UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III

STATEMENT OF BASIS

QUEBECOR PRINTING ATGLEN INCORPORATED

LOWER VALLEY ROAD

WEST SADSBURY TOWNSHIP, PA

April 28, 1995

TABLE OF CONTENTS

ATTACHMENT(S):

LIST OF TABLES

LIST OF FIGURES

STATEMENT OF BASIS FOR PROPOSED CORRECTIVE MEASURES

UNDER RCRA SECTION 7003

QUEBECOR PRINTING ATGLEN INCORPORATED

WEST SADSBURY TOWNSHIP, PENNSYLVANIA

I. INTRODUCTION

This Statement of Basis for Quebecor Printing Atglen Incorporated, ("Quebecor"), Lower Valley Road, West Sadsbury Township, PA ("Facility") presents EPA's proposed Corrective Measures Alternative ("CMA") for the remediation of contaminated groundwater and soil at the facility. As used in this Statement of Basis, the term "Facility" shall mean all contiguous property under the control of Quebecor. This document summarizes the remedies that EPA and Quebecor have evaluated under the Administrative Consent Order, Docket Number RCRA-3-003IH ("Order"), issued to Quebecor on March 29, 1991 pursuant to §7003 of the *Resource Conservation and Recovery Act ("RCRA")*[1], as amended, 42 U.S.C. §6973.

In accordance with the Order, Quebecor completed the tasks described in the EPA-approved RCRA Facility Investigation ("RFI") Workplan to evaluate the nature and extent of the release of hazardous waste and hazardous constituents at or from the Facility. On March 25, 1994, EPA approved the RFI Report. Also under the requirements of the Order, Quebecor completed a Corrective Measures Study ("CMS") Report in which Quebecor evaluated corrective measures alternatives to remediate the contamination at the Facility. On September 29, 1994, EPA approved the CMS report.

This document describes the corrective measures alternatives and presents EPA's preferred alternative and justification for the proposed selection of the alternative. This document also highlights certain information presented in the RFI Report, the CMS Report and other documents in the Administrative Record for the Facility but does not serve as a substitute for these documents. EPA encourages the public to review these documents, which are found in the Administrative Record, to gain a more comprehensive understanding of the RCRA activities that have been conducted at the Facility. The Administrative Record is located

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[1] Italicized words are defined in the Glossary attached hereto.

at two locations identified in Section X, Public Participation, of this document.

EPA is issuing this Statement of Basis pursuant to the public participation provisions under RCRA. EPA will select a final Corrective Measures for the Facility after information submitted during the public comment period has been considered.

EPA may modify the proposed Corrective Measures or select another Corrective Measure based upon new information and/or public comments. Therefore, the public is encouraged to review and comment on all alternatives described in this document and/or studied. The public may participate in the Corrective Measures selection process by reviewing the documents contained in the Administrative Record, attending the public meeting conducted on November 29, 1994 and by submitting written comments to EPA during the public comment period, pursuant to Section XI of the Statement of Basis.

II. PROPOSED CORRECTIVE MEASURES

Based upon the findings of the RFI, soil in the underground storage tank and railroad siding areas of the Facility and groundwater beneath the Facility require remediation. With respect to necessary soil clean-up activities for the Underground Storage Tank (UST) area, EPA proposes deferring to the Pennsylvania Department of Environmental Resources (PADER). The Facility is presently undertaking remediation for the UST area in accordance with PADER UST Closure Requirements, Act 32, Section 502(c), Storage Tank and Spill Prevention Act, July 6, 1989. EPA would, however, require the submittal of a post clean-up sampling and analysis plan for the UST area as part of EPA's proposed remedy.

EPA is proposing In-Situ Vapor Extraction as the preferred corrective measure alternative to remediate the soil in the railroad siding area at the Facility. EPA is proposing Groundwater Pump and Treatment as the preferred corrective measure alternative to remediate the contaminated groundwater at the Facility. EPA is also proposing Institutional Controls to ensure continued operation and maintenance of the preferred corrective measures. The preferred corrective measures includes the following:

A. SOIL

1. UNDERGROUND STORAGE TANK AREA

Submit for EPA review and approval a post-UST removal/soil excavation soil sampling and analysis plan to demonstrate attainment of the soil clean-up standards presented in Section VIII, below.

2. RAILROAD SIDING AREA

Conduct in-situ soil vapor extraction and volatilized gas treatment with granulated activated carbon (GAC) filtration and/or incineration in accordance with the *Clean Air Act*.

B. GROUNDWATER

1. Construct a pump and treat system; treat the contaminated groundwater utilizing air stripping with granulated activated carbon or incineration for the exhaust gases in accordance with the Clean Air Act; treat the groundwater discharge in accordance with the *Clean Water Act National Pollutant Discharge Elimination System ("NPDES")*.

2. Continue to operate the Interim Measures Pump and Treat system as required by the Order until the new system is operational.

C. INSTITUTIONAL CONTROLS

Impose a restriction in the deed to the Facility property to prevent the installation of on-site drinking water wells. Require periodic monitoring and reporting of data to track compliance with media clean-up standards (see Section VIII., below).

III. FACILITY BACKGROUND

A. Facility Background

Since 1990, Quebecor has operated a 15-acre printing plant on its 57-acre site located in West Sadsbury Township, Chester County, Pennsylvania (see Figure 1). Quebecor prints color newspaper supplements using the *rotogravure* method. The Facility includes printing process machinery, ink and solvent storage tanks and drum storage areas, warehousing, and administrative offices. Quebecor operates a wastewater treatment plant at the Facility. This wastewater treatment plant is subject to the permitting requirements of the Clean Water Act and its NPDES regulations. Parade Magazine ("Parade") owned the Facility under the name Diversified Printing Corporation from 1970 until June 1987. Maxwell Communication Corporation ("Maxwell") owned the Facility from June 1987 until February 1990. Quebecor Printing Atglen Incorporated purchased the Facility in 1990 from Maxwell.

B. Waste Management

Pursuant to the requirements of RCRA, in 1980, Parade notified EPA of its status as a treatment, storage and disposal facility managing RCRA ignitable (D001) and corrosive (D002) wastes. In 1983, Parade requested that its status be changed to RCRA generator only, and that EPA "withdraw its status as a treatment, storage and disposal facility". In 1987, Maxwell renotified EPA of its generator status and notified EPA that it was storing hazardous waste from non-specific sources, F002, F003, and F005 for less than ninety days.

C. Previous Investigations:

In 1985, Diversified conducted an investigation of a spill of approximately 300 gallons of Lactol, a commercial organic printing solvent containing toluene-xylene organic compounds, from underground storage tanks at the Facility. The investigation revealed the presence of benzene and toluene contaminants in groundwater beneath the site. Remediation measures began in this area in 1986 under PADER direction. (See Section III.D., Interim Measures/Stabilization).

In 1988, Maxwell evaluated a spill of 3,500 - 6,000 gallons of toluene-based solvent from the solvent handling process equipment. Solvent spilled in the material handling portion of the building migrated through a storm drain near the railroad siding area and offsite to nearby Engel pond, located downgradient and adjacent to the south side of Lower Valley Road (See Figure 2). In response to this spill, Maxwell, at PADER's direction, conducted sampling of the four residential wells downgradient of the Facility. These samples did not show any contamination. The analysis of samples from Engle pond collected by PADER on November 28, 1988 showed the presence of toluene contaminants.

In response to this spill, Maxwell implemented corrective measures which included liquid *vacuum extraction* from the impacted areas, pond aeration, pond monitoring and sampling. The Engel pond was subsequently restored with indigenous pond and stream biota. However, the RFI data indicated the presence of the solvent atop the groundwater at the facility. (See Section D., Interim Measures, below).

In April 1990, EPA completed an Environmental Priorities Initiative Preliminary Assessment ("Assessment") for the Facility. According to the Assessment, benzene, toluene, ethylbenzene, xylene, tetrachloroethylene, bis(2-ethylhexyl) phthalate, cyanide, and lead have been released to the environment from the Facility. On March 29, 1991, EPA and Quebecor entered into a Consent Order which required that

Quebecor conduct an RFI and CMS to determine the nature and extent of the contamination at the Facility.

In September 1993, Quebecor reported an additional 5,000 gallon spill of toluene in the UST area. The Facility is remediating this area in accordance with the following PADER approved remediation workplans: May 19, 1994 UST Closure Workplan; July 7, 1994 UST Removal Sampling Plan; July 12, 1994 UST Closure Notification; and July 12, 1994 PADER letter approving the modified UST Removal Sampling Plan. The PADER-approved workplans provide for the excavation of all USTs and associated soil and debris. EPA has coordinated the RFI and CMS activities with PADER UST Closure activities.

D. Interim Measures/Stabilization

As a result of the 1985 Lactol discharge from the underground storage tanks, on October 25, 1986, Diversified (and later Quebecor) began implementing a groundwater recovery pump and treatment system to contain the solvent and prevent any further migration of the contaminated groundwater *plume* from the Facility. The system currently contains the floating solvent and recovers contaminated groundwater by pumping from two recovery wells and treating the recovered fluids through an *air stripping* tower. Treated water from this system is discharged under PADER NPDES permit number PA0054933. Since 1986, the system has recovered over 5,300 gallons of solvent. In 1993, the pump and treat system recovered minimal amounts of solvent. In 1993, the air stripping tower was upgraded to include granulated activated carbon filters to collect the air stripping exhaust gas emissions from the tower.

IV. SUMMARY OF THE RCRA FACILITY INVESTIGATION

The RFI evaluated the distribution of contaminants in groundwater, soil, sediments, air, and surface water at the Facility. According to the findings of the RFI, the groundwater underneath the Facility contains concentrations of benzene, toluene, tetrachloroethylene, and bis(2-ethylhexyl) phthalate above EPA Region III risk-based concentrations and/or the *Maximum Contaminant Levels ("MCLs")* which were developed under the Safe Drinking Water Act, 42 U.S.C. Section 300(f) et seq., and are published at 40 C.F.R. Part 141, Subpart B. Subsurface soils in the railroad siding area were found to contain toluene, ethylbenzene and xylene which may leach into the groundwater and contribute to the groundwater contamination. Consequently, the contaminants of concern for the Facility are benzene, toluene, ethylbenzene, xylene, tetrachloroethylene, and bis(2-ethylhexyl)phthalate. The following is a summary of the RFI findings for environmental media.

1. Groundwater

Groundwater was evaluated during the RFI through a groundwater monitoring well network comprised of thirty-one onsite and four offsite monitoring wells. According to the findings of the RFI, the depth to groundwater ranges from two to eleven feet beneath the Facility. Groundwater generally flows towards the south and discharges into Valley Creek. Groundwater flow is also locally influenced by the ongoing pumping of the interim measures recovery wells. There is no underflow of groundwater contaminants beneath Valley Creek.

Onsite, groundwater sample analyses indicate that the concentrations of benzene, toluene, bis(2-ethylhexyl) phthalate, and tetrachloroethylene exceed the MCLs for those constituents (See Table 1). Offsite groundwater sample analyses do not show exceedances of the MCLs.

There are three residences located within 1000 feet downgradient of the Facility. (See Figure 2). Two of these residences obtain domestic water supplies from private groundwater wells and springs. One residence is supplied by the City of Coatesville. Analytical results from samples collected during the RFI from the domestic wells did not show any site-specific chemicals of concern.

The Facility does not use groundwater for drinking or industrial purposes. General purpose and industrial process water is provided to the Facility by the City of Coatesville.

2. Surface Water

The surface water bodies in the study area include King Pond, Engel Pond, Gallagher Stream, North Marsh Stream, Valley Creek and its tributaries. During the RFI, surface water samples and analyses did not show any chemicals of concern above the EPA Water Quality Criteria or EPA risk-based concentrations.

3. Soil

Onsite surface (0-2 feet) soils were sampled during the RFI to determine the presence of contaminants. Sample analyses did not show any chemicals of concern above EPA's risk-based concentrations. However, subsurface (2-11 feet) soil sample analyses from the underground storage tank and the railroad siding areas showed the presence of toluene, ethylbenzene, and xylene. The concentrations of contaminants are above the PADER Clean-up Standards for Contaminated Soil, December 1993. These criteria reflect the leachability of contaminants from the soil to the groundwater. (See Section IV.1., above.)

4. Sediment

During the RFI, sediment samples were collected from Engel Pond and along the unnamed tributary of Valley Creek which crosses the Facility. The sediment analyses did not show any chemical of concern above EPA risk-based concentrations.

5. Air

The ambient air emissions from the pump and treatment air stripping system were sampled and analyzed during the RFI. Based on the findings of the RFI, no contaminants of concern were found in excess of EPA risk-based criteria.

6. Geology

The Facility is located in the Chester Valley which was formed by the preferential weathering of the carbonate rocks in relation to more resistant rocks which surround the valley to the north and south. Surficial soils are at least thirty feet thick at the Facility. The soils are colluvium sediments consisting of silts and clay with minor amounts of sand and gravel. The underlying bedrock is the Conestoga Formation which consists of the limestone at the upper section, phyllite in the middle section, and carbonate rocks in the lower section.

7. Ecological Assessment

During the RFI, an evaluation was undertaken of the wetlands and ponds in the vicinity of the Facility. The wetlands generally border Valley Creek and its tributaries. These areas are classified as emergent, forested, and palustrine wetlands. Based on the findings of the RFI, site-specific contaminants of concern were not detected in any surface water or sediment samples collected from the wetlands, marsh, the associated ponds, and tributaries above EPA's Water Quality Criteria or EPA's risk-based concentrations.

V. SUMMARY OF FACILITY RISKS

Based on the findings of the RFI, subsurface soil in the UST and railroad siding areas and in the groundwater have been identified as environmental media of concern. In groundwater, benzene, tetrachloroethylene, toluene, and bis(2-ethylhexyl) phthalate were detected in excess of MCLs for drinking water. In subsurface soils, the concentrations of toluene, ethylbenzene, and xylene are above the PADER Clean-up Standards for Contaminated Soil and may contribute to the groundwater contamination through *leaching*. (See Figure 3).

Table 1

CONTAMINANTS of CONCERN

CONTAMINANT	Soil	Groundwater
Benzene		X
Toluene	X	X
Ethylbenzene	X	
Xylene	X	
Bis(2-ethylhexyl)phthalate		X
Tetrachloroethylene		X

X = Above MCLs or EPA risk-based concentration

Surface soils do not contain concentrations of contaminants in excess of the EPA risk-based concentration or PADER's criteria and, therefore, do not pose a health risk. Subsurface soils, however, contain contaminants which exceed the PADER criteria and may leach into the groundwater, thereby contributing to the health risk.

The potential cancer risk from the site-specific contaminants is 2.54E-04. A 2.54E-04 risk represents the probability that 2.5 persons out of 10,000 people of average weight who are exposed to the site contaminants will develop cancer. This is greater than EPA's acceptable risk level of 1E-06. The 1E-06 risk represents the probability that an additional 1.0 person will develop cancer out of every 1,000,000 people who are exposed to the site contaminants by drinking two liters of contaminated water daily during a 70 year life span. At the present time, on-site groundwater pumping wells which supply water for human use do not exist.

As discussed in Section III.D. above, Interim Measures/ Stabilization, a groundwater recovery pump and treat system is currently in operation at the Facility. EPA has determined that, as a result of the pump and treat system and groundwater flow patterns documented in the RFI, there has been no offsite impact by the specific contaminants of concern on domestic private wells, surface water and sediment in the vicinity of the Facility, and that the contaminated groundwater plume is contained and not migrating to ecologically sensitive areas (ponds, marshes and Valley Creek).

The potential groundwater non-cancer health risk is represented by *the Hazardous Index (HI)*. The HI is the ratio of a chemical exposure dose to a reference dose which is likely to be without any adverse health effects. EPA has established 1.0 as the acceptable level. A HI greater than 1.0 is potentially harmful to human health. The HI at the Facility is 62.5, which

is greater risk than the acceptable level of 1.0. The health risk is derived from potential exposure to groundwater contaminants of concern via ingestion and inhalation. **At the present time, EPA has determined that there are no on-site human receptors because the groundwater beneath the Facility is not used for any purpose.**

VI. SCOPE OF CORRECTIVE ACTION

As previously discussed in Section III.C., EPA is deferring remediation of the UST area to PADER. EPA is, however, requiring post-excavation sampling in the UST area as part of its proposed corrective measure for this Facility. Based upon the findings of the RFI, EPA has determined that soil in the railroad siding area and groundwater beneath the Facility require remediation. EPA is proposing the following corrective measures to address the contaminated soil and groundwater at the Facility:

SOIL

1. UNDERGROUND STORAGE TANK AREA

Submit to EPA for review and approval a post UST removal/soil excavation sampling and analysis plan which will demonstrate attainment of soil clean-up standards (See Section VIII).

2. RAILROAD SIDING AREA

Conduct in-situ vapor extraction and volatilized gas treatment with GAC and/or incineration;

GROUNDWATER

Construct a new pump and treat system; treat the pumped groundwater utilizing air stripping with granulated activated carbon filters and/or incineration for the exhaust gases in accordance with the Clean Air Act; discharge the treated groundwater in accordance with the Clean Water Act National Pollutant Discharge Elimination System.

Continue to operate the Interim Measures Pump and Treat system until the new system is operational.

INSTITUTIONAL CONTROLS

Include restrictions in the facility deed to prevent the installation of on-site drinking water wells. In addition, require periodic monitoring and reporting of data to track compliance with media clean up standards, (See Section VIII., below).

VII. SUMMARY OF ALTERNATIVES

As part of the RCRA corrective action process, twenty-two corrective measures alternatives were studied for their applicability to the UST and Railroad siding areas at the Facility. PADER is currently directing the remediation of the UST area. (See Section III.C.) Based upon the CMS, EPA has identified the following corrective measures alternatives to address soil in the railroad siding area and groundwater beneath the Facility.

A. NO ACTION

Under this alternative, no remedial actions would be undertaken to address the site. This alternative provides a comparison between discontinuing the existing Interim Measures pump and treat operations at the site with no additional expenditures towards remediation, and the following alternatives which present some degree of environmental remediation with varying associated benefits and cost. There are no capital or operation and maintenance (O&M) costs associated with this alternative.

B. SOIL (RAILROAD SIDING AREA)[2]

1. SOIL EXCAVATION, DISPOSAL, LANDFILL OR INCINERATION (SW-1)

SW-1 provides for the excavation and removal of contaminated soil in the railroad siding area for recycling or disposal at an approved landfill or incineration. Capital cost is $1,625,000 and annual cost of O&M cost is $0. The estimated total project cost for the corrective measure is $1,625,000[3]. This project is expected to be completed in five years.

2. IN-SITU SOIL VAPOR EXTRACTION (SW-2).

SW-2 provides for the removal of volatile and semi-volatile organic compounds (VOCs) from soils in the unsaturated zone. VOCs in soil gas would be extracted with vertical and/or horizontal vapor extraction wells/trenches; passive and/or forced air inlet wells could be used, primarily in

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[2] The UST area is discussed in Section VI. PADER is currently directing the remediation of this area.

[3] Complete cost data for all corrective measures alternatives is included in the administrative record for this Statement of Basis.

the areas of maximum hydrocarbon impact, to increase the rate of air influx to the subsurface, thus enhancing volatilization. The off gases would be removed by carbon adsorption or by incineration. Capital cost is $176,700 and O&M cost is $365,400. The estimated total project cost for the corrective measure is $536,100. This project is expected to be completed in seven years.

3. AIR SPARGING (SW-3)

SW-3 provides for air injection under pressure below the water table, creating transient air pockets in pore spaces. Absorbed hydrocarbons trapped by water in these pore spaces volatilize and are transported to the shallow water table to be evacuated by a geological vent system. Capital cost is $172,500 and O&M cost is $573,200. The estimated total project cost for the corrective measure is $745,700. This project is expected to be completed in ten years.

4. IN SITU BIOREMEDIATION (SW-4).

SW-4 provides for the biodegradation of volatile organic compounds by stimulating naturally-occurring microorganisms to decontaminate subsurface materials affected by volatile and semi-volatile organic compounds. Injection wells, trenches and surface infiltration could be utilized to physically and chemically introduce oxygen and nutrients to the subsurface environment. Capital cost is $304,200 and O&M cost is $912,100. The estimated total project cost for the corrective measure is $1,216,300. This project is expected to be completed in six years.

5. BIOLOGIC ENHANCEMENT BY SOIL VENTING (SW-5)

SW-5 provides for the forced aeration by air injection and/or withdrawal to stimulate biological degradation of volatile and semi-volatile organic compounds. The system could be augmented with nutrient/oxygen injection wells, or trenches. Capital cost is $172,500 and O&M cost is $867,900. The estimated total project cost for the corrective measure is $867,900. This project is expected to be completed in six years.

C. GROUNDWATER

1. INSTITUTIONAL CONTROLS (GW-1)

GW-1 provides for imposition of deed restrictions to prevent the installation of on-site drinking water wells. GW-1 also provides for site monitoring, including periodic sampling of downgradient domestic supply wells near the Facility, periodic sampling of selected wells and site groundwater monitoring wells. This alternative monitors the movement of impacted groundwater. Capital cost is $0.00 and O&M cost is $325,500. The estimated

total project cost for the corrective measure is $325,500. This project is expected to be completed in fifteen years.

2. GROUNDWATER PUMP AND TREATMENT (GW-2)

GW-2 provides for the extraction and decontamination of groundwater affected by volatile and semi-volatile organic compounds, followed by discharge of the water to Valley Creek in accordance with NPDES. Groundwater can be extracted with recovery wells and trenches and is then treated using air stripping. Gas emissions are further treated with granulated activated carbon (GAC) filtration and/or incineration. Capital cost is $122,000 and O&M cost is $1,078,800. The estimated total project cost for the corrective measure is $1,200,800. This project is expected to be completed in fifteen years.

VIII. MEDIA CLEAN-UP STANDARDS/POINTS OF COMPLIANCE

A. Media Clean-up Standards

Media clean-up standards represent contaminant concentrations in each media that corrective measures must achieve. Media clean-up standards are established at concentrations that ensure protection of human health and the environment and are set for each media during the remedy selection process. Media clean-up standards for this Facility are set forth in Table 2, below, and are based on EPA Region III Risk-Based Concentration (RBCs) Tables and the Safe Drinking Water Act MCLs.

Table 2

Media Clean-up Standards

CONSTITUENT	Soil (ppm) *RBCs*	Groundwater (ppm) MCLs
Benzene	n/a	0.005
Toluene	0.5	1.0
Bis(2-ethylhexyl)phthalate	n/a	0.006
Ethylbenzene	1.0	n/a
Tetrachloroethylene	n/a	0.005
Xylene	0.7	n/a

n/a = not applicable

B. Points of Compliance

When establishing media clean-up standards for groundwater, it is also necessary to establish points of

compliance at which progress towards obtaining media clean-up standards will be measured. The points of compliance are selected to provide sufficient data to monitor and evaluate the overall effectiveness of the remediation and demonstrate compliance with the media clean-up standards.

For groundwater, media clean-up standards shall be attained throughout the contaminated groundwater plume. The following locations shall be used to determine compliance with the groundwater clean-up standards (see Figure 4):

1. On-site Monitoring Wells:

   a. MW3
   b. MW4
   c. MW8
   d. MW9
   e. MW10
   f. MW12
   g. MW13
   h. RW-1
   I. RW-2
   J. S-3

2. Off-Site Monitoring Wells

   a. Engel Pond
   b. Engel Domestic Well

For soils, a soil sampling plan shall be developed which demonstrates attainment of the soil clean-up standards in accordance with EPA Guidelines for Preparation of Quality Assurance Project Plan (OWRS QA-1, May 1984).

IX. EVALUATION OF PROPOSED REMEDY AND ALTERNATIVES

EPA has deferred the remediation of the soil contamination in the underground storage tank area with PADER. The underground storage tank area is currently being remediated pursuant to the PADER approved UST Workplan.

For the railroad siding area and the onsite groundwater, EPA has identified a combination of Alternatives SW-2, GW-1, and GW-2 as the proposed corrective measure alternative for the Quebecor Facility. The rationale for this selection is presented in this section which compares the selected alternative against the other appropriate technologies considered.

This section also profiles the proposed alternative against the four general standards for corrective measures (overall protection of standards of human health and the environment, attainment of clean-up standards, source control, and compliance)

and the five selection decision factors (long term reliability and effectiveness, reduction in *toxicity*, mobility and volume, short-and long term effectiveness, implementability, and cost). This section also presents a comparison of the proposed corrective measure to the other alternatives under consideration.

A. General Standards

1. Overall Protection

GW-1 (Institutional Controls) is protective of human health and the environment to the extent that it prevents the use of groundwater on-site by imposing restrictions on the Facility Deed. GW-1 also provides for periodic monitoring and reporting of groundwater data to track compliance with established media clean-up standards. GW-2 (Pump and Treat) serves to contain the contaminant plume and prevent it from migrating. In addition, GW-2 provides for the treatment of the contaminated plume by removing the site specific contaminants of concern, and is, therefore, protective of human health and the environment. Both GW-1 and GW-2 provide some degree of protection to human health and the environment, however, neither alternative alone provides complete overall protection. Rather, a combination of GW-1 and GW-2 is proposed to provide full protection of human health and the environment.

SW-1 (Excavation/Incineration) is protective of human health and the environment because it provides for the removal and proper disposal of contaminated soils. SW-2 (In-Situ Soil Vapor Extraction), SW-3 (Air Sparging), SW-4 (Bioremediation) SW-5 (Biological Enhancement by Soil Venting) are protective of human health and the environment because they provide for the removal and treatment of the site specific contaminants of concern from contaminated soils. SW-1 is not preferred because during excavation, it creates an exposure pathway to the contaminated soil. SW-3, SW-4, and SW-5, are not preferred because the low permeability properties of the soils at the Facility render these alternatives ineffective, therefore, they do not provide full protection of human health. In addition, SW-3 and SW-5 would simply transfer VOCs from soil to the air without treatment. For contaminated soil, SW-2 is preferred since it removes the site-specific contaminants of concern in place without transferring VOCs from the soil to air without treatment. In addition, EPA has successfully implemented this technology in the past.

2. Attainment of Clean-up Standards

Of the groundwater alternatives, only GW-2 (Pump and Treat) will attain media clean-up standards. GW-1(Institutional Controls) provides for contaminated plume monitoring and reporting and deed restrictions but does not provide any

treatment to remediate site specific contaminants of concern. In order to track compliance with established media clean-up standards however, EPA is proposing GW-2 in combination with GW-1.

In certain geological formations SW-3 (Air Sparging), SW-4 (Bioremediation) SW-5 (Biological Enhancement by Soil Venting) would attain the established media clean-up standards. However, the low permeability of the soils at the Facility severely limits the efficiency of these alternatives at this facility because the intermolecular spacing of the soil molecules restricts the passages of the VOC molecules. Both SW-1 (Excavation/ Incineration) and SW-2 (In-Situ Soil Vapor Extraction) would attain established media clean-up standards, however, SW-2 is preferred because it treats contaminated soils in place to remove contamination while SW-1 would result in human exposure from excavation activities.

3. Controlling the Source of Releases.

GW-2 (Pump and Treat) serves to control and reduce the source of releases because it prevents further migration of the contaminated plume and treats contaminated groundwater to remove the site specific contaminants of concern. GW-1 (Institutional Controls) does not serve to control the source or release because it provides for groundwater monitoring activities and deed restrictions. EPA is, however, proposing GW-2 in combination with GW-1 since groundwater monitoring provided for under GW-1 is necessary to demonstrate that the groundwater plume is being contained.

In other geological formations, SW-3 (Air Sparging), SW-4 (Bioremediation) SW-5 (Biological Enhancement by Soil Venting) would serve to control the source of releases by removing site specific contaminants of concern from the contaminated soils. However the low permeability of the facility soil severely limits efficacy of this alternative. In addition, SW-3 and SW-5 serve to transfer VOCs from soil to air without treatment, creating a release to air. SW-1 (Excavation/ Incineration) controls the source of release because it removes the contaminated soil. However this alternative is not preferred since it has the potential to release contaminants to air during excavation activities. SW-2 (In-Situ Soil Vapor Extraction) controls the source of release because it removes and treats site specific contaminants and, therefore, is the preferred corrective measures alternative for controlling the source of the release.

4. Compliance with Waste Management and Other Standards

Corrective measures alternatives must comply with applicable federal, state and local laws, regulations and policy. Standards which may be applicable to GW-1(Institutional Controls)

pertain to the process by which a deed is restricted and the associated documentation. The groundwater withdrawal rates for the GW-2 (Pump and Treat) alternative will be reviewed and approved by local and/or state officials. The discharge of treated groundwater for this alternative is regulated under the Clean Water Act NPDES regulations.

With respect to the soil alternatives, under SW-1, the excavated soil must be handled as hazardous waste, and the treatment byproducts, such as the spent carbon generated during the on-site treatment of soils under SW-2 (In-Situ Soil Vapor Extraction) must also be handled in accordance with applicable RCRA regulations. SW-3, SW-4, and SW-5 are processes which expedite the natural degradation of organic materials in the soils such that the waste products are minimal, thus, compliance with waste management and other standards would be most effective with these three corrective measures alternatives. SW-3, SW-4, and SW-5, however, are ineffective because of the low permeability properties of the soils at the Facility, and thus, will not produce waste products which require compliance with waste management standards.

B. Selection Decision Factors.

1. Long Term Reliability and Effectiveness:

GW-1 (Institutional Controls) provides a degree of long term effectiveness and reliability since it limits the onsite groundwater use for drinking water purposes through deed restrictions. However, GW-1 alone does not provide the desired degree of long term effectiveness because it does not remove site specific contaminants of concern in ground water or contain the plume. GW-2 (Pump and Treat) will provide long term reliability and effectiveness because GW-2 provides for the use of a proven groundwater technology which will remove groundwater contaminants and contain the plume, although it does not control the use of on-site groundwater for drinking water purposes. Consequently, EPA is proposing a combination of GW-1 and GW-2 to address contaminated groundwater at this facility.

SW-3 (Air Sparging), SW-4 (Bioremediation), SW-5 (Biological Enhancement by Soil Venting) do not provide long term reliability and effectiveness because the low permeability properties of the soils at this Facility renders these three corrective measures alternatives ineffective. SW-1 (Excavation/ Incineration) provides long term reliability and effectiveness because it provides for the removal and proper disposal of contaminated soils. SW-2 (In-Situ Soil Vapor Extraction) provides long term effectiveness and reliability because it provides for treatment to remove site specific contaminants of concern from soil. SW-2 is preferred because it will treat the contaminated soils and remove the contamination while SW-1 simply

relocates the contaminated soil to another location off-site, while contributing to air pollutant concerns and worker exposure.

2. Reduction in Toxicity, Mobility, and Volume

GW-1 (Institutional Controls) requires restrictions on the use of on-site groundwater for drinking water purposes to eliminate exposure to the groundwater and its site specific contaminants of concern. Alone, GW-1 does not reduce either toxicity, mobility or volume of contaminants in groundwater. GW-2 (Pump and Treat) reduces the mobility of contaminated groundwater since it contains the plume. GW-2 reduces the toxicity, mobility, and volume of contaminants in the plume since it removes site specific contaminants of concern from contaminated groundwater and treats them before discharge in accordance with NPDES limitations. Together, GW-1 and GW-2 prevent human consumption of contaminated groundwater pending removal of contaminants from such groundwater. Consequently, EPA is proposing a combination of GW-1 and GW-2 to address contaminated groundwater at the facility.

SW-3 (Air Sparging), SW-4 (Bioremediation) and SW-5 (Biological Enhancement by Soil Venting) are designed to reduce the toxicity, mobility and volume of soil contamination. However, the low permeability of the soils makes SW-3, SW-4, and SW-5 ineffective. In addition, SW-3 and SW-5 simply transfer contaminants from the soil to air media. SW-1 (Excavation/ Incineration) will reduce the toxicity, mobility and volume of contaminants in soil at the Facility because it provides for the removal and proper disposal of contaminated soils. However, SW-1 merely transfers such contaminants to a landfill at another location at the same level of toxicity and volume. Furthermore, certain exposures could result from excavation and associated mobility in air. SW-2 (In-Situ Soil Vapor Extraction) will reduce the toxicity, mobility and volume of contamination by removing and treating contamination in soils, and is consequently proposed to address soil contamination at this facility.

3. Short Term Effectiveness

GW-1 (Institutional Controls) is an effective short term alternative because it quickly limits use of groundwater for drinking water purpose through deed restrictions. The short time required to design, implement and refine this proven technology of GW-2 (Pump and Treat) makes GW-2 a effective short term control measure. Neither alternative alone provide the desired degree of short term effectiveness. Consequently, EPA is proposing a combination of GW-1 and GW-2 to address contaminated groundwater at the facility.

The short time required to design and implement SW-3 (Air Sparging), SW-4 (Bioremediation) and SW-5 (Biological Enhancement by Soil Venting) would make these alternative effective short term corrective measures. However, low permeability properties of on-site soils render these alternatives ineffective and therefore are not preferred. SW-1 (Excavation/Incineration) is effective in the short term since excavation could be undertaken quickly. However certain potential human exposures could result in the short term from excavation activities and, as a result, this alternative is not preferred. The short term effectiveness of SW-2 (In-Situ Soil Vapor Extraction) is defined by the period of time required to design, construct and refine this alternative. This is a proven technology which can be implemented quickly, and is therefore preferred by EPA.

4. Implementability

Implementability of all Corrective Measure Alternatives is related to the activities required for each alternative.

Both of the groundwater corrective measures are readily implementable since they require continuing or extending activities presently in progress. Implementability of GW-1 (Institutional Controls) is also related to the additional time required to start periodic groundwater monitoring and reporting of groundwater data to tracking compliance with the established media clean-up standards. Additionally, the process time to restrict the facility deed affects the implementability of GW-1. Implementability of GW-2 (Pump and Treat) is related to the time required to design and construct the additional groundwater monitoring wells for the pump and treat system. Furthermore, time required to complete the permitting procedures and obtain the necessary approvals for groundwater withdrawal rates and complete the Clean Water NPDES requirements are factors which contribute to the implementability of GW-2.

All of the soil corrective measures alternatives are implementable with varying levels of success. SW-2 (In-Situ Soil Vapor Extraction) is readily implementable as demonstrated in the pilot study completed in the CMS. SW-3, SW-4, and SW-5, have minimal success due to the low permeability of the onsite soils. Thus SW-3, SW-4, and SW-5 are not preferred. In addition, SW-3 and SW-5 would simply transfer VOCs from soil to the air without treatment. For contaminated soil, SW-2 is preferred since it treats contaminated soils in place to remove the site specific contaminants of concern. In addition EPA has successfully implemented this technology in the past. None of the alternatives alone will achieve the remediation goals, thus, EPA prefers the implementability of the combination of SW-2, GW-1 and GW-2.

5. Cost

The total estimated capital and operation and maintenance costs associated with each corrective measure alternative for soil and groundwater are summarized below. EPA is proposing a combination of alternatives as the Corrective Measures Alternatives for the facility. EPA's proposed Corrective Measures Alternatives include GW-1 (Institutional Controls) plus a combination of GW-2 (Groundwater Pump & Treat) and SW-2 (In-Situ Soil Vapor Extraction). The estimated total project cost including capital cost and operation and maintenance cost of EPA's proposed Corrective Measures Alternatives (GW-1, GW-2, and SW-2) is $861,100[4]. The cost for each alternative is presented in Table 3.

Table 3

	COST		
	CAPITAL	O&M	TOTAL
A. NO ACTION	$ 0	$ 0	$ 0
B. EXCAVATION (SW-1)	$1,625,000	$ 0	$1,625,000
IN-SITU SOIL VAPOR EXTRACTION (SW-2)	$ 176,700	$ 359,400	$ 536,100
AIR SPARGING (SW-3)	$ 172,500	$ 573,200	$ 745,700
SOIL VENTING (SW-4)	$ 172,500	$ 695,400	$ 867,900
IN-SITU BIOREMEDIATION (SW-5)	$ 304,200	$ 912,100	$1,216,300
C. GROUNDWATER INSTITUTIONAL (GW-1)	$ 0	$ 325,500	$ 325,000
GW PUMP & TREAT (GW-2)	$ 122,000	$1,078,800	$1,200,800

[4] The cost for the preferred alternative is $536,100 plus $325,000 totaling $861,100.

GW PUMP & TREAT (GW-2) PLUS IN-SITU SOIL VAPOR EXTRACTION (SW-2)	$ 176,700	$ 359,400	$ 536,100[5]

XI. PUBLIC PARTICIPATION

EPA is requesting comments from the public on all the corrective measure alternatives and on EPA's preliminary identification of SW-2, GW-1 and GW-2 as the preferred corrective measure alternative to remediate the contaminated groundwater at the Facility. The public comment period will last thirty (30) calendar days beginning May 5, 1995 and ending June 5, 1995. Comments on the CMS and/or EPA's preliminary selection of a preferred corrective measure alternative shall be in writing. Written comments may be submitted to:

Mr. Vernon Butler (3HW62)
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107
(215) 597-5996

On November 23, 1994 EPA placed an announcement in the Parkesburg Post to notify the public of the public meeting on this Statement of Basis. The public meeting was held on November 29, 1994 at 7:00 PM in the Parkesburg Community Building Complex. A copy of the Administrative Record is available for review during business hours at the following two locations:

U.S. Environmental Protection Agency
Region III (3HW64)
841 Chestnut Building
Philadelphia, Pennsylvania 19107
Telephone Number: (215) 597-2381
and
Parkesburg Community Building Complex
329 W. First Avenue
Parkesburg, Pennsylvania 19365
Telephone Number: (610) 857-2616

Following the thirty (30) calendar day public comment period, EPA will prepare a Final Decision Document and Response to Comments which identifies the selected Corrective Measures and addresses all significant written comments and any significant oral comments generated at the public meeting. This Final Decision and Response to Comments will be made available to the

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[5] The combination of GW-2 and SW-2 reduces the remediation cost associated with each individually since SW-2 reduces the amount of time to pump and treat the groundwater

public. If, on the basis of such comments or other relevant information, significant changes are made in the Corrective Measures Alternative identified by EPA, EPA will seek public comments on the revised Corrective Measure Alternative.

Upon consideration of public comments, EPA will select a final Corrective Measure Alternative for the Facility. Thereafter, EPA will seek implementation of the final corrective measure alternative via available legal authorities, including RCRA Section 3008(h).

4/28/95
Date

Thomas C. Voltaggio, Director
Hazardous Waste Management Division

GLOSSARY

AIR STRIPPING - A technology which utilities air currents on a carbon filter to remove volatile organic compounds from water.

BTEX - Benzene, toluene, ethylbenzene and xylene contaminants.

CARCINOGEN - Any substance that can cause or contribute to the production of cancer.

CLEAN AIR ACT - Federal legislation enacted in 1970 establishing National Ambient Air Quality Standards for air pollutants.

CLEAN WATER ACT - Federal Legislation originally enacted in 1972 establishing Federal Water Quality Criteria for key pollutants.

LEACHING - Infiltration of water through soil extracting water-soluble compounds.

MAXIMUM CONTAMINANT LEVEL (MCL) - The maximum permissible level of a contaminant in water delivered to any user of a public water system. Developed under the Safe Drinking Water Act, 42 U.S.C. Section 300(f) et seq. as amended, and published at 40 C.F.R. Part 141 Subpart B.

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) - 33 U.S.C. Section 1251 et seq. of the Clean Water Act and Pennsylvania's Clean Streams Law, as amended, 33 P.S. Section 691.1 et seq. authorizes the discharge of wastewaters into water of the United States.

NON-CARCINOGEN - Any substance that will not contribute to the production of cancer.

PARTS PER MILLION (PPM) - A unit of concentration of a chemical substance or compound. It is similar to 1 inch in 16 miles, 1 penny on $10,000 or 1 pound in 500 tons.

PARTS PER BILLION (PPB) - A unit of concentration of a chemical ppm / 1000.

PLUME - The volume of contaminated groundwater.

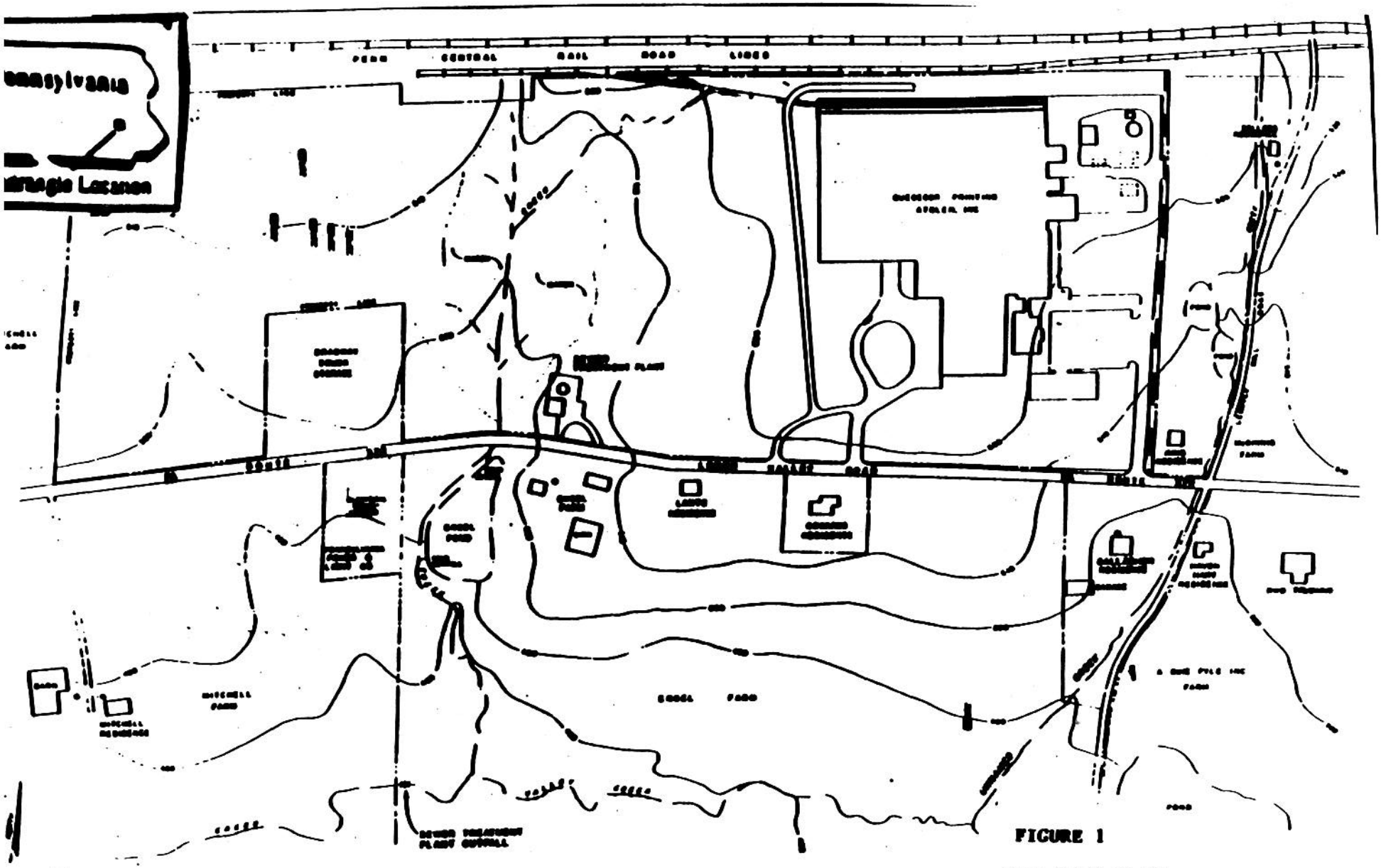
RBC - Risk Based Concentration - level of contaminant in soil which presents and unacceptable potential for adverse health effect.

ROTOGRAVURE - a photomechanical process by which pictures, typeset matter etc., are printed from an engraved copper cylinder.

TOXICITY - The degree of adverse effects posed by a contaminant to animal, human or plant life.

10^{-6} RISK - Potential for one person in a population of one million people contracting cancer.

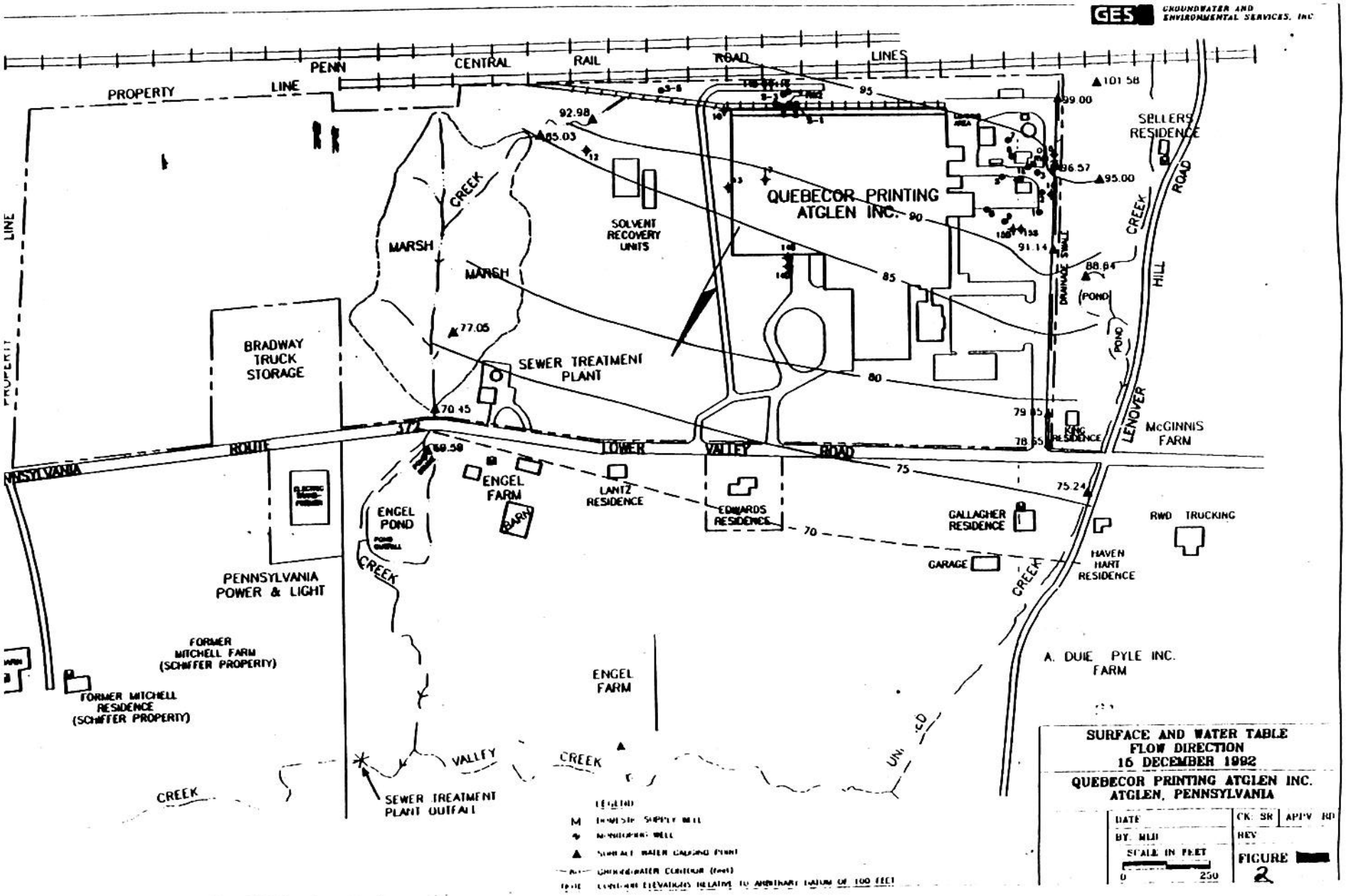
VACUUM EXTRACTION - Technology for the removal of volatile organic contaminants from soil by creating pressure differences below the soil surface, thereby forcing volatile organic contaminants out of the soil.



• DOMESTIC WELL

FIGURE 1

SITE AREA PLAN
QUEBECOR PRINTING ATGLEN, INC
ATGLEN, PENNSYLVANIA


GES GROUNDWATER AND ENVIRONMENTAL SERVICES, INC
PENN CENTRAL RAIL ROAD LINES
PROPERTY LINE
PROPERTY LINE
QUEBECOR PRINTING ATGLEN INC.
SOLVENT RECOVERY UNITS
MARSH
MARSH
CREEK
SEWER TREATMENT PLANT
BRADWAY TRUCK STORAGE
SELLERS RESIDENCE
ROAD
HILL
CREEK
LENOVER
McGINNIS FARM
POND
POND
ROUTE 372
LOWER VALLEY ROAD
ENGEL FARM
ENGEL POND
POND OVERFLOW
BARN
LANTZ RESIDENCE
EDWARDS RESIDENCE
GALLAGHER RESIDENCE
GARAGE
RWD TRUCKING
HAVEN HART RESIDENCE
CREEK
PENNSYLVANIA POWER & LIGHT
FORMER MITCHELL FARM (SCHIFFER PROPERTY)
FORMER MITCHELL RESIDENCE (SCHIFFER PROPERTY)
ENGEL FARM
A. DUIE PYLE INC. FARM
VALLEY CREEK
CREEK
SEWER TREATMENT PLANT OUTFALL
UNNAMED
92.98
95.03
99.00
101.58
96.57
95.00
91.14
88.84
77.05
70.45
79.05
78.65
75.24
95
90
85
80
75
70
LEGEND
SURFACE AND WATER TABLE FLOW DIRECTION 16 DECEMBER 1992
QUEBECOR PRINTING ATGLEN INC. ATGLEN, PENNSYLVANIA
DATE
BY: MJD
CK: SR
APPV: RD
REV
SCALE IN FEET
0
250
FIGURE 2

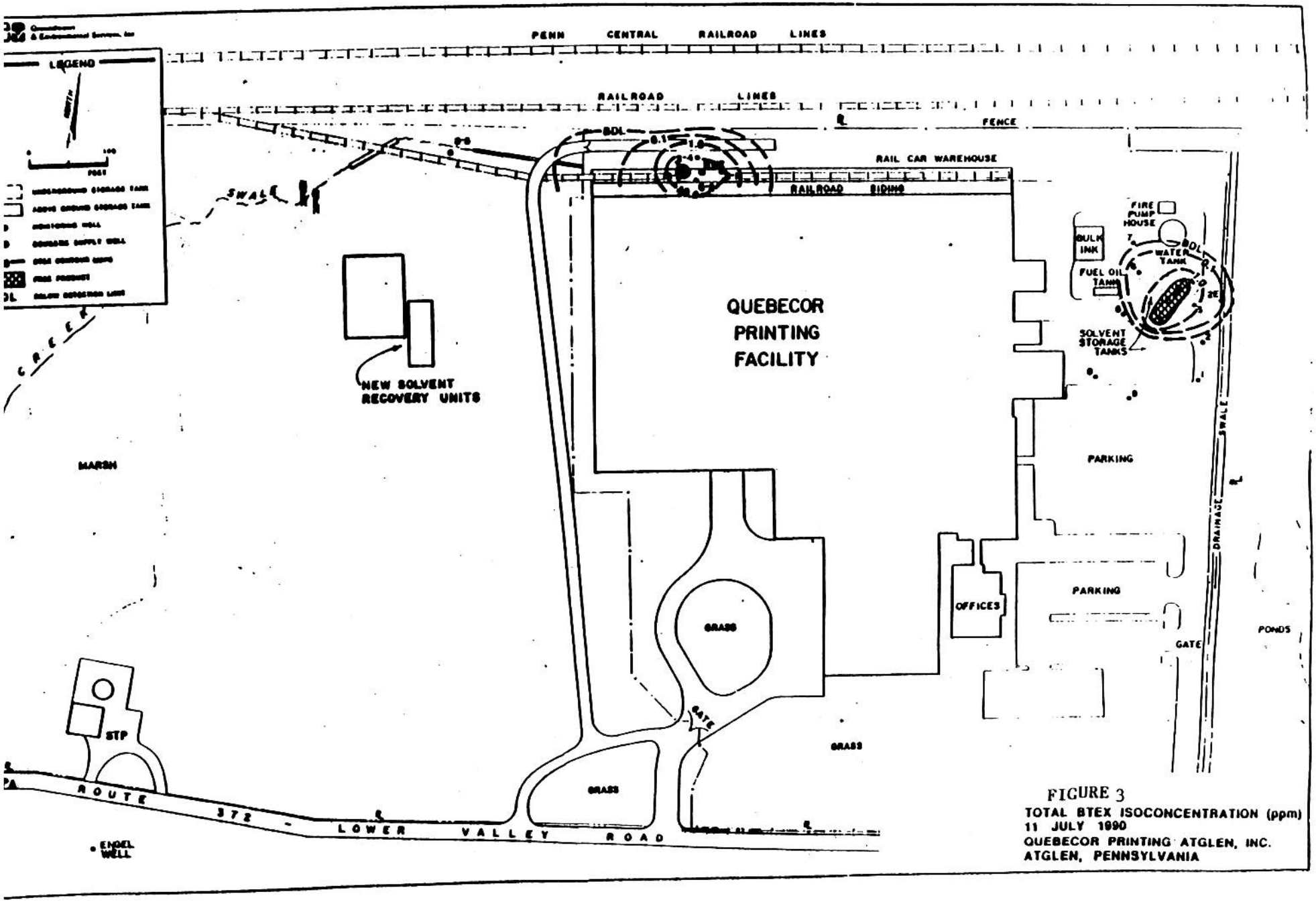


FIGURE 3
TOTAL BTEX ISOCONCENTRATION (ppm)
11 JULY 1990
QUEBECOR PRINTING ATGLEN, INC.
ATGLEN, PENNSYLVANIA

FIGURE 4

POINTS OF COMPLIANCE