 J	43 J
BENZO(A)PYRENE	SEMI	U	1300	38 J	110 J	80 J
INDENO(1,2,3-CD)PYRENE	SEMI	U	400 J	U	43 J	U
DIBENZ(A,H)ANTHRACENE	SEMI	U	86 J	U	U	U
BENZO(G,H,I)PERYLENE	SEMI	U	330 J	U	33 J	35 J
ALPHA-BHC	PST	U	2.7 J*	U	U	U
GAMMA-BHC (LINDANE)	PST	U	3.4 J*	U	U	U
DELTA-BHC	PST	U	33 *	20	17	U
4,4'-DDD	PST	5.3 J	U*	U	U	U
4,4'-DDE	PST	11 J	U*	U	U	U
4,4'-DDT	PST	15	31 *	U	U	U
ENDOSULFAN II	PST	5.3 J	U*	U	U	U
ENDOSULFAN SULFATE	PST	U	290 *	U	U	U
ENDRIN	PST	U	18 *	U	U	U
HEPTACHLOR	PST	25	U*	U	U	U
HEPTACHLOR EPOXIDE	PST	U	U*	U	2.8 J	U
METHOXYCHLOR	PST	U	110 *	U	U	U

VOC - Volatile Organic Compounds
SEMI - Semivolatiles
PST - Pesticides
Results reported in ug/kg (ppb)

DATA QUALIFIERS:
B - Compound detected in the associated method blank
J - Value is less than the sample quantitation limit but greater than zero
U - Undetected
* - Compound concentration and quantitation limit estimated due to surrogate outliers.

TABLE 6 (Cont'd)
DUNLOP TIRE CORPORATION, TONAWANDA, N.Y.
Summary of Analytical Results - Sediment Samples

SAMPLE-ID		SS-102	SS-103	SS-104	SS-105	SS-106
SAMPLE TYPE		SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
COLLECTION DATE		4/18/91	4/18/91	4/18/91	4/18/91	4/18/91
PARAMETER	TYPE					
ALUMINUM	MCP	12,100	9,310	18,900	12,200	7,630
ANTIMONY	MCP	U	U	U	U	0.76 B
ARSENIC	MCP	18	7.5	13	4.7	10
BARIUM	MCP	190	183	139	130	92
BERYLLIUM	MCP	1.0	U	0.96	0.92	U
CADMIUM	MCP	14	9.4	14	12	7.3
CALCIUM	MCP	58,000	23,800	2,900	628	11,800
CHROMIUM	MCP	33	26	28	23	15
COBALT	MCP	10	9.2	13	10	8.2
COPPER	MCP	36	46	21	26	33
IRON	MCP	30,600	17,200	31,400	25,500	16,200
LEAD	MCP	110	1,750	38	46	52
MAGNESIUM	MCP	5,450	7,270	4,210	16,000	4,620
MANGANESE	MCP	2,020	218	295	844	148
MERCURY	MCP	0.55	0.17	U	0.58	2.0
NICKEL	MCP	59	24	28	31	46
POTASSIUM	MCP	1,280	1,600	2,260	2,090	1,360
SILVER	MCP	U	3.7	U	U	U
SODIUM	MCP	474	807	309 B	419 B	283 B
VANADIUM	MCP	42	24	47	29	28
ZINC	MCP	412	778	226	215	570
CYANIDE	MCP	U	2.4	U	U	U

MCP - Metals, Cyanide, Phenol
Results reported in mg/kg (ppm)

DATA QUALIFIERS: B - Value is less than quantitation limit but greater than or equal to the instrument detection limit
U - Undetected

APPENDIX C

ADMINISTRATIVE RECORD

APPENDIX C - ADMINISTRATIVE RECORD

1. Proposal to Investigate Inactive Waste Disposal Sites, November 1982

2. Investigation of Inactive Waste Disposal Sites, October 1983

3. Phase II, Surface Water Investigation, November 1984

4. Completion of Hydrogeologic Investigation of Groundwater and Surface Water, February 1982

5. Preliminary Assessment, Dunlop Sites, December 1987

6. Work Plan (Final) for Interim Remedial Measure (IRM) Site Investigation, February 1991

7. Health & Safety Plan, February 1991

8. IRM Order on Consent, April 1991

9. Risk Assessment/Remediation Assessment Report (Draft), October 1991

10. Post-Closure Groundwater Monitoring Plan (Draft), October 1991

11. Report of Field Investigation and Data Analysis (Final), April 1992

12. Conceptual IRM Closure Plan, November 1992

APPENDIX D

RESPONSIVENESS SUMMARY

APPENDIX D - RESPONSIVENESS SUMMARY

The public comment period on the Conceptual Design Capping Plan lasted from November 23, 1992 to December 22, 1992. A public meeting was held on December 1, 1992 to discuss the details of the Capping Plan, to answer questions, and to gather comments from interested citizens and local elected officials. This responsiveness summary addresses the concerns and questions raised at that meeting. No comments were received after December 22, 1992.

Q. How thick is the waste? What is at the bottom of it? What is at the sides of it? How far below the surface is the native soils?

A. The thickness of the waste varies across the three landfills. The fill is thickest in the center of the landfills (it is greater than ten feet in thickness at Site A) and thins toward the edges where it grades into native soils. The native soil underlying and surrounding the waste is a very dense, reddish brown silty clay that is approximately sixty-five feet thick. Where fill is not present the native soil immediately underlies the topsoil layer that is about six inches in thickness.

Q. There is a big mound of material on Site C that was recently placed there. What is it? Is it being monitored?

A. This mound consists of uncontaminated surface material removed from Sites A and B during the recent construction of the parking lot and tractor-trailer staging area. This material will be utilized during cap construction. Because these materials are not waste they do not need to be monitored.

Q. Is groundwater leaching out of the waste? Is there presently migration from the sites? Is anything migrating off the B Site? Will it migrate to the Niagara River? Can there be migration from the waste to places where people have drinking wells? Are you satisfied that there isn't much migration from the sites?

A. Groundwater flows through the waste material because the three landfills are not properly capped. The analytical results from groundwater, surface water, and sediment, however, suggest that extensive contaminant migration is not occurring from any of the sites. For example, wells installed directly in the waste show the highest levels of contamination. In contrast, monitoring wells surrounding the landfills show diminutive levels of contamination. Because contaminant migration is not occurring, the waste material will not adversely impact any drinking wells in the area or the Niagara River. Post-closure groundwater monitoring will be conducted to assess the effectiveness of the cap and provide early detection should failure occur.

Q. How deep are the wells? Where is the monitoring system now? Are any wells in the center of the waste? Do you sample just above the clay layer where the migration might occur?

A. There are twelve monitoring wells on site. Ten of these wells are shallow (nine to twenty-six feet in depth) and screen either the waste material or the upper part of the native soils. When site conditions warranted the wells were constructed to monitor the groundwater in the waste and fill material. Wells were installed in the native soils whenever the fill material was too thin to allow for proper construction of more shallow wells. Two wells are deep (sixty-nine and eighty-two feet in depth respectively) and screen the upper bedrock underlying the site. Wells were not installed in the center of the waste because the goal of the monitoring program was to assess contaminant migration from the landfills.

Q. Will the contaminants break down? Could contamination be made benign or is the mix too complex?

A. The organic compounds detected at the site will break down into simpler compounds under natural site conditions, and have probably done so since use of the landfills ceased in the 1970's. This natural degradation likely accounts for the low concentrations of contaminants detected in various site media. The inorganic compounds (metals) will not break down into simpler compounds, however, the cap will help reduce the rate of metals migration from the sites.

Due to the different types of waste material at the sites, treatment would be difficult. There are many technologies available to treat inorganics (e.g., stabilization, solidification), however, these technologies are not normally feasible when organic compounds are also present. Also, there are many technologies available to treat organics (e.g., bioremediation, solvent extraction) that are not effective on inorganics. Only by segregating the organics and inorganics before treatment can the waste be made more benign. The segregation of compounds at the Dunlop sites is not practical due to the different waste types and the cost associated with such segregation.

Q. Is Dunlop currently generating wastes and dumping it in the landfills?

A. Use of the three landfills by Dunlop ceased in the 1970's. Wastes generated by the company are either reused, recycled or disposed off-site in a regulated landfill.

Q. What does it mean that Dunlop will maintain and monitor the landfills for thirty years? What happens after that? Do the landfills have to be monitored into eternity? What happens if Dunlop leaves the area? Will the Town get stuck with site costs?

A. The Order on Consent signed by Dunlop is a legally binding agreement that requires the company to inspect the final cover quarterly and maintain it for thirty years. If during that time the Department concludes that any element of the cover fails to perform as predicted or otherwise fails to protect human health or the environment, the Department can require Dunlop to make modifications or repairs as required. It is not anticipated that maintenance and monitoring will be required after thirty years.

If Dunlop closes the facility and leaves the area, the Order on Consent still requires the company to maintain and monitor the landfills. If the property is sold, Dunlop must notify the Department within sixty days of closing and furnish the name(s) of the perspective new owner(s) of the property. In addition, Dunlop must inform the new owner(s) that an Order on Consent is in effect.

Q. Will the cap prevent rainwater from getting into the wastes? Are Areas A and B covered now?

A. A landfill cap serves two primary purposes - the elimination/reduction of precipitation infiltration into the waste and the elimination of direct contact exposures. The cap design proposed by Dunlop will meet both requirements. Parts of area A are covered with two feet or more of clay and will not receive further cover during the remediation. Parts of area B are covered with an asphalt parking lot and will not require further cover during remediation. Post-closure monitoring will be conducted to help assess the effectiveness of the new and existing caps.

Q. The new construction for the parking lot, is that the area paved today? How will surface drainage to Sheridan Drive be prevented? How will drainage of groundwater in the crushed stone subbase be prevented? Doesn't asphalt shed much water?

A. The parking lot paved on December 1, 1992 is part of the landfill cap for Site B. Dunlop paved this area, and the tractor-trailer staging area over Site A, to limit infiltration, reduce direct contact with the wastes, and enable the company to continue plant operations with minimal disruption. The paved areas were constructed to promote surface water runoff, thereby reducing infiltration to the underlying wastes. Catch basins will direct water to a settling pond on Dunlop property along River Road. Limiting infiltration into the asphalt also will limit the quantity of groundwater that can flow through the crushed stone subbase.

Q. Does the pond along River Road settle wastes? Does it discharge into the Niagara River?

A. The pond was constructed by Dunlop in the mid 1970's to settle solids from surface and plant process waters. The water leaving the pond ultimately discharges into the Niagara River. This water is sampled twice monthly by Dunlop and analyzed for Site Specific Compounds as listed in the company's State Pollutant Discharge Elimination System (SPDES) permit issued by NYSDEC's Division of Water. This monitoring ensures the Department that significant discharge of pollutants to the Niagara River is not occurring.

Q. When do you get enough exceedances of groundwater standards to require more extensive remediation? When do regulators decide that more work is required?

A. 6 NYCRR Part 375 of the Environmental Conservation Law lists several factors to consider when determining if the hazardous waste disposed at a site is a significant threat to public health or the environment. Such factors include the contravention of groundwater and surface water standards, geology of the site, potential for migration of contaminants, and use of the affected water. The Regulations, however, do not state what levels of contravention constitute a significant threat, and there are no formulas that can be utilized to make this determination.

Exceedance of groundwater and surface water standards at the Dunlop site have been documented, however, contamination is localized and the levels detected do not pose a significant threat to human health or the environment. There are no known private water wells in the area used as a potable water source, the analytical results for the Dunlop sites suggest that extensive migration of contaminants from the landfills is not occurring, and the underlying native clay soils are preventing downward contaminant migration into deeper water-bearing zones.

Q. Will the clay capping material be brought in from off-site or will on-site clay be used? Will there be a big hole left in the clay borrow area?

A. The Conceptual Design Capping Plan proposes using on-site clay for landfill construction. Geotechnical tests on the clay suggest that it will be suitable to meet landfill construction requirements. The source of clay will be from an area immediately east of the settling pond between Sites A and B. After capping is complete, this area will be graded to slope toward the settling pond. If more clay is required, this area may be more extensively excavated and made into part of the pond.

Q. If the landfills are capped, can the land be used for other purposes? Does this design allow Dunlop flexibility for expansion? Will changes proposed by Dunlop require a permit process?

A. After the landfills are capped, use of the land will be restricted to non-intrusive activities such as recreational uses for plant employees. If Dunlop wished to expand the facility, however, the cap could be removed, the wastes excavated, and disposed of at a regulated landfill. Such activity would not require a permit process, but would have to be approved by the Department prior to execution. Measures would have to be taken by Dunlop to ensure that these activities would not adversely impact human health or the environment.