RECORD OF DECISION

Facet Enterprises, Inc.

Village of Elmira Heights, Chemung County, New York

United States Environmental Protection Agency
Region II
New York, New York
June 1992

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Facet Enterprises, Inc.
Village of Elmira Heights
Chemung County, New York

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Facet Enterprises, Inc. Site, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for this Site.

The New York State Department of Environmental Conservation (NYSDEC) concurs with the selected remedy, per the letter attached as Appendix IV. The information supporting this remedial action decision is contained in the administrative record for this site, the index of which is attached as Appendix III.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the site, if not addressed by implementing the response actions selected in this Record of Decision, may present an imminent and substantial endangerment to public health, welfare or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The major components of the selected remedy for the treatment of soils, sediments, and ground water at the Facet Enterprises, Inc. Site include the following:

- Excavation of contaminated soils and sediments from the Disposal Areas as identified in the Risk Assessment and in those areas where soils and sediment pose a risk to ground water quality,

- Disposal of TSCA waste (PCBs > 50 ppm) in a secure TSCA double lined landfill facility (estimated at approximately 1,275 cubic yards),

- Stabilization of RCRA waste to prevent leaching of metals and subsequent disposal in a secure RCRA lined facility (approximate volume 2,124 cubic yards),

- Disposal of non-RCRA wastes in an industrial waste landfill (approximate volume 120 cubic yards),

- Strategic placement of pumping wells to extract the contaminated ground water from the aquifer,

- Storage of extracted ground water in a central collection tank for subsequent treatment in an above-ground system,

- Treatment of the contaminated ground water to meet Federal and State Standards for surface water discharge. Treated ground water would then be either discharged as effluent to the facility non-contact cooling system, or to a surface water discharge,

- Recommendation that local institutional controls, in the form of local zoning ordinances, be implemented in an attempt to control any future site use that could create an exposure pathway to subsurface soils,

- Recommendation that institutional controls be provided/maintained to restrict access to those portions of the aquifer which remain contaminated above cleanup levels, and

- Implementation of a long-term monitoring program to track the migration and concentrations of the contaminants of concern.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost effective. The selected remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable, and it satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as their principal element.

Because this remedy will result in hazardous substances remaining on site above health--based levels, a review will be conducted within five years after commencement of remedial action, and every five years thereafter, to ensure that the remedy continues to provide adequate protection of human health and the environment.

Constantine Sidamon-Eristoff
Regional Administrator

September 4, 1992
Date

ROD FACT SHEET

SITE

Site name: Facet Enterprises, Inc.

Site location: Village of Elmira Heights, Chemung County, New York

HRS score: 46.67

ROD

Selected remedy: Soil and Sediment - Off-site Shipment for Treatment and Disposal
Ground Water - Pump, filtration/precipitation, air stripping

Capital cost: $3,545,060

O & M cost: $1,305,596

Present-worth cost: $4,850,656

LEAD

United States Environmental Protection Agency

Primary Contact: J. Jeffrey Josephson (212) 264-4183

Secondary Contact: Kevin Lynch (212) 264-6194

Main PRPs: Purolator Products Company
Allied-Signal Corporation

WASTE

Waste type: VOCs, PAHs, PCBs, Metals

Waste origin: Industrial Disposal

Estimated waste quantity: At least 3,519 cubic yards sediment and soil and 4.7×10^8 gallons contaminated ground water

Contaminated mediums: Soil, sediment, and Ground water

RECORD OF DECISION
DECISION SUMMARY

Facet Enterprises, Inc.

Village of Elmira Heights, Chemung County, New York

United States Environmental Protection Agency
Region II
New York, New York

TABLE OF CONTENTS

SITE NAME, LOCATION AND DESCRIPTION

The Facet Enterprises, Inc. site includes a 31-acre parcel of land in the Village of Elmira Heights, Chemung County, New York. The Facet Enterprises facility property is bounded to the north by a municipal golf course, to the east by State Route 14, to the south by residential property along West 17th and West 18th Streets, and to the west by residential property and Robinwood Avenue. The Village of Elmira Heights is a mixture of residential, commercial, industrial, and wooded land, but the section in which the site is located is zoned primarily for residential and commercial use. The closest residences are within 60 feet of the present manufacturing facility to the south and west. (See Figure 1.)

Approximately one half of the facility property is currently developed. Between one third and one quarter of the facility property is comprised of one manufacturing plant and the foundation and cement slab of a former manufacturing plant, while the remainder of the developed property is comprised of parking areas or other small production buildings including a starter drive laboratory, a maintenance shop, a fuel pump test laboratory, a boiler room, and several other small buildings. (See Figure 2.)

The facility is not located on or adjacent to a New York State regulated wetland. Any existing Federally regulated wetlands at the Site will be delineated prior to conducting any remediation activities. No Federal or State endangered species have been identified at the site, and no critical habitats are present.

The Facet facility was constructed in 1895 and was used by the Eclipse Bicycle Company (Eclipse) for the manufacture of bicycles. In the early 1900s, Eclipse began manufacturing motorcycles and engine parts and changed its name to Eclipse Machine Company. During World Wars I and II, Eclipse manufactured military support parts, ammunition, airplane parts, and fuel pumps. In 1929, Bendix Aviation Corporation, later to become Bendix Corporation (Bendix), acquired control of Eclipse. Although the Eclipse name remained, Bendix controlled the company. From 1960 until 1975, Eclipse, as a division of Bendix, manufactured electric clutches and brakes.

Facet Enterprises, Inc. was organized as a result of an antitrust action between Bendix and the U.S. Federal Trade Commission in 1974. Purolator Products Company (Purolator) became the corporate successor to Facet in 1989 and maintains the Purolator name to date.

The following areas at the facility are known to have been used for disposal purposes based on the site history.

Area 1 - Plating wastes, oil sludges, and grinding wastes were disposed of in this area between 1960 and 1971. Liquid wastes may have also been disposed in this area; lime was dumped here in an attempt to neutralize the waste prior to covering it with soil.

Area 2 - Plating waste was thought to have been disposed of at Area 2 between 1960 and 1971. Attempts were apparently made to neutralize the waste prior to covering it with soil.

Area 3 - Plating waste, oil sludge, grinding waste and non-characterized liquids may have been disposed of at Area 3 between 1940 and 1965. After 1965, miscellaneous wastes (cinder blocks, metal grindings) were disposed of at Area 3 until 1980. During use, the area was periodically covered and graded. Leachate outbreaks have been noted at the base of this disposal area.

Area 4 - Oils and unknown liquid wastes were disposed of in this currently inactive lagoon between 1920 and 1971. Liquid from this area previously was discharged to the North Drainage Way via a swale which is now filled. In 1981 a soil sample collected from Area 4 contained polychlorinated biphenyls (PCBs) at 320 parts per million (ppm).

Area 5 - Area 5 was previously used as a sludge disposal area containing wastewater treatment units and sand filter beds; metal hydroxide sludge was disposed of in Area 5 until 1965. After 1965, sludge was spread over the surface. The area has been filled and seeded. Sampling conducted by NYSDEC in 1981 detected the presence of cadmium and chromium in excess of 100,000 ppm and copper in excess of 10,000 ppm.

Area 6 - This area, constructed in the early 1970s, is a small pond originally designed to collect seepage and runoff from Areas 1 and 2. Chromic acid may have been treated near this area.

Area 7 - Ash from the production facilities was stored at Area 7 from the early 1940s to the mid 1950s.

Area 8 - Sediments and oily soil have drained over time from a drain pipe from Area 4 into this area.

Area 9 - Ash from the production facilities was stored at Area 9 from the early 1940s to the mid 1950s.

Area 10 - Heat treatment water, non-contact cooling water, and possibly oils were disposed of in this lagoon. The lagoon is no longer active but a surface water impoundment remains in this area. This area is thought to have once been a filter bed.

Plant 2 Yard - Grinding chips, machinery oil, and drummed waste were stored in this area from as early as 1940. The area has been graded and seeded.

Oil/Water Separator - This area was used to segregate oil and particulates from runoff or treatment water at the facility. The oil/water separator is located at the southern boundary of the property.

Dry Wells - Up to five dry wells used for the disposal of liquid wastes and/or water from the facility are present at the facility. The dry wells are being closed pursuant to a consent order with the New York State Department of Envrionmental Conservation (NYSDEC).

Surface Water - In addition to the Area 10 lagoon and the Area 6 pond, Mays Creek, an unnamed drainage way south of the Facet facility, and a drainage way which drains surface water from the northern portion of the facility have all received industrial waste from production activities by way of surface run-off and point source discharge.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Several investigations of the facility have been conducted by EPA or NYSDEC since 1979. In 1979, an initial Facility inspection conducted by NYSDEC resulted in the implementation of remedial measures which included excavation of surface water diversions, covering of past disposal areas with soil, and construction of a leachate collection system. A facility inspection and sampling was conducted by USEPA in 1980, and additional sampling and investigation was conducted by NYSDEC during March and June 1981. These investigations indicated that volatile organics, inorganics, pesticides, and PCB compounds were present in surface soils, in soils and sediments in the disposal areas, and in surface water drainage streams at the facility.

The Site was first proposed for the National Priorities List on October 1, 1981 and was placed on the NPL on September 1, 1983. In 1983 a preliminary hydrogeologic investigation was conducted at the facility by Facet Enterprises, Inc. under an EPA Administrative Order pursuant to Section 3013 of the Resource Conservation and Recovery Act (RCRA). The investigation concluded that trichloroethylene (TCE) contamination in the ground water exceeded NYSDEC standards. In 1986, Facet Enterprises, Inc. agreed to conduct a Remedial Investigation /Feasibility Study (RI/FS) under a CERCLA Administrative Order (Allied-Signal Corporation, the corporate successor to Bendix Corporation, was also a signatory to this consent order). The 1986 draft RI concluded that TCE, perchloroethylene, 1,1,1-trichloroethane, 1,1-dichloroethane, trans -1,2-dichloroethene, 1,2-dichlorobenzene, trichlorofluoromethane, methylene chloride, acetone, PCBs, and polyaromatic hydrocarbons (PAHs) were present in Site soils. In addition, 14 volatile organic contaminants, pentachlorophenol, and 4 inorganics contaminants were detected in ground water at concentrations above NYSDEC standards.

Based upon a review of the 1986 RI, EPA concluded that additional Site characterization was required before the RI could be finalized. In 1990, Purolator began the necessary field work required to complete the RI. The findings of this field work are reported below.

Enforcement

Facet Enterprises, Inc. has conducted investigations under the following Administrative orders with the EPA:

1) Administrative Order RCRA II-3013-20201 -April 8, 1983 - Hydrogeological Investigation

2) Administrative Order CERCLA II-60205 - May 1986 - (Allied-Signal is also a signatory this Order). - Remedial Investigation/Feasibility Study

Facet Enterprises, Inc. has conducted investigations under the following Administrative order with the NYSDEC:

1) NYSDEC Consent Order under the Clean Water Act R8-0771-90-04 - Dry Well Investigation

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI report, FS report, and the Proposed Plan for the Site were released to the public for comment on May 27, 1992. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, New York and the information repositories at Village of Elmira Heights, Village Hall, 215 Elmwood Ave, Village of Elmira Heights, New York. The notice of availability for the above-referenced documents was published in the Elmira Star-Gazette on May 27, 1992. The public comment period on these documents was held from May 27, 1992 until June 27, 1992.

On June 16, 1992, EPA, the NYSDEC, and the New York State Department of Health conducted a public meeting at the Village of Elmira Heights Village Hall, to inform local officials and interested citizens about the Superfund process, to review current and planned remedial activities at the Site, and to respond to any questions from area residents and other attenders.

Responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V).

SCOPE AND ROLE OF OPERABLE UNIT

This Record of Decision outlines EPA's strategy to eliminate the threat to human health and the environment posed by contaminated ground water and contaminated soils and sediments present at the Site. Specifically, remediation of soil and sediment in disposal areas in concentrations above site specific cleanup levels will be conducted. The proposed remediation of ground water will treat contaminated ground water at the facility to meet Federal and State drinking water standards. No further operable units are currently planned for this site.

During the Spring of 1992, pursuant to the CERCLA Administrative Order, Purolator excavated and removed 469 drums buried in Disposal Areas 1,2,3, and 4. In addition, 2,250 tons of contaminated soil was excavated and 30,000 gallons of contaminated liquids were removed to be sent off-site for treatment and disposal at a permitted industrial waste landfill. The drum and soil excavation activities were conducted with oversight by EPA. Purolator and EPA collected confirmatory samples from the excavation floor in each of these disposal areas. Based on the data obtained during the Summer 1992, EPA will evaluate if further action is required.

Once the excavation of the drums and the contaminated soil from Disposal Areas 1,2, and 3 is completed, the potential threat that these materials pose to ground water will be removed. Final remediation of Disposal Area 4 is discussed in this ROD.

Dry well closure, which includes excavation of contaminated sediment and sludges, will be addressed by Purolator Products Company under the consent agreement with the NYSDEC.

The proposed actions to be undertaken at this Site, in conjunction with dry well cleanup actions currently under way under the supervision of the NYSDEC, will address the sources of ground water contamination and the principal threats posed by contaminated soils and sediments.

SUMMARY OF SITE CHARACTERISTICS

A. Site Geology and Hydrology

The Purolator facility lies along the western side of the Newtown Creek Valley. The unconsolidated sediments which underlain the western portion of the facility consist of sands, silts, and clays. In the eastern portion of the facility the unconsolidated sediments consist of outwash sands and gravels and may contain silts and clays. The ground-water flow direction, as determined by water level measurements taken at facility monitoring wells, is south easterly. Figure 3 illustrates ground-water flow direction measured during the summer of 1990. Figure 4 presents the estimated regional ground water flow direction presented in the Kentucky Avenue Wellfield Remedial Investigation Report. Figure 5 illustrates surface water drainage at the facility.

B. Nature and Extent of Contamination

The following section summarizes the known contamination at and near the facility as determined during the Remedial Investigation: This study consisted of the following: eighty-five soil samples were collected from the surface soils or from subsurface borings in known or suspected disposal areas; twenty-five sediment samples were collected from streams; ponds or lagoons at the facility or in streams adjacent to the facility; fourteen ground water samples were collected from monitoring wells or production wells at or near the facility; and 8 surface water samples were collected from streams or lagoons at the facility or in streams adjacent to the facility. Tables 1-11 present analytical data collected during remedial investigation activities. More detailed descriptions of the work can be found in the RI report.

Area 1/Area 2 - A total of 27 samples from these areas were collected for chemical analyses from depths ranging from 1 to 12 feet below ground level. Soil collected from one boring in Area 2 had elevated levels of contaminants. The analytical results indicate the presence of cadmium (351 ppm), chromium (2410 ppm), and copper (1120 ppm). The maximum TCE concentration in soil was 110 ppb. (Table 1)

Area 3 - A total of 12 samples were collected for chemical analyses from this area at depths from 8 to 14 feet below ground surface. Elevated levels of chromium (2110 ppm), cadmium (72.3 ppm), and copper (270 ppm) were found in soil samples. (Table 2)

Area 4 - A total of 13 samples from this area were collected for chemical analyses at depths ranging from 8 to 20.5 feet below ground surface. The soil borings in this area indicate that a layer of fill approximately 8 feet thick is saturated with oil product. Numerous volatiles and semi-volatiles were detected in Area 4 including toluene (210 ppb), PCB (Arochlor 1248) (35 ppm). (Table 3)

Area 5 - Three samples out of the 21 samples collected at depths ranging from 8 to 20 feet below ground surface from Area 5 had elevated levels of chromium (13,000 ppm). TCE was detected in 14 soil samples in concentrations up to 240 ppb. (Table 4)

Area 6 - Two surface soil samples collected from pond sediments had TCE in concentrations up to 130 ppb. Elevated levels of arsenic (588 ppm), cadmium (79 ppm), and chromium (1220 ppm) were also detected. Confirmatory sampling conducted during the FS, completed in order to determine the presence of Resource Conservation and Recovery Act (RCRA) hazardous waste, revealed that a sediment sample exhibited the characteristic for cadmium waste. (Table 5)

Area 7 - Three surface soil samples were collected from this area. PCB compounds were detected at concentrations ranging from 0.32 ppm to 5.3 ppm. Semi-volatile organics were detected in the one surface sediment sample at concentrations up to 22 ppm. (Table 5)

Area 8 - Area 8 soils contained elevated concentrations of eighteen semi-volatile organic compounds at concentrations up to 69 ppm (benzo(b)fluoranthene). PCBs were detected in concentrations up to 11 ppm. (Table 5)

Area 9 - The one surface soil sample collected from Area 9 contained 1 ppm PCBs. (Table 5)

Area 10 - Two sediment samples and one duplicate sample was collected from Area 10. PCBs were detected in sediments in concentrations up to 14 ppm. Cadmium (796 ppm), chromium (10,100 ppm), and copper (1,110 ppm) were detected in these surface sediment samples. (Table 5)

Plant 2 Yard - Soil sampling (24 samples including duplicate samples in soil boring samples collected from 0-8 feet below the ground surface.) conducted during the 1986 RI field work detected TCE in concentrations ranging from 3.4 ppb to 253 ppb. In addition the analyses revealed tetrachloroethylene (150 ppb), 1,1,1-trichloroethane (48.1 ppb), and 1,1 dichloroethane (8.58 ppb). (Table 6)

Oil/Water Separator - Twenty two semi-volatile compounds (8 of which were in concentrations over 100,000 ppb) were detected in soil collected from near the oil/water separator. Soil samples contained slightly elevated levels of cadmium (41.4 ppm), copper (502 ppm), and zinc (675 ppm). (Table 7)

Dry Wells - Sampling and analysis of dry well liquids, sludges, and sediment has been conducted by Purolator as a part of a consent order with the NYSDEC. The sampling has detected liquid with PCB concentrations up to 31 ppm. TCE was present in sludge material in concentrations up to 60 ppm. Lead was present in concentrations up to 5500 ppm, and chromium was present in concentrations of 450 ppm in dry well sludge. Benzene (1390 ppb), toluene (3050 ppb), chlorobenzene (9260 ppb), ethylbenzene (3330 ppb), p-xylene (3780 ppb), o-xylene (3780 ppb), and 1,3-dichlorobenzene (4940 ppb) were also detected in dry well sludges or liquids.

Unnamed Drainage Swale South of Facility (Also known as the Heights Drainage Swale) - Twenty-one soil and sediment samples were collected from 0 - 6 feet below ground surface from this area. Soil samples and boring data collected from the drainage way south of the Facet facility contained the semi-volatiles benzo(a)anthracene (11 ppm), benzo(a)pyrene (11 ppm), benzo(b)fluoranthene (30 ppm), benzo(k) fluoranthene (30 ppm), and ideno(1,2,3-cd)pyrene (6 ppm); PCB 1254 (6.8 ppm), and the inorganics arsenic (23 ppm) and chromium (3920 ppm) in elevated concentrations. (Table 8)

North Drainage Way - Arsenic (320 ppm) was detected in the North Drainage Ditch in a surface sediment sample collected in July 1980. (Table 9)

Buried Drums - A magnetometry survey and interviews with employees indicated that buried drums were present at the facility. Based on the magnetometry survey results, Purolator Products Company, with oversight by EPA, removed 469 drums from Disposal Areas 1,2,3 and 4. In addition, at least 2,250 tons of contaminated soil have been excavated, and approximately 30,000 gallons of contaminated water have been contained for off site treatment and disposal.

Surface Water Sampling - Seven surface water samples were collected from surface water bodies at the Site. TCE was detected at the oil/water separator effluent at up to 26 ppb, and chloromethane was present at 24 ppb. TCE was detected in Mays Creek surface water at 11 ppb. Surface water samples collected from Area 10 contained elevated concentration of cadmium (77.8 ppb), chromium (2190 ppb), and zinc (894 ppb). (Table 10)

Ground water - A total of 13 monitoring wells were installed at or near the facility in the unconsolidated sediments below the Site. The wells vary in depth from 12.5 feet to 49.2 feet below ground surface. Fourteen organics: n-butylbenzene (13 ppb), 1,1-dichloroethene (160 ppb), ethylbenzene (12 ppb), isopropylbenzene (8 ppb), 4-Isopropyltoluene (12 ppb), methylene chloride (69 ppb), n-propylbenzene (22 ppb), 1,1,1-trichloroethane (13 ppb), trichloroethene (190 ppb), trichlorofluoromethane (19 ppb), 1,2,4-trimethylbenzene (18 ppb), 1,3,5-trimethylbenzene (81 ppb), vinyl chloride (33 ppb Spring 1991 sampling), and xylenes (14 ppb), and six inorganic contaminants: cadmium (55.8 ppb), chromium (1540 ppb), copper (1200 ppb), lead (146 ppb), mercury (5.6 ppb), zinc (1180 ppb) were detected in ground water at the facility at concentrations in excess of State and Federal standards for potable drinking water sources. (Table 11)

In addition, the concentrations of antimony (45.8 ppb), beryllium (4.2 ppb), and nickel (602 ppb) exceeded either NYSDEC guidance values or EPA proposed Maximum Contaminant Levels (MCLs), the latter of which were promulgated under the Federal Safe Drinking Water Act.

Figures 6 and 7, present respectively, the sampling results of facility groundwater monitoring wells with volatile organic contaminants or inorganic contaminants present.

The ground water contamination flows in the direction consistent with the regional ground water flow direction. The facility contamination contributes to the contamination within the Newtown Creek Aquifer which is classified by EPA a Class IIa aquifer. See Figure 8.

Floating Product - EPA detected a layer of pure product floating on top of the water table (approximately 20 feet below the ground surface) at monitoring well D-5 located on the facility property. (See Figure 2).

SUMMARY OF SITE RISKS

EPA conducted a baseline risk assessment to evaluate the potential risks to human health and the environment associated with the Facet Enterprises, Inc. Site in its current state. The Risk Assessment focused on contaminants in the soil, sediment, surface water, ground water and air which are likely to pose significant risks to human health and the environment. The summary of the contaminants of concern (COC) in sampled matrices is listed in Table 12.

The baseline risk assessment evaluated the health effects which could result from exposure to contamination as a result of ingestion of ground water, inhalation of ground water contaminants during showering, ingestion of sediments in the drainage swale south of the facility, incidental ingestion of sediments while wading in the North Drainage way, ingestion of on site soils, ingestion of sediments in Mays Creek, and incidental ingestion of sediments in areas 6 and 10 lagoons. Both current and future land use at the facility was considered to be industrial with exposure scenarios for on site workers and trespassers. For Mays Creek and the unnamed drainage way south of the facility, exposure to small children and adults was considered because these areas are generally more accessible to the public. A total of 12 exposure pathways were evaluated under possible on site current and future land-use conditions. The exposure pathways considered under current and future uses are listed in Table 13. The reasonable maximum exposure was evaluated.

Under current EPA guidelines, the likelihood of carcinogenic (cancer-causing) and noncarcinogenic effects as a result of exposure to site chemicals are considered separately. It was assumed that the toxic effects of the site-related chemicals would be additive. Thus, carcinogenic and noncarcinogenic risks associated with exposures to individual compounds of concern were summed to indicate the potential risks associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses). Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of mg/kg-day, are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (*e.g.*, the amount of a chemical ingested from contaminated drinking water) are compared to the RfD to derive the hazard quotient for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds across all media that impact a particular receptor population.

An HI greater than 1.0 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media. The reference doses for the compounds of concern at the Site are presented in Table 14. A summary of the noncarcinogenic risks associated with these chemicals across various exposure pathways is found in Table 15.

It can be seen from Table 5 that the HI for noncarcinogenic effects from ingestion of untreated ground water exceeded one (HI = 46) for reasonable maximum exposure for children, therefore, noncarcinogenic effects may occur from the exposure routes evaluated in the Risk Assessment. The noncarcinogenic risk was attributable to several compounds including vinyl chloride, cis-1,2 dichloroethylene, TCE, antimony, arsenic, cadmium, chromium, mercury, and nickel. Furthermore, it can be seen from Table 15 that the HI for noncarcinogenic effects from ingestion of sediment in the unnamed drainage swale (also known as the Heights drainage swale) exceeded one (HI = 3.5) for reasonable maximum exposure for children, therefore, noncarcinogenic effects may occur from the exposure routes evaluated in the Risk Assessment. The noncarcinogenic risk was attributable to several compounds including chromium..

Potential carcinogenic risks were evaluated using the cancer slope factors (Sfs) developed by EPA for the chemicals of potential concern. Sfs have been developed by EPA's Carcinogenic Risk Assessment Verification Endeavor (CRAVE) for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. Sfs which are expressed in units of $(mg/kg\text{-}day)^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The SF for each indicator chemical is presented in Table 16.

For known or suspected carcinogens, EPA considers excess upper bound individual lifetime cancer risks of between 10^{-4} to 10^{-6} to be acceptable. This level indicates that an individual has not greater than a one in ten thousand to one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year period under specific exposure conditions at the Site. The total cancer risks at the Facet Enterprises, Inc. Site are outlined in Table 17. In addition, MCLs are currently exceeded for several hazardous substances in ground water. Although the risks posed by the soils are within EPA's acceptable risk criteria, contamination in the soils, if not addressed, will likely continue to contribute to further contamination of the ground water at the Site.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

There are, also, additional uncertainties unique to the Site that would serve to underestimate Site-related risks. Specifically, they are: the presence of previously undetected drums and associated contaminated soils; an on-site "reservoir" of contaminants that may potentially migrate from the facility property; designation of future land use at the facility property as industrial rather than residential; and the contribution to risk resulting from - but not quantified, as a result of limited scientific data - dermal exposure to soil-borne contaminants.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the Risk Assessment Report.

Current federal guidelines for acceptable exposures are a health Hazard Index equal to 1.0 and an individual lifetime excess carcinogenic risk in the range of 10^{-4} to 10^{-6}. Some of the on site soil and sediment risks fall within EPA's acceptable risk range. However, EPA has determined that remedial action is necessary in these areas due to: the uncertainties as mentioned above, the contribution of some of the chemicals to the ground water contamination, and that unless these soils and sediments are remediated, they would continue to migrate off the facility property and accumulate which would likely result in an unacceptable risk to the public.

Actual or threatened releases of hazardous substances from this Site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health, welfare or the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment; they specify the contaminant(s) of concern, the exposure route(s), receptor(s), and acceptable contaminant level(s) for each exposure route. These objectives are based on available information and standards such as applicable, or relevant and appropriate requirements (ARARs) and risk-based levels established in the risk assessment.

The cleanup levels have been chosen for each area where an unacceptable exposure risk was determined or from data which indicates that a disposal area contributes to the groundwater contamination. These cleanup levels are derived from the point of departure, as defined in the NCP, of 1.00×10^{-6} or a Hazard Index of 1 and using the same risk modeling assumptions used in the risk assessment, thereby yielding a cutoff value below which the ingestion of sediment at the Site is no longer a risk.

Soils and Sediments - The following remedial action objectives have been determined for clean-up of soils and sediments at the Site.

Surface Soils (0 to 2 feet below ground surface) and Sediments

	Facility Surface Soils/Sediments	Unnamed Drainage Way and Mays Creek Soils/ Sediments
Semivolatiles (ppm)		
Benzo (a) anthracene	20	3
Benzo(b)fluoranthene	20	3
Benzo (k)fluoranthene	43	7
Benzo(a)pyrene	3	1
Indeno(1,2,3-cd)pyrene	12	2

Dibenzo(a,h)anthracene	3	1
PCBs (ppm)	10	1
Inorganics (ppm)		
Arsenic	19	7
Chromium	-	1110

Cleanup levels are lower for the Unnamed drainage way and Mays Creek soil/sediment than for facility soils and sediment because there is a greater potential for residential exposure (as opposed to industrial exposure) in areas off the facility property.

Subsurface Soils (> 2 ft below ground surface)

Facility Subsurface Soil

Semivolatiles (ppm)	
Benzo(a)anthracene	54
Benzo(b)fluoranthene	55
Benzo(k)flouranthene	118
Benzo(a)pyrene	8
Indeno(1,2,3-cd)pyrene	33
PCBs (ppm)	25
Inorganics (ppm)	
Arsenic	52

The facility subsurface soils cleanup levels are higher than facility surface soils cleanup levels because the potential for human exposure to subsurface soils is restricted to occasional exposure to utility workers.

Soils and Sediments Which May Pose a Threat to the Aquifer

Analytical data from soils and sediment collected from Disposal Areas 6, 10, and 5 indicate that these areas may be contributing to the Site ground water contamination. For these areas, soils and sediments will be analyzed using the TCLP method to determine this potential, and soils or sediments which do not pass this test will be remediated. In addition, preliminary confirmatory data from the bottom of the excavation in drum removal areas 1,2,3 indicate that a small volume of soils remaining pose a threat to ground water quality. These areas will be re-excavated, and confirmatory sampling will be re-conducted.

Ground water

Cleanup levels for ground water are established by federal and State laws and regulations. According to RI data, the aquifer beneath the Site is contaminated with a variety of chemicals. The aquifer is designated by EPA as a Class IIa aquifer and New York State designates the aquifer as a class GA aquifer, or a potential source of potable water. This designation requires that applicable or relevant and appropriate requirements (ARARs) for drinking water be met. Cleanup levels are thereby driven by MCLs established by State and federal regulations. See Table 8. For example, the maximum concentration of the organic chemical TCE in ground water is 190 ppb, while the MCL for TCE for the aquifer is the NYSDEC standard of 5 ppb. For chromium, an inorganic chemical, the maximum concentration in ground water at the facility is 1540 ppb, while the MCL for chromium is the NYSDEC standard of 50 ppb.

DESCRIPTION OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions, alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

This Record of Decision evaluates in detail eight soil and sediment and two ground water remedial alternatives for addressing the contamination associated with the Site. The time to implement reflects only the time required to construct and/or implement the remedy and does not include the time required to design the remedy, negotiate with the responsible parties, if appropriate, or procure contracts for design and construction.
These alternatives are:

MEDIA 1 and 2: SOILS AND SEDIMENTS

Alternative 1 - No Action

Capital Cost: $ 0
Annual O&M Costs: $0
Present Worth: $ 0
Time to Implement: Could be implemented immediately.

The Superfund program requires that a "no action" alternative be evaluated at every site to establish a baseline for comparison. Under this alternative, a public awareness program concerning surface soil contamination would be implemented, including conducting public meetings and posting warning signs. The Site would be reviewed every five years to evaluate the protectiveness of the remedy.

Alternative 2 - Access Restriction

Capital Cost: $9,750
Annual O&M Costs:$0
Total Cost: $9,750
Time to Implement: Approximately 6 months

This alternative consists of deed restrictions to restrict future uses of the Facility to industrial operation, to prohibit the extraction of ground water to be used as drinking water, to provide maintenance of the fences surrounding the facility, including the unnamed drainage way south of the facility, and to continue 24-hour security. The Site would be reviewed every five years to evaluate the protectiveness of the remedy.

Common Action for Sediment and Soil Remedial Alternatives

Six of the remedial alternatives evaluated for remediation of surface, subsurface soils and sediment contain the common actions of removal and de-watering of sediment, consolidation of soil, and product recovery, as described below:

1) Excavation of sediment from May's Creek, the Unnamed Drainage way, the North drainage way, and Area 10 Lagoon. The sediment would be staged in one area and de-watered.

2) Excavation of surface soils from Areas 6,7, and 8 and subsurface soil from the oil/water separator and Area 4.

(Volume calculations of the amount of soils and sediments exceeding cleanup levels, which were performed during the FS, indicate that an estimated 3,480 cubic yards of contaminated soil and sediment must be removed to reduce risks posed by the contaminated soil to the 10^{-6} range. In addition, it is estimated that 55 cubic yards of cadmium contaminated soils must be removed from disposal Area 6 to remove the potential threat to ground water posed by these contaminated soils.)

3) Confirmation sampling to ensure remediation goals are obtained.

4) Replacement of existing sediment and soil with clean fill.

5) Implementation of a free-product investigation and remediation program. This program will investigate the source (likely to be contaminated soils) of the floating product detected at monitoring well D-5, and following this study, source control and product recovery will be performed.

6) Access restrictions in the form of existing fences and facility security. This prevents inadvertent trespassing onto the industrial property.

7) Collection of additional soil samples from Area 5 and analysis for TCLP. Based on the TCLP data, a RCRA cover pursuant to 40 CFR Part 264 would be installed over the contaminated areas of Disposal Area 5. A fence with a gate would be placed around the disposal areas. If the volume of contaminated material is very small, EPA will consider off-site treatment and disposal of this material.

8) Collection of additional samples from Area 4 so that wastes may be segregated for proper disposal of PCB-contaminated soils.

9) Installation of a geotextile membrane under rip-rap in May's Creek. This will be installed as a protective measure for aquatic species exposure to low levels of cadmium which have been detected.

Alternative 3 - Consolidate Soil and Sediment, Install RCRA Cover

Capital Cost: $913,094
Annual O&M Costs: $14,300
Present Worth of O&M: $134,849
Total Cost: $1,047,943
Time to Implement: 1 year

The common actions described above would be completed prior to clearing vegetation and grading in a portion of the western half of the facility property selected for the disposal and capping. The consolidated and de-watered sediment would be placed in this selected area. A RCRA cover pursuant to 40 CFR Part 264 would be installed over the soil and sediment. A RCRA cover includes two feet of soil capable of supporting adequate vegetation, a six inch thick drainage layer or synthetic drainage net, a 60 mil geotextile membrane liner, non-woven geotextile, and a one-foot thick layer of intermediate cover above consolidated soil and sediment. A fence with a gate and lock would be installed around the RCRA cover area. Post closure care would include maintenance of the RCRA cover and restricting of facility operations in the area of the RCRA cover.

Alternative 4 - Consolidate Soil and Sediment, Stabilize, Install RCRA Cover

Capital Cost: $1,447,869
Annual Operation and Maintenance (O&M) Costs: $14,300
Present Worth of O&M: $134,849
Total Cost: 1,582,718
Time to Implement: 1 year

The common actions described above except de-watering would be completed prior to clearing vegetation and grading in a portion of the western half of the facility property selected for the disposal of the stabilized material. A treatability study would have to be conducted in order to determine the most effective stabilization agent. Stabilization agents include portland cement, lime, cement kiln dust, and commercially available materials. The RCRA cover and fencing would be identical to that described for Alternative 3.

Alternative 5 - Segregate Soil and Sediment, Use Low Temperature Thermal Treatment, Stabilize, Install RCRA Cover

Capital Cost: $2,207,215
Annual O&M Costs: $14,300
Present Worth of O&M: $134,849
Total Cost: $2,342,064
Time to Implement: 2 years

The common actions as described above would be conducted. The soil contaminated with inorganics in Area 7 would be segregated from the remainder of the excavated soil and sediment. The Area 7 soil exceeds cleanup levels for metals (arsenic) but not for PAHs and PCBs. Soil and sediment would be treated using a low temperature thermal treatment system. The excavated soil and sediment from Area 7 would then be mixed with the thermally treated material and would be stabilized following a stabilization treatability study. An area in the western portion of the facility property would be selected for placement of the consolidated soil, cleared of vegetation, and graded. The RCRA cover and fencing would be identical to that described for Alternative 3.

Alternative 6 - Consolidate Soils and Sediment, Dispose of Off-Site at Industrial Waste Landfill

Capital Costs; $2,811,931
Annual O&M Costs: $0
Total Cost: $ 2,811,931
Time to Implement: 1 year

This alternative consists of all the common actions described above. The excavated soil and de-watered sediment would be staged in a central area. After consolidation, all the soil and sediment would be transported to a RCRA approved industrial waste landfill.

Alternative 7 - Consolidate Soil and Sediment, Build an On site RCRA-Disposal Landfill

Capital Costs: $ 1,052,252
Annual O&M Costs: $14,300
Present Worth of O&M: $134,849
Total Cost: $1,187,101
Time to Implement: 1 year

This alternative consists of all the common actions described above. An area in the western portion of the Facility property would be selected for construction of the on-site RCRA landfill (approximately 10,340 square feet are required). The on-site RCRA landfill would be constructed as follows: a multi-liner would be constructed from top to bottom consisting of: 1 foot protective cover, non-woven geotextile, 60 mil- geotextile membrane, non-woven geotextile, 1-foot drainage layer, non-woven geotextile, 60 mil- geotextile membrane, non-woven geotextile, 6" compacted sub-base. The liners would be designed and constructed to meet 40 CFR and NYS 6 NYCRR 373-2 requirements. The contaminated soil would be placed over the liner and non-impacted soil would be placed between the contaminated soil and the RCRA cover. The RCRA cover and fencing would be identical to that described for Alternative 3.

Alternative 8 - Consolidate Soil and Sediment, Ship Off-site For Treatment and Disposal

Capital Costs: $ 2,462,334
Annual O&M Costs:$0
Total Costs: $2,462,334
Time to Implement: 1 year

This alternative consists of all the common actions described above. The soil and de-watered sediment would be staged in a central area. After consolidation, all the soil and sediment would be transported to an approved treatment and/or disposal facility. Treatment would be conducted in order to meet RCRA Land Ban Regulations. This alternative includes TSCA waste (PCBs > 50 ppm) disposal in a secure TSCA double lined landfill facility (approximate volume 1,275 cubic yards). RCRA waste (e.g. PCBs < 50 ppm, Arsenic > 5 ppm, Chromium > 5ppm) would be stabilized to prevent leaching of metals and disposed of in a secured RCRA lined facility (approximately 2,124 cubic yards as determined as the reasonable likely quantity in the Feasibility Study), and non-RCRA wastes would be disposed of in an industrial waste landfill (approximate volume 120 cubic yards). Based on soil estimates of 3000 to 6000 cubic yards, approximately 150 to 300 trucks would be expected to leave the facility. The cost estimate is based on the 2,124 cubic yards and may vary depending on the final volume actually excavated.

MEDIUM 3: Ground Water

Ground water analyses conducted during the RI indicate that 14 organics and 7 inorganics are present in concentrations above cleanup levels at the facility.

The ultimate goal of the EPA Superfund Program's approach to ground water remediation, as stated in the NCP (40 CFR Part 300), is to return usable ground waters to their beneficial uses within a time frame that is reasonable. Therefore, for this aquifer, which is classified by New York State as a potential drinking water source, the final cleanup levels will be federal and State drinking water standards. The remedial alternatives for ground water include no action and ground water treatment.

Alternative 9 - No Action

Capital Costs: $12,000
Annual O&M Costs: $14,300
Present Worth of O&M: $134,849
Total Costs: $146,849
Time to Implement: At least 30 years

As previously stated, the Superfund program requires that a "no action" alternative be evaluated at every site to establish a baseline for comparison. Under this alternative, a public awareness program concerning ground water contamination would be implemented, including conducting public meetings and posting warning signs. Institutional controls would be implemented to prevent untreated ground water use as a source of potable water at the Site. Long-term surface water and ground water monitoring would be included to track any contaminant migration. The Site would be reviewed every five years to evaluate the protectiveness of the remedy.

Alternative 10 - Ground water Treatment

Capital Cost: $1,082,726
Annual O&M Cost: $153,419
Present Worth of O&M (20 years): $1,305,596
Total Costs:$ 2,388,322
Time to Implement: Approx 20 years

This alternative involves the pumping and treatment of contaminated ground water with the goal of achieving federal and state drinking water cleanup levels. Treatment will consist of air stripping the extracted water to remove VOCs and, if necessary, metals removal by either filtration or precipitation. Air emission treatment, if necessary, will be installed to meet 6 NYCRR Parts 200, 201, and 212 regulations and New York State Air Guide 1. See Figure 9. The exact treatment specifications required will be determined during the remedial design. Treated ground water will be discharged to the non-contact cooling system at the plant, or to surface water in accordance with the State Pollutant Discharge Elimination System requirements. The costs are based on pumping and treating 30 gallons per minute. It is possible that higher pumping rates will be required to contain and/or capture contamination in ground water at the facility. The exact pumping rate will be determined during the design stage. Recent studies have indicated that pumping and treatment technologies may contain uncertainties in achieving concentrations required under Federal and State standards over a reasonable period of time. However, these studies also indicate significant decreases in contaminant concentrations early in the system implementation, followed by a leveling out. For these reasons, this alternative stipulates contingency measures, whereby the ground water extraction and treatment system's performance will be monitored on a regular basis and adjusted as warranted by the performance data collected during operation. Modifications may include any or all of the following:

a) at individual wells where cleanup goals have been attained, pumping may be discontinued;

b) alternate pumping at wells to eliminate stagnation points;

c) pulse pumping to allow aquifer equilibration and to allow adsorbed contaminants to partition into ground water; and

d) install additional extraction wells to facilitate or accelerate cleanup of the contaminant plume.

If it is determined, on the basis of the preceding criteria and the system performance data, that certain portions of the aquifer cannot be restored to their beneficial use in a reasonable time frame, all of the following measures involving long-term management may occur, for an indefinite period as a modification of the existing system:

a) engineering controls such as physical barriers including trenches, source control measures, or long-term gradient control provided by low level pumping, may be implemented as containment measures;

b) chemical-specific ARARs will be waived for the cleanup of those portions of the aquifer which cannot be restored based on the technical impracticability of achieving further contaminant reduction;

c) institutional controls will be provided/maintained to restrict access to those portions of the aquifer which remain above cleanup levels;

d) continued monitoring of specified wells; and

e) periodic reevaluation of remedial technologies for ground water restoration.

The decision to invoke any or all of these measures may be made during a periodic review of the remedial action, which will occur at intervals of no less often than every five years after the initiation of the operation.

All costs and implementation times are estimated.
Remedial design period is not included in implementation times.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative was assessed utilizing nine evaluation criteria as set forth in the NCP and OSWER Directive 9355.3-01. These criteria were developed to address the requirements of Section 121 of CERCLA to ensure all important considerations are factored into remedy selection decisions.

The following "threshold" criteria are the most important, and must be satisfied by any alternative in order to be eligible for selection:

1. *Overall protection of human health and the environment* addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. *Compliance with ARARs* addresses whether or not a remedy would meet all of the applicable, or relevant and appropriate requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

The following "primary balancing" criteria are used to make comparisons and to identify the major trade-offs between alternatives:

3. *Long-term effectiveness and permanence* refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. *Reduction of toxicity, mobility, or volume through treatment* is the anticipated performance of a remedial technology, with respect to these parameters, that a remedy may employ.

5. *Short-term effectiveness* addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation periods until cleanup goals are achieved.

6. *Implementability* is the technical and administrative feasibility of a remedy, including the availability of materials and services needed.

7. *Cost* includes estimated capital and operation and maintenance costs, and the present-worth costs.

The following "modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

8. *State acceptance* indicates whether, based on its review of the RI/FS and the Proposed Plan, the State supports, opposes, and/or has identified any reservations with the preferred alternative.

9. *Community acceptance* refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports. Factors of community acceptance to be discussed include support, reservation, and opposition by the community.

A comparative analysis of the remedial alternatives based upon the evaluation criteria noted above follows.

Overall Protection of Human Health and the Environment

Soils and Stream Sediments: All of the alternatives, with the exception of the no action alternative and access restriction alternative (Alternatives 1 and 2), would provide adequate protection of human health and the environment by eliminating or controlling risk through containment, removal, or treatment.

Alternatives 1 and 2 are not an acceptable remedial option given that the current risk from PAHs, PCBs, and inorganics posed by the Site exceeds the acceptable risk range of 10^{-4} to 10^{-6} in certain areas of the Site. Therefore, since Alternatives 1 and 2 do not meet this threshold criterion, they will not be discussed further in this section.

Ground water: Only the treatment alternative (Alternative 10) for ground water attempts to provide adequate protection of human health and the environment by reducing contaminant levels to cleanup levels. Although there is no current exposure pathway for ground water use at the facility, the no action alternative is not protective of public water supplies because it will not prevent the migration of contaminants within the Newtown Creek Aquifer. Consequently, and in accordance with EPA ground water policy as set forth in the NCP, Site remediation is warranted to restore ground water to its beneficial use. Therefore, since Alternative 9 (no action) does not meet this threshold criterion, it will not be discussed further.

Compliance with ARARs

Soils and Stream Sediments: Alternatives 3,4,5,6,7, and 8 provide containment or treatment as a means of eliminating potential exposures.

Land Disposal Restrictions (LDRs) are chemical- and action-specific ARARs that are triggered by the placement of wastes regulated under RCRA. LDRs require that excavated hazardous wastes be treated to acceptable levels before land disposal. For non-listed wastes, on-site or off-site disposal of treated wastes is permitted provided the wastes are not, after treatment, RCRA characteristic hazardous wastes. Soils in Area 6 contain hazardous waste and must therefore be treated so that the contaminants remaining in the leachate (as determined by TCLP) are less than the Toxicity Characteristic limit so as to no longer be considered hazardous waste and therefore be eligible for disposal. Area 5 contains listed hazardous waste, and LDR restrictions would prevent any land disposal of these materials. The LDR requirements, however are not triggered if the material is contained without excavation with a RCRA cover. Alternative 8 would meet Land Disposal Restrictions for all wastes while Alternatives 3 and 6 would not.

One sample from Disposal Area 4 indicated PCBs at a concentration of 320 ppm. Therefore, the potential exists that additional soils and /or sediments will be encountered with concentrations above 50 ppm. For these sediments or soils, Alternative 8, which includes excavation, segregation and off site disposal in a TSCA regulated landfill, would meet TSCA ARARs.

Alternative 7 would not meet New York State requirements as set forth at 6 NYCRR 373-2 for all contaminated soil or sediments because ground water must be greater than 10 feet from a landfill's cell bottom and because the area proposed for the landfill is a ground water recharge zone. Perched ground water was encountered at 4-5 feet below the ground surface during drum excavation activities in Disposal Areas 1 and 2 and therefore this requirement cannot be satisfied.

Other action-specific and location-specific ARARs that are applicable or relevant and appropriate would be met under the selected alternative (Table 9). Examples include Occupational Safety and Health Administration (OSHA) Standards for Hazardous Responses and New York RCRA Hazardous Waste Facility Requirements for the handling and storage of hazardous wastes.

Ground water: According to the federal site-specific classification scheme, the ground water at the Site is Class 2A, which is potential drinking water. New York State classifies the Site ground water "GA" which indicates that the underlying aquifer is a potential drinking water aquifer. Safe Drinking Water Act (SDWA) MCLs are federal chemical-specific ARARs as are NYSDEC Class GA Ground water Quality Standards.

Alternative 10 attempts to meet these ARARs; if ARARs are demonstrated to be unattainable after implementation of a ground water extraction and treatment system, the contingency exists for a waiver of these ARARs, as outlined in the Summary of Alternatives section.

Alternative 10, ground water treatment, would also meet action-specific ARARs. Location-specific ARARs that are applicable or relevant and appropriate would also be met under the preferred alternative. Examples include OSHA Standards for Hazardous Responses and New York State Pollutant Discharge Elimination System (SPDES) Requirements for Site Runoff, Surface Water and Ground Water Discharge Limits (Table 9).

Long-term Effectiveness and Permanence

Soils and Stream Sediments: Alternative 8 would be both effective and permanent once the construction phase is complete because the potential risks posed by the contaminated soil and sediments would be removed and the contaminated soil areas would be restored to ambient conditions. Alternative 8 will result in transporting additional material to an existing off-site disposal facility as opposed to creating a new disposal facility on-site, thereby restricting future uses of that on site piece of property. Each of the remaining alternatives offer long-term effectiveness and some degree of permanence by removing the exposure pathway or treating the contaminated materials.

Ground water: Alternative 10 is effective and permanent in that the remedial goal is to achieve ARARs and the pumping and treatment would remove the ground water contamination and prevent further negative impacts to the Newtown Creek Aquifer.

Reduction of Toxicity, Mobility, or Volume

Soils and Stream Sediments: Alternative 3 provides no reduction in toxicity or volume because of the absence of treatment, but it would reduce the mobility of contaminants in the soil because they would be contained and no longer exposed for transport by wind or water erosion.

Alternatives 4 and 8 would reduce the mobility of inorganic contaminants through treatment. These alternatives may increase the total volume of waste material. No reduction in toxicity of contaminated soils or sediments would occur under Alternatives 3,4,6, 7 or 8. Only Alternative 5 meets this criterion fully.

Ground water: Alternative 10, pumping and treatment, would contain the ground water contaminants thereby reducing mobility and the ability of contaminants to migrate into the Newtown Creek Aquifer. The treatment process would reduce contaminant concentrations in the treated ground water to below surface water discharge standards and would have the goal of reducing contaminant concentrations in the aquifer to below ARARs, effectively diminishing both toxicity and volume.

Short-term Effectiveness

Soils and Stream Sediments: The short-term effectiveness of all the alternatives is high since each alternative involves relatively little construction and implementation. Although the potential for dust release is higher for Alternative 8 than for on-site alternatives, this alternative is neverthless effective in regard to this criterion. Reliable technologies would be used in the excavation, treatment, transport, and consolidation phases to ensure that any dust releases would be minimized.

Ground water: The short-term effectiveness of Alternative 10 is high since there is no exposure to contaminated ground water during implementation. Any short-term risks are derived from the potential of constructing and using a ground water well on site before institutional controls are in place, which is considered highly unlikely since the Site is provided with water from the town municipal system. Implementation of Alternative 10 would not result in any exposures through proper operational procedures. The estimated time for implementation of the construction phase for the preferred alternative is 24 months, with a minimum of 20 years of monitoring to complete the remedial action.

Implementability

Soils and Stream Sediments: Alternative 3 is technically easy to implement, although it requires maintenance to remain effective.

Alternative 8, excavation and off-site disposal after treatment, utilizes technologies that are readily implementable. The equipment and personnel required for this alternative are readily available. The removal of all surface soil and sediment will require approximately 150 to 300 trucks leaving the facility.

Treatment alternatives 4 and 5 would require treatability studies to ensure effectiveness, and Alternative 5 must be able to meet NYS air regulations prior to full scale operation.

Ground water: Alternative 10 uses standard equipment and well developed technologies that are commercially available. Treatment alternatives for the extracted ground water would require treatability testing during remedial design. The small volume of residuals from the construction of this alternative would be transported off-site for disposal. However, contingencies will be included to maximize the pump and treatment system's effectiveness in realizing this goal.

Cost

Soils and Stream Sediments: Based on the RI data and the FS evaluation, the cost of treating soils and sediments to meet LDR's, prior to off-site disposal in an Industrial Waste Landfill (Alternative 8) is not substantially higher than the cost of the on-site disposal and treatment alternatives (Alternative 4 and 5). The cost of off site treatment is higher than construction of a RCRA cell for treated wastes, but removal and treatment provides for permanent removal of the contaminants.

The estimated present worth cost of the selected Alternative #8 is $2,462,334. The present worth costs for soil and sediment remediation ranged from $9,750 for Alternative 2 to $2,811,931 for Alternative 6.

ɔund water: The actual cost of Alternative 10 could be considerably less depending on ether the contingency measures are invoked after initial implementation, or if EPA :ides that the treatment system should be operated for more than 20 years.

ɜ thirty year present worth cost of the no action alternative is $146,849, while the twenty ɪr (estimated time for remediation) present worth cost of the treatment alternative is 714,721. Individual cost breakdowns are included in the Summary of Remedial ɜrnatives section of this Proposed Plan.

ɪte Acceptance

ɜ State of New York concurs with the preferred alternatives presented in this Record of cision.

mmunity Acceptance

ɜ Public Comment Period on the Proposed Plan for the Site was held from May 27, 1992 ɔugh June 27, 1992. In addition, a Public Meeting was held at the Village of Elmira ights Village Hall on June 16, 1992 to discuss, answer questions about, and accept nments on the Proposed Plan. No negative comments regarding EPA's Proposed Plan re made by the public during the Public meeting.

LECTED REMEDY

sed upon consideration of the requirements of CERCLA, the detailed analysis of the ɜrnatives, and public comments, both NYSDEC and EPA have determined that **ernative 8: Consolidate Soil and Sediment, Ship Off site for Treatment and sposal; and Alternative 10: Extraction/Air Stripping /Metals Precipitation and or tration/Surface Water Discharge** are the appropriate remedies for the Site.

ɜ major components of the selected remedy are as follows:

ɔ Excavation of contaminated soils and sediments from the Disposal Areas identified in the Risk Assessment and where soils and sediment pose a risk to ground water quality,

ɔ Disposal of TSCA waste (PCBs > 50 ppm) in a secure TSCA double lined landfill facility (estimated at approximately 1,275 cubic yards),

ɔ Stabilization of RCRA waste to prevent leaching of metals and disposal in a secure RCRA lined facility (approximate volume 2,124 cubic yards),

- o Disposal of non-RCRA wastes in an industrial waste landfill (approximate volume 120 cubic yards),

- o Strategic placement of pumping wells to extract the contaminated ground water from the aquifer,
- o Storage of pumped ground water in a central collection tank for subsequent treatment in an above-ground system,

- o Treatment of the contaminated ground water to meet Federal and State Standards for surface water discharge. Treated ground water would then be either discharged as effluent to the facility non-contact cooling system or to a surface water discharge,

- o Recommendation that local institutional controls, in the form of local zoning ordinances, be implemented in an attempt to control any future site use that could open an exposure pathway to subsurface soils,

- o Recommendation that institutional controls will be provided/maintained to restrict access to those portions of the aquifer which remain above cleanup levels, and

- o Implementation of a long-term monitoring program to track the migration and concentrations of the contaminants of concern.

The ground water alternative also stipulates contingency measures, outlined under Alternative 10 in the Summary of Remedial Alternatives section of this Record of Decision, whereby the ground water extraction and treatment system's performance will be monitored on a regular basis and adjusted as warranted by the performance data collected during operation. If it is determined, in spite of any contingency measures that may be taken, that portions of the aquifer cannot be restored to its beneficial use, ARARs may be waived based on technical impracticability of achieving further contaminant reduction. The decision to invoke a contingency measure may be made during periodic review of the remedy, which will occur at intervals of no less often than every five years.

The selected alternative is believed to provide the best balance of trade-offs among the alternatives with respect to the evaluation criteria. Based on the information available at this time, EPA believes the selected alternative would be protective of human health and the environment, would comply with ARARs, would be cost effective, and would utilize permanent technologies to the maximum extent practicable. The preferred alternatives also treat the most grossly contaminated material (surface soils, sediments, and ground water), meeting the statutory preference for the use of a remedy that involves treatment as a principal element.

STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for this Site must comply with applicable, or relevant and appropriate environmental standards established under Federal and State environmental laws unless a statutory waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource-recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes, as available. The following sections discuss how the selected remedy meets these statutory requirements. The contingent remedy will also meet these requirements.

Protection of Human Health and the Environment

Once excavation and shipment off-site of sediment and soils with unacceptable levels of contamination is completed, the unacceptable risks posed by these materials will be permanently removed. The soils and sediments will be shipped off-site for treatment and disposal, confirmatory sampling will be conducted in the excavated areas to ensure that all unacceptably contaminated material is removed, and the excavated areas will be covered with clean fill. In addition, EPA will recommend to local officials that institutional controls be implemented to prevent activities at the facility from opening an exposure pathway to the subsurface soils.

After design and construction of a ground water pump and treat system is completed, contaminated ground water will be pumped in order to contain the facility ground water contamination, and to restore the aquifer quality to appropriate State and Federal Standards for a Class IIa and GA aquifer. EPA will recommend to local officials that institutional controls be implemented to prevent installation of a drinking water well in areas effected by the contamiantion caused by releases at the facility.

Compliance with ARARs

At the completion of the response actions, the selected remedy will have complied with the following:

Action Specific ARARs

Soils and Sediments -
6 NYCRR 373-1 Hazardous Waste Facility standards for permitting, 40 CFR 761 PCB Spill Cleanup Policy, and RCRA Land Disposal restriction under 40 C.F.R. 268, 40 C.F.R. 261

determination of whether a waste is hazardous, 40 C.F.R.262 Hazardous waste generator requirements, and 40 C.F.R. 263 Hazardous waste transporter requirements.

Ground Water -
Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (40 C.F.R. 141.11-141.16) and 6 NYCRR Ground Water Quality Regulations (Parts 703.5, 703.6, 703.7) as well as NYS 10 NYCRR 5, 10NYCRR 170 (State Public Drinking Water Standards and State Public Drinking Water Sources Standards, 6 NYCRR 750-757 State Pollution Discharge Elmination System. For air pollution control 6 NYCRR 200, 201, 211, and 212, as well as 6NYCRR 257, and NYS Air Guide 1 will have been considered.

Chemical-Specific ARARs:

Since the ground water at the Site is classified by EPAas IIa (GA by NYSDEC), drinking water standards are relevant and appropriate. Again, these include SWDA MCLs and 6NYCRR Ground Water Quality Regulations. However, achieving chemical-specific ARARs for ground water is dependent on remediation of the contaminant sources at the facility. The remedial action is intended to result in attainment of chemical specific ground water ARARs providing that the remedy is effective in eliminating the sources of aquifer contamination.

Other potential remedial action objectives are presented in Table 18.

Cost-Effectiveness

The selected remedy is cost effective and provides the greatest overall protectiveness proportionate to costs. Excavation, segregation and shipment off-site for treatment and disposal at a present worth of $2,462,334, is more expensive than some of the other alternatives but it does not result in the incurrence of the cost of treatability studies; also it can be completed more quickly than these other alternatives at a reasonable cost. The present worth cost of the ground water treatment and discharge (to the non-contact cooling system or the surface water directly after treatment) is $2,388,322 based on pumping and treating for 20 years and pumping and treating 30 gallons per minute. This alternative provides for containment of the contaminant plume and restoration of the aquifer at the facility to meet Federal and State standards at a reasonable cost.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable. The selected remedy represents the best balance of trade-offs among the alternatives with respect to the evaluation criteria.

Preference for Treatment as a Principal Element

The preference for treatment as a principal element is satisfied since treatment of the principal threat (soil and sediment and ground water) will be conducted. The off-site treatment of soil and sediment may include stabilization and incineration, if necessary, to meet LDRs. For ground water treatment: filtration and/or precipitation, and air stripping of contaminants will be utilized to attain ARARs.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes from the preferred alternative presented in the Proposed Plan.

APPENDIX I

FIGURES

Figures

TAKEN FROM USGS 7.5 MINUTE QUADRANGLES
ELMIRA AND HORSEHEADS, N.Y.

TITLE

FACILITY LOCATION

PURULATOR PRODUCTS COMPAN

ELMIRA, N.Y.

PREPARED FOR

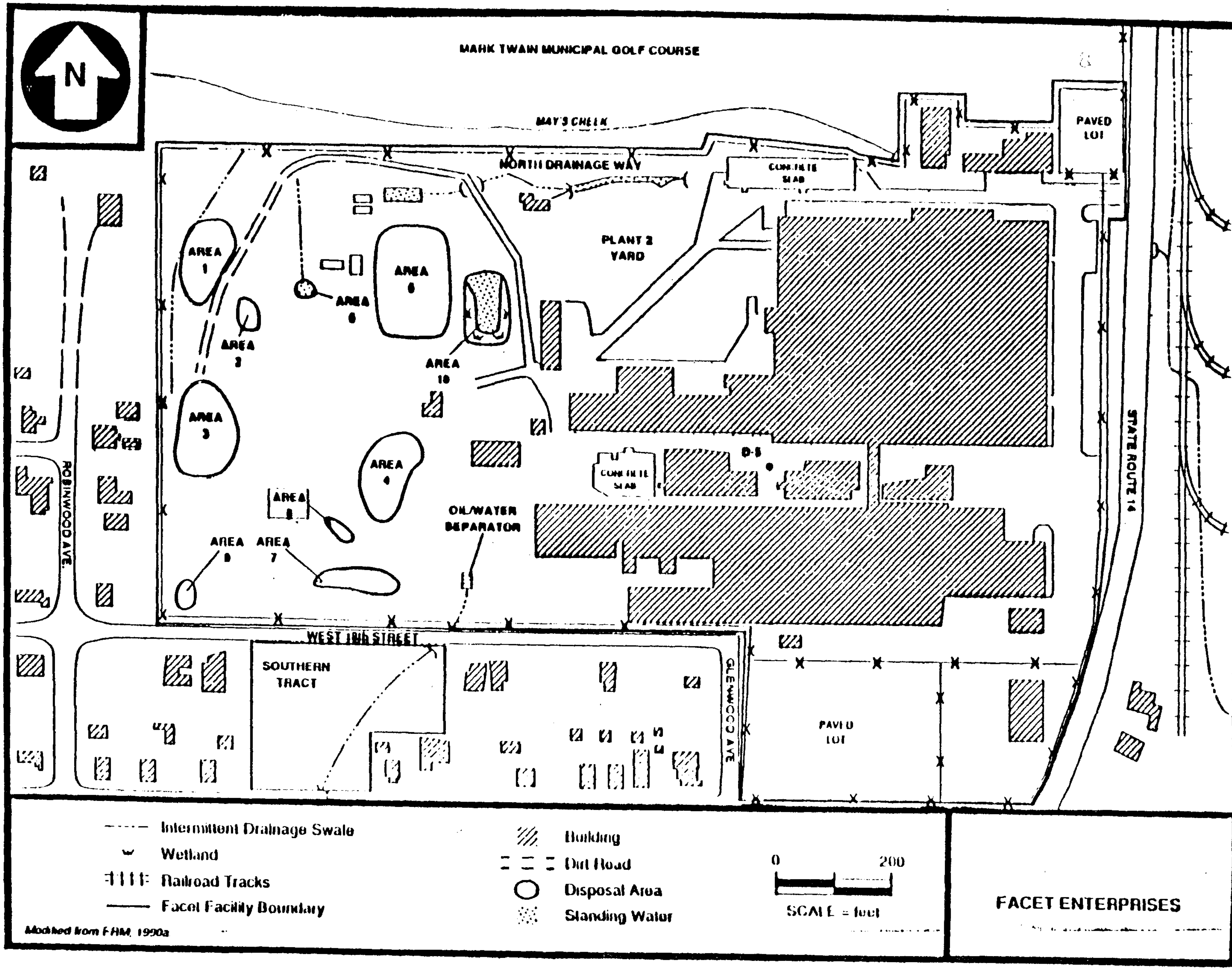
PUROLATOR PRODUCTS COMPAN

ERM-Northeast

SCALE 1:2000

DATE 1/91

Figure 2



N
MARK TWAIN MUNICIPAL GOLF COURSE
MAY'S CREEK
NORTH DRAINAGE WAY
CONCRETE SLAB
PAVED LOT
PLANT 2 YARD
AREA 1
AREA 2
AREA 3
AREA 4
AREA 5
AREA 6
AREA 7
AREA 8
AREA 9
AREA 10
D-5
CONCRETE SLAB
OIL/WATER SEPARATOR
ROBINWOOD AVE.
WEST 10th STREET
SOUTHERN TRACT
GLENWOOD AVE
PAVED LOT
STATE ROUTE 14
Intermittent Drainage Swale
Wetland
Railroad Tracks
Facet Facility Boundary
Building
Dirt Road
Disposal Area
Standing Water
0
200
SCALE = feet
Modified from FHM, 1990a
FACET ENTERPRISES

Figure 4

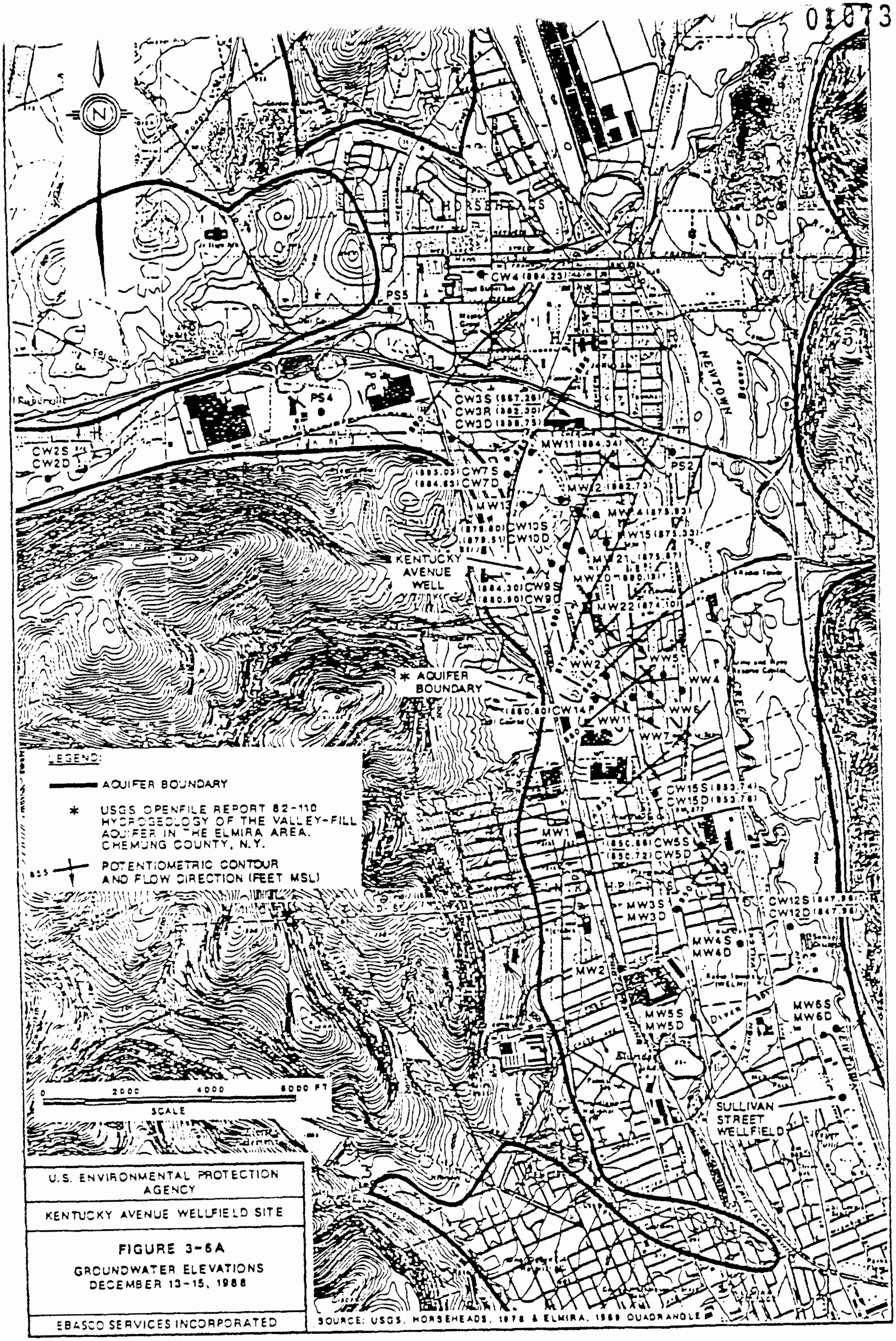
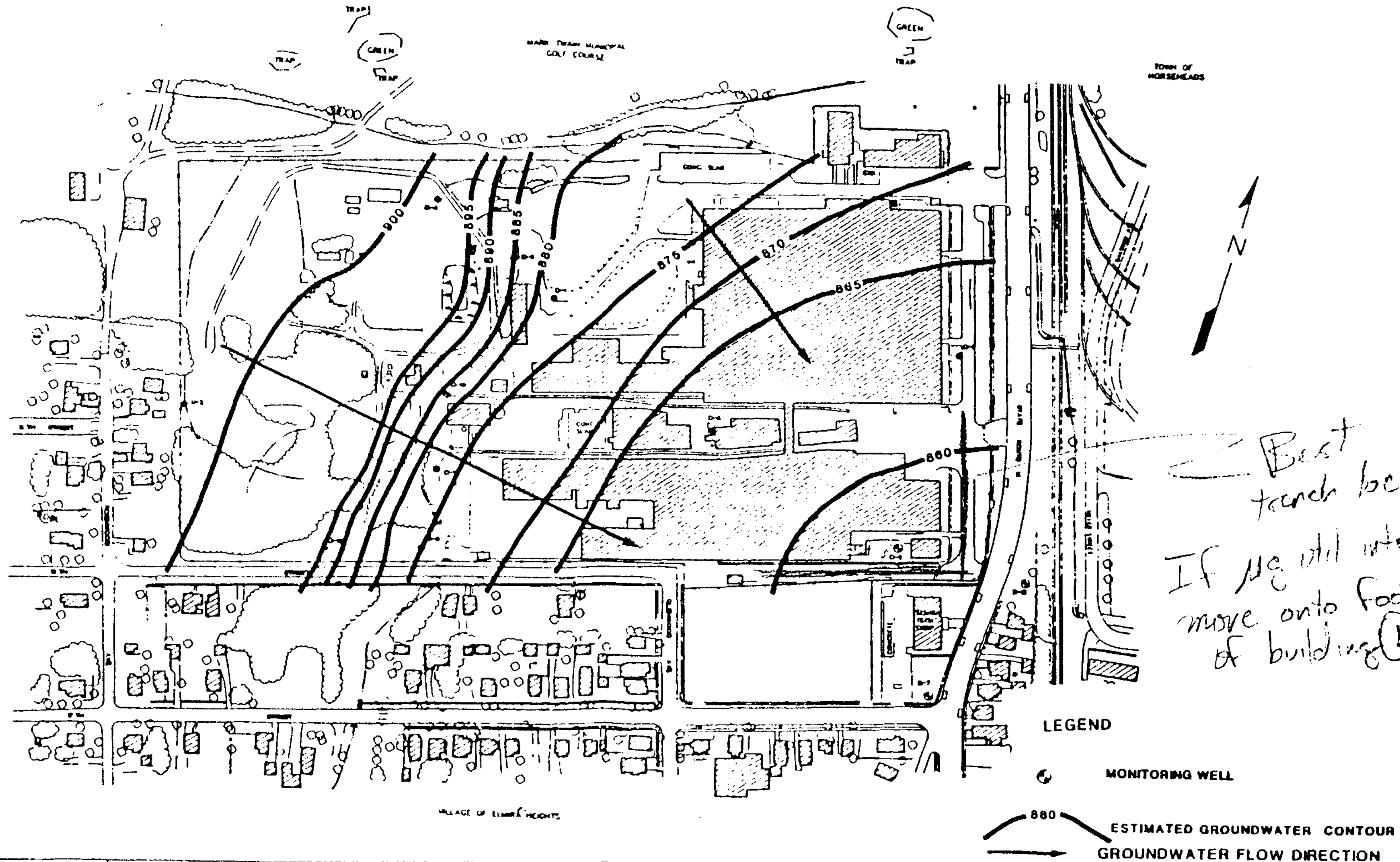

HORSEHEADS
CW4 (884.23)
PS5
PS4
NEWTOWN
CW3S (887.28)
CW3R (882.30)
CW3D (888.75)
CW2S
CW2D
MW11 (884.34)
PS2
(883.05) CW7S
(884.83) CW7D
MW12 (882.73)
MW13
MW14 (875.93)
(879.80) CW10S
(879.51) CW10D
MW15 (875.33)
MW21 (875.87)
MW20 (880.19)
KENTUCKY AVENUE WELL
(884.30) CW9S
(880.90) CW9D
MW22 (874.10)
WW2
WW5
WW4
* AQUIFER BOUNDARY
(880.80) CW14
WW11
WW6
WW7
CW15S (853.74)
CW15D (853.76)
MW1
(850.88) CW5S
(850.72) CW5D
MW3S
MW3D
CW12S (847.96)
CW12D (847.98)
MW4S
MW4D
MW2
MW5S
MW5D
MW6S
MW6D
SULLIVAN STREET WELLFIELD
LEGEND:
AQUIFER BOUNDARY
* USGS OPENFILE REPORT 82-110 HYDROGEOLOGY OF THE VALLEY-FILL AQUIFER IN THE ELMIRA AREA, CHEMUNG COUNTY, N.Y.
POTENTIOMETRIC CONTOUR AND FLOW DIRECTION (FEET MSL)
0 2000 4000 6000 FT
SCALE
U.S. ENVIRONMENTAL PROTECTION AGENCY
KENTUCKY AVENUE WELLFIELD SITE
FIGURE 3-6A
GROUNDWATER ELEVATIONS
DECEMBER 13-15, 1988
EBASCO SERVICES INCORPORATED
SOURCE: USGS. HORSEHEADS, 1978 & ELMIRA, 1969 QUADRANGLE

Figure 3



Best trench loc.
If we will interfere move onto footprint of building (1)

PUROLATOR PRODUCTS COMPANY

ERM-Northeast
Environmental Resources Management

ESTIMATED GROUNDWATER CONTOUR MAP

1"=200'

Figure 6

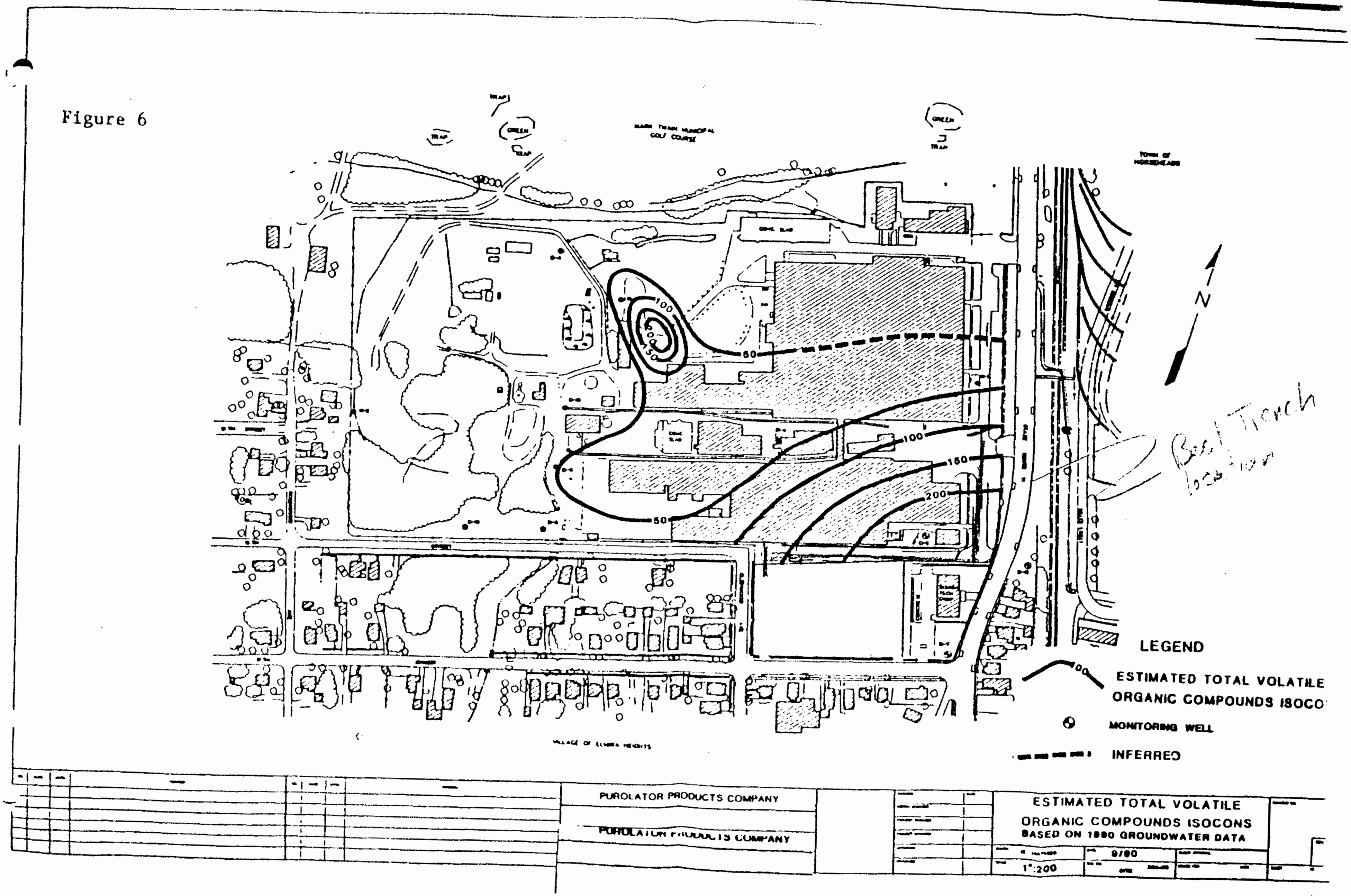

N
Bed Trench location
LEGEND
100
ESTIMATED TOTAL VOLATILE
ORGANIC COMPOUNDS ISOCO
MONITORING WELL
INFERRED
100
150
200
50
PUROLATOR PRODUCTS COMPANY
PUROLATOR PRODUCTS COMPANY
ESTIMATED TOTAL VOLATILE
ORGANIC COMPOUNDS ISOCONS
BASED ON 1980 GROUNDWATER DATA
9/80
1":200

Figure 5

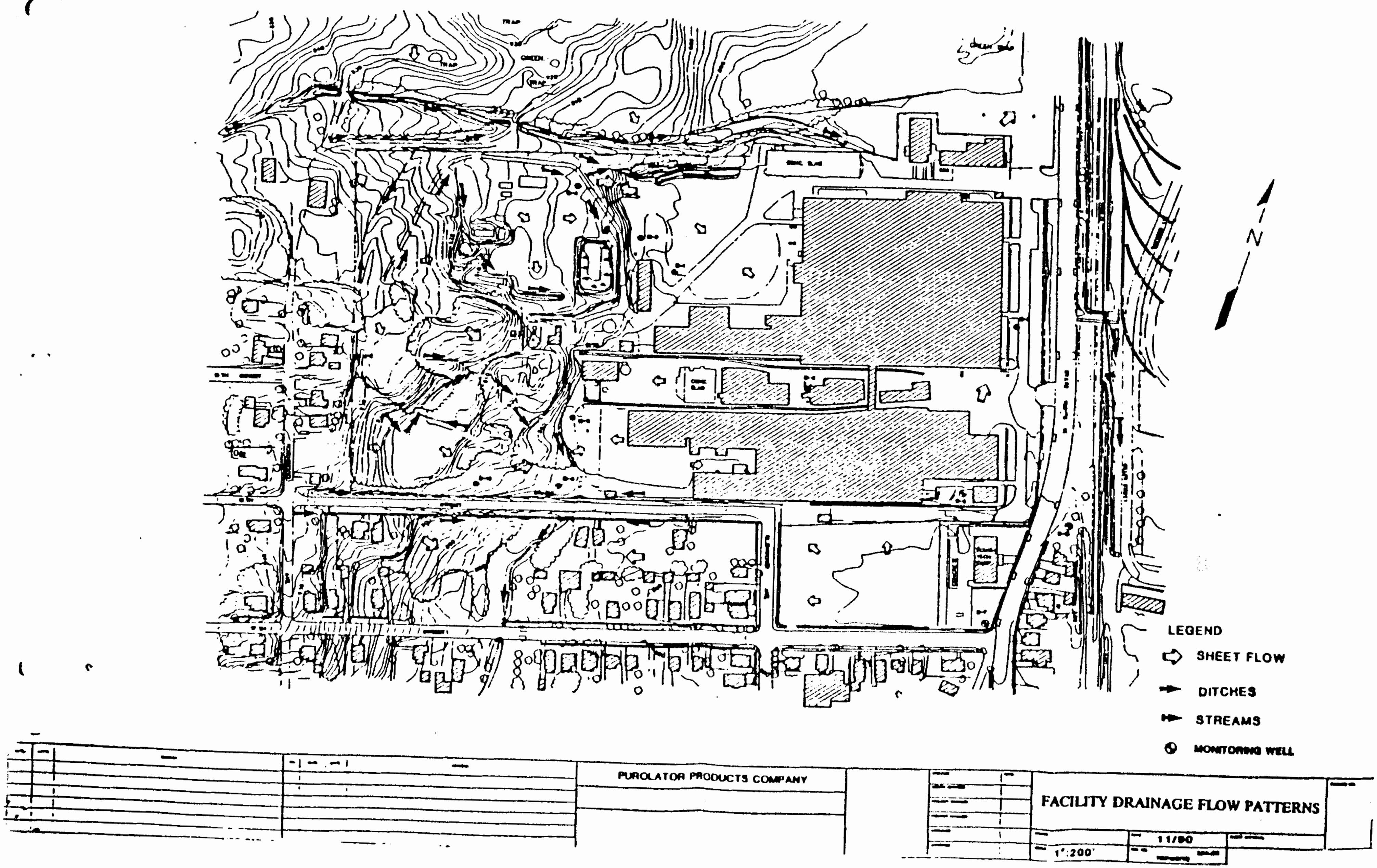
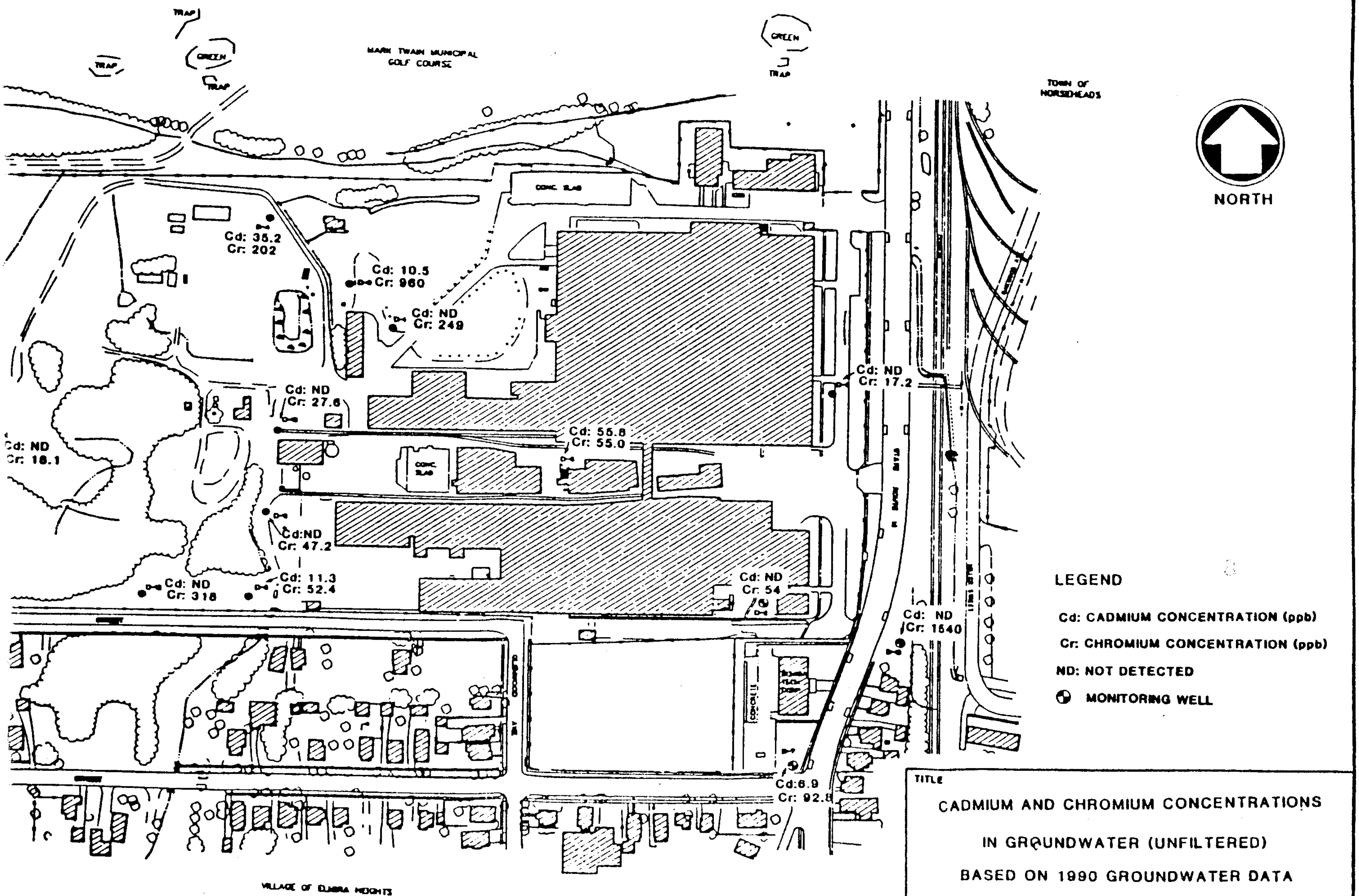

N
LEGEND
SHEET FLOW
DITCHES
STREAMS
MONITORING WELL
PUROLATOR PRODUCTS COMPANY
FACILITY DRAINAGE FLOW PATTERNS
11/90
1":200'

Figure 7



TITLE

CADMIUM AND CHROMIUM CONCENTRATIONS

IN GROUNDWATER (UNFILTERED)

BASED ON 1990 GROUNDWATER DATA

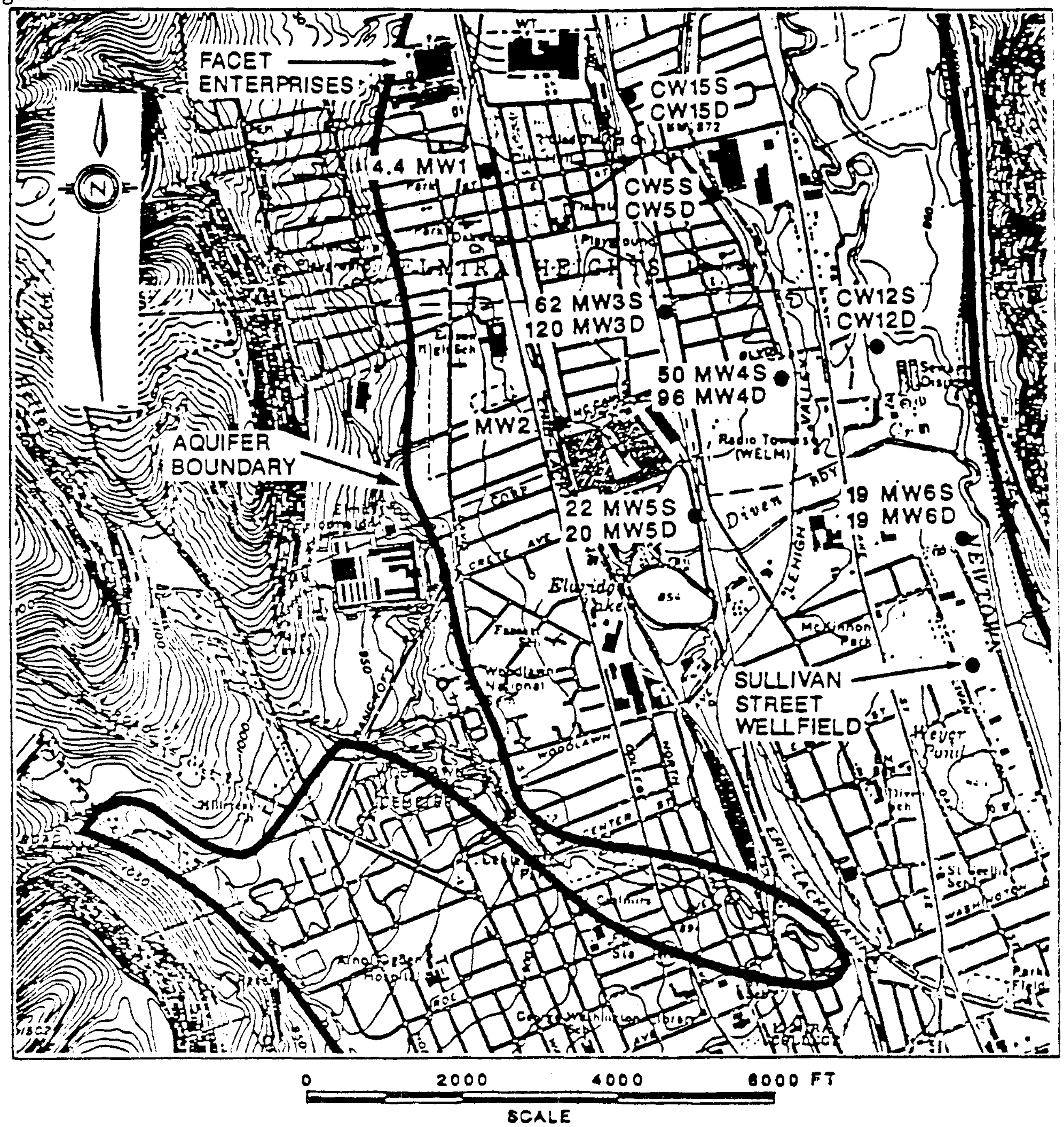
PREPARED FOR

PUROLATOR PRODUCTS COMPANY

SCALE 1":200'

DATE 10/90

Figure 8



LEGEND:

AQUIFER BOUNDARY

22 CONCENTRATION OF TCE IN ppb, JANUARY 1990

NOTE: NYSDEC WELLS WERE INSTALLED BY CLEAN HARBORS INC.,1989.

SOURCE: USGS, HORSEHEADS, 1978 & ELMIRA, 1969 QUADRANGLE

U.S. ENVIRONMENTAL PROTECTION AGENCY
KENTUCKY AVENUE WELLFIELD SITE
TCE DISTRIBUTION IN SULLIVAN STREET MONITORING WELLS (NYSDEC)
EBASCO SERVICES INCORPORATED

Figure 9

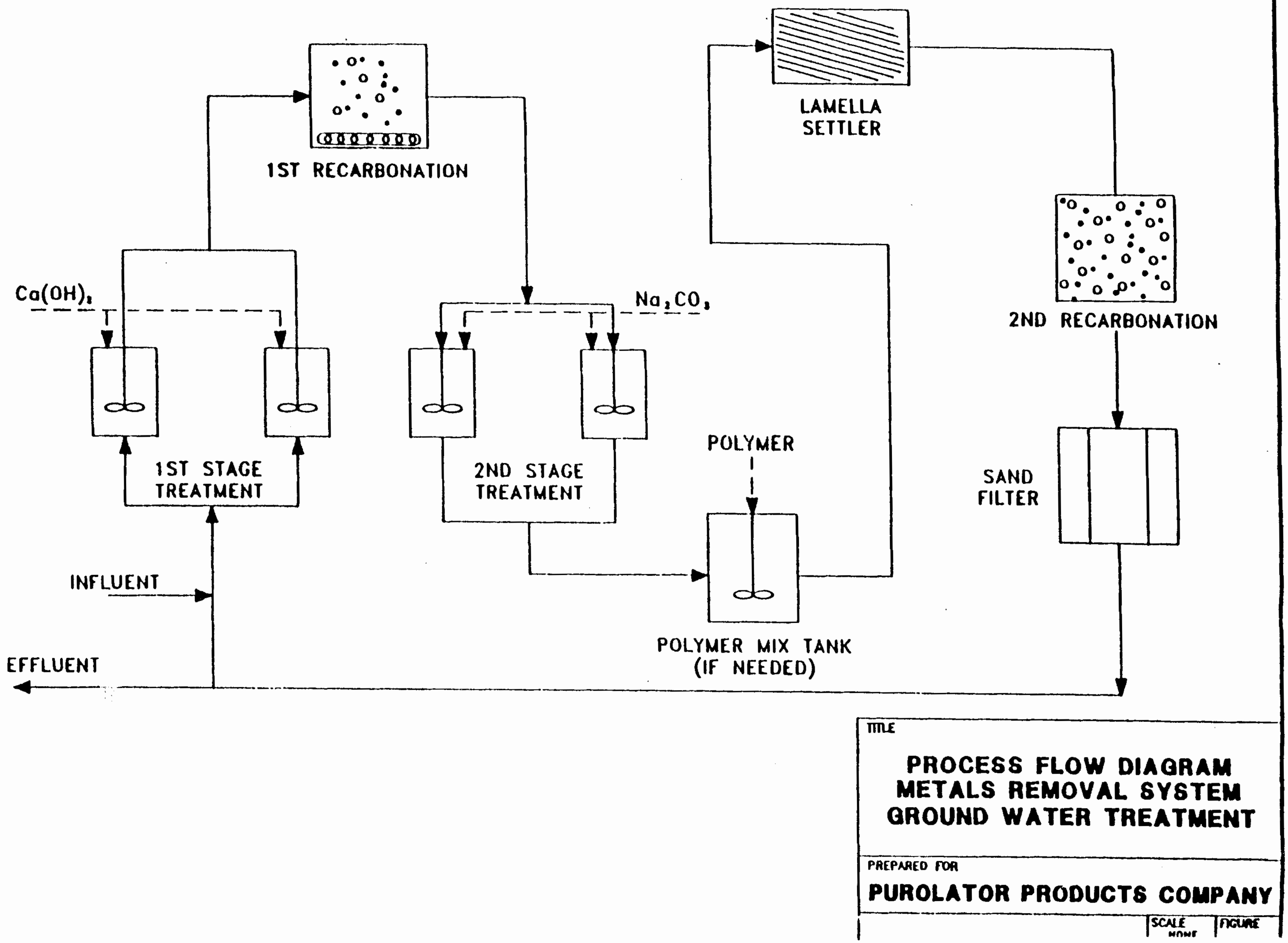

1ST RECARBONATION
LAMELLA SETTLER
$Ca(OH)_2$
Na_2CO_3
2ND RECARBONATION
1ST STAGE TREATMENT
2ND STAGE TREATMENT
POLYMER
SAND FILTER
INFLUENT
EFFLUENT
POLYMER MIX TANK (IF NEEDED)
TITLE
PROCESS FLOW DIAGRAM
METALS REMOVAL SYSTEM
GROUND WATER TREATMENT
PREPARED FOR
PUROLATOR PRODUCTS COMPANY
SCALE NONE
FIGURE

Figure 9 contd.