Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

TTI - Crotty Road Site

Town of Wallkill, Orange County, New York

Site Number 3-36-056

March 2004

New York State Department of Environmental Conservation

GEORGE E. PATAKI, *Governor* ERIN M. CROTTY, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

TTI - Crotty Road Inactive Hazardous Waste Disposal Site
Town of Wallkill, Orange County, New York
Site No. 3-36-056

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for the TTI - Crotty Road site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the TTI - Crotty Road inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

Actual or threatened releases of hazardous waste constituents from this site have been addressed by implementing the interim remedial measures identified in this ROD. The removal of contaminated soil from the site and the continued operation of two air sparging / soil vapor extraction systems (AS/SVE) has significantly reduced the threat to public health and the environment. An operation, maintenance, and monitoring plan for the AS/SVE systems is in place and is being implemented. A groundwater monitoring program is also implemented to monitor the effectiveness of previous remedial actions in preventing further contamination of the groundwater.

Description of Selected Remedy

Based on the results of the Remedial Investigation and Feasibility Study (RI/FS) for the TTI - Crotty Road site and the criteria identified for evaluation of alternatives, the NYSDEC has selected No Further Action with continued operation of the AS/SVE systems and quarterly groundwater monitoring. The components of the remedy are as follows:

- Continued operation, maintenance and monitoring of two air sparging / soil vapor extraction systems.

- Monitoring the effectiveness of the air sparging and the natural attenuation of on-site groundwater.

- Implementation of a site management plan that will include maintenance of the asphalt pavement that serves as a cap over the contaminated soil and address residual contaminated soils that may be excavated from the site during future redevelopment.

- An environmental easement that will require an evaluation of soil vapor intrusion pathways if the use of the site's buildings changes.

- An institutional control will be imposed in the form of an environmental easement that will require compliance with the approved site management plan, limit the use and development of the property to commercial or industrial uses; restrict use of groundwater as a source of potable or process water, and require the property owner to complete an annual certification.

New York State Department of Health Acceptance

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

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

_____ _____

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

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SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the TTI-Crotty Road site. As more fully described in Sections 3 and 5 of this document, numerous spills have resulted in th disposal of hazardous wastes, including toluene and other VOCs. These wastes contaminated the soil and groundwater at the site, and resulted in:

- a significant threat to human health associated with potential exposure to contaminated soil, groundwater and soil vapor.

- a significant environmental threat associated with the impacts of contaminants to the groundwater resource.

During the course of the investigation certain actions, known as interim remedial measures (IRMs), were undertaken at the TTI-Crotty Road site in response to the threats identified above. An IRM is conducted at a site when a source of contamination or an exposure pathway can be effectively addressed before completion of the remedial investigation/feasibility study (RI/FS). The IRMs undertaken at this site included:

- construction and operation of an air sparge / soil vapor extraction (AS/SVE) system in the solvent handling and recovery area;

- excavation and disposal of toluene contaminated soil from the loading dock area;

- construction and operation of a second AS/SVE system at the solvent storage building; and

- excavation and off-site disposal of toluene contaminated soil from the roof down spout drainage area.

Based on the implementation of the above interim remedial measures, the findings of the investigation this site indicate that the site no longer poses a significant threat to human health or the environment, therefore No Further Action with continued operation of the two AS/SVE systems, groundwater

monitoring, and institutional controls was selected as the remedy for this site. The NYSDEC also will reclassify the site to a Class 4 site on the New York State Registry of Inactive Hazardous Waste Disposal Sites. A Class 4 site is described as properly closed - requires continued management

The selected remedy, discussed in detail in Section 6, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards a criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

SECTION 2: SITE LOCATION AND DESCRIPTION

The TTI-Crotty Road facility is in a rural setting at 135 Crotty Road, in the Town of Wallkill, Orange County (Figure 1) near Middletown. The site occupies a rectangular piece of property measuring approximately 1900 ft by 750 ft (32.7 acres) (Figure 2). The site is bounded on the north by Interstate Route 84, on the south by Crotty Road and a cement manufacturer and on the east and west by residential areas. The site consists of a large single floor central building, a smaller manufacturing building, and several warehouse type structures and outbuildings. A majority of the active portions of the site are either paved or covered by the existing buildings.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

In 1985, Tesa Tape, Inc. (TTI) acquired the site from Strick Corp., a manufacturer of tractor-trailer trailers for over the road hauling. TTI made improvements to the existing site buildings to accommodate the equipment for their tape manufacturing processes.

In December 2003, Tesa Tape, Inc. sold a portion of its business and certain assets of the Middletown plant to Intertape Polymer Group Inc. The plant ceased operation shortly thereafter.

TTI used toluene in the manufacture of masking tape. Most of the toluene was reclaimed for reuse. Spills, disruptions in the manufacturing process, equipment failures, and poor housekeeping resulted in environmental impacts at the site.

- Toluene contamination was first detected in 1996 in the solvent handling and recovery area outside of the building. The spill was never reported. Therefore, the date and quantity of the toluene release is unknown.

- Toluene was used on the coating head equipment inside the facility building near the solvent handling and recovery area. The concrete slab floor was cracked beneath and around the coating head equipment. Toluene had impacted shallow soil beneath the slab.

- During construction of a ramp at the southwest loading dock in December 1999, toluene contamination was found in the soils. Contamination had also migrated beneath an adjacent portion of the facility known as the mixing room.

- In April 2000 toluene was released from a loose pipe fitting in the solvent storage building where the solvent is stored in five above ground storage tanks. Although the floor and side walls of the building were constructed to contain a spill, the concrete floor was cracked and toluene was able to seep beneath the slab.

- A process formerly used at the facility often resulted in the release of toluene enriched gas to the environment. Some of the toluene would condense on the roof. Later rain events would wash the toluene from the roof and down the roof drainage down spouts. During an April 2000 investigation, toluene impacted soil was found at some of the down spout discharge points.

3.2: Remedial History

In May 2001, the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

Solvent Handling and Recovery Area

In October 1996, toluene contamination was detected in soils and shallow groundwater at thirteen sampling locations (Figure 3) near the solvent recovery building. An investigation was conducted in March 1997 to delineate the contamination in the solvent handling and recovery area. During the investigation, nine additional soil borings were completed with the majority located between the solvent recovery area and the solvent storage building. (Figure 4) Each of the samples was immediately analyzed for toluene using an on-site gas chromatograph (GC).

An air sparging / soil vapor extraction (AS/SVE) system was constructed in the solvent handling and recovery area and put in to operation in June 1998.

Coating Head Area

An April 2000 investigation of the coating head area required coring through the plant floor slab. Soil and/or soil gas samples were collected at 18 locations (Figure 5) around the coating head to assess the potential impact and distribution of toluene under the slab. Where possible, a sample of the exposed soil beneath the concrete floor was collected and analyzed for toluene using a field GC. Samples were generally collected from a depth of 0-1 ft below the slab.

In December 2000, additional SVE piping was installed to remediate the contamination beneath the floor in the coating head area. The new piping was then attached to the AS/SVE system operating in the solvent handling and recovery area.

Solvent Storage Building

A subsurface investigation was conducted in April 2000 following an earlier release of toluene from a loose pipe fitting in the solvent storage building.

Eleven soil and soil gas sampling points were installed through the slab along the interior perimeter of the solvent storage building at depths varying from four to eight feet. (Figure 6) Upon completion of tl interior sampling, all of the sampling locations and floor cracks were filled and sealed with a solvent resistant epoxy to maintain containment in the building in the event of another spill.

Exterior sampling around the solvent storage building consisted of shallow soil probes and shallow and deep monitoring wells installed with a conventional rotary drilling rig. (Figure 7) Seventeen soil samples were collected from nine shallow soil probe locations approximately eight feet from the build on the northwest, southwest and southeast sides of the building. All of the samples collected were immediately analyzed for toluene using an on-site GC.

Loading Dock Area

Toluene impacted soil was encountered in December 1999 during construction of a new ramp at the loading dock near the southwest corner of the building. In December 1999 and April 2000, a total of 42 soil samples were collected from fourteen soil borings, two test pits and two hand excavations for toluene analysis. Soil gas sampling was also conducted in the adjacent mixing room in April 2000. (Figure 8)

Approximately 50 tons of toluene contaminated soil was excavated and removed from the loading dock area in June 2000.

Roof Drain Down Spouts

During the April 2000 site investigation, areas of deteriorated pavement and paint were noted in the vicinity of the roof down spouts. Soil samples were collected at the facility's roof drainage down spou discharge points (Figure 9). These samples were generally collected in two intervals (0 to 1 ft and 1 to 2 ft). Toluene contamination was detected in the shallow soils in some areas.

Drum Crushing Building

A small building near the northern boundary of the site contains a machine formerly used to crush drun for recycling. The floor is solid concrete and the crushing apparatus was equipped to contain any residual materials from the drums. However, the area adjacent to the building is open soil or weathered asphalt. Soil samples were collected in April 2000 at seven locations near the building to assess the subsurface conditions in the area around the building. (Figure 10) Locations that showed surface discoloration or other suspect features were targeted for sampling. The soil samples were immediatel

analyzed on-site for toluene. Toluene concentrations in soils around the drum crushing building did no exceed the NYSDEC TAGM 4046 recommended soil cleanup objective.

Former Septic System

An inactive septic system is located beneath a parking lot on the south side of the facility near Crotty Road. The facility was connected to the public sanitary sewers prior to TTI purchasing the property in 1985. To address the potential that toluene may have been previously discharged via the septic system, three borings were advanced within the septic system in April 2000. Toluene concentrations did not exceed the NYSDEC TAGM 4046 recommended soil cleanup objective in the former septic system area. (Figure 11)

Site Groundwater

Over a five-year period beginning in January 1998 thirteen monitoring wells have been constructed at the site in areas, or down gradient from areas, where soil contamination was found or suspected. (Figure 12) Monitoring well MW-4 is located upgradient from the spill locations. MW-2, MW-3S and MW-3D were constructed to monitor groundwater conditions in the solvent handling and storage area. MW-1, MW-6, MW-7S and MW-7D monitor conditions near the solvent storage building. MW-5 and MW-11 were constructed down gradient of the loading dock area. MW-8 monitors for potential off-site migration of groundwater contamination toward an adjacent residence. MW-9 is in the southern parking lot at the most down gradient portion of the site to evaluate the groundwater in the vicinity of the former septic system. MW-10 is just down gradient from the drum crushing building.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The NYSDEC and Tesa Tape Incorporated (TTI) have entered into two separate Consent Orders.

The first Order was signed on March 31, 1997 prior to the site being listed on the Registry. The 1997 Order obligates the responsible party to conduct an interim remedial measure (IRM) on an earlier spill in the solvent recovery area.

Following additional spills at the site and listing of the site on the Registry, the second Order was signe on September 21, 2002. The 2002 Order obligates the responsible party to implement a full remedial program for the entire site.

SECTION 5: SITE CONTAMINATION

A remedial investigation/feasibility study (RI/FS) has been conducted to evaluate the alternatives for addressing the significant threats to human health and the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between September 2002 and February 2003. The field activities and findings of the investigation are described in the RI report.

The following activities were conducted during the RI:

- Sampling of twelve existing monitoring wells.

- Installation and sampling of one additional monitoring well for analysis of groundwater.

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels."

Based on results of investigations conducted prior to the RI and the second Consent Order and the later RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site required remediation. These are summarized below. More complete information can be found in the RI report.

5.1.1: Site Geology and Hydrogeology

The Tesa site lies within the United States Geological Survey (USGS) Goshen quadrangle and is located within the Wallkill River drainage basin. According to the Soil Survey of Orange County, soils in the surrounding area and underlying the site are predominantly fill overlying native glacial till deposi Bedrock underlying the site area is Middle Ordovician in age and consists of the lower member of the Normanskill Shale formation, the Mount Merino Shale. The Mount Merino is divided into a lower and an upper unit. The lower unit is composed of medium-dark grey, silty mudstone in layers ranging from 0.25 to 6-in thick separated by layers of silt and fine sand. Higher in the unit, laminated sandy siltstone is more prominent with typical thick, massive beds.

Borings advanced on-site have revealed that the fill material underlying the site typically consists of brown to orange-brown fine to medium grained sand, with some silt and occasional clay. The clay lenses present in the fill material periodically cause localized perched water conditions during early spring or other times following heavy precipitation. The fill material on-site appears to be native glacia

deposits that were reworked during site construction and are no longer in their original depositional position.

On-site bedrock has been encountered at depths ranging from 8 ft to 14 ft below grade. The bedrock consists of brown to grey shale. Although bedrock cores were not retrieved, samples examined from borings indicate bedrock to be the Mount Merino Shale member of the Normanskill Shale Formation. Typically, weathered pieces of the shale were noted in the samples retrieved from test soil borings above competent bedrock.

Groundwater is found both as perched and in unconfined conditions ranging from 5.5 ft to 10.0 ft belo grade. Perched conditions occur where shallow clay lenses are present that prevent downward percolation. Regionally, the unconfined groundwater is believed to flow south, southeast toward the Wallkill River. Locally the predominant groundwater direction at the site is to the south with a minor component to the southeast.

5.1.2: Nature of Contamination

As described in the RI report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the category of contaminants that exceed their SCGs is volatile organic compounds (VOCs).

The VOCs of concern are toluene, 1,1,1-trichloroethane (TCA), and 1,1-dichlorethane (DCA). Toluene was used by TTI as a solvent in the tape manufacturing process. TCA and DCA are also solvents that are remnants of the industrial activities of the previous site occupants.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigat

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) soil, and parts per billion by volume (ppbv) for soil gas. For comparison purposes, where applicable, SCGs are provided for each medium.

Table 1 summarizes the degree of contamination for the contaminants of concern in soil and groundwater and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Subsurface Soil

Prior to the site being listed, subsurface soil investigations were conducted in seven areas as discussed in Section 3.2. Toluene was the only hazardous material used in the tape manufacturing process and known to have been released at the site. Therefore, the soil and soil gas were only analyzed for toluene. Significant contamination was detected in the solvent handling and recovery area, the coating

head area, the solvent storage building, the loading dock area, and the roof drain down spout discharge points.

Solvent Handling and Recovery Area

The initial investigation conducted in October 1996 in the solvent handling area consisted of thirteen s probes (Figure 3) that were completed to various depths in the vicinity of the solvent recovery building Toluene concentrations in the soil samples ranged from non-detect (ND) at P-8 to 142 ppm at P-4. Three of the 25 samples collected exceeded the TAGM 4046 recommended soil cleanup objective of 1.5 ppm for toluene.

Due to elevated concentrations of toluene in groundwater, nine additional borings, B-1 to B-9, were driven in March 1997 to delineate the extent of toluene impacts to soil and groundwater in and around the solvent handling and recovery area. (Figure 4) Toluene concentrations in the soils were well belov the 1.5 ppm soil cleanup objective.

Coating Head Area

Soil and soil gas samples were collected in April 2000 from eighteen locations in and around the location of the coating head apparatus. (Figure 5). Free-phase product was encountered under the floor in boring locations #1 and #18. A soil sample was collected at #1 from below the layer of free-phase product. The investigation found that toluene concentrations exceeded the soil SCG only in the soil near the coating head area where the highest concentration detected was 11.1 ppm in boring #2. Minor impacts were detected in soil beyond the coating head area.

The extent of the soil gas distribution beneath the floor slab was likely a result of the off-gassing of the free product and the impacted soil around the coating head. The soil conditions at the shallow depth of 2 ft below the slab indicated that the soil is very compact and is limiting any significant downward migration of toluene and containing it to a small area just beneath the slab.

Solvent Storage Building

Eight of the eleven soil samples collected in April 2000 from beneath the solvent storage building floo slab exceeded the recommended soil cleanup objective of 1.5 ppm for toluene (Figure 6). The toluene concentrations ranged from non-detect in sample #10 to 176.8 ppm in sample #3. The two samples with the highest toluene concentrations were closest to the sump.

Soil gas screening conducted in the eleven borings in the building confirmed elevated concentrations o toluene in soil beneath the floor slab. Significant vapor concentrations were detected at each sample point within the solvent storage building. The soil and soil gas data indicated that toluene contaminatio is present under the entire slab.

Twenty-one soil samples were collected from ten soil borings along the outside of the solvent storage building. (Figure 7) The soil samples were collected from ground surface to two feet below ground surface. In all of the soil samples, the toluene concentrations were well below the TAGM 4046 soil cleanup objective of 1.5 ppm. The highest toluene concentration detected was 0.0067 ppm in boring G-20.

Loading Dock Area

In December 1999 and April 2000, a total of 42 soil samples were collected from fourteen soil boring three test pits and two hand excavations for toluene analysis. (Figure 8) Toluene concentrations exceeding the TAGM 4046 soil cleanup objective were detected in five of the soil samples collected from this area. The locations exceeding the guidance value were B-2 (2-4 ft interval; 12.6 ppm), B-2 (0-2 ft interval; 42.6 ppm), B-3 (2-4 ft interval; 3.6 ppm), TP-2 (0-1 ft interval; 175 ppm), and TP-3 (0-1 ft interval; 12.7 ppm).

Soil gas screening indicated that there was no toluene impact to soils under the adjacent mixing room floor slab. The highest soil gas concentration was 30 ppb/v in a sample collected near the loading dock. A background air sample was collected from the mixing room when toluene was in use at the plant. The background sample showed 42.6 ppb/v of toluene. This was higher than any of the sub-slab soil gas samples. The low soil gas concentrations indicate that no significant toluene contaminatio is beneath the mixing room and the contamination is predominately limited to the dock.

Roof Drainage Down Spout Discharge Points

During the March 1997 investigation of the solvent storage and recovery area, water samples were collected from three of the roof down spouts to screen for potential toluene contamination. Toluene was detected in these samples at 0.13, 1.6, and 619 ppb in RD-1, RD-2, and RD-3 respectively (Figure 4). Due to these findings, soil sampling was conducted at the roof down spout discharge points

Soil samples collected at the roof down spout discharge points during 2000 showed toluene concentrations in excess of the soil cleanup objective in soil borings G-12 and G15 near exhaust fans on the west side of the facility. (Figure 9) The respective toluene concentrations were 93 ppm and 601 ppm. The remainder of the soil samples collected beneath the down spouts were all well below the TAGM 4046 soil cleanup objective of 1.5 ppm.

Water samples were also collected directly from the down spouts and the toluene concentrations in these samples confirmed that the down spouts were the source of the soil contamination. Toluene concentrations in the water samples ranged from 0.9 ppb at G-1 to 805 ppb at G-13. The majority of the samples with higher concentrations of toluene were found between G-11 and G-17.

Drum Crushing Building

Around the drum crushing building, nine soil samples were collected from eight borings and monitorin well MW-10 during its construction in April 2000. (Figure 10) All nine of the samples were well below the TAGM 4046 recommended soil cleanup objective of 1.5 ppm. The soil concentrations ranged from non-detect in MW-1 to 0.0060 ppm in boring B-1.

Former Septic System

Four soil samples were collected from three soil borings in the former septic system area in April 200 (Figure 11) The toluene concentrations in the soil ranged from 0.001 ppm to 0.002 ppm. These concentrations are well below the TAGM 4046 recommended soil cleanup objective of 1.5 ppm.

Groundwater

During the initial October 1996 investigation of the solvent handling and recovery area, shallow perche groundwater samples were also collected from P-1, P-3, P-4, and P-5. The toluene concentrations in the water samples ranged from 71 ppb to 463,000 ppb. All of the perched groundwater samples were well above the NYSDEC Class GA groundwater standard of 5 ppb for toluene. To delineate the extent of the groundwater impact, soil and groundwater samples were collected from nine additional borings, B-1 to B-9. The toluene concentration in the groundwater ranged from a trace at B-7 to 15.86 ppb at B-4. This indicated that the contamination in the groundwater had not migrated much beyond the location of the original toluene release.

Thirteen monitoring wells were constructed at different times to investigate the different specific area the site. Toluene content in groundwater has been monitored since the first wells were constructed in January 1998. Eight air sparge wells that are connected to the air sparge / soil vapor extraction systems are also used as groundwater monitoring wells. The air sparge wells, as part of the remediatio systems, were constructed in the areas of significant soil and groundwater contamination. Therefore, the groundwater toluene concentrations are expected to be higher in those wells.

Beginning in February 2003, all of the monitoring wells have been analyzed for all volatile organic compounds (VOCs). The results of the three most recent groundwater sampling rounds conducted in February, May, August 2003 are detailed in Figures 13 and 14.

During these last three groundwater monitoring rounds, toluene was detected in one monitoring well, MW-5, which is down gradient from the loading dock. Toluene was detected at 250 ppb and 3200 ppb in MW-5 in February and May respectively. The groundwater standard for toluene is 5 ppb. However, toluene was undetectable in MW-5 in August 2003. Toluene has not been detected in nearby MW-11. This indicates that toluene has not migrated much beyond the original spill locations.

As expected, toluene was found in all of the air sparge wells except SSAS-4. The highest concentrations were found in nearby sparge wells SSAS-2 and SSAS-3 up to 7,500,000 ppb.

Low levels of chlorinated VOCs have been detected in all of the monitoring wells except MW-3S. 1,1,1-trichloroethane (TCA), 1,1-dichlorethane (DCA) and 1,1-dichloroethene (DCE) were found above groundwater SCGs with the respective maximum concentrations of 45 ppb, 21 ppb and 40 ppb. The groundwater SCG is 5 ppb for each compound.

TCA was found in air sparge wells SSAS-3 and LDAS at concentration ranging from non-detect to 29 ppb.

Total xylene was detected in SSAS-2 at a maximum concentration of 121 ppm during the May 2003 sampling round. The groundwater standard for total xylene is 5 ppb.

Other VOCs; chloroform, trichloroethene (TCE), tetrachloroethene (PCE), and trichlorofloromethane were detected in some of the wells at concentrations well below their groundwater standards.

The groundwater flow rates at the site are relatively low and contaminants have not been transported from the individual sources areas at significant concentrations. Groundwater flow contours and the approximate extent of the groundwater contamination plumes are shown in Figure 15.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or an exposure pathway can be effectively addressed before completion of the RI/FS.

Toluene contaminated soils were excavated from accessible locations in the loading dock area and three roof drain down spout discharge points. Two air sparging / soil vapor extraction (AS/SVE) systems are operating at the site. One system is operating in the solvent handling and recovery area and the coating head area. A second AS/SVE system is addressing soils beneath the solvent storage building and the loading dock area.

Air sparging (AS) is an in situ remedial technology that reduces concentrations of VOCs that are adsorbed to soils and dissolved in groundwater. This technology, also known as in situ air stripping and in situ volatilization, involves the injection of clean air into the groundwater, enabling a phase transfer of hydrocarbons from a dissolved state to a vapor phase. The air is then vented through the unsaturated zone.

When air sparging is combined with soil vapor extraction (SVE), the SVE system creates a negative pressure in the unsaturated zone through a series of extraction wells to control the vapor plume migration.

Soil vapor extraction, also known as soil venting or vacuum extraction, is an in situ remedial technology that reduces concentrations of volatile organic compounds (VOCs) adsorbed to soils in the unsaturated (vadose) zone by applying a vacuum through wells near the contaminated soil. The VOCs volatilize (evaporate) and the vapors are drawn toward the extraction wells. The VOC vapors are treated when necessary and the air is then discharged to the atmosphere.

Solvent Handling and Recovery Area

An air sparging / soil vapor extraction system (hereafter referred to as System 1) was constructed in th solvent handling and recovery area in June 1998. AS/SVE System 1 consists of five vapor extraction wells and four air sparging wells along the north and south edges of the nitrogen tank / heat exchanger (solvent recovery) pad on the west side of the facility. Compressed air is forced into the subsurface through the sparge wells, where it volatilizes contamination in the groundwater and soil. Extraction lin hooked to a vacuum pump then remove the volatilized toluene from the vadose zone. The air is then vented to the atmosphere. The system equipment and controls are housed in an adjacent remedial trailer. The vapor extraction system has been operational since June 1998 and the air sparging system came on-line that December. Toluene vapor effluent concentrations from the five extraction wells are measured monthly. The groundwater in the four sparge wells is also sampled monthly.

Monitoring of the AS/SVE system shows that it is effectively decreasing toluene concentrations in the groundwater. The SVE effluent concentrations were also decreasing until a second spill occurred in August 1999 in the same area. System 1 has removed approximately 125 pounds or 17 gallons of toluene since it was upgraded in July 2002.

Coating Head Area

In December 2000, additional SVE piping was installed to remediate the contamination confined to the soil immediately below the floor slab in the coating head area of the manufacturing building. Placing tl extraction lines at the space between the floor slab and the soil allows toluene vapors to be actively removed from the soil into the interface where it is subsequently removed via the extraction piping. Th existing System 1 extraction vacuum pump was upgraded in July 2002 to provide the necessary increase in extraction pressure for the coating head lines. The SVE piping from the coating head area was then connected to the upgraded System 1.

Solvent Storage Building

Contamination in the subsurface below the floor slab of the solvent storage building is currently being remediated through the use of a second AS/SVE system that was installed in July 2002 (hereafter referred to as System 2). The system consists of a series of slotted PVC extraction lines branching several feet inward toward the center of the floor slab. The piping runs connect to a vacuum pump that also draws vapors from the piping in the loading dock area.

Operation of the solvent storage building SVE system is occurring in a sequenced manner, whereby extraction lines are alternately opened on one side of the building at a time. All extraction in this syste takes place from the open line over a certain length of time, after which the line is valved off and the extraction line along the adjacent side of the building opened while all others remain closed. Rotating use of the extraction lines will continue around the building, while effluent concentrations are monitor so that the schedule for opening any given line can be tailored to address the levels detected during sampling. In addition to the piping installed directly under the building slab, four air sparge points were

installed around the two down gradient (south and west) sides of the building. Each AS point is set approximately 10 ft from the edge of the building and installed at an angle so that the two-foot screen section is below the watertable under the floor of the building. Vapor samples have also been collected from this system on a monthly basis since startup. To date, System 2 has been continuously operated, maintained and monitored monthly with minimal downtime. Approximately 625 pounds or 86 gallons of toluene have been removed by System 2 since it went online on August 8, 2002.

Loading Dock Area

Approximately 50 tons of toluene contaminated soil was removed from the loading dock area in June 2000. The extent of the excavation was limited by the building foundation. In December 2000, SVE lines were installed to remediate the remaining soil contamination beneath the loading dock and a portion of the building.

The SVE lines previously installed in the loading dock area were connected to System 2 in July 2002. An air sparge line was installed near the loading dock in July 2002 to remediate toluene impacted groundwater.

Roof Drain Down Spout Discharge Points

In June 2003, toluene contaminated soil was excavated from areas immediately below three drainage down spouts. The contaminated soil was properly disposed off-site. Asphalt was removed from the former sampling locations G-12, G-13 and G-15. Soil was then removed in 6 inch intervals and screened with a photoionization detector (PID) and confirmed with an on-site portable gas chromatograph. Approximately eight, four, and three yards respectively were removed from the three locations. Post excavation samples showed toluene concentrations were non detectable in the G-15 location and well below the TAGM 4046 recommended soil cleanup objective of 1.5 ppm in the G-12 and G-13 sampling locations.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Chapter 7 of the October 2003 Remedial Investigation & Interim Remedial Measures Completion Report. The report is available for public review at the document repositories.

An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry

contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently do not exist, but could in the future.

Under the current land use conditions at the TTI - Crotty Road site two groups of potential receptors could be exposed to site contamination in soil, groundwater, and soil vapor.

- Site employees.
- Construction workers.

The potential for exposure to contaminated soils and soil vapors has been significantly reduced by the completed soil removal IRMs and the ongoing air sparging / soil vapor extraction. In the case of a construction worker dermal exposure to the remaining contaminated soils and groundwater during excavation is also a possibility.

Depending on future land use conditions at the site two groups of potential receptors could be exposed to contamination present in site soil and groundwater.

- Future residents.
- Site employees / construction workers.

Both of these groups may be directly exposed to contaminants remaining in site soils. The future resident may ingest contaminants in groundwater if a private well is installed on-site. As above, a site worker may also be directly exposed to contaminants in groundwater during an excavation. Both groups may also be exposed to contaminants via inhalation of vapors released from groundwater or soils. Inhalation of soil vapors released into a future home or workplace from contaminated groundwater or soils is another potential route of exposure.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

Site contamination has impacted the groundwater resource in the shallow aquifer.

Contamination is confined to the site. Remaining soil contamination is beneath asphalt paving or the building slab. The hydrogeologic conditions at the site have restricted the vertical and horizontal flow groundwater contamination. Therefore, no surface water bodies are threatened and a viable exposure pathway to fish and wildlife receptors is not present.

SECTION 6: SUMMARY OF THE REMEDIAL GOALS AND SELECTED REMEDY

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

Prior to the completion of the IRMs described in Section 5.2, the remediation goals for this site were eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to toluene, TCA and DCA in soil, groundwater and soil vapor and

- The release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards.

Further, the remediation goals for the site include attaining to the extent practicable:

- ambient groundwater quality standards and

- soil cleanup objectives.

The NYSDEC believes that the IRMs will accomplish these remediation goals provided that the AS/SVE systems continue to be operated and maintained in a manner consistent with the design.

Based on the results of the investigations at the site, the IRMs that have been performed, and the evaluation discussed below, the NYSDEC has selected No Further Action with continued operation of the AS/SVE systems as the preferred alternative for the site. An operation, maintenance, and monitoring plan is in place and is being implemented. With that, the NYSDEC will also reclassify the site from a Class 2 to a Class 4 on the New York Registry of Inactive Hazardous Waste Disposal Sites, which means the site is properly closed but requires continued management.

The basis for this selection is the NYSDEC's conclusion that No Further Action with continued operation of the AS/SVE systems will be protective of human health and the environment and will meet all SCGs. Overall protectiveness is achieved through meeting the remediation goals listed above.

The main SCGs applicable to this project are as follows:

- As defined in the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels, the SCGs for toluene, TCA and DCA in soil are 1.5 ppm, 0.8 ppm and 0.2 ppm respectively.

- As defined in the NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of the New York State Sanitary Code, the groundwater SCGs for toluene, TCA and DCA are each 5 ppb.

All of the accessible toluene impacted soil was excavated and properly disposed. The remaining on-site soil contamination is contained beneath building slabs or asphalt. This acts as a cap that restricts rain water from passing through the contaminated soil and further impacting groundwater.

The two soil vapor extraction / air sparging systems have been operating since June 1998 and August 2002 respectively with minimal down time for maintenance and repairs. System 1 addresses soil and groundwater contamination in the solvent handling and recovery area and the coating head area. System 2 addresses the remaining contamination beneath the solvent storage building and in the loading dock area.

Both AS/SVE systems have been monitored since their construction. In both cases, the toluene concentrations in the air extracted from the contaminated areas have decreased significantly. This indicates that the remedial systems are effectively reducing the concentrations of toluene in soil and groundwater in the areas where they are operating.

The AS/SVE systems will remain in their current operation, maintenance and monitoring (OM&M) phase. Continued operation of the systems is expected to meet the remedial action objectives and no further remedial action for the groundwater or soils are necessary at this site in regard to past toluene spills.

Toluene, TCA, DCA are the other low concentration VOCs that are amenable to biodegradation in soils and groundwater. The biodegradation, dilution, and dispersion, in conjunction with the air sparging, will bring VOC concentrations below groundwater SCGs within a reasonable time frame.

The existing monitoring wells at the site will be monitored quarterly to assess the effectiveness of the sparging and the natural attenuation of the VOCs found in the on-site groundwater.

Where accessible, toluene contaminated soil was excavated and properly disposed. The two AS/SVE systems are addressing the remaining soil contamination by volatilizing the toluene and extracting it.

The remaining soil contamination is contained beneath building slabs or asphalt. Therefore, there currently are no direct exposure pathways to the remaining soil contamination.

The NYSDEC has concluded that the following elements of the IRMs already completed have or will achieve the remediation goals for the site and that No Further Action is needed other than OM&M and the institutional and engineering controls listed below.

1. Continued operation, maintenance and monitoring of two air sparging / soil vapor extraction systems.

2. Monitoring the effectiveness of the air sparging and the natural attenuation of on-site groundwater.

3. An environmental easement in the form of a site management plan will be implemented. The site management plan will include maintenance of the asphalt pavement that serves as a cap over the contaminated soil. The plan will also address residual contaminated soils that may be excavated from the site during future redevelopment. In the case of site redevelopment, the plan will require soil characterization, identification of any use restrictions, and, where applicable, disposal and/or reuse in accordance with NYSDEC regulations. The plan will also require soil vapor sampling, as appropriate, based on future development and/or construction plans.

4. An environmental easement that will require an evaluation of soil vapor intrusion pathways if the use of the site's buildings changes.

5. An institutional control will be imposed in the form of an environmental easement that will: (a) require compliance with the approved site management plan, (b) limit the use and development of the property to commercial or industrial uses only; (c) restrict use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the Orange County Health Department, NYSDOH and/or NYSDEC; and (d) require the property owner complete and submit an annual certification to the NYSDEC.

6. The property owner will provide an annual certification, prepared and submitted by a professional engineer or an environmental professional acceptable to the NYSDEC. To ensure continued protection of public health and the environment, the certification will verify that the institutional and engineering controls put in place are unchanged from the previous certification and nothing has occurred that would constitute a violation or failure to comply with any operation, maintenance, monitoring or site management.

7. The operation of the components of the remedy will continue until the remedial objectives have been achieved, or until the NYSDEC determines that continued operation is not feasible or technically impracticable.

SECTION 7: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A fact sheet and public meeting announcement was mailed on February 6, 2004 and a public comment period was held from February 9 through March 16 2004.
- A public meeting was held on February 23, 2004 to present the PRAP and receive comments on it.
- A responsiveness summary (Appendix A) was prepared to address the comments received during the public comment period for the PRAP.

In general, the public comments received were supportive of the selected remedy.

TABLE 1
Nature and Extent of Contamination
Tesa Tape Inc. - Middletown Facility, Town of Walkill - NYSDEC Site #336056
Remedial Investigation Sampling Data – September 1996 to August 2003

SUBSURFACE SOIL	Area of Concern	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Solvent Handling and Recovery Area	toluene	ND to 142	1.5	2 of 52
	Coating Head Area	toluene	0.002 to 11.1	1.5	3 of 17
	Loading Dock	toluene	ND to 175	1.5	5 of 42
	Solvent Storage Building	toluene	ND to 176.8	1.5	8 of 32
	Roof Drain Down Spout Area	toluene (pre-IRM) (post-IRM)	ND to 601 ND to 0.044	1.5	2 of 35 0 of 12
		1,1,1-trichloroethane (post-IRM)	ND	0.8	0 of 12
		1,1-dichlorethane (post-IRM)	ND	0.2	0 of 12
	Sanitary Septic System	toluene	0.001 to 0.002	1.5	0 of 4
	Drum Crushing Building	toluene	ND to 0.006	1.5	0 of 9

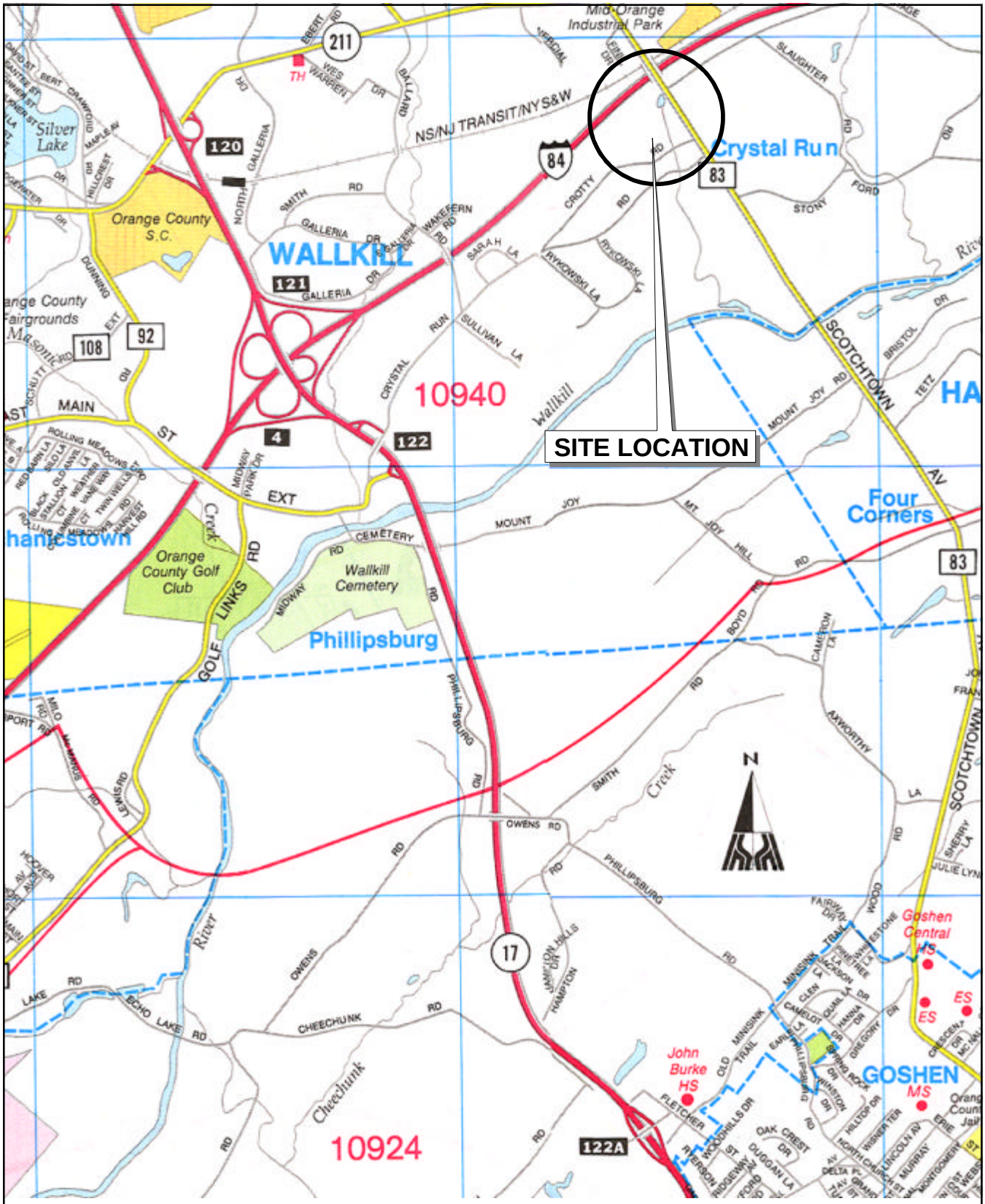
GROUNDWATER	Area of Concern	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Solvent Handling and Recovery Area	toluene	ND to 170	5	6 of 36
		1,1,1-trichloroethane (TCA)	ND to 45	5	11 of 36
		1,1-dichlorethane (DCA)	ND to 21	5	4 of 36
	Loading Dock	toluene	ND to 3200	5	3 of 15
		1,1,1-trichloroethane	1.1 to 31	5	8 of 15
		1,1-dichlorethane	ND to 7.4	5	7 of 15
	Solvent Storage Building	toluene	ND to 7,500,000	5	6 of 27
		1,1,1-trichloroethane	1.9 to 45	5	14 of 27
		1,1-dichlorethene (DCE)	2 to 40	5	2 of 27
	Sanitary Septic System	toluene	ND	5	0 of 3
		1,1,1-trichloroethane	10 to 12	5	3 of 3
		1,1-dichlorethane	ND to 1.6	5	0 of 3
	Drum Crushing Building	toluene	ND to 0.065	5	0 of 3
		1,1,1-trichloroethane	6.7 to 36	5	3 of 3
		1,1-dichlorethane	1.2 to 9.6	5	2 of 3

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;

[b] SCG = standards, criteria, and guidance values;

[c] LEL = Lowest Effects Level and SEL = Severe Effects Level. A sediment is considered to be contaminated if either of these criteria is exceeded. If both criteria are exceeded, the sediment is severely impacted. If only the LEL is exceeded, the impact is considered to be moderate.

ND - non-detect



Map source:
Hagstrom Map of Rockland/Ornage/Ulster Counties, 2000.

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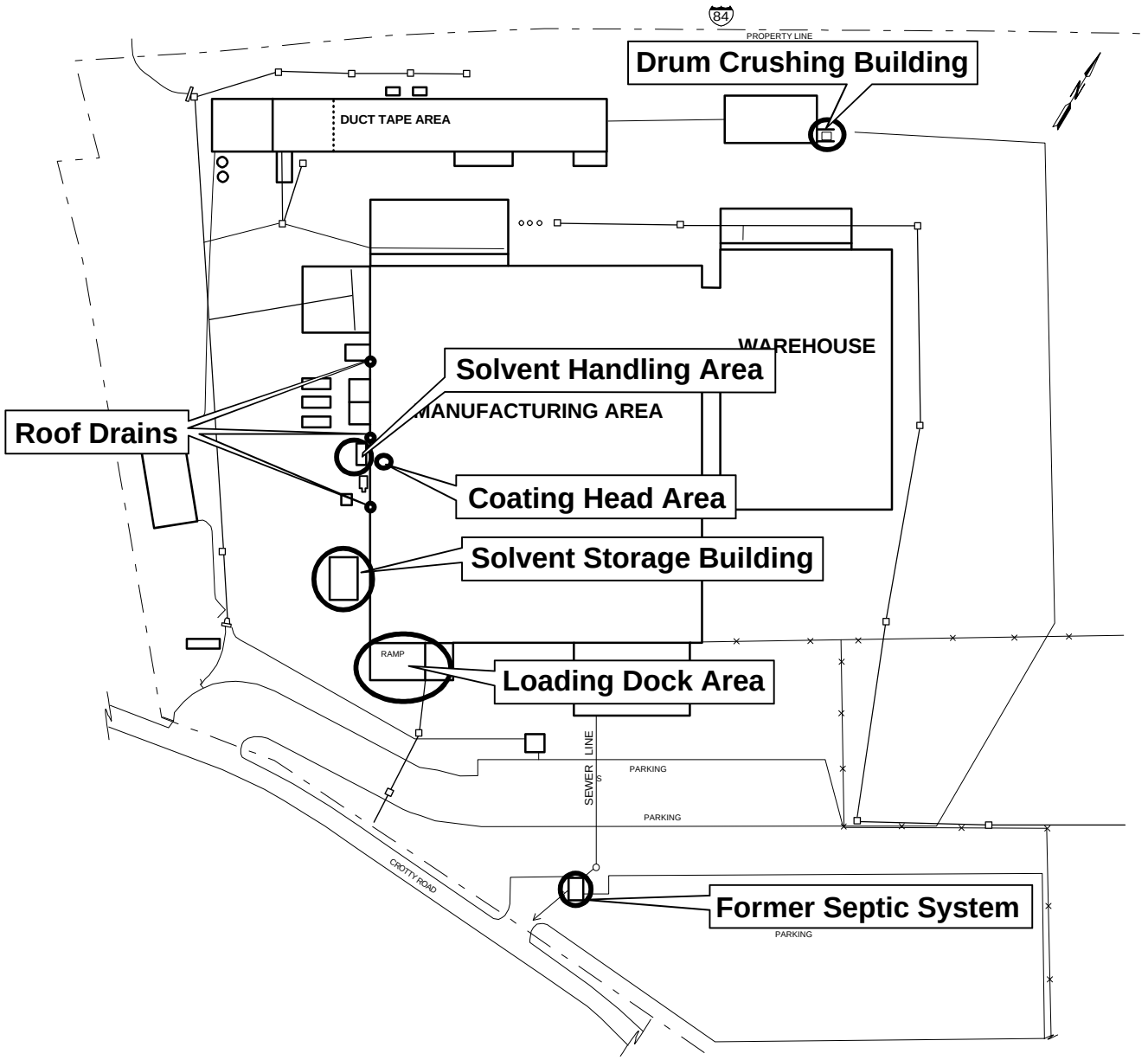
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Site Location** **tesa tape inc. • Middletown, New York**	**Figure 1**



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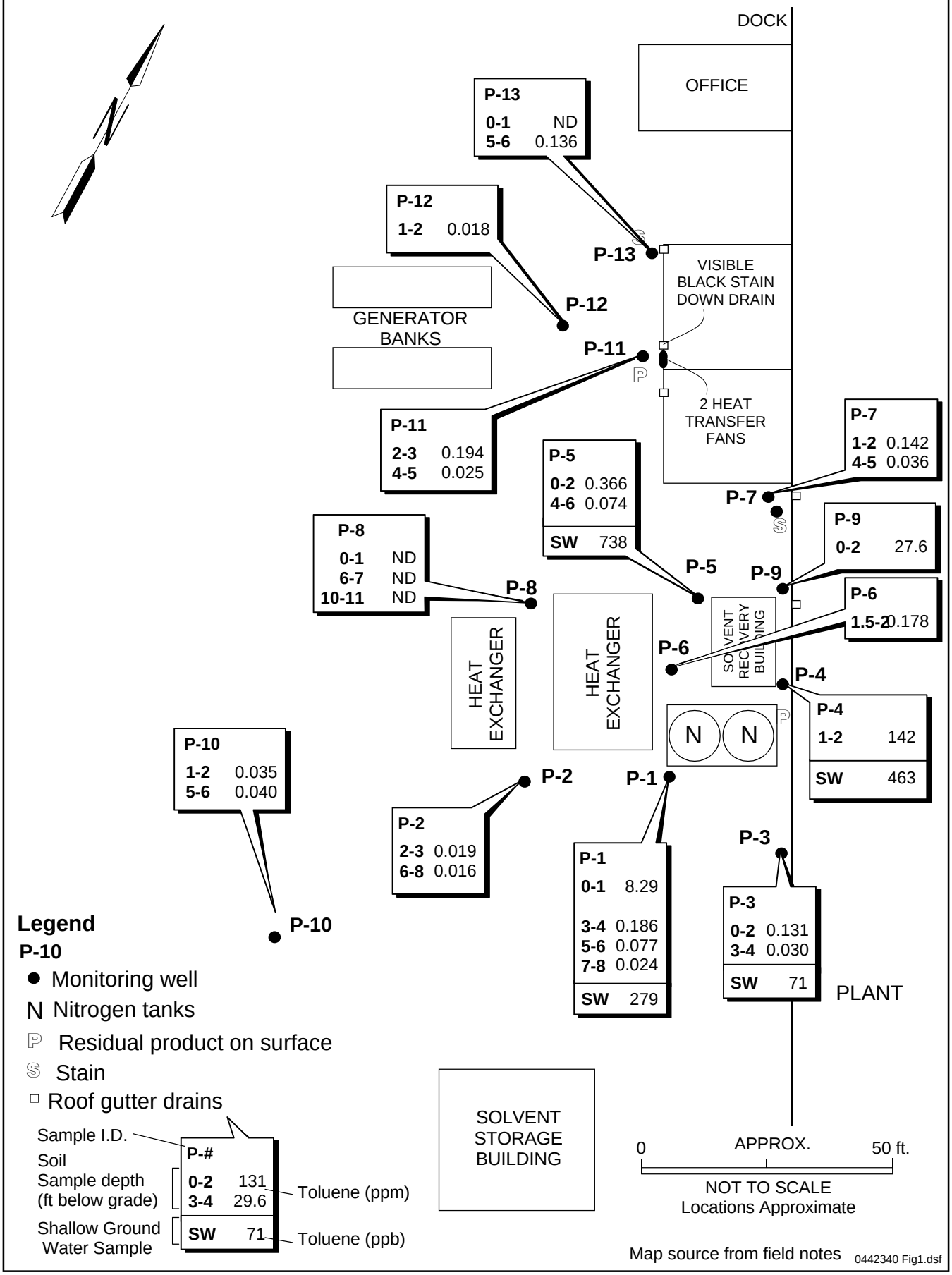
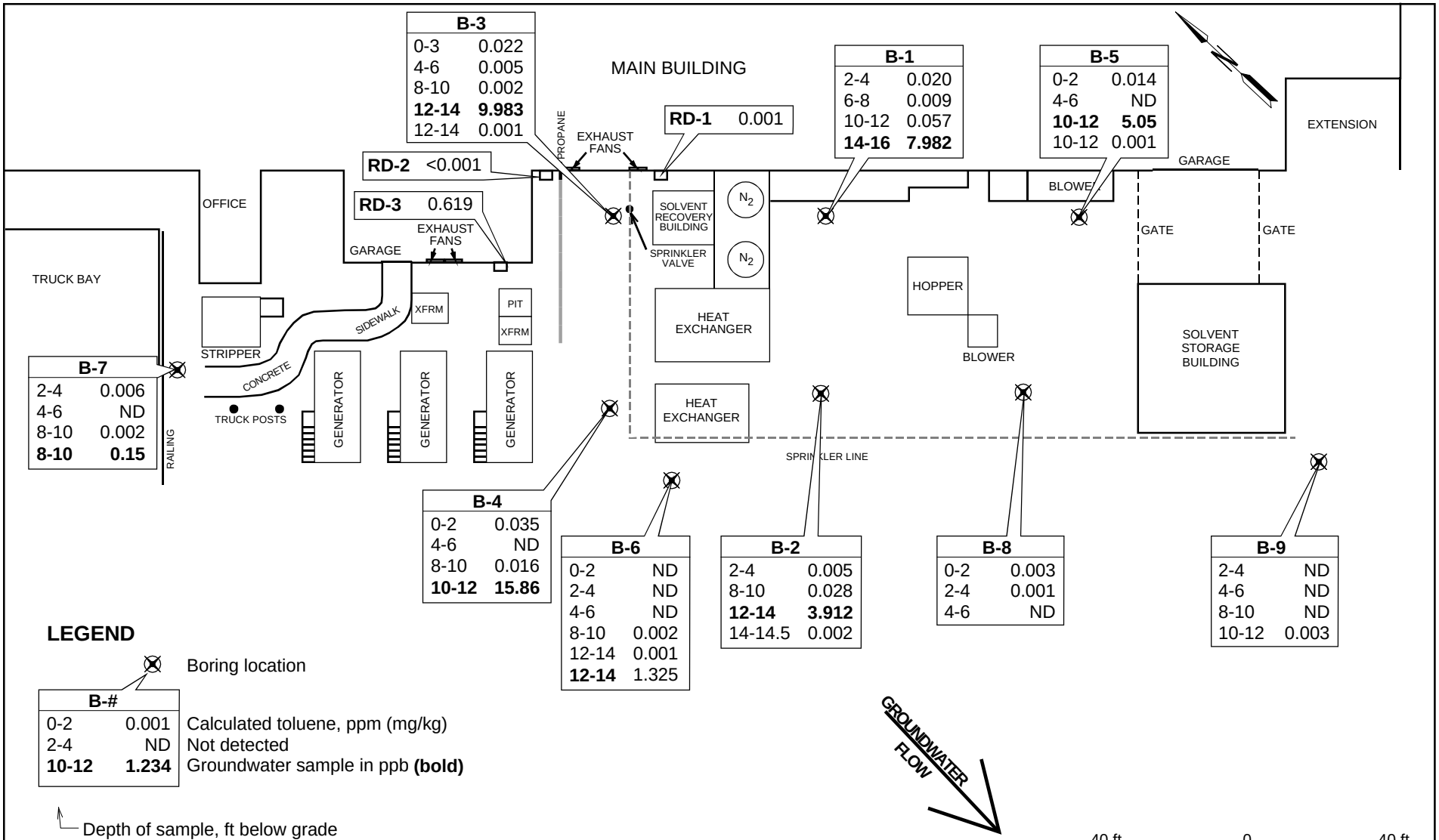
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Site Plan Showing Areas of Concern** **tesa tape Inc. • Middletown, New York**	**Figure 2**



Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Solvent Handling & Recovery Area Sampling Locations and Soil Data (September 1996 Initial Investigation)** **tti • Middletown, New York**	**Figure 3**



NOTE: Figure reflects actual site conditions in 1997. Since that time the site has been modified (i.e. Generators, Solvent recovery building...)

Map developed from field notes.

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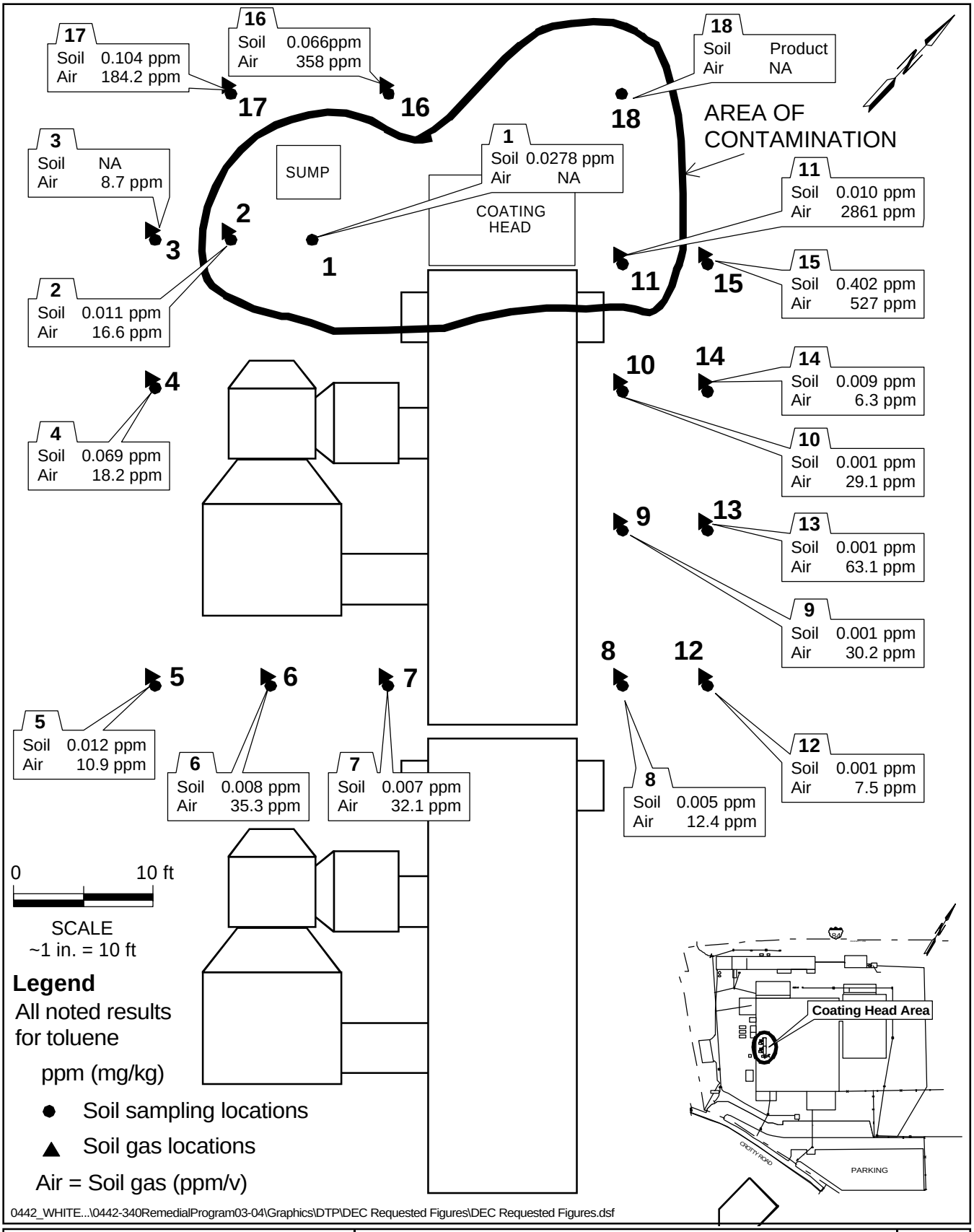
Solvent Handling & Recovery Area Sampling Locations and Soil and Groundwater Data (March 1997 Delineation)
tesa tape inc. • Middletown, New York

Figure 4



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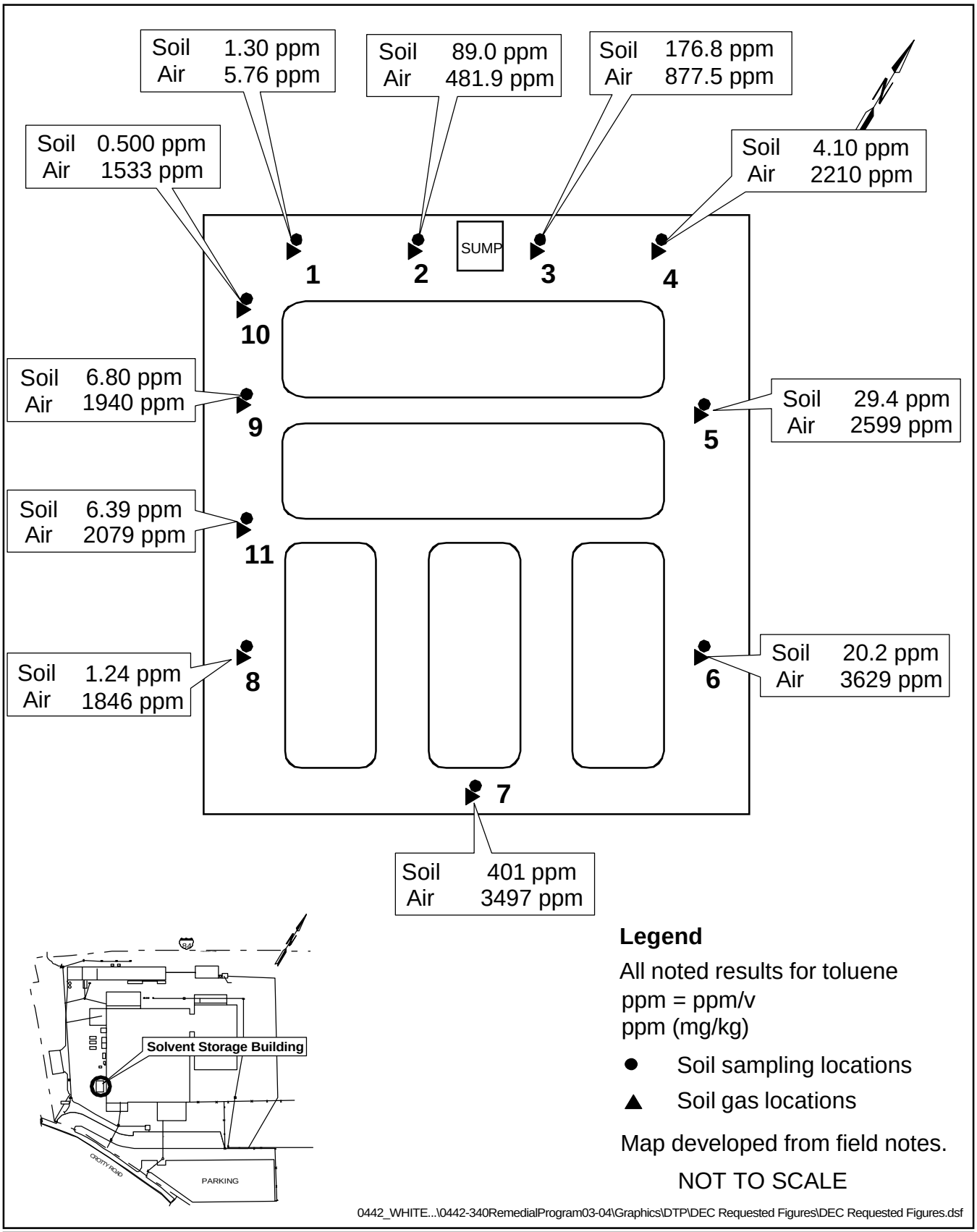
LMS Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Coating Head Area Sampling Locations and Soil and Soil Gas Data** **tesa tape Inc. • Middletown, New York**	**Figure 5**



Legend

All noted results for toluene
ppm = ppm/v
ppm (mg/kg)

- ● Soil sampling locations
- ▲ Soil gas locations

Map developed from field notes.

NOT TO SCALE

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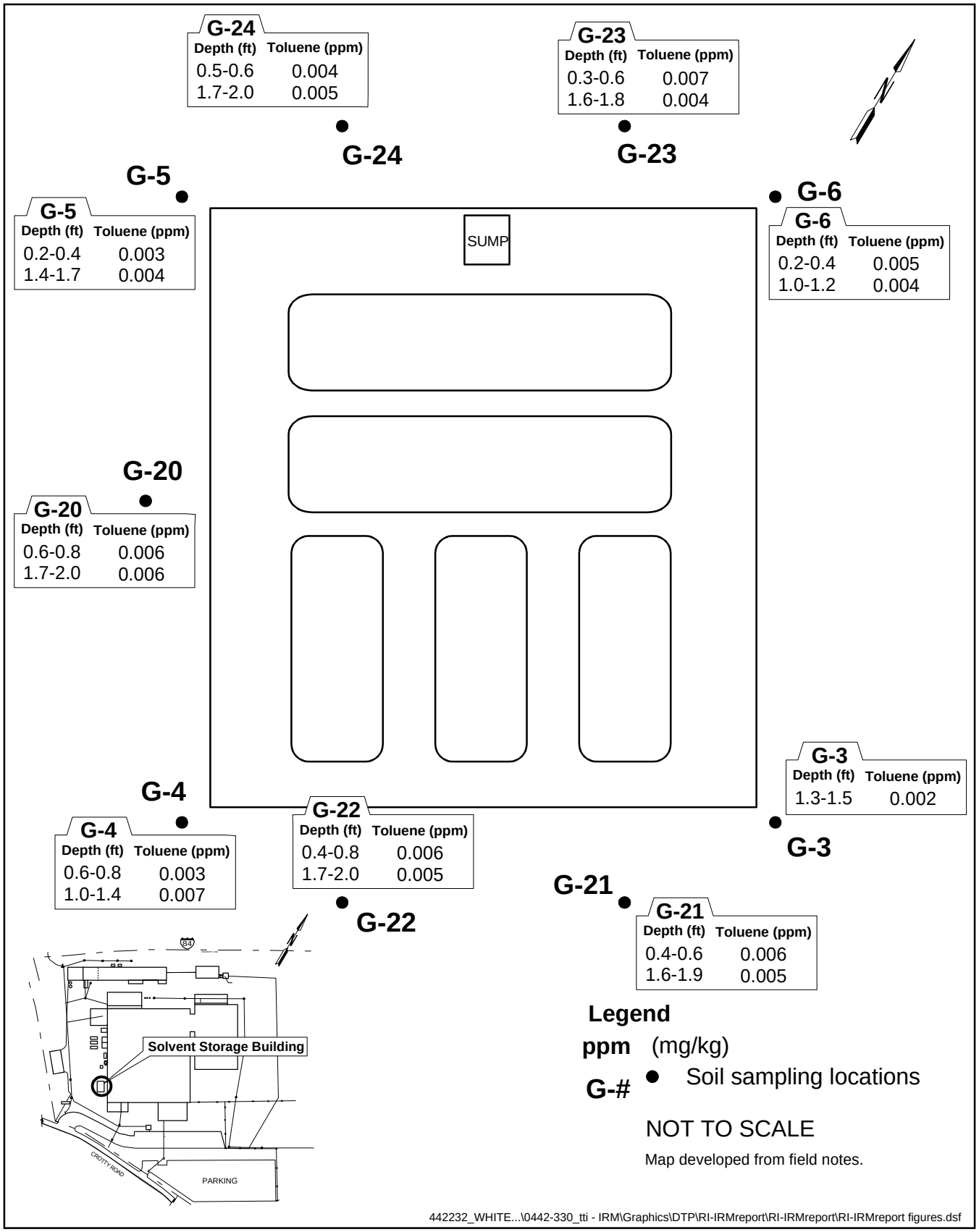
LMS **Lawler, Matusky & Skelly Engineers LLP** One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Interior Solvent Storage Building** **Sampling Locations and Data** **tesa tape Inc. • Middletown, New York**	**Figure 6**



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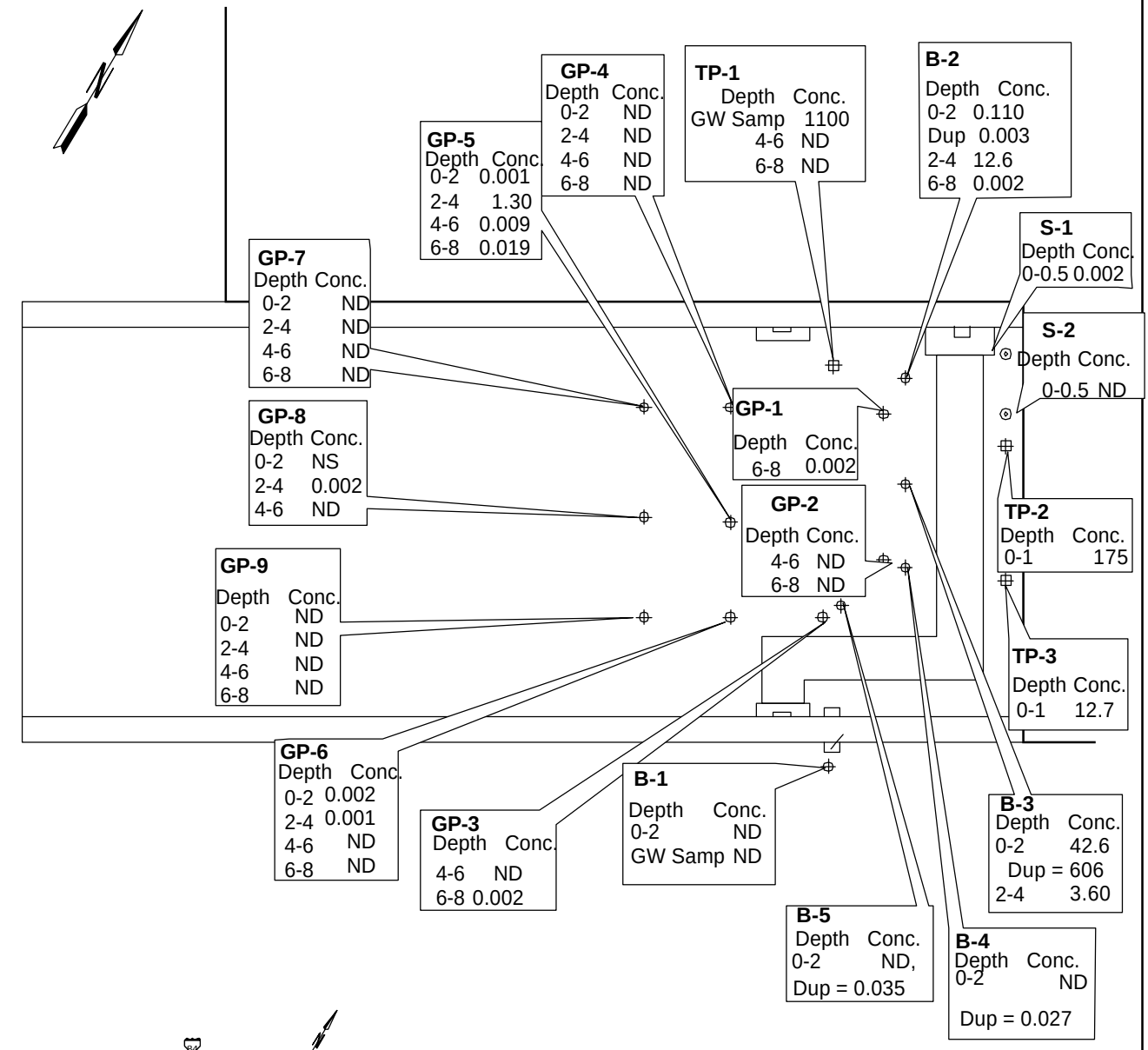
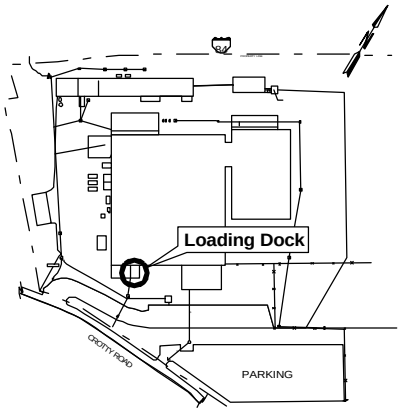
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Exterior Solvent Storage Building Sampling Locations and Soil Data** **tesa tape Inc. • Middletown, New York**	**Figure 7**





Legend

All noted results for toluene

Soil results are in ppm (mg/kg)

Groundwater results are in ppb (ug/L)

Dup = Duplicate sample

ND = Not detected

Note:

Where two results are shown duplicate samples were collected

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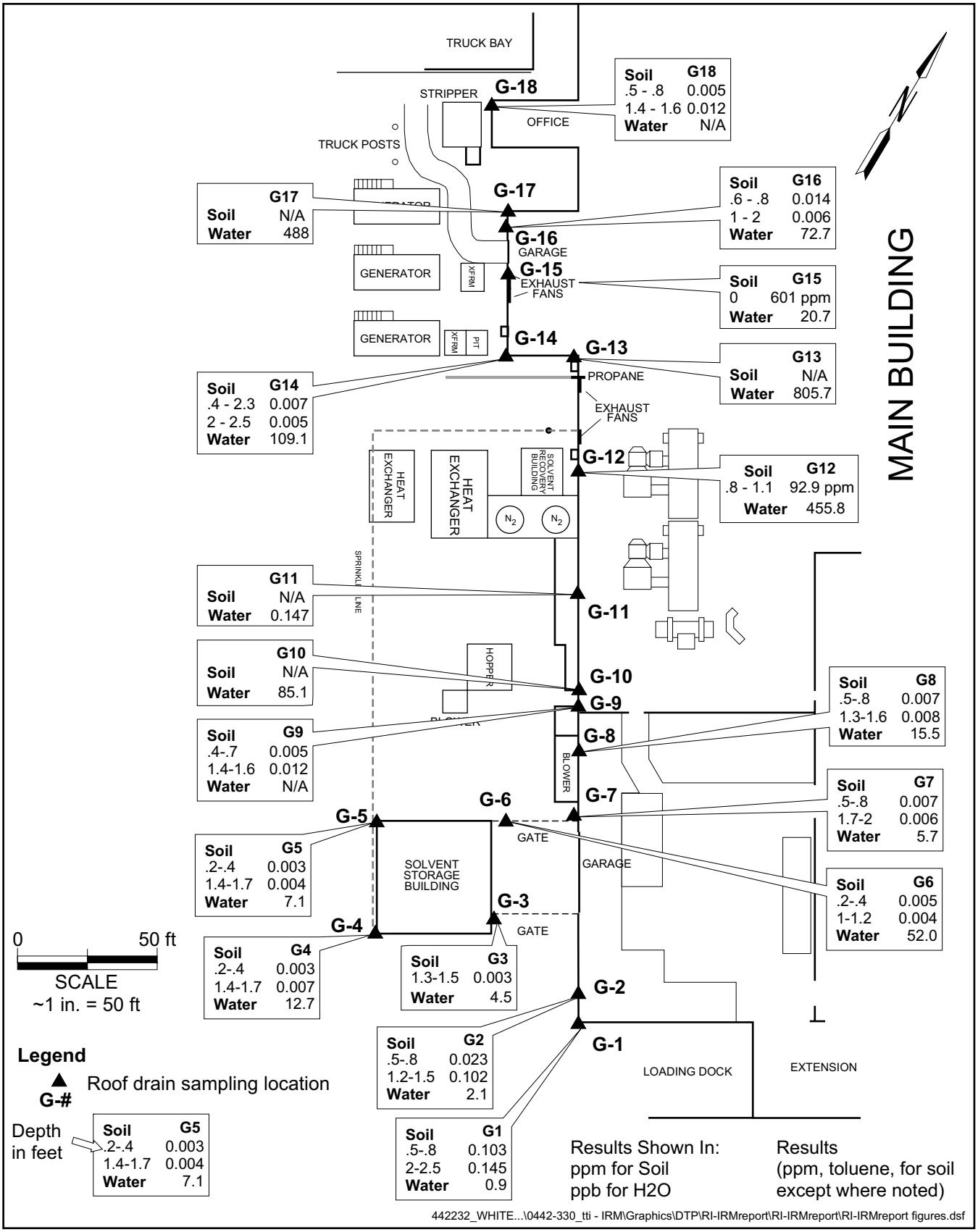
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Loading Dock Sample Locations and Soil Data** **tesa tape Inc. • Middletown, New York**	**Figure 8**



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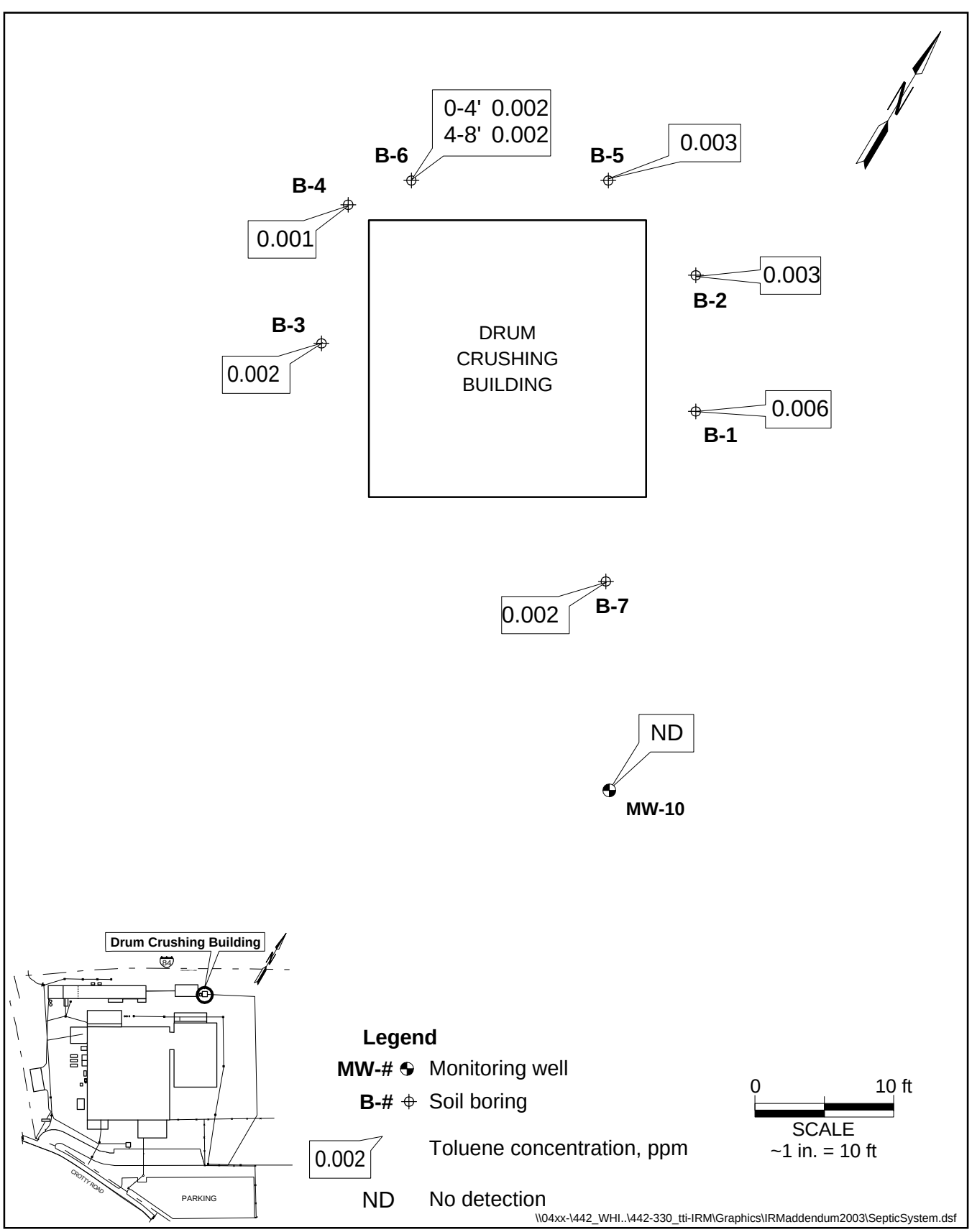
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Roof Drain Down Spout Sampling Locations and Soil and Roof Runoff Data** **tesa tape Inc. • Middletown, New York**	**Figure 9**



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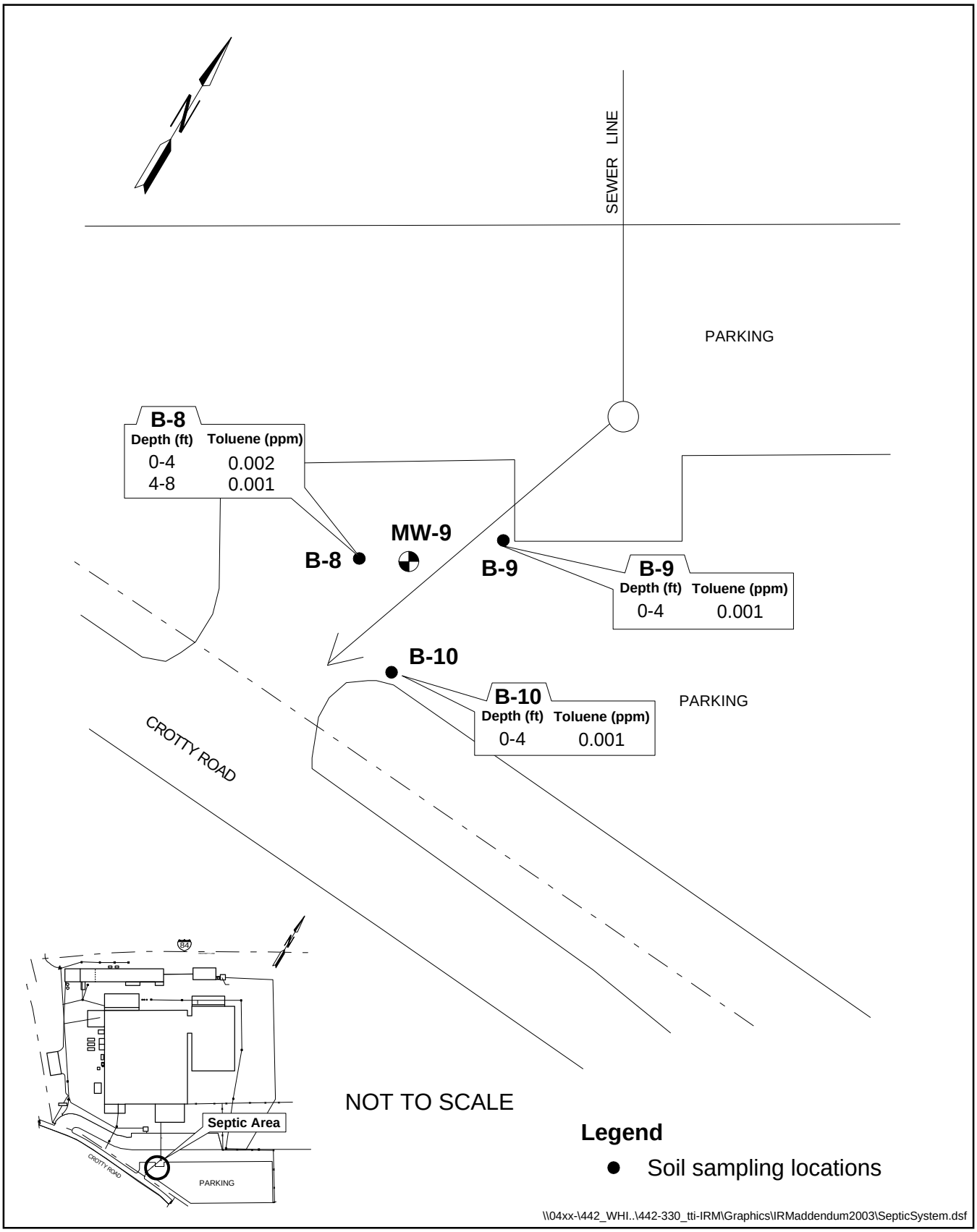
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Drum Crushing Building Sampling Locations and Soil Data** **tesa tape inc. • Middletown, New York**	**Figure 10**



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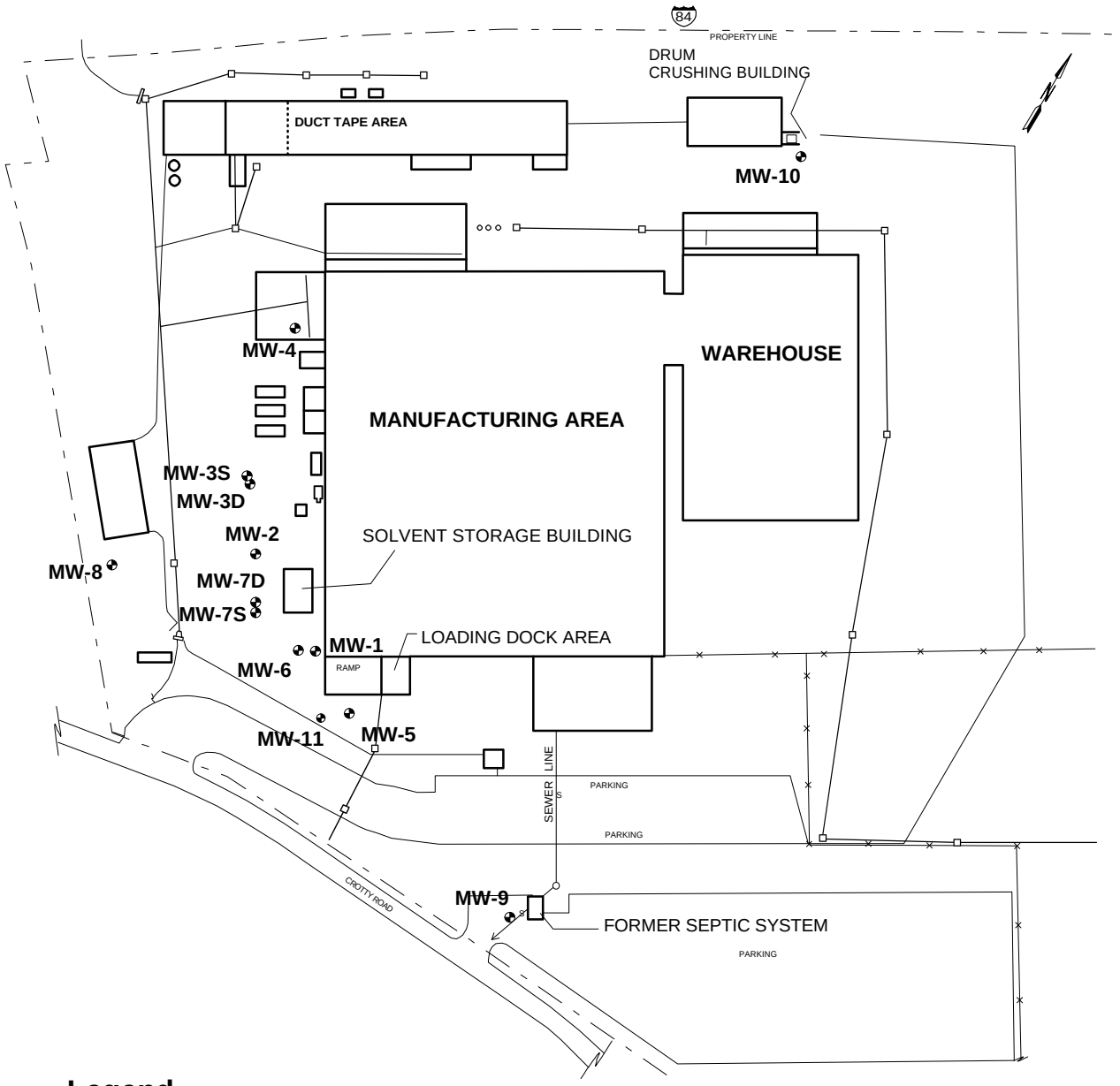
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Septic SystemArea Sampling Locations and Soil Data** **tesa tape inc. • Middletown, New York**	**Figure 11**



Legend

- Monitoring well

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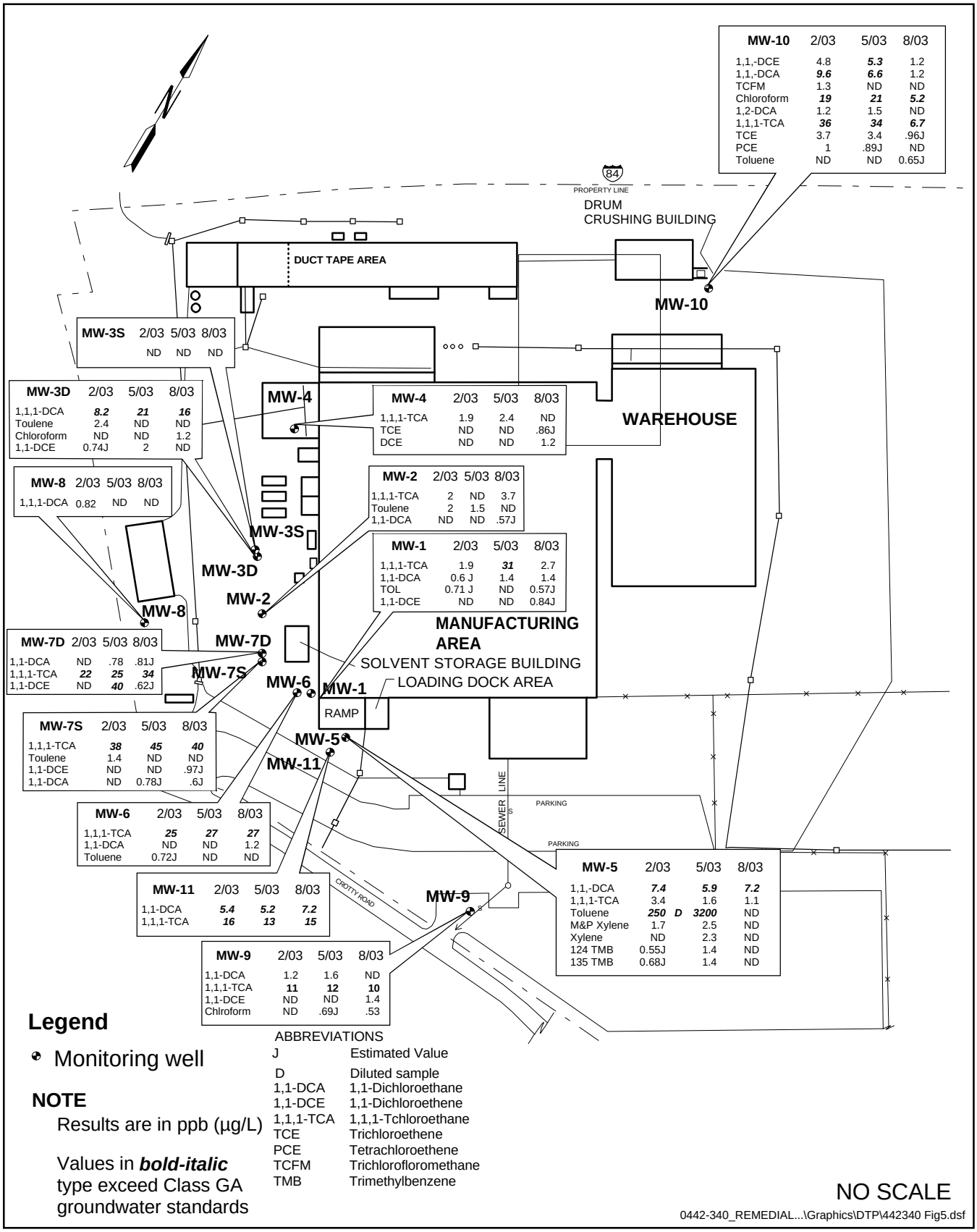
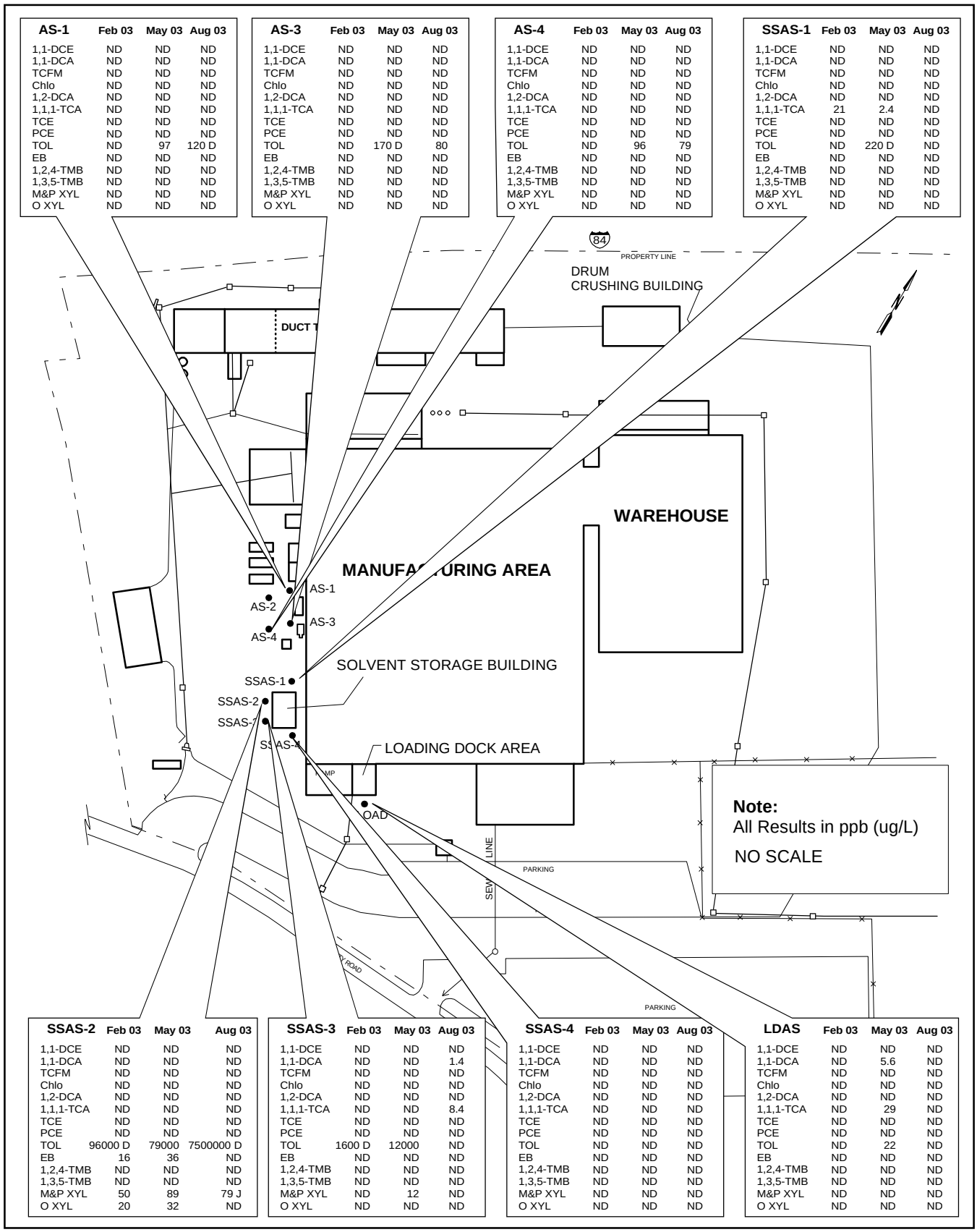
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Monitoring Well Locations** **tesa tape Inc. • Middletown, New York**	**Figure 12**



LMS **Lawler, Matusky & Skelly Engineers LLP** One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Monitoring Well Data** **tesa tape inc. • Middletown, New York**	**Figure 13**



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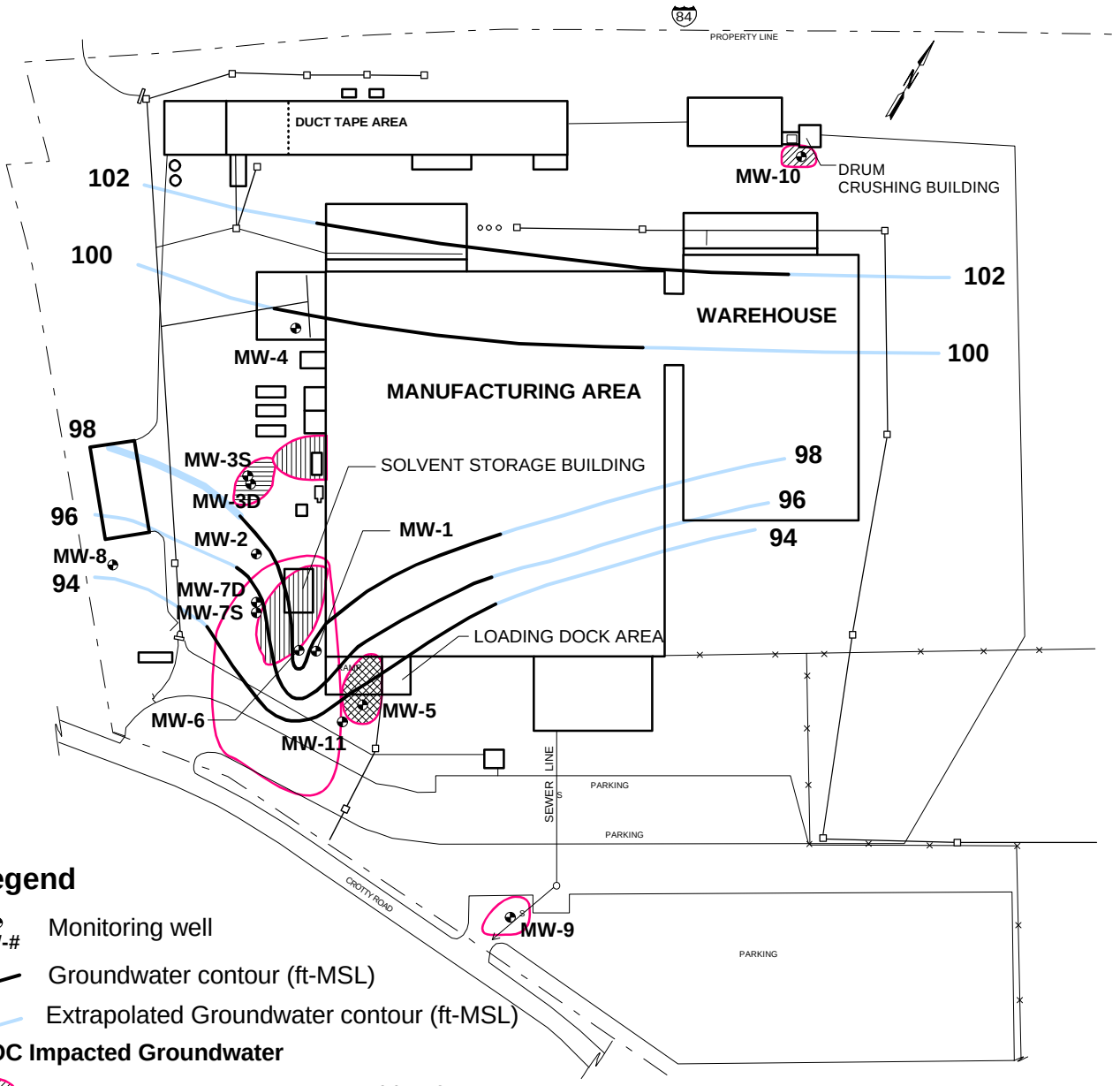
ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS

Air Sparging Well Data for System 1 and 2

tesa tape Inc. • Middletown, New York

Figure 14



Legend

MW-# Monitoring well

Groundwater contour (ft-MSL)

Extrapolated Groundwater contour (ft-MSL)

VOC Impacted Groundwater

1,1-DCE, 1,1-DCA, 1,1-TCA, chloroform

Toluene, 1,1-DCA

1,1-DCA

Toluene

1,1-TCA

40 ft 0 40 ft

APPROXIMATE SCALE
1 in. = 40 ft

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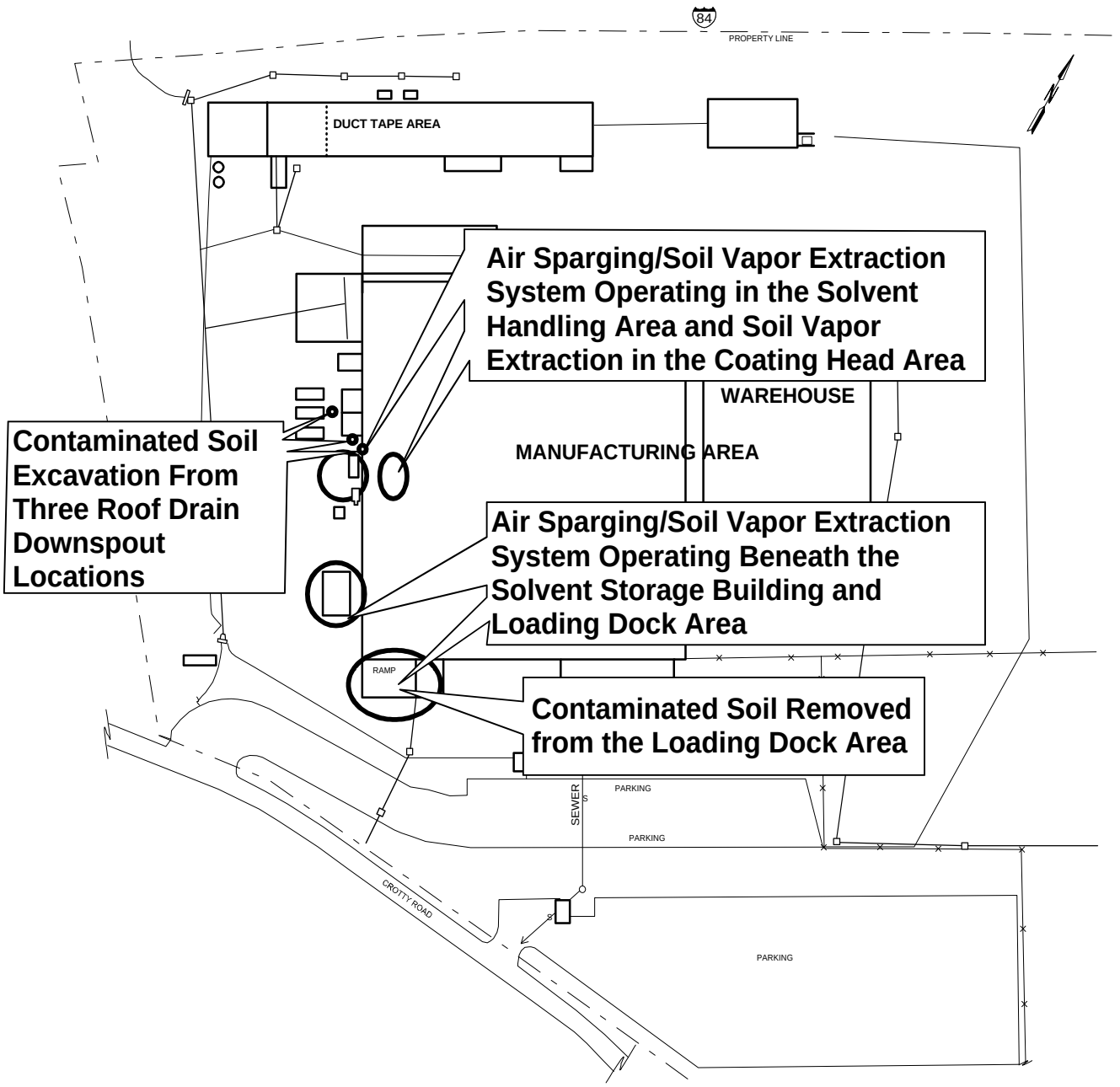
Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Groundwater Contours Map (February 2003) and Areas of Impacted Groundwater** **tesa tape Inc. • Middletown, New York**	**Figure 15**



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Lawler, Matusky & Skelly Engineers LLP One Blue Hill Plaza • Pearl River, New York 10965 ENVIRONMENTAL SCIENCE & ENGINEERING CONSULTANTS	**Site Plan Showing Locations of Interim Remedial Measures** **tesa tape Inc. • Middletown, New York**	**Figure 16**

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

TTI - Crotty Road Site
Town of Wallkill, Orange County, New York
Site No. 3-36-056
March 2004

The Proposed Remedial Action Plan (PRAP) for the TTI - Crotty Road site, was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 9, 2004. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the TTI - Crotty Road site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on February 23, 2004, which included a presentation of the Remedial Investigation (RI) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period was to have ended on March 9, 2004, however it was extended to March 16, 2004, at the request of the public.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the NYSDEC's responses:

COMMENT 1: How and when did the state find out that there was environmental contamination at the TTI plant?

RESPONSE 1: TTI plant management reported the original spill in the solvent handling area to the NYSDEC Region 3 office in October 1996. The spill was assigned No. 96-08798.

COMMENT 2: Under normal operating conditions, how was toluene used and disposed of at the site? Did it go into the product or was it just used in the process?

RESPONSE 2: Toluene was used as a solvent in the manufacture of masking tape. Some of the toluene was destroyed under high heat during the manufacturing process. Some residual toluene went out with the product. Much of the toluene was reclaimed in the solvent handling and recovery area where liquid nitrogen was used to condense and separate out the toluene for reuse. There were also stack and fugitive air emissions.

COMMENT 3: What are the State guidelines for toluene in soil and groundwater?

RESPONSE 3: The recommended soil cleanup objective for toluene is 1.5 parts per million (ppm). The groundwater standard for toluene is 5 parts per billion (ppb).

COMMENT 4: How deep are the monitoring wells?

RESPONSE 4: The depths of the monitoring wells range from seven feet below the ground surface (bgs) in MW-10 to 35 feet bgs in MW-3D and MW-7D. A complete set of boring / well logs is contained in Appendix A of the October 2003 Remedial Investigation & Remedial Measures Completion Report.

COMMENT 5: Why were no soil samples taken under the drum crushing building?

RESPONSE 5: The floor of the drum crushing building was designed with a containment system that appeared structurally sound and showed no pathway for contamination migration to subsurface soil. The soil data collected from around the drum crushing building showed no evidence of soil contamination. Therefore, no further soil investigation was deemed necessary.

COMMENT 6: When was the septic system investigated?

RESPONSE 6: The septic system was investigated in April 2000.

COMMENT 7: Which way does the groundwater flow?

RESPONSE 7: Local groundwater flows south-southeast. See Figure 15 of this document.

COMMENT 8: Doesn't all the rain we've had have some effect on the concentrations of contaminants in groundwater?

RESPONSE 8: Substantial rainfall can have an impact on shallow groundwater concentrations. However, at the TTI site, all of the soil contamination and groundwater contamination is beneath asphalt or concrete. The asphalt and concrete act as caps that prevent the infiltration of rain water to the areas of contamination. Therefore, excessive rainfall does not have a significant impact on groundwater concentrations at the site.

COMMENT 9: In the overburden, what is the permeability factor for the soil at this site?

RESPONSE 9: No permeability testing was conducted at the site. But, data from the SVE pilot testing suggests the permeability is from 10^{-3} to 10^{-5} centimeters / second (cm/sec).

COMMENT 10: What is the source of the of the other VOCs detected in the groundwater?

RESPONSE 10: The other VOCs; 1,1,1-trichloroethane (TCA), 1,1-dichlorethane (DCA) and1,1-dichloroethene (DCE), were not used in any industrial processes by Tesa Tape, Inc. when they operated at the site. It is suspected that the VOCs detected in groundwater are residual contamination from the former occupants of the site. The concentrations of these VOCs are relatively low and do not indicate a major contamination source.

COMMENT 11: Is the plant still operating?

RESPONSE 11: The plant is no longer operating as of the second week of February 2004. The plant is presently (March 2004) undergoing proper closure procedures with NYSDEC oversight.

COMMENT 12: What are the notification procedures when a site is put on the registry. Who exactly was notified when this site was put on the registry?

RESPONSE 12: When a site is added to the registry, in addition to the owner of the property, the County, Town and/or City Clerk's office receive a notice of the listing. In the case of TTI Crotty Road, the Middletown City Clerk and the Orange County Clerk received notice of the listing.

COMMENT 13: I am an adjacent property owner and I have been away, can the public comment period be extended so I have time to review all this information?

RESPONSE 13: The public comment period was extended one week to March 16, 2004.

COMMENT 14: If a monitoring well constructed on my adjacent, down gradient property and found to contain contaminants from TTI, will I be expected to pay for remediation?

RESPONSE 14: TTI is responsible for the investigation and remediation of any off-site impacts from the site related contamination.

COMMENT 15: I am adjacent property owner, and own an office building directly across the street from this site on a private well. Can this be tested for any contamination which has come off the site?

RESPONSE 15: The well in question was sampled by the office building owner within days of the February 23, 2004 public meeting. The water was analyzed by a New York State Department of Health Environmental Laboratory Approval Program accredited laboratory. None of the site related groundwater contaminants were detected in this sample.

COMMENT 16: What does toluene do to humans?

RESPONSE 17: Toluene may affect the nervous system. Low to moderate levels can cause tiredness, confusion, weakness, drunken-type actions, memory loss, nausea, loss of appetite, and hearing and color vision loss. These symptoms usually disappear when exposure is stopped. Inhaling high levels of toluene in a short time can make a person feel light-headed, dizzy, or sleepy. It can also cause unconsciousness, and even death.

High levels of toluene may affect the kidneys. For additional information, you can refer to the Agency for Toxic Substances and Disease Registry (ATSDR) web site: http://www.atsdr.cdc.gov/tfacts56.html

COMMENT 18: I have a study that shows that toluene is a carcinogen. What does the EPA classify toluene as?

RESPONSE 18: EPA has classified toluene as a Group D compound, not classifiable as to human carcinogenicity. Studies in humans and animals generally indicate that toluene does not cause cancer. The EPA has determined that the carcinogenicity of toluene can not be classified. Please refer to EPA's website for additional information http://www.epa.gov/ttn/atw/hlthef/toluene.html.

COMMENT 19: Concerning the effects of toluene on the body, is that from inhaling it or drinking it?

RESPONSE 19: Similar effects may occur from inhalation and ingestion exposures. However, the most significant route of exposure is generally inhalation of toluene in air.

COMMENT 20: In 1997, Tesa Tape was one of the top 5 polluters in New York State. What kind of pollution are we talking about?

RESPONSE 20: The New York State 1997 Toxic Release Inventory reports that TTI Middletown was responsible for stack and fugitive emissions of 1,381,671 pounds of toluene to the air. The emissions recorded in 1997 were the highest recorded for the plant. During 2003, the last full year of operation, toluene emissions were approximately 335,000 pounds.

COMMENT 21: Did they have an air permit?

RESPONSE 21: Yes

COMMENT 22: Why weren't all the employees told about this meeting? After all this contamination effected the air they breathed and the water they drank. If there was that much toluene in the air, how

were the employees protected?

RESPONSE 22: The purpose of this public meeting was to discuss the proposed environmental remediation plan for the subject site, and to discuss the effect that implementing these proposed measures could have on current employees, future employees, or construction workers. It is the State's understanding that there are no current workers at the site who could be impacted by the remedy selected to remediate subsurface contamination.

The TTI Crotty Road plant is supplied with public water which is unaffected by site related groundwater contamination. This public water supply was utilized by employees for drinking purposes and thus they did not drink contaminated water.

The issue concerning what previous workers could have been exposed to during the tenure of their employment, and how that exposure could effect them, is beyond the scope of this document. The amount of toluene in work place environments is regulated by OSHA (Occupational Health and Safety Administration). It is the employers responsibility to comply with OSHA standards.

COMMENT 23: Why didn't you take out an advertisment in the local paper to get more people to attend this public meeting?

RESPONSE 23: With the exception of National Priority List (NPL) sites, guidance followed by the NYSDEC for the notice of a PRAP public meeting does not include the purchase of an advertisement in a local paper. It has been the experience of the NYSDEC that a mailing list, targeted to those whom we believe would have an interest in the PRAP, is a more effective method to notify the public.

For the PRAP Fact Sheet and Meeting Announcement, the mailing list included the following segments: Local/Elected Officials (28 entries including Federal/State /County/Town and City officials); State Government Officials (12 entries); Media (35 entries including Daily and weekly papers, radio stations, e-news, Cable and Regional Network TV News); Environmental Groups (8 entries); and two hundred property owners within a half-mile radius of the site south of Rt 84 (as the groundwater flow is south-southeast).

Attendance at the public meeting was not the only means available to the public to learn about the TTI-Crotty Road site. It is our expectation that the PRAP Fact Sheet, together with the documents in the two local repositories, addressed many questions that those on our mailing list might have about the PRAP. Furthermore, the Fact Sheet makes clear that the public is not required to come to the public meeting in order to have their concerns addressed. Any questions or concerns submitted to the project manager during the public comment period received equal consideration to those submitted orally at the meeting.

COMMENT 24: When you are taking the toluene and the other VOCs out of the soil and groundwater, what form does it come out in?

RESPONSE 24: The air sparging / soil vapor extraction systems volatilize the toluene and remove it in the vapor phase.

COMMENT 25: Are the two remedial systems safe, if they are just releasing this contamination into the air?

RESPONSE 25: The air sparging / soil vapor extraction blow in and extract a large volume of air. The toluene concentrations in the air released from these systems do not present a health hazard.

COMMENT 26: Was TTI fined for these spills or this contamination?

RESPONSE 26: TTI was not fined for the toluene spills.

COMMENT 27: Who is paying for the investigation and remediation of the site?

RESPONSE 27: Tesa Tape, Inc. has payed for the remedial investigations and the interim remedial measures. TTI will continue to fund the groundwater monitoring, and the operation, maintenance, and monitoring of the remediation systems. Under the two Orders on Consent, TTI reimburses the NYSDEC and the NYSDOH for expenses incurred by State staff while managing the project.

Susan Cleaver submitted a letter (received February 23, 2004) which included the following comments:

COMMENT 28: I am writing you as a concerned citizen. I am a member / volunteer / watchdog with the Riverkeepers. The spills that have happened (at the site) over the years are of concern. I have seen what appears to be a whitish foam discharge in the stream across the road from the property last year. I feel it is important to make sure every effort is made to protect the streams and the environment.

RESPONSE 28: The only stream across Crotty Road that the NYSDEC is familiar with is the Wallkill which is also down gradient from the concrete plant. The groundwater data show that the groundwater contamination related to the TTI site has not migrated beyond the site, and therefore, could not have impacted the Wallkill. The mission of the NYSDEC is to protect public health and the environment. If the data had shown evidence that the site contamination had migrated off-site, the NYSDEC would have required TTI to continue their investigations off-site as needed.

Salvatore J. LaBruna submitted a letter (dated February 23, 2004) which included the following comments:

COMMENT 29: While the primary environmental concern on this site is toluene contamination, the presence of the low levels of chlorinated VOCs, or volatile organic compounds, is also a situation that should be addressed. If the compounds are residuals from the previous occupant, as the remedial investigation has concluded, and the TCA appears to be naturally degrading (also indicated in the investigation), then how is it possible that the levels of the chlorinated compounds have remained the same? Shouldn't these levels be decreasing if they have not been reintroduced into the site since 1985?

RESPONSE 29: The low VOC concentrations do not indicate a significant source of on-site contamination. While the concentrations of some of the other VOCs in the groundwater samples were above their respective drinking water standards, the VOCs present in the groundwater are at relatively low concentrations and are not a threat to public health or the environment. An institutional control will be imposed in the form of an environmental easement that will restrict use of groundwater as a source of potable or process water without necessary water quality treatment. Groundwater originating from the site does not discharge to any nearby surface water bodies.

Recent sampling of a supply well at an adjacent, down gradient property showed no evidence of site related contamination. This finding further indicates that the groundwater contamination is limited to the site.

As presented in the PRAP and this ROD on Figure13, groundwater has been monitored for all VOCs only since February 2003. The three quarters of data presented do not provide a sufficient time frame to observe a trend in concentration reduction. All of the VOCs detected in the groundwater at the site have been shown at many other VOC contaminated sites to be amenable to attenuation via biodegradation, dilution and dispersion.

COMMENT 30: In my opinion the facts may indicate a current source of contamination and the issue requires further investigation. Did the DEC ever evaluate the records of the previous occupants, Strick Corp., to determine if they used any such compounds that may have caused the contamination? It is also possible there was some undocumented use of chlorinated solvents by Tesa, which was operating at the site during the time in question. Did the DEC ever consider that a neighboring site might have caused the contamination? The groundwater of neighboring locations should also be monitored to rule out this possibility. The DEC has a responsibility to make a complete and accurate determination of what actually caused the presence of these chlorinated VOCs.

RESPONSE 30: Regardless of the original cause of the VOCs (excluding toluene), the low level concentration of these VOCs in the groundwater do not indicate a significant contamination source. And, as stated above, the VOCs present in the groundwater are at relatively low concentrations and are not a threat to public health or the environment. Therefore, the NYSDEC does not have

reason to further investigate and/or remediate these VOCs. Groundwater monitoring will continue until the site is sufficiently cleaned up. If the groundwater monitoring indicates a threat to public health or the environment from a major source of groundwater contamination, the NYSDEC will investigate the matter.

APPENDIX B

Administrative Record

Administrative Record

TTI - Crotty Road Site

Site No. 3-36-056

1. Proposed Remedial Action Plan for the TTI - Crotty Road site, dated February 2004, prepared by the NYSDEC.

2. Order on Consent, Index No. W3-0780-96-12, between NYSDEC and Tesa Tape, Inc., executed on March 31, 1997.

3. Order on Consent, Index No. W3-0906-02-07, between NYSDEC and Tesa Tape, Inc., executed on September 21, 2002

4. "Interim Remedial Measure Scope of Work," June 1997, Lawler, Matusky & Skelly Engineers LLP.

5. "Site Investigative Briefing Report and Remedial Recommendations," July 2000, Lawler, Matusky & Skelly Engineers LLP.

6. "Interim Remedial Measures Work Plan," February 2003, Lawler, Matusky & Skelly Engineers LLP.

7. "Field Sampling Plan," February 2003, Lawler, Matusky & Skelly Engineers LLP.

8. "Quality Assurance Plan," February 2003, Lawler, Matusky & Skelly Engineers LLP.

9. "Final Operation and Maintenance Manual," February 2003, Lawler, Matusky & Skelly Engineers LLP.

10. "Remedial Investigation & Interim Remedial Measures Completion Report, Tesa Tape, Inc., Middletown NY," October 2003, Lawler, Matusky & Skelly Engineers LLP.

11. Fact Sheets / Meeting Notice, February 2004