

**1998 Annual System
Effectiveness Report
South Bend, Indiana**

Prepared For:

**The Torrington Company
Torrington, Connecticut**

February 16, 1999

1998 ANNUAL
SYSTEM EFFECTIVENESS REPORT

Prepared For:

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59 Field Street
Torrington, Connecticut 06790

February 16, 1999

Prepared By:



CAPSULE

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1.0 INTRODUCTION

This annual system effectiveness report has been prepared for The Torrington Company by Capsule Environmental Engineering to:

- document the operation and performance of the air sparging/soil vapor extraction system from January to December 1998
- present semi-annual ground water quality monitoring data and findings collected as part of corrective action activities

for their former manufacturing facility located at 3702 West Sample Street, South Bend, Indiana. The facility is currently occupied by the Sample Street Business Complex, which provides space to small businesses.

This is the second annual effectiveness report. The first report, 1997 Annual System Effectiveness Report, is dated March 5, 1998.

2.0 SYSTEM OPERATION SUMMARY

2.1 System Background

The air sparging/soil vapor extraction (AS/SVE) system, remediating impacted soil and ground water beneath the former Torrington manufacturing facility, South Bend, Indiana, became operational in mid-1996. The Urban Enterprise Association (UEA) currently owns the former manufacturing facility. Industrial Automators performed system inspection, operation and maintenance activities. On behalf of The Torrington Company, Capsule Environmental Engineering provides overall management of the project.

The AS/SVE system was installed in late 1995 and early 1996. It became operational during a several month startup period in mid-1996, and was fully operational by the second half of 1996. System operation for late 1996 and 1997 was reported in the 1997 Annual System Effectiveness Report.

The AS/SVE system consists of twenty-four vapor extraction vents and six air sparging points remediating impacted media in three operational areas, the S-3 Area, Area A and Area B. There are nine extraction vents and two sparge points in Area A, four extraction vents and one sparge point in Area B, and eleven extraction vents and three sparge points in Area S-3 (Figure 1).

There are two separate equipment rooms, commonly referred to as the north and south equipment rooms. The north equipment room houses equipment for Areas A and B. The south equipment room houses equipment for the S-3 Area. Both equipment rooms

contain a blower, a compressor and one control panel. The electrically driven blowers are connected to either eleven or thirteen extraction vents via a series of aboveground and below ground polyvinyl chloride (PVC) header pipes. Each compressor is connected to three sparge points through a series of individual aboveground and below ground 3/4-inch black iron steel pipes. The sparge lines were all run as individual lines to allow for greater control and flexibility within the system. Other system components include flow control valves, vacuum and pressure gauges, pressure regulators, flow switches, solenoid valves, vacuum and pressure relief gauges, electrical controls, discharge silencers, condensate collection sumps, and valve boxes for subsurface installations.

2.2 System Operation

The system is designed for continuous operation. Compressors inject air into the groundwater through the sparge points. The air rises through the water table, stripping volatile organic compounds (VOCs) from the groundwater. The air is removed by vapor extraction vents once above the water table. The vacuum applied by the vapor extraction vents strip VOCs from the soil. The system is designed so that the air sparging portion shuts down if the extraction system stops operating.

2.2.1 Scheduled Down Time

Scheduled down periods included approximately four days for the sparge system and two days for the soil vapor extraction system prior to the start of each semiannual ground water sampling event. There were two sampling events during the year (January and July 1998). Sampling related down time for the sparge system was approximately 9 days. The soil vapor extraction system was down for approximately 5 days.

The sparge system was also down for scheduled maintenance including such things as inspections and compressor oil changes (every 8000 hours) for one to two days.

The following table summarizes the run time history for the compressor and blower in each equipment room for the period from 1/1/98 to 12/31/98.

North Equipment Room

Equipment	Time Period	System Available to Operate (A)	Equipment Run Time (B)	Equipment Run Time (B)(C)
		(days)	(hours)	(days)
Blower	1/2/98 to 12/30/98	352	14,241 - 6644 = 7597	317
Compressor	1/2/98 to 12/30/98	352	20,595 - 12,969 = 7626	318

South Equipment Room

Equipment	Period	System Available to Operate (A) (days)	Equipment Run Time (B) (hours)	Equipment Run Time (B) (days)
Blower	1/2/98 to 12/30/98	352	14,301 - 6667 = 7,634	318
Compressor	1/2/98 to 12/30/98	352	20,729 - 13,149 = 7580	316

Notes:

- (A) Available to operate days = total days in period minus shutdown and scheduled maintenance and sampling
- (B) Run time hours from weekly inspection reports
- (C) North compressor shows more hours due to work offline in early 1998

2.2.2 Unscheduled Down Time

Unscheduled down periods resulted from system malfunctions. During January, the compressor in the north equipment room was down for approximately 21 days because of a compressor belt sheave. The sheave was eventually replaced after troubleshooting by a compressor repair technician. The sheave was not readily available locally and was back ordered for more than a week.

The south equipment room blower failed in April 1998 and was shipped back to the factory for a determination of rebuild/replace. The blower was replaced in early May 1998.

2.2.3 Summary

During 1998 the north part of the system operated for 317 days out of 352 days available, or 90% of the available time. The south part of the system operated for 316 days out of 352 days available, or 90% of the available time. This compares to 92% and 97% for the north and south rooms respectively for 1997.

2.3 Air Flow

2.3.1 Background

The air sparging portion of the system is designed to inject air through the six sparge points into the groundwater at a depth of approximately 60 feet below the land surface, or 53 feet below the water table. Air injection rates are monitored as part of the weekly inspection.

There are twenty-four soil vapor extraction vents to extract air from the shallow unsaturated soils above the water table. The thickness of unsaturated soils ranges from 7 to 10 feet. The following table provides a summary of sparge point and vent coverage.

Area	Sparge Points	Extraction Vents
A	SP-1 and 2	EV-1 through 7 (1)
B	SP-3	EV-8 through 11
S-3	SP-4 through 6	EV-12 through 22

Note: (1) There are extraction vents numbered EV-1, 1a, 2, and 2a in Area A

2.3.2 Injected Air Summary

The rate of injected air, which is monitored as part of the weekly inspection, is generally kept at one half the extracted air rate, which is also monitored. This insures that a negative pressure is maintained on the areas surrounding the vapor extraction vents to enable the system to treat both the groundwater and subsurface soils simultaneously. Table 1 presents a summary of the injected air rates for the individual sparge points.

During mid-May through mid-September, the air injection rate was increased on the sparge wells, SP-1, SP-2, and SP-3. The increase was a planned event to determine if additional injected air would increase the VOC removal rate in the ground water beneath Area B.

Overall, for 1998 in Area A and Area B sparge points, SP-1, SP-2 and SP-3 injected an average of 39, 38 and 41 cubic feet per minute (cfm), respectively, for a total average injection rate of 118 cfm. These averages include period of increased injection during the summer. Throughout the period the total injected air rate varied from 92 to 153 cfm. Figure 4 presents a graph of the weekly sum of these three northern sparge points. For comparison purposes both 1997 and 1998 data are plotted on Figure 4.

In Area S-3, sparge points SP-4, SP-5 and SP-6 injected an average of 34, 38, and 37 cfm, respectively, for a total average injection rate of 109 cfm. Throughout the operational period the total injected air rate varied from 98 to 116 cfm. Figure 5 presents a graph of the weekly sum of the three southern sparge points. For comparison purposes both 1997 and 1998 data are plotted on Figure 5. As Figure 5 indicates, the injection rates fluctuated weekly, however, the trendline shows that the injected rate has been consistent for 1997 and 1998.

2.3.3 Extracted Air Summary

The rate of air extracted from the subsurface is regulated by flow meters. The design extraction rate is 20 cfm per vent. Each vent was inspected weekly and adjustments are made to rates as necessary.

In Area A and Area B, thirteen extraction points, EV-1 through EV-11 (includes EV-1a and 2a), removed air at an average rate of 249 cfm. Individual vent data can be found in Table 2. Throughout the 1998 the total extracted air rate varied from 225 to 274 cfm. The total design extraction rate was 280 cfm (20 cfm per vent times 14 vents).

In Area S-3, eleven extraction vents, EV-12 through EV-22, removed air at an average rate of 218 cfm. Individual vent data can be found in Table 3. During the operational period the total extracted air rate varied from 182 to 236 cfm. The total design extraction rate was 220 cfm (20 cfm per vent times 11 vents). The variation in extraction rates in the S-3 Area is primarily attributable to two vents, EV-20 and EV-21. The vents are located in an area that contains standing water in the spring and after rainfalls. As the standing water infiltrates, extracted rates decrease from the vents. The nature of the soils in the area of these two vents also is a factor in the extraction rates. In June 1997 a temporary vent was installed next to EV-21. The temporary vent was plumbed into the system and has been successful in increasing the air extraction rate around EV-21.

2.3.4 Contaminant Mass Removal

Air samples are collected in Tedlar bags and analyzed monthly from the air discharge stacks in the north and south equipment rooms. Table 4 provides a summary of the analytical data for 1998. As a note, in April 1997 the EPA analytical method was changed from 8260 to TO1/TO2. Both methods determine volatile organic compounds by purge and trap GC/MS. The TO1/TO2 method produces lower detection limits.

The organic constituents found in the north and south equipment samples are similar. Typically the following compounds are detected: methylene chloride, 1,1-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane, trichloroethene, perchloroethene, benzene, ethylbenzene and the xylene isomers. This compound list generally corresponds to the VOCs found in the site's monitoring wells. Benzene, toluene and xylene are seldom detected in ground water samples.

The following table summarizes the volume removal by the system for the three most commonly detected VOCs in Facility ground water samples.

VOC	North Volume Removed (gallons)	South Volume Removed (gallons)	Total Volume Removed (gallons)
1,1,1-trichloroethane	0.26	0.65	0.91
1,1-dichloroethane	0.22	0.22	0.44
1,1-dichloroethene	0.21	0.48	0.69

The table below compares the 1997 and 1998 removal amounts.

VOC	1997 North Volume Removed	1998 North Volume Removed	1997 South Volume Removed	1998 South Volume Removed
	(gallons)	(gallons)	(gallons)	(gallons)
1,1,1- trichloroethane	0.36	0.26	1.48	0.65
1,1-dichloroethane	0.11	0.22	0.40	0.22
1,1-dichloroethene	0.23	0.21	0.06	0.48

2.3.5 Wastewater Handled

A small quantity of wastewater is generated as part of the system operation from two sources. The wastewater is discharged into three outfalls, to the city of South Bend POTW under the terms of a discharge permit. In early 1998 a renewal application was submitted for the permit. The permit was reissued in April 1998. The permit has conditions for discharging two waste streams.

The first wastewater source is water purged from monitoring wells as part of semiannual ground water sampling events. This water is containerized and sampled as part of the sampling events. Upon receipt and review of the analyses, the purge water is discharged to the sanitary sewer at a manhole, outfall number 619, near the southwest corner of the facility. The discharge is reported to the POTW. Approximately, 365 gallons were discharged in 1998.

The second wastewater source is the combined effluent of compressor blow down, air dryer, and vacuum system condensate. In each equipment room a sump collects the wastewater, which discharges through a flow meter to the sanitary sewer at outfalls number 401 and 402. The discharge from the north equipment room averages 27 gallons per week. The discharge from the south equipment room averages 12 gallons per week. The north equipment room discharge averaged 13 gallons more per week than in 1997.

2.3.6 Maintenance Items

The north equipment room system was down for 18 days in January 1998 due to a warped sheave and leaking seal in the compressor. It was also down for a shorted fuse mount, a sticking discharge valve and broken belts during three separate short periods in 1998.

The blower in the south equipment room failed in April 1998. The blower was shipped back to the manufacturer for inspection. It could not be repaired and had to be replaced. The replacement blower was on line May 8, 1998

Purge water generated during the sampling events is stored in drums and a sample is collected. The purge water is discharged into the sanitary sewer after requesting and receiving permission from the city of South Bend POTW.

Waste oil from the purging and bailing of S-3 was manifested and disposed of by Heritage Environmental during the first quarter of 1998.

3.0 GROUND WATER CONDITIONS

Past site investigation activities have provided considerable information on the geologic conditions below the facility. The facility's subsurface generally consists of a very permeable sand and gravel to an approximate depth of 60 feet below the land surface. A clay layer is present at 60 feet below land surface and appears to be continuous beneath the facility. Ground water conditions are monitored by 25 wells. Additionally, select soil extraction vents are used for monitoring the conditions at and immediately below the water table.

Consistent with the Corrective Action Plan there were two sampling events in 1998. Seven monitoring wells and vent points were selected for monitoring during January and July events. The wells and vents were previously sampled once in 1996 and quarterly in 1997. Several of the monitoring wells had been sampled prior to 1996 as part of investigation activities.

3.1 Ground Water Flow

Beneath the facility the depth to water, or the water table, is 7 to 11 feet below the land surface. Water level measurements taken during a comprehensive ground water measurement event in December 1996. These measurements were used to prepare a ground water elevation contour map, Figure 2, originally published in the 1997 Annual Report. Based upon that map and water level elevations the following interpretations were developed:

- the slope of the water table is fairly flat with hydraulic gradients in the range of 0.0005 and less
- flat gradients are fairly typical in shallow saturated soils, composed of sand and gravel
- ground water flow is generally to the north. As shown in Figure 2, the ground water elevations decrease from south to north across the Facility.
- seasonal fluctuations in water levels are approximately 0.8 feet
- vertical gradients were very small with no preferred direction to nonexistent

As previously presented, three likely explanations for the U-shape of the contours seen on the groundwater elevation map include:

1. the variable permeability of the subsurface soils.
2. the reduced infiltration in the area covered with buildings or pavement.

3. due to the shallow slope or gradient to the water table, small errors in water level measurements, casing elevations and the movement of casing due to frost heave can result in incorrect ground water elevations.

The U-shape of the contours result in local vagaries and do not impact the overall ground water flow direction characterization.

3.1.1 1998 Ground Water Level Data

From January, 1998 through July, 1998 the water table generally declined 0.8 feet. A summary of well measurements and calculated ground water elevations is presented in Table 5. A series of hydrographs for the period of record from December 1996 to July 1998 are plotted on Figure 6. All monitored points with the exception of S-3, and a onetime EV-13 measurement, responded uniformly.

The historic behavior of S-3 is likely due to the presence of floating oil on the water table. Typically, floating petroleum product depresses the water table below the floating oil, causing a lower than anticipated water level. The anomaly in EV-13 may be due to an error in water level measurement.

3.2 Groundwater Quality

The constituents of concern in the shallow subsurface beneath the Facility include halogenated volatile organic compounds (VOCs), in particular, 1,1,1-trichloroethane and 1,1-dichloroethane. As proposed in the Corrective Action Plan, monitoring points were sampled semiannually for VOCs by EPA Method 8260 during 1998. The following table lists the seven monitored points and their monitoring objective.

Monitoring Point	Monitoring Objective
S-3	Assess conditions within the "S-3 area." Throughout period of record has shown elevated VOC concentrations.
EV-13	Down gradient of "S-3" area and sparge/extraction system.
W-13	Down gradient of "S-3" area and sparge/extraction system. Historical water quality record available for comparison purposes.
EV-8	Within the influence of sparge/extraction system in Area A. During December 1996 event, VOCs detected in EV-8. Assesses effectiveness of corrective action in Area A.
W-7	Shallow well. Assesses conditions at mid-facility.
W-10B	Shallow well. Down gradient of Area B sparge/extraction system.
W-15A	Historically has shown VOCs. Monitors conditions downgrading of Facility.

Table 6 presents a summary of all detected VOCs for all sampling points for the period of record.

VOC-impacted ground water is typically limited to the upper 30 feet of the saturated thickness. Water samples from on-site well nests, such as W-10A and B, and W-7 and 8, have detected higher concentrations of VOCs in shallow samples than in deeper samples. W-10B, the shallower well, samples have shown total EPA Method 8260 VOC

concentrations ranging from 121 to 315 micrograms per liter ($\mu\text{g/l}$). At W-10A, the deeper well, samples ranged from nondetect to $4.1\mu\text{g/l}$. This behavior, combined with minimal vertical gradients, suggests that the ground water flow beneath the facility is generally parallel to the land surface.

3.2.1 Groundwater Quality in S-3 Area

Figure 7 presents a chart of the sum of detected VOCs versus time for monitoring well W-13, which is down gradient of the S-3 Area sparging and extraction system. Total VOC concentrations measured prior to the treatment system ranged from 69 to $171\mu\text{g/l}$. Since the treatment system startup in mid 1996, total VOC concentrations ranged from 7 to $12\mu\text{g/l}$.

Prior to the system startup, chloroethane, 1,1-dichloroethane, 1,2-dichloroethane, 1,1,2-trichloroethane and 1,1,1-trichloroethane were detected in W-13. Since system startup only 1,1-dichloroethane has been consistently detected.

During the two 1998 sampling events, oil was found floating on the water table in S-3. The thicknesses ranged from 0.5 to 1.15 feet. Additionally, oil thicknesses have been measured in nearby wells. The following table presents a summary of the measurements for the period of record.

Oil Thickness in S-3 Area

Well Screened interval	S-3 (19-24) * (inches)	S-3A (4-19) * (inches)	S-3B (4-19) * (inches)	S-3C (4-19) * (inches)	S-3D (40-50) * (inches)
Dec. 1996	-	12	3	12	-
Mar. 1997	8	9	1	0.5	0
June 1997	14	-	-	-	-
Sept. 1997	6	3	-	0	0
Jan. 1998	1	8	-	-	-
Jul. 1998	3	0.5	0	8	0

Note:

(19-24) * indicates screened interval of well in feet below land surface

- indicates no measurement

From May 19 through August 22, Industrial Automators bailed S-3A twice a week as part of a pilot study to determine the persistence of the oil layer and the amount of oil removed. Table 7 provides a summary of the data collected. As a note, the oil thickness indicated in Table 7 is the thickness measured in the first bailer retrieved. Bailing would continue until less than 0.5 inches of product remained in the well. The volume of oil would then be estimated as it separated from the bailed fluid. Figure 8 presents a time

series of initial thicknesses. As the chart indicates, after an initial decline during the first month, the thickness appeared to stabilize at approximately 2 inches.

3.2.2 Groundwater Quality in Area A

Figure 9 presents a chart of the sum of detected VOCs versus time for extraction vent EV-8, which is within the area of influence of the sparging and extraction system in Area A. There is no pre-AS/SVE water quality data for Area A, however, the total VOC concentrations measured in EV-8 from December 1996 through September 1997 ranged from 229 µg/l to 5 µg/l. Concentrations declined throughout this period.

The two 1998 sum of detected VOCs measurements indicated slightly rising values. Two VOCs were detected: 1,1-dichloroethane and chloroethane.

By comparison, in the December 1996 sample, 1,1,1-trichloroethane, 1,1-dichloroethane and chloroethane were detected. 1,1-dichloroethane and chloroethane are breakdown products of 1,1,1-trichloroethane.

3.2.3 Groundwater Quality in Area B

Figure 10 presents a chart of the sum of detected VOCs versus time for monitoring well W-10B, which is a shallow well downgradient from the Area B sparging and extraction system. Total VOC concentrations are similar to slightly higher compared to pre-treatment system startup concentrations. Concentrations before startup ranged from 121 to 197 µg/l. Concentrations since startup ranged from 233 to 315 µg/l. The suite of detected compounds has been 1,1,1-trichloroethane, 1,1-dichloroethane, chloroethane, trichloroethene and 1,1-dichloroethene.

3.2.4 Groundwater Quality at Well Nest W-15A and B

Monitoring well MW-15A, a monitoring point downgradient from the facility, was sampled two times. As Table 6 indicates, cis-1,2-dichloroethene was the only detected VOC, ranging from 12 to 24 µg/l. These concentrations are similar to lower than previously detected.

3.2.5 Groundwater Quality at Well W-12

As previously discussed in the 1997 Annual Report during the December, 1996 sampling event, two VOCs, 1,1-dichloroethene and methylene chloride, were detected in W-12 on the extreme eastern side of the facility. The VOC, 1,1-dichloroethene, has been previously detected during the period of record at concentrations, ranging from 14 to 44 µg/l. The December, 1996 result was 74 µg/l. Methylene chloride, detected at 7 µg/l, had not been previously found. Methylene chloride is a common laboratory artifact and is likely the source of the 7µg/l detection.

3.2.6 VOCs Compared to MCLs

According to the Corrective Action Plan, the ground water cleanup goals are the federal Maximum Contaminant Levels. Table 8 provides a summary of the detected VOC concentrations compared to the MCLs. All sampling locations were below the MCLs except for W-10B, which exceeded for TCE, EV-13 for PCE, and S-3 for TCA and 1,1-DCE. The W-10B concentration was 9 µg/l. Overall, the exceedances for W-10B and EV-13 were very close to the MCLs with concentrations of 25 µg/l or less for these halogenated VOCs.

Overall, compared to 1997, the 1998 VOC levels were slightly lower to the same. One exception to this was EV-8, where the total VOC concentration went from 51 µg/l in early 1997 to 5 µg/l in late 1997 to 54 µg/l in mid-1998. As Table 6 indicates this fluctuation was entirely due to varying concentrations of 1,1-DCA. (As a note, 1,1-DCA does not have an MCL.) At these low concentrations, it is not unusual for VOC concentrations to fluctuate across ranges similar to those observed over the past two years. Variation is due to several factors including: the reproducibility of sampling and analytical procedures, seasonal variability to precipitation, and the nature of the residual source concentrations.

4.0 FINDINGS

The ground water and soils in three areas, S-3 Area, Area A and Area B, beneath the former Torrington facility are being remediated by an air sparging/soil vapor extraction system.

- One compressor, blower and ancillary equipment in the north equipment room is used for Areas A and B remediation. A second compressor, blower and equipment in the south equipment room is used for the S-3 Area.
- The north equipment room system, remediating Areas A and B, operated 90 percent of the available time during 1998.
- The south equipment room system, remediating the S-3 Area, operated 90 percent of the available time during 1998.
- Sparge air was introduced in the ground water at an average rate of 227 cfm. Up slightly from 1997 levels due to north rate of 50 cfm per vent during three-month trial period.
- The increased injection rate in north system did not have a measurable effect on VOC removal.
- Air was extracted from the unsaturated soils at an average rate of 467 cfm.

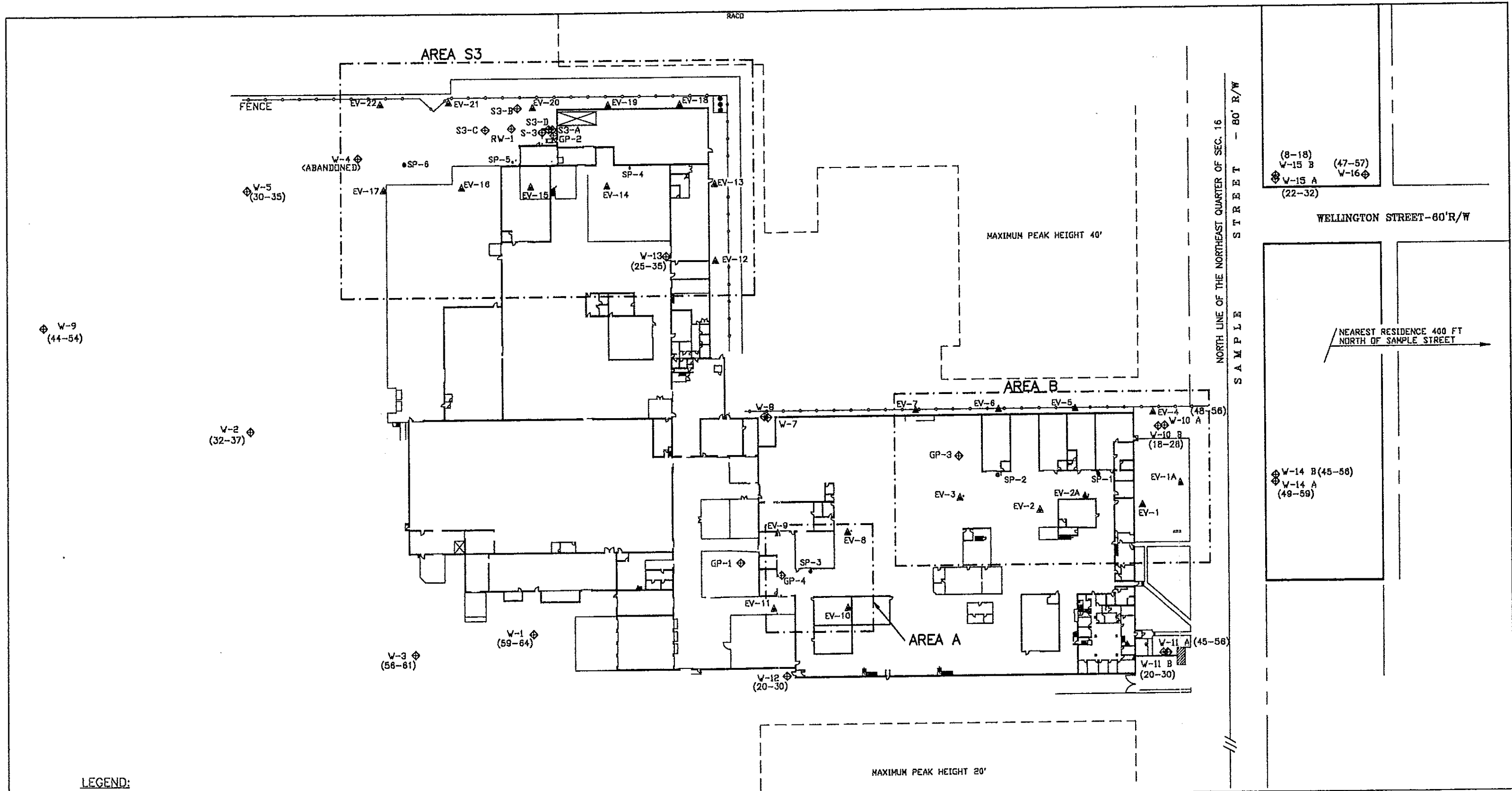
- Significant maintenance items included the south blower replacement and the sheave on the north compressor.
- Ground water samples have historically shown 1,1,1-trichloroethane, 1,1-dichloroethane, chloroethane, 1,1-dichloroethene and trichloroethene. During 1998 the same suite of VOCs has been detected. PCE has been observed during 1998 in EV-13.
- VOC concentrations in EV-8 within Area A were up from 5 µg/l in September 1997 to 54 µg/l in July 1998. The increase was due almost entirely to 1,1-dichloroethane, which does not have an MCL.
- VOC concentrations in W-10b downgradient of Area B continued a downward trend that started in late 1997.
- VOC concentrations in W-13 downgradient of the S-3 Area remained low with total concentrations near 10 µg/l.
- During the 318 days of operation of the system in 1998, 0.9 gallons of 1,1,1-trichloroethane, 0.69 gallons of 1,1 dichloroethene, and 0.44 gallons of 1,1-dichloroethane were removed by the system.
- Floating oil has been observed in several wells in the S-3 Area. A pilot bailing study was performed over a three-month period in mid-1998.

5.0 REFERENCES

Capsule Environmental Engineering, 1996, Corrective Action Plan

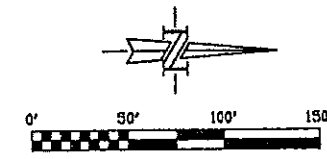
Capsule Environmental Engineering, 1998, 1997 Annual Report, March 1998






LEGEND:

- ◊ MONITORING WELLS (45-55) DEPTH OF WELL SCREEN INTERVAL
- ▲ VAPOR EXTRACTION WELL (EV)
- AIR SPARGE WELL (SP)

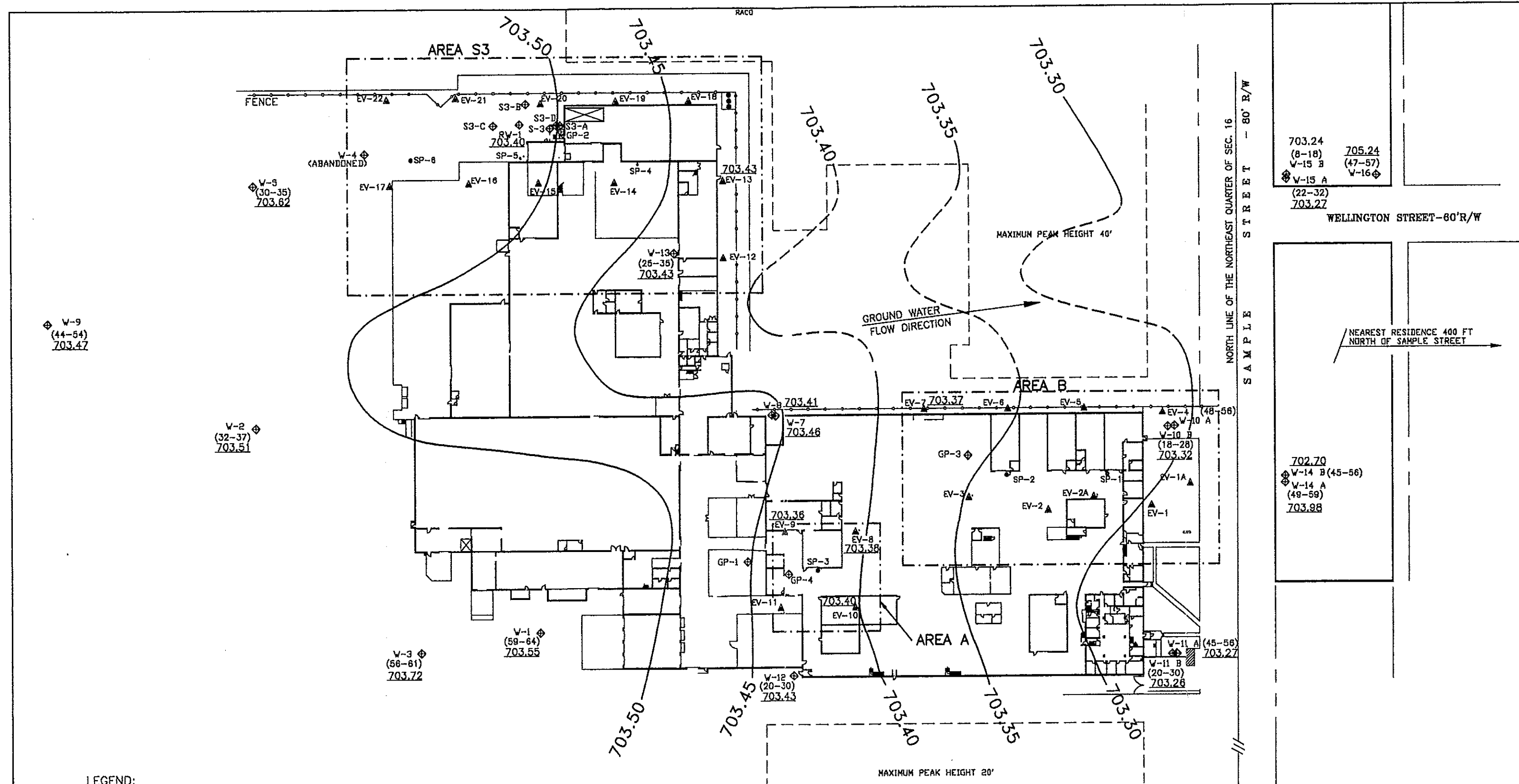




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TITLE: LOCATION MAP
 SYSTEM EFFECTIVENESS REPORT
 SAMPLE STREET BUSINESS CENTER
 (FORMER TORRINGTON FACILITY)
 SOUTH BEND, INDIANA

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:	DRAWING NO.:	FIGURE:
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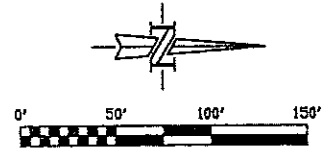


LEGEND:

- ◆ MONITORING WELLS (45-55) DEPTH OF WELL SCREEN INTERVAL
- ▲ VAPOR EXTRACTION WELL (EV)
- AIR SPARGE WELL (SP)

703.72 GROUND WATER ELEVATION (FEET ABOVE SEA LEVEL) DEC., 1996

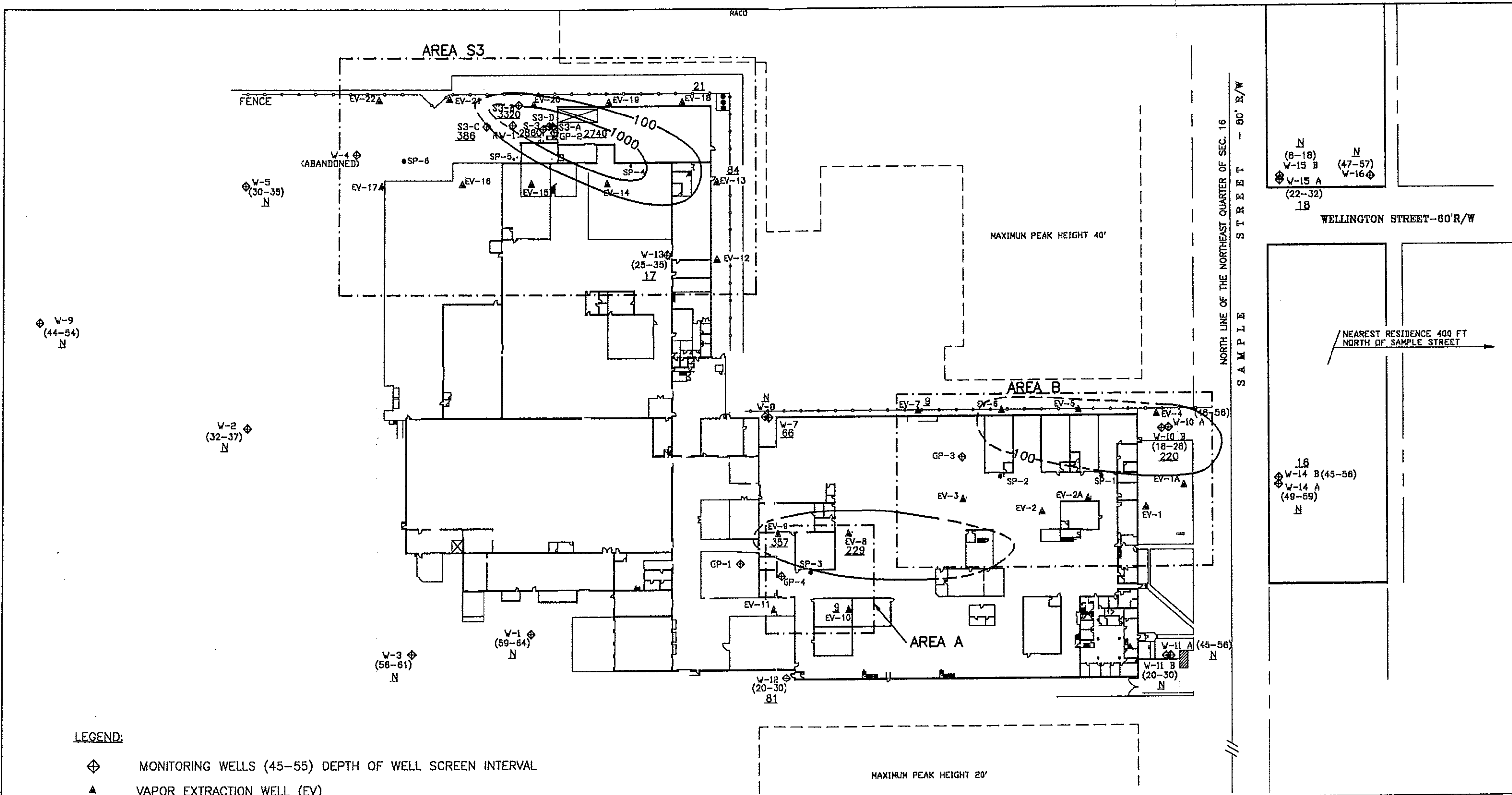
703.50 GROUND WATER ELEVATION CONTOUR (FEET ABOVE SEA LEVEL) DEC., 1996



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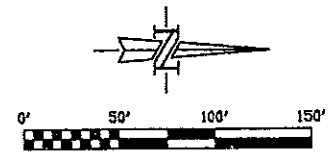
TITLE: GROUND WATER ELEVATION MAP
 SYSTEM EFFECTIVENESS REPORT
 SAMPLE STREET BUSINESS CENTER
 (FORMER TORRINGTON FACILITY)
 SOUTH BEND, INDIANA


DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:	DRAWING NO.:	FIGURE:
TCD	JJM	12/11/97	001-412	C00297-1	2



LEGEND:

- ⊕ MONITORING WELLS (45-55) DEPTH OF WELL SCREEN INTERVAL
- ▲ VAPOR EXTRACTION WELL (EV)
- AIR SPARGE WELL (SP)
- 220 SUM OF DETECTED VOCs, IN MICROGRAMS PER LITER, USING EPA METHOD 8260, DEC., 1996 SAMPLING EVENT
- N NO DETECTED VOCs USING EPA METHOD 8260, DEC., 1996 SAMPLING EVENT
- 100 SUM OF DETECTED VOCs, IN MICROGRAMS PER LITER, DEC., 1996 SAMPLING EVENT EXCEPT FOR EV-18, WHICH WAS MAR., 1997 SAMPLING EVENT





CAPSULE
 ENVIRONMENTAL ENGINEERING, INC.
 1970 OAKCREST AVE., SUITE 215
 ST. PAUL, MINNESOTA 55113
 (612) 636-2644

TITLE: ISOCONCENTRATION MAP (SUM OF DETECTED VOCs, 12/96)
 SYSTEM EFFECTIVENESS REPORT
 SAMPLE STREET BUSINESS CENTER
 (FORMER TORRINGTON FACILITY)
 SOUTH BEND, INDIANA

DRAWN BY:	CHECKED BY:	DATE:	PROJECT NO.:	DRAWING NO.:	FIGURE:
TCD	JJM	12/11/97	001-412	C00297-2	3

North Equipment Room
 Sum of Injected Air Rates, SP-1, SP-2, SP-3
 Former Torrington Facility, South Bend, IN

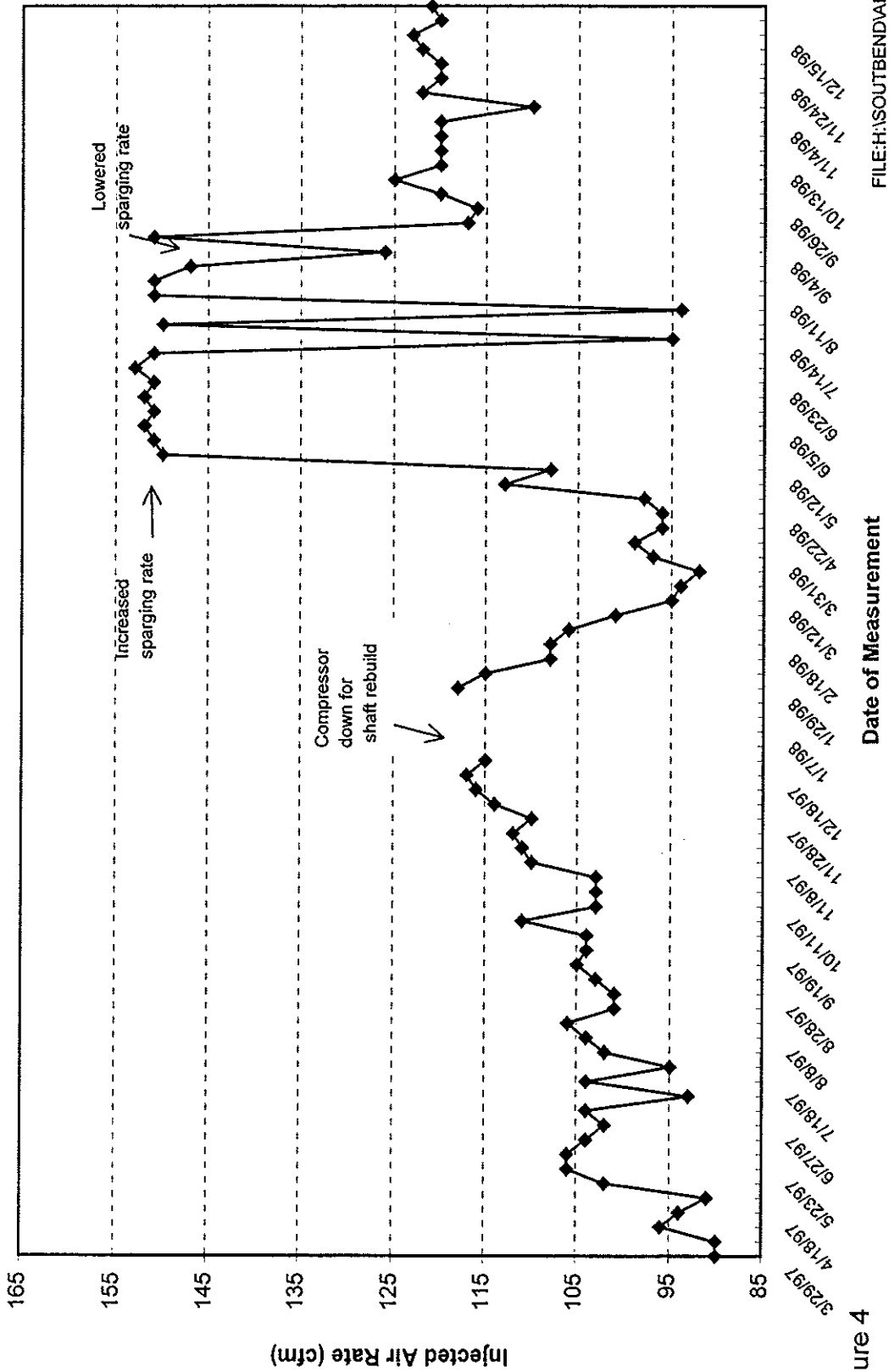


Figure 4

South Equipment Room
 Sum of Injected Air Rates, SP-4, SP-5, SP-6
 Former Torrington Facility, South Bend, IN

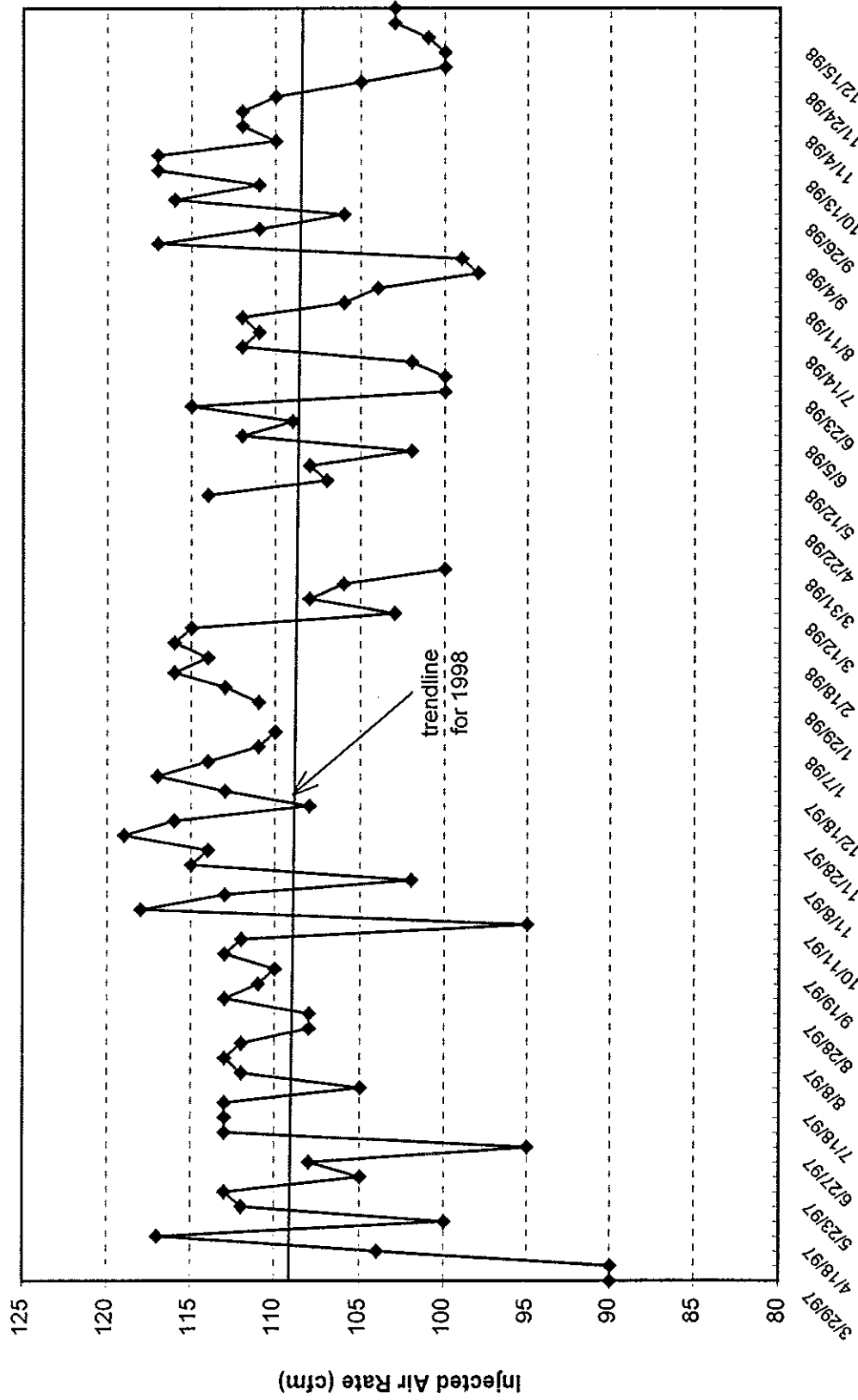
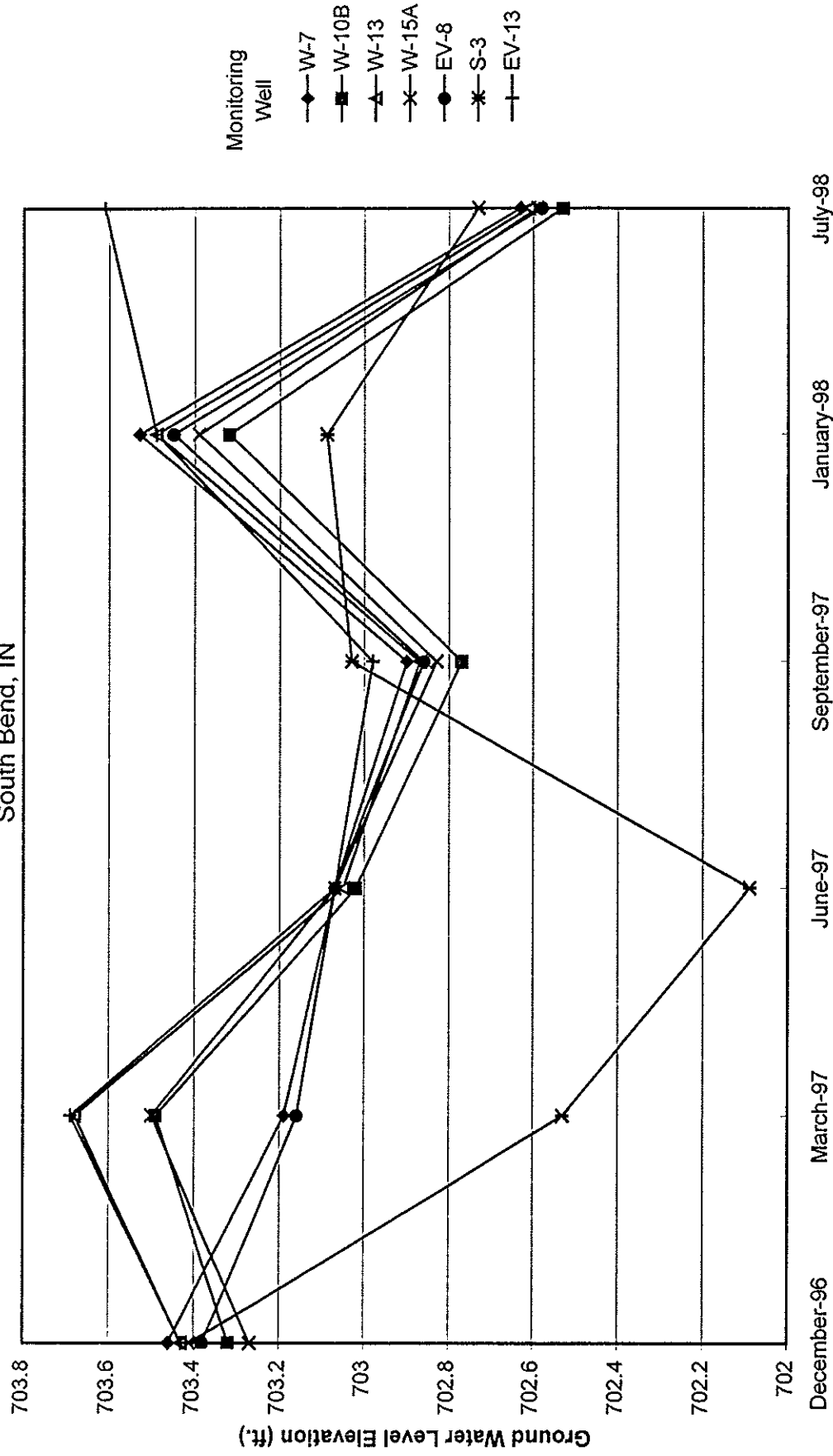


Figure 5

Ground Water Elevation Hydrographs
 Former Torrington Facility
 South Bend, IN



Measurement Date

FILE: I:\FINAL\FINAL97RM\REPORTS\SOBEND\ANALYSES.XLS\Hydrograph

Figure 6

Sum of VOCs for W-13
Former Torrington Facility
South Bend, IN

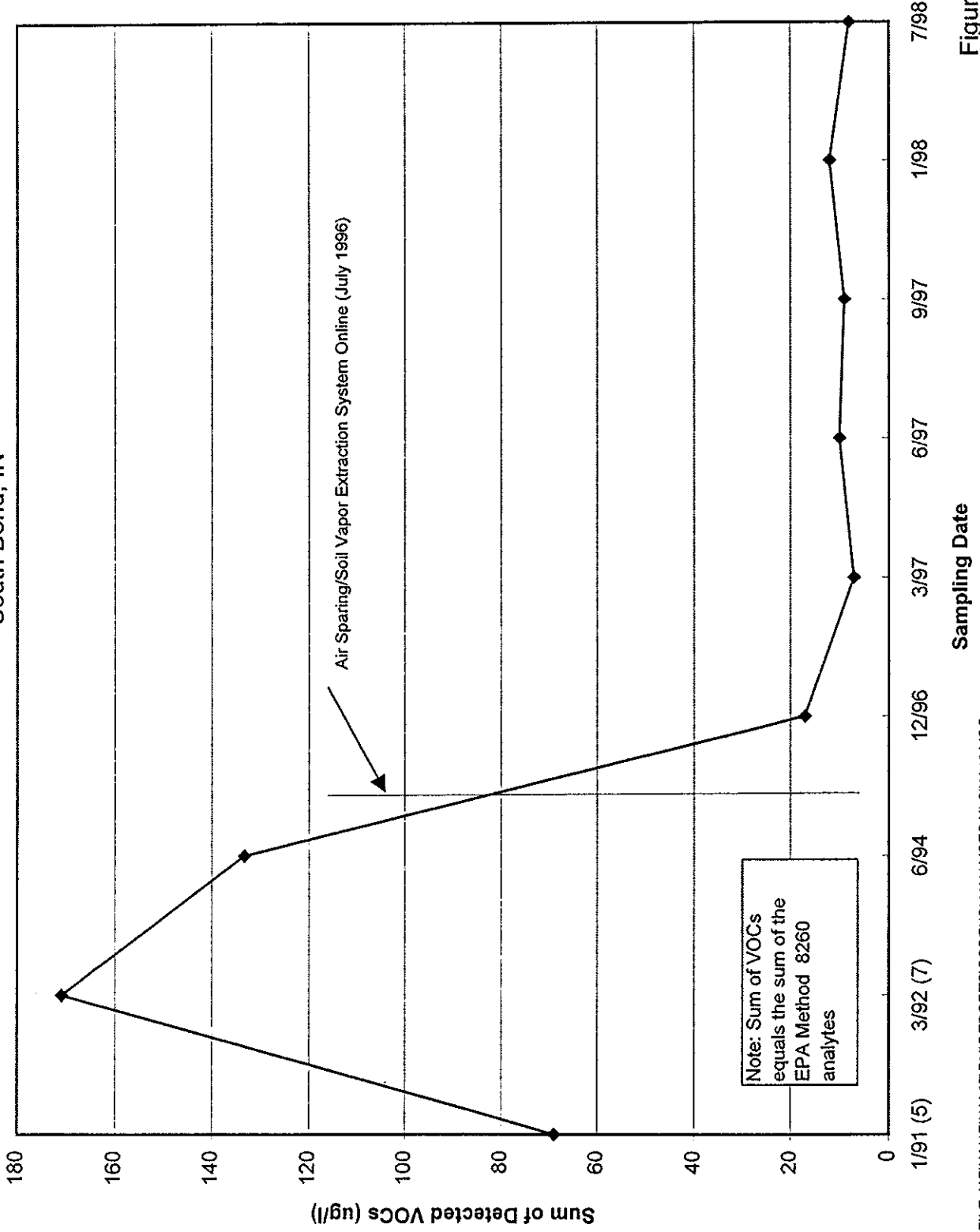


Figure 7

Floating Oil Thickness in S-3A
 Former Torrington Facility
 South Bend, Indiana

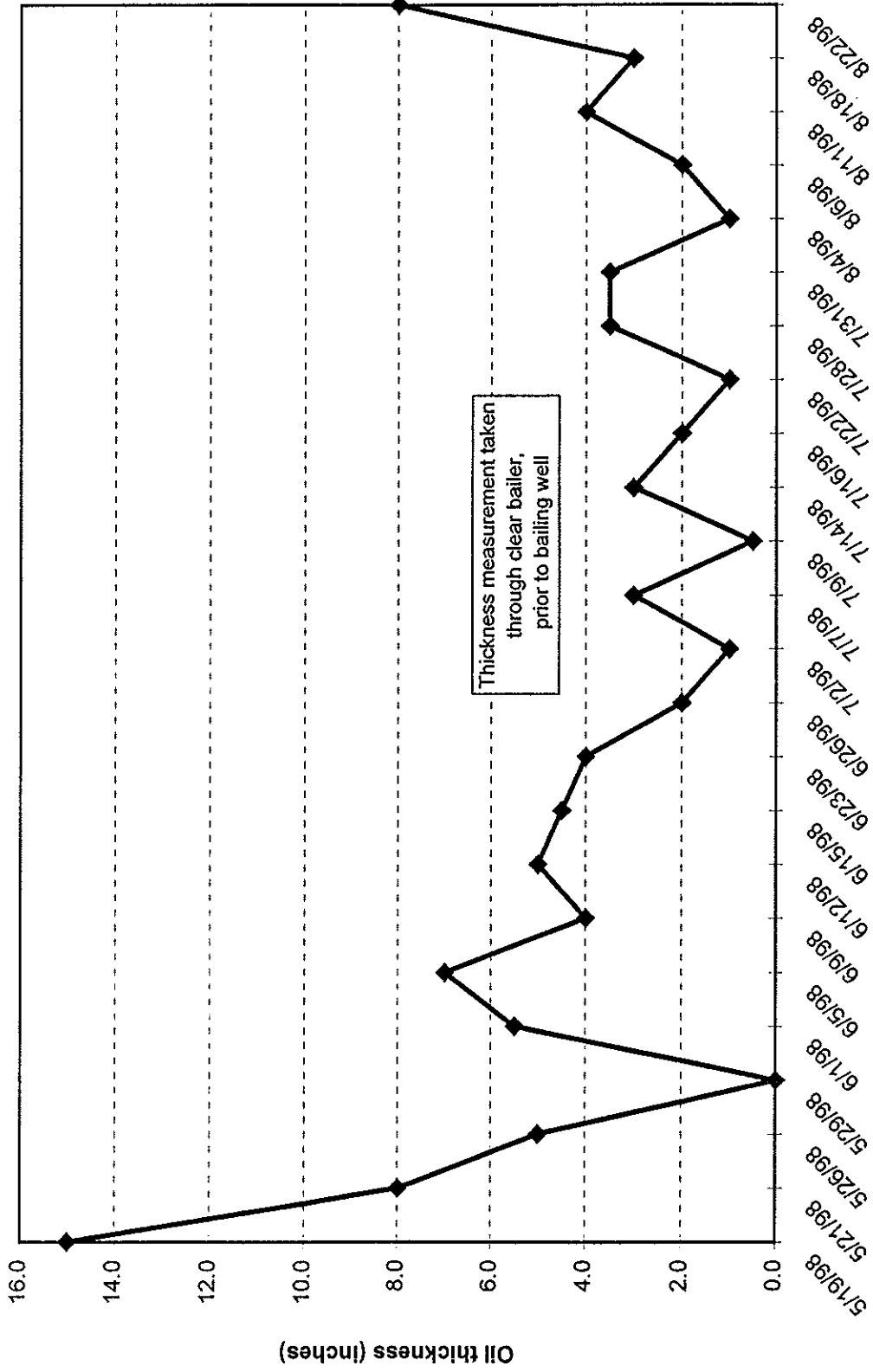


Figure 8

Sum of VOCs for EV-8
Former Torrington Facility
South Bend, IN

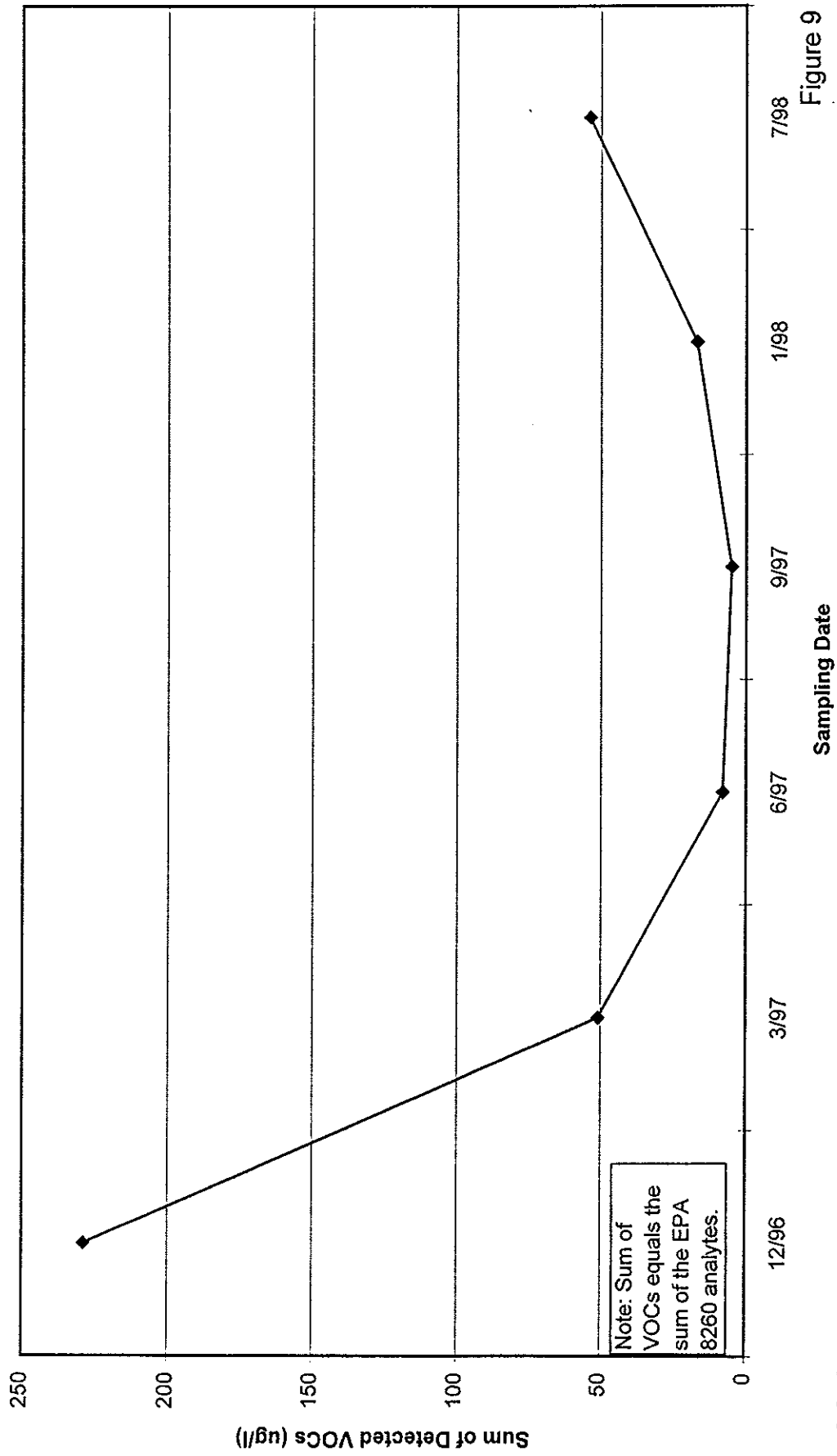
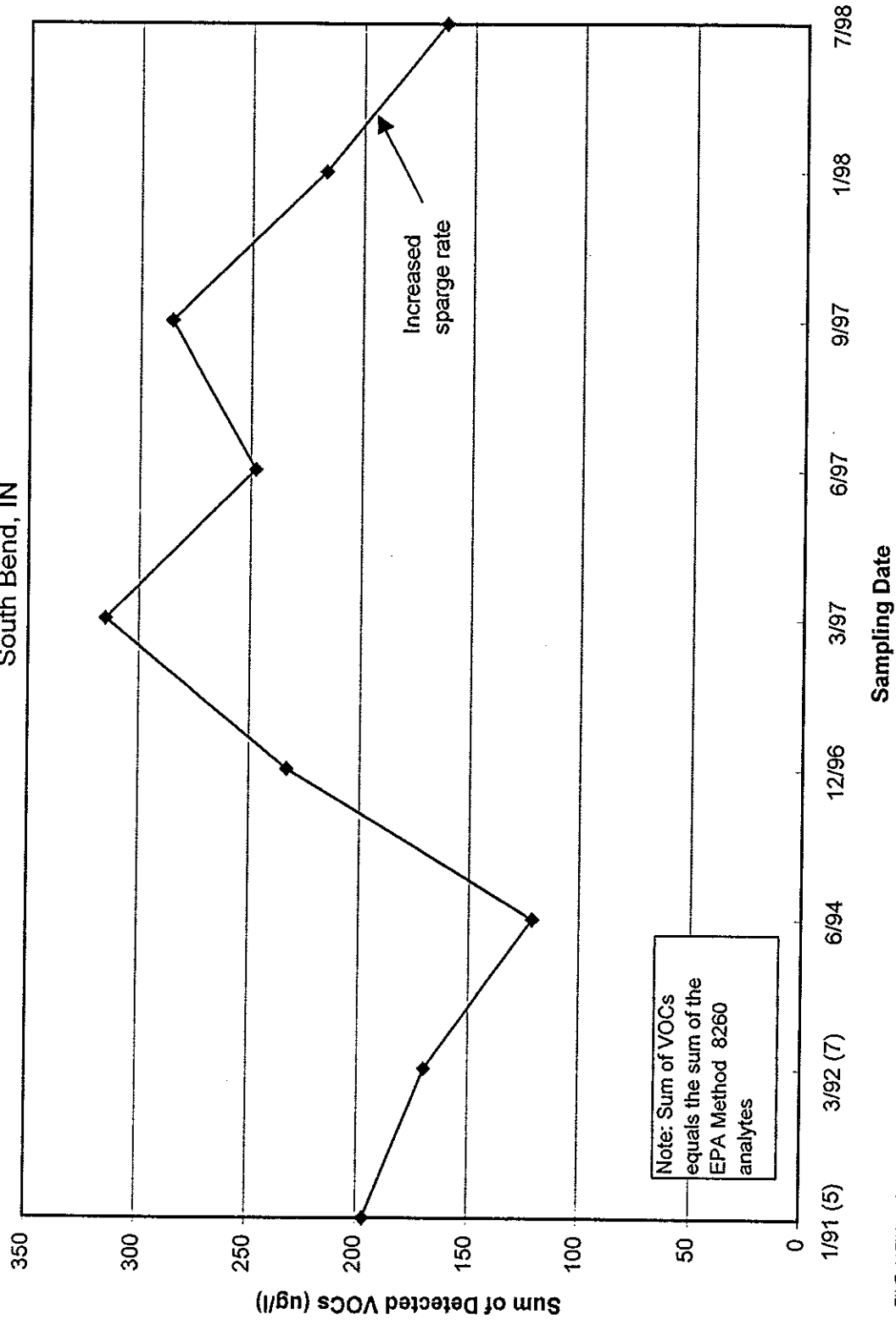


Figure 9

Sum of VOCs for W-10B
Former Torrington Facility
South Bend, IN



FILE: I:\FINAL\FINAL\RM\REPORTS\SOBEND\ANALYSES\XLS\W-10B VOCs

Figure 10

Table 1

Title: Summary of Injected Air
 Project: Former Torrington Facility, South Bend, IN
 Date Prepared: December 6, 1997
 Date Updated: February 1, 1999

Background: This spreadsheet summarizes the weekly readings of injected air rates for the SB sparge points.
 Prepared as part of the System Effectiveness Report.

Date	North				South			N & S Sum (cfm)	
	SP-1 (cfm)	SP-2 (cfm)	SP-3 (cfm)	North Sum (cfm)	SP-4 (cfm)	SP-5 (cfm)	SP-6 (cfm)		South Sum (cfm)
1/2/98					37	38	39	114	114
1/7/98					35	37	39	111	111
1/13/98					33	38	39	110	110
1/23/98									
1/29/98	39	39	40	118	37	39	35	111	229
2/3/98	38	38	39	115	36	38	39	113	228
2/11/98	38	31	39	108	38	39	39	116	224
2/18/98	38	31	39	108	37	39	38	114	222
2/25/98	38	31	37	106	39	39	38	116	222
3/4/98	38	31	32	101	37	39	39	115	216
3/12/98	31	32	32	95	31	39	33	103	198
3/18/98	31	32	31	94	31	39	38	108	202
3/27/98	31	31	30	92	30	39	37	106	198
3/31/98	28	31	38	97	30	39	31	100	197
4/8/98	31	30	38	99					99
4/15/98	30	31	35	96					96
4/22/98	30	31	35	96					96
4/29/98	30	31	37	98					98
5/8/98	38	39	36	113	36	39	39	114	227
5/12/98	31	38	39	108	31	38	38	107	215
5/19/98	51	50	49	150	30	39	39	108	258
5/27/98	51	50	50	151	32	39	31	102	253
6/5/98	52	50	50	152	38	39	35	112	264
6/9/98	51	50	50	151	32	38	39	109	260
6/19/98	50	50	52	152	39	35	41	115	267
6/23/98	51	50	50	151	30	31	39	100	260
6/30/98	51	50	52	153	31	38	31	100	253
7/11/98	51	50	50	151	31	38	33	102	253
7/14/98	25	20	50	95	33	40	39	112	207
7/22/98	50	50	50	150	36	40	35	111	261
7/28/98	32	35	27	94	31	41	40	112	206
8/11/98	51	51	49	151	28	39	39	106	257
8/18/98	49	52	50	151	25	39	40	104	255
8/25/98	50	51	46	147	30	37	31	98	245
9/4/98	40	41	45	126	31	37	31	99	225
9/12/98	50	52	49	151	41	36	40	117	268
9/15/98	39	39	39	117	30	41	40	111	228
9/26/98	39	39	38	116	28	39	39	106	222
9/30/98	40	40	40	120	35	41	40	116	236
10/6/98	45	41	39	125	30	40	41	111	236
10/13/98	40	40	40	120	35	40	42	117	237
10/22/98	40	40	40	120	35	40	42	117	237
10/27/98	40	40	40	120	40	40	30	110	230
11/4/98	40	40	40	120	40	42	30	112	232
11/12/98	30	40	40	110	35	42	35	112	222
11/20/98	40	40	42	122	30	40	40	110	232
11/24/98	40	40	40	120	30	40	35	105	225
12/1/98	40	40	40	120	30	40	30	100	220
12/8/98	42	40	40	122	31	39	30	100	222
12/15/98	43	40	40	123	33	35	33	101	224
12/22/98	40	40	40	120	34	35	34	103	223
12/30/98	41	40	40	121	34	35	34	103	224
Minimum	25	20	27	92	25	31	30	98	96
Maximum	52	50	52	153	39	41	41	116	267
Average	39	38	41	118	34	38	37	109	201

Table 2

Title: Summary of Extracted Air Rates
 Project: Former Torrington Facility, South Bend, IN
 Date Prepared: December 6, 1997

Background: This spreadsheet summarizes the weekly readings of extracted air rates from the SB extraction vents. Prepared as part of the System Effectiveness Report.

Date	Area B									Area B Sum (cfm)
	EV-1 (cfm)	EV-1A (cfm)	EV-2 (cfm)	EV-2A (cfm)	EV-3 (cfm)	EV-4 (cfm)	EV-5 (cfm)	EV-6 (cfm)	EV-7 (cfm)	
1/2/98	--	--	--	--	--	--	--	--	--	--
1/7/98	--	--	--	--	--	--	--	--	--	--
1/13/98	--	--	--	--	--	--	--	--	--	--
1/23/98	--	--	--	--	--	--	--	--	--	--
1/29/98	19	16	19	19	19	20	18	17	20	167
2/3/98	20	20	20	18	19	19	19	20	19	174
2/11/98	19	19	19	19	19	19	19	18	18	169
2/18/98	18	18	19	19	19	19	18	18	19	167
2/25/98	19	20	19	19	19	19	19	17	19	170
3/4/98	19	21	26	18	15	19	22	21	21	182
3/12/98	19	20	20	20	19	19	--	--	--	--
3/18/98	18	18	19	19	19	19	20	20	18	170
3/27/98	19	18	20	18	19	18	16	20	19	167
3/31/98	18	17	20	18	18	17	15	21	20	164
4/8/98	17	17	19	22	18	17	21	22	17	170
4/15/98	18	17	20	19	19	18	18	16	21	166
4/22/98	20	18	20	18	19	18	15	21	18	167
4/29/98	22	18	20	18	18	15	25	18	21	175
5/8/98	18	17	20	19	19	19	17	20	19	168
5/12/98	18	16	19	18	17	18	22	20	17	165
5/19/98	17	17	20	16	18	18	19	21	20	166
5/27/98	17	16	20	18	18	19	17	21	22	168
6/5/98	20	16	21	20	19	22	22	17	27	184
6/9/98	19	17	18	18	18	15	22	20	17	164
6/19/98	18	16	21	22	22	17	22	20	17	175
6/23/98	17	18	19	18	17	16	18	20	21	164
6/30/98	17	15	18	23	17	13	17	18	16	154
7/11/98	18	20	19	18	17	17	20	20	18	167
7/14/98	17	18	23	23	22	19	21	17	23	183
7/22/98	17	21	23	25	21	21	20	17	9	174
7/28/98	20	18	22	24	21	25	25	19	23	197
8/11/98	17	18	22	24	21	20	25	21	19	187
8/18/98	17	17	21	23	21	19	21	21	20	180
8/25/98	17	17	23	23	21	19	21	17	17	175
9/4/98	18	19	21	19	21	24	21	19	20	182
9/12/98	21	22	22	21	20	18	23	18	17	182
9/15/98	19	17	21	23	21	19	21	21	21	183
9/26/98	19	19	21	23	20	20	22	21	20	185
9/30/98	17	15	25	23	21	20	21	21	21	184
10/6/98	19	17	23	23	21	20	23	20	23	189
10/13/98	19	19	22	24	20	19	20	21	17	181
10/22/98	18	19	20	23	21	21	19	20	22	183
10/27/98	18	21	20	24	22	18	20	19	20	182
11/4/98	19	19	21	23	20	20	20	21	20	183
11/12/98	19	19	21	20	19	17	22	24	21	182
11/20/98	19	19	22	24	21	20	21	22	20	188
11/24/98	19	18	22	24	21	20	21	23	20	188
12/1/98	20	19	22	24	21	20	21	23	20	190
12/8/98	20	19	20	24	21	21	21	23	20	189
12/15/98	19	20	19	25	21	22	18	17	17	178
12/22/98	19	19	21	24	21	22	18	17	17	178
12/30/98	20	18	22	22	19	20	19	15	21	176
							Area A	1997 Minimum		178
							Area A	1997 Maximum		194
							Area A	1997 Average		182
							Area A	1998 Minimum		154
							Area A	1998 Maximum		197
							Area A	1998 Average		176

Table 2
(Continued)

Date	EV-8 (cfm)	EV-9 (cfm)	EV-10 (cfm)	EV-11 (cfm)	Area A	
					Area A Sum (cfm)	Area A & B Sum (cfm)
1/2/98	--	--	--	--	--	--
1/7/98	--	--	--	--	--	--
1/13/98	--	--	--	--	--	--
1/23/98	--	--	--	--	--	--
1/29/98	18	19	22	19	78	245
2/3/98	18	20	21	19	78	252
2/11/98	19	19	17	19	74	243
2/18/98	19	19	17	19	74	241
2/25/98	19	19	18	19	75	245
3/4/98	19	6	17	21	63	245
3/12/98	20	19	20	20	79	
3/18/98	18	20	17	18	73	243
3/27/98	20	20	19	19	78	245
3/31/98	18	20	17	16	71	235
4/8/98	19	20	16	16	71	241
4/15/98	19	20	16	16	71	237
4/22/98	19	20	19	16	74	241
4/29/98	19	20	16	17	72	247
5/8/98	19	20	19	19	77	245
5/12/98	18	20	17	16	71	236
5/19/98	10	20	17	16	63	229
5/27/98	20	19	18	15	72	240
6/5/98	18	20	21	24	83	267
6/9/98	18	20	19	20	77	241
6/19/98	22	20	22	24	88	263
6/23/98	19	19	17	16	71	235
6/30/98	18	19	17	17	71	225
7/11/98	17	20	18	17	72	239
7/14/98	16	19	17	17	69	252
7/22/98	18	19	17	15	69	243
7/28/98	19	17	21	20	77	274
8/11/98	17	19		18	52	239
8/18/98	18	19	19	16	72	250
8/25/98	18	19	17	16	70	248
9/4/98	18	19	19	17	73	255
9/12/98	19	20	19	20	78	260
9/15/98	18	19	19	16	72	257
9/26/98	18	18	18	17	71	256
9/30/98	17	19	19	16	71	255
10/6/98	18	19	19	18	74	263
10/13/98	17	19	18	17	71	252
10/22/98	18	20	20	19	77	260
10/27/98	21	24	20	19	84	266
11/4/98	18	19	20	15	72	255
11/12/98	18	21	23	18	80	262
11/20/98	17	19	18	16	70	258
11/24/98	18	19	18	16	71	259
12/1/98	18	19	18	16	71	261
12/8/98	19	19	18	19	75	264
12/15/98	17	19	15	18	69	247
12/22/98	19	19	18	15	71	249
12/30/98	22	21	22	16	81	257
		Area B	1997 Minimum		75	254
		Area B	1997 Maximum		84	275
		Area B	1997 Average		81	263
		Area B	1998 Minimum		52	225
		Area B	1998 Maximum		88	274
		Area B	1998 Average		73	249

Table 3

Title: Summary of Extracted Air Rates
 Project: Former Torrington Facility, South Bend, IN
 Date Prepared: December 6, 1997

Background: This spreadsheet summarizes the weekly readings of extracted air rates from the SB extraction vents. Prepared as part of the System Effectiveness Report.

Area S-3											Area S3
EV-12 (cfm)	EV-13 (cfm)	EV-14 (cfm)	EV-15 (cfm)	EV-16 (cfm)	EV-17 (cfm)	EV-18 (cfm)	EV-19 (cfm)	EV-20 (cfm)	EV-21 (cfm)	EV-22 (cfm)	Sum (cfm)
21	21	21	20	20	25	26	21	20	13	22	230
20	21	21	20	20	26	20	21	5	12	21	207
20	21	25	21	19	25	24	21	8	20	25	229
--	--	--	--	--	--	--	--	--	--	--	--
21	21	24	20	20	25	26	20	5	19	23	224
21	21	21	20	20	25	22	21	11	17	21	220
18	21	24	19	20	25	20	21	8	21	22	219
20	21	24	20	20	25	26	22	6	6	24	214
21	21	24	20	20	26	26	21	6	15	23	223
19	21	25	20	20	25	16	5	23	21	19	214
21	22	25	20	20	25	20	22	5	14	23	217
20	21	25	20	20	25	26	20	18	5	23	223
19	20	21	20	25	26	19	20	22	23	21	236
17	17	21	20	19	25	18	26	18	22	23	226
20	18	--	15	16	25	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
--	--	--	--	--	--	--	--	--	--	--	--
20	17	19	19	20	25	20	18	6	21	18	203
20	18	20	19	19	21	24	20	19	15	23	218
22	12	21	19	20	25	25	18	19	19	18	218
20	18	19	23	20	25	18	21	19	10	23	218
20	18	21	19	21	25	20	18	20	20	23	225
20	17	19	21	23	17	21	18	19	21	22	218
20		21	25	19	23	20	18	5	23	38	212
19	17	21	19	19	25	20	19	18	14	22	213
19	17	21	19	19	25	21	16	19	18	17	211
21	21	17	19	19	25	19	20	20	12	21	214
19	17	21	23	19	25	20	23	17	15	21	220
18	18	20	19	20	18	25	19	19	21	22	219
22	20	--	20	19	25	17	23	19	21	20	206
19	17	--	18	19	25	21	23	23	17	25	207
19	17	--	18	19	25	22	20	19	17	6	182
19	20	18	17	21	25	20	18	21	17	18	214
20	20	18	17	21	25	25	20	16	15	21	218
23	21	19	19	20	25	21	23	17	21	25	234
19	21	19	20	18	25	24	21	18	21	25	231
20	19	18	18	19	25	25	21	24	18	25	232
21	19	19	18	20	25	21	14	24	20	25	226
20	17	19	18	20	25	19	21	26	19	17	221
20	19	22	19	20	25	25	19	20	19	15	223
19	20	20	17	21	23	21	22	20	16	17	216
20	18	19	18	20	25	25	21	19	20	15	220
20	19	20	19	19	25	25	21	20	18	25	231
21	19	19	20	18	23	25	25	20	21	19	230
20	19	18	19	19	25	25	17	19	20	16	217
20	19	16	19	19	25	25	20	19	21	15	218
20	19	16	19	19	25	25	21	19	20	16	219
20	20	17	19	20	24	25	21	19	20	17	222
20	17	22	16	20	17	18	20	19	16	19	204
19	17	21	17	20	17	17	20	20	16	19	203
20	18	21	18	20	18	25	20	21	17	5	203
							Area S-3		1997 Minimum		182
							Area S-3		1997 Maximum		243
							Area S-3		1997 Average		221
							Area S-3		1998 Minimum		182
							Area S-3		1998 Maximum		236
							Area S-3		1998 Average		218

S A I E N T R O O M (4 0 2)												
Date Sampled	29-Jan-98	17-Feb-98	17-Mar-98	30-Jun-98	28-Aug-98	15-Sep-98	23-Oct-98	19-Nov-98	17-Dec-98			
Date Analyzed	30-Jan-98	23-Feb-98	27-Mar-98	Jun-98	09-Sep-98	28-Sep-98	03-Nov-98	02-Dec-98	18-Dec-98			
Analytical Method	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*	T01/T02*
Units	mg/m ³	mg/m ³	mg/m ³	µg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³	mg/m ³
Chloromethane	0.013 J	<0.02	<0.02	0.02	0.013 JB	0.052 JB	0.0066 JB	0.015 J	0.051			
Bromomethane	0.0032 JB	0.0061 J	0.0075 JB	0.02	0.0076 JB	0.0072 JB	<0.02	<0.02	<0.02			
Vinyl Chloride	0.00098 J	<0.02	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Chloroethane	<0.020	0.0099 J	<0.02	0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Methylene Chloride	0.0099 J	0.19	0.01	0.048	0.035	0.087	0.033	0.12	0.28			
Acetone												
Carbon Disulfide	<0.01	0.12	0.012	0.048	0.02	0.017	0.0093 JB	0.0051 J	0.0075 J			
1,1-Dichloroethane	0.082 B	<0.01	0.005 J	0.19	0.12	0.85 E	<0.01	<0.01	0.47			
1,1-Dichloroethane	0.15	0.22	0.13	0.085	0.14	0.17	0.84	0.1	0.29			
cis-1,2-Dichloroethane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
trans-1,2-Dichloroethane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Chloroform	<0.01	<0.01	<0.01	0.01	0.0021 J	0.0026 J	0.002 J	0.0016 J	0.015			
1,2-Dichloroethane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
2-Butanone												
1,1,1-Trichloroethane (A)	0.67 E	1 E	0.56 E	0.18	0.43	0.6 E	0.33	0.38	1.2 E			
Carbon Tetrachloride	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Bromodichloromethane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
1,2-Dichloropropane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Trans-1,3-dichloropropene	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Trichloroethene	0.014	0.04	0.0044 J	0.049	0.047	0.057 B	0.048	0.029	0.29			
Dibromochloromethane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
1,1,2-Trichloroethane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Benzene	0.0028 J	0.0037 J	0.0031 J	0.043 J	0.0055 J	0.0048 J	0.0077 J	<0.01	0.016			
cis-1,3-Dichloropropene	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
Bromoform	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
4-Methyl-2-Pentanone												
2-Hexanone												
Tetrachloroethene	0.012	0.02	0.015	0.026	0.022	0.28	0.021	0.19	0.081			
1,1,2,2-Tetrachloroethane	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	0.021			
Toluene	0.037	0.041	0.022	0.3	0.1	0.16	0.092	0.15	0.8 E			
Chlorobenzene	<0.01	<0.01	<0.01	0.01	<0.01	0.0019 J	0.011	<0.01	<0.01			
Ethylbenzene	0.012	0.0083 J	0.0025 J	0.16	0.006 J	0.0054 J	0.068	0.035	0.017			
Styrene	0.0022 J	<0.01	<0.01	0.032 J	0.009 J	0.0051 J	0.0061 J	0.0028 J	0.011			
Total Xylenes	0.054	0.04635	0.01254 J	0.767	0.02757 J	0.02496 J	0.29381 J	0.14502	0.06132			

NOTES:

E Indicates that value exceeded the calibration range

J Indicates that the compound was analyzed for and determined to be present in the sample. The concentration of the compound meets the identification criteria for the method. The concentration is less than the specified minimum detection limit but is greater than zero.

B This flag is used when the analyte is found in the blanks as well as the sample. It indicates contamination and warns the data user to use caution when applying the results.

Table 5

GROUNDWATER ELEVATIONS DATA

The Torrington Company
South Bend, Indiana

Well	Reference Elevation	Dec-96 Water Level Elevation (ft)	Mar-97 Water Level Elevation (ft)	Jun-97 Water Level Elevation (ft)	Sep-97 Water Level Elevation (ft)	Jan-98 Water Level Elevation (ft)	Jul-98 Water Level Elevation (ft)
W-1	711.97	703.55					
W-2	712.61	703.51					
W-3	711.93	703.72					
W-4	712.93						
W-5	713.35	703.62					
W-7	713.39	703.46	703.19	703.07	702.9	703.53	702.63
W-8	713.65	703.41					
W-9	714.61	703.47					
W-10A	714.51	703.32					
W-10B	714.55	703.32	703.49	703.02	702.77	703.32	702.53
W-11A	712.08	703.27					
W-11B	712.08	703.26					
W-12	712.64	703.43					
W-13	713.73	703.43	703.68	703.05	702.87	703.49	702.61
W-14A	715.46	703.78					
W-14B	714.91	702.7					
W-15A	714.43	703.27	703.5	703.07	702.83	703.39	702.59
W-15B	713.78	703.24					
W-16	715.23	703.24					
S-3	709.86	703.41	702.53	702.09	703.03	703.09	702.73
S3-A	710.05	701.05					
S3-B	709.35	700.35					
S3-C	709.71	700.71					
S3-D	710.13	703.4					
EV-7	712.07	703.37					
EV-8	713.66	703.38	703.16	703.07	702.86	703.45	702.58
EV-9	713.47	703.36					
EV-10	713.55	703.4					
EV-13	712.11	703.43	703.69	703.07	702.98	703.49	703.61
EV-17	710.58						
EV-18	711.13						

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	Federal Maximum Contaminant Level (ppb)	Tier II Levels From CAP	The Torrington Company South Bend, Indiana										
			W-1 9/84 (1) (ppb)	W-1 8/90 (4) (ppb)	W-1 9/90 (4) (ppb)	W-1 1/91 (5) (ppb)	W-1 3/92 (7) (ppb)	W-1 6/94 (ppb)	W-1 12/96 (ppb)	W-2 9/84 (1) (ppb)	W-2 4/86 (3) (ppb)	W-2 1/91 (5) (ppb)	
1,1,1-Trichloroethane	200	920	ND	18	ND	ND	ND	BEQL	ND	<5	30	<5	ND
1,1-Dichloroethane	No MCL	10002	ND	6	ND	ND	ND	ND	ND	<5	30	<5	ND
1,1-Dichloroethene	7	7	ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
Trichloroethene	5	260	ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
Chloroethane	No MCL	NA	ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
Vinyl Chloride	2	10	ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
Toluene	1000		ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
trans-1,2-Dichloroethene	100		ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
cis-1,2-Dichloroethene	70	1000	NA	ND	ND	ND	ND	NA	ND	<5	NA	NA	ND
Mineral Spirits	<100		<100	NA	NA	NA	NA	NA	NA	NA	<100	NA	NA
Dichlorobromomethane	100		ND	NA	NA	NA	NA	NA	ND	<5	ND	NA	NA
1,2-Dichloroethane	5		ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
1,1,1,2,2-Tetrachloroethane	No MCI		ND	ND	ND	ND	ND	ND	ND	<5	ND	NA	ND
Acetone	No MCI		NA	ND	ND	ND	ND	ND	ND	<10	NA	ND	ND
Perchloroethene	5		ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
Methylene Chloride	5		ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND
1,1,2-Trichloroethane	5		NA	NA	NA	NA	NA	NA	ND	<5	NA	NA	NA
2-Butanone (MEK)			NA	NA	NA	NA	NA	NA	ND	<5	NA	NA	NA
Sum of Detectable Compounds			0	24	0	0	0	0	0	0	60	0	0
Sum minus Acetone and MC (A),(B)			0	24	0	0	0	0	0	0	60	0	0

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-2 3/92 (7) (ppb)	W-2 6/94 (ppb)	W-2 12/96 (ppb)	W-3 9/84 (1) (ppb)	W-3 1/91 (5) (ppb)	W-3 3/92 (7) (ppb)	W-3 6/94 (ppb)	W-3 12/96 (ppb)	W-4 9/84 (1) (ppb)	W-4 4/86 (3) (ppb)	W-4 8/90 (4) (ppb)	W-4 9/90 (4) (ppb)	W-4 1/91 (5) (ppb)
1,1,1-Trichloroethane	ND	ND	<5	ND	ND	BEQL	2.9	<5	285	470	190	81	110
1,1-Dichloroethane	ND	ND	<5	ND	ND	ND	2.2	<5	65	ND	160	26	87
1,1-Dichloroethene	ND	ND	<5	ND	ND	ND	ND	<5	20	10	6	ND	ND
Trichloroethene	ND	ND	<5	ND	ND	ND	BEQL	<5	ND	ND	ND	ND	ND
Chloroethane	ND	ND	<5	ND	ND	ND	ND	<5	ND	11	15	ND	ND
Vinyl Chloride	ND	ND	<5	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
Toluene	ND	ND	<5	ND	ND	ND	BEQL	<5	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	<5	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NA	ND	<5	NA	ND	NA	BEQL	<5	NA	NA	ND	ND	ND
Mineral Spirits	NA	NA	NA	<100	NA	NA	NA	NA	<100	NA	NA	NA	NA
Dichlorobromomethane	NA	NA	<5	ND	NA	NA	ND	<5	ND	NA	NA	NA	NA
1,2-Dichloroethane	ND	3.3	<5	ND	ND	ND	43	<5	ND	94	ND	ND	ND
1,1,1,2,2-Tetrachloroethane	ND	ND	<5	ND	ND	ND	ND	<5	ND	NA	ND	ND	ND
Acetone	ND	ND	<10	NA	ND	ND	ND	<10	NA	ND	ND	ND	ND
Perchloroethene	ND	ND	<5	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	<5	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NA	ND	<5	NA	NA	NA	9	<5	NA	NA	NA	NA	NA
2-Butanone (MEK)													
Sum of Detectable Compounds	0	3.3	0	0	0	0	57.1	0	370	585	371	107	197
Sum minus Acetone and MC (A),(B)	0	3.3	0	0	0	0	57.1	0	370	585	371	107	197

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-4 3/92 (7) (ppb)	W-4 6/94 (ppb)	W-5 9/84 (1) (ppb)	W-5 4/86 (3) (ppb)	W-5 1/91 (5) (ppb)	W-5 3/92 (7) (ppb)	W-5 6/94 (ppb)	W-5 12/96 (ppb)	W-7 10/84 (2) (ppb)	W-7 11/84 (2) (ppb)	W-7 12/84 (2) (ppb)	W-7 12/84 (2) (ppb)	W-7 4/86 (3) (ppb)
1,1,1-Trichloroethane	81	140	55	<5	ND	ND	ND	<5	72	12	83	<0.5	33
1,1-Dichloroethane	82	290	14	<5	ND	BEQL	BEQL	<5	97	12	65	16	ND
1,1-Dichloroethene	7	8.6	ND	ND	ND	ND	ND	<5	28	2	55	1.3	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	BEQL	<5	<10	1	<10	<0.5	ND
Chloroethane	7	15	ND	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
Vinyl Chloride	ND	BEQL	ND	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	ND	ND	<5	<10	10	<10	<0.5	<5
trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	<5	<10	3	<10	<0.5	<5
cis-1,2-Dichloroethene	NA	ND	NA	NA	ND	NA	ND	<5	NA	NA	NA	NA	NA
Mineral Spirits	NA	NA	<100	NA	NA	NA	NA	NA	510	NA	265	NA	NA
Dichlorobromomethane	NA	ND	ND	NA	NA	NA	ND	<5	ND	ND	ND	ND	NA
1,2-Dichloroethane	ND	2.3	ND	ND	ND	ND	BEQL	<5	ND	ND	ND	ND	5
1,1,2,2-Tetrachloroethane	ND	ND	ND	NA	ND	ND	ND	<5	<10	<1	20	<0.5	NA
Acetone	ND	ND	NA	ND	ND	ND	ND	<10	NA	NA	NA	NA	92
Perchloroethene	ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	<5	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	NA	ND	NA	NA	NA	NA	ND	<5	NA	NA	NA	NA	NA
2-Butanone (MEK)	177	455.9	69	0	0	0	0	0	707	40	488	17.3	130
Sum of Detectable Compounds	177	455.9	69	0	0	0	0	0	707	40	488	17.3	130
Sum minus Acetone and MC (A),(B)	177	455.9	69	0	0	0	0	0	707	40	488	17.3	130

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-7 DUP 4/86 (3) (ppb)	W-7 1/91 (5) (ppb)	W-7 3/92 (7) (ppb)	W-7 6/94 (ppb)	W-7 12/96 (ppb)	W-7 3/97 (ppb)	W-7 6/97 (ppb)	W-7 9/97 (ppb)	W-7 1/98 (ppb)	W-7 7/98 (ppb)	W-8 9/84 (2) (ppb)	W-8 10/90 (4) (ppb)	W-8 1/91 (5) (ppb)
1,1,1-Trichloroethane	26	7	35	5.1	36	36	23	14	See A 6	See B 25	ND	ND	ND
1,1-Dichloroethane	ND	10	24	9.7	30	29	61	58	95	38	ND	ND	ND
1,1-Dichloroethene	ND	10	BEQL	BEQL	<5	<5	<5	<5	6	2	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND
Chloroethane	ND	ND	BEQL	ND	<5	<5	<5	<5	<5	<10	ND	ND	ND
Vinyl Chloride	ND	ND	ND	ND	<5	<5	<5	<5	<5	<10	ND	ND	ND
Toluene	<5	ND	ND	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND
trans-1,2-Dichloroethene	ND	ND	ND	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND
cis-1,2-Dichloroethene	NA	62	NA	2.9	<5	6	12	<5	15	6	NA	ND	ND
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
Dichlorobromomethane	NA	NA	NA	ND	<5	<5	<5	<5	<5	<5	ND	NA	NA
1,2-Dichloroethane	<5	ND	ND	6.3	<5	<5	<5	<5	<5	<5	ND	ND	ND
1,1,2,2-Tetrachloroethane	NA	ND	ND	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND
Acetone	62	ND	ND	ND	<10	<10	<10	<10	<5	<10	NA	ND	ND
Perchloroethene	ND	ND	ND	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND
1,1,2-Trichloroethane	NA	NA	NA	BEQL	<5	<5	<5	<5	<5	<5	NA	NA	NA
2-Butanone (MEK)													
Sum of Detectable Compounds	88	89	59	24	66	71	96	72	122	71	0	0	0
Sum minus Acetone and MC (A),(B)	88	89	59	24	66	71	96	72	122	71	0	0	0

Notes:

(A) Laboratory contamination of samples likely. Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely. Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification	W-8 3/92 (7) (ppb)	W-8 6/94 (ppb)	W-8 12/96 (ppb)	W-9 1/91 (5) (ppb)	W-9 3/92 (7) (ppb)	W-9 6/94 (ppb)	W-9 12/96 (ppb)	W-10A 1/91 (5) (ppb)	W-10A 3/92 (7) (ppb)	W-10A 6/94 (ppb)	W-10A 12/96 (ppb)	W-10B 1/91 (5) (ppb)	W-10B 3/92 (7) (ppb)
1,1,1-Trichloroethane	8	2.7	<5		ND	ND	<5	ND	ND	ND	<5	130	110
1,1-Dichloroethane	BEQL	2.5	<5	ND	ND	ND	<5	ND	ND	BEQL	<5	29	25
1,1-Dichloroethene	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	12	19
Trichloroethene	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	19	16
Chloroethane	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
Vinyl Chloride	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
Toluene	ND	BEQL	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
trans-1,2-Dichloroethene	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
cis-1,2-Dichloroethene	NA	BEQL	<5	ND	NA	ND	<5	14	NA	4.1	<5	7	NA
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	NA	ND	<5	NA	NA	ND	<5	NA	NA	ND	<5	NA	NA
1,2-Dichloroethane	ND	20	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
1,1,1,2-Tetrachloroethane	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
Acetone	ND	ND	<10	ND	ND	ND	<10	ND	ND	ND	<10	ND	ND
Perchloroethene	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
Methylene Chloride	ND	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	ND	ND
1,1,2-Trichloroethane	NA	4.6	<5	NA	NA	ND	<5	NA	NA	ND	<5	NA	NA
2-Butanone (MEK)													
Sum of Detectable Compounds	8	29.8	0	0	0	0	0	14	0	4.1	0	197	170
Sum minus Acetone and MC (A),(B)	8	29.8	0	0	0	0	0	14	0	4.1	0	197	170

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-10B 6/94 (ppb)	W-10B 12/96 (ppb)	W-10B 3/97 (ppb)	W-10B 6/97 (ppb)	W-10B 9/97 (ppb)	W-10B 1/98 (ppb)	W-10B 7/98 (ppb)	W-11A 1/91 (5) (ppb)	W-11A 3/92 (7) (ppb)	W-11A 6/94 (ppb)	W-11A 12/96 (ppb)	W-11B 1/91 (5) (ppb)	W-11B 3/92 (7) (ppb)
1,1,1-Trichloroethane	69	170	250	170	210	See A 130	See B 130	ND	ND	ND	<5	ND	ND
1,1-Dichloroethane	18	23	29	35	37	34	16	ND	ND	BEQL	<5	ND	BEQL
1,1-Dichloroethene	14	23	18	18	19	15	6	ND	ND	ND	<5	ND	5
Trichloroethene	14	11	12	17	14	11	9	ND	ND	ND	<5	ND	ND
Chloroethane	3.4	6	6	8	6	<5	<10	ND	ND	ND	<5	ND	ND
Vinyl Chloride	ND	<5	<5	<5	<5	<5	<10	ND	ND	ND	<5	ND	ND
Toluene	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
trans-1,2-Dichloroethene	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
cis-1,2-Dichloroethene	2.8	<5	<5	<5	<5	<5	2	38	NA	BEQL	<5	28	NA
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	ND	<5	<5	<5	<5	<5	<5	NA	NA	NA	<5	NA	NA
1,2-Dichloroethane	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
1,1,1,2,2-Tetrachloroethane	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
Acetone	ND	<10	<10	<10	<10	27	<10	ND	ND	ND	<10	ND	ND
Perchloroethene	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
Methylene Chloride	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
1,1,2-Trichloroethane	ND	<5	<5	<5	<5	<5	<5	NA	NA	ND	<5	NA	NA
2-Butanone (MEK)													
Sum of Detectable Compounds	121.2	233	315	248	286	217	163	38	0	0	0	28	5
Sum minus Acetone and MC (A),(B)	121.2	233	315	248	286	190	163	38	0	0	0	28	5

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCS 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-11B 6/94 (ppb)	W-11B 12/96 (ppb)	W-12 1/91 (5) (ppb)	W-12 3/92 (7) (ppb)	W-12 6/94 (ppb)	W-12 12/96 (ppb)	W-13 1/91 (5) (ppb)	W-13 3/92 (7) (ppb)	W-13 6/94 (ppb)	W-13 12/96 (ppb)	W-13 3/97 (ppb)	W-13 6/97 (ppb)	W-13 9/97 (ppb)
1,1,1-Trichloroethane	ND	<5	ND	ND	18	<5	ND	ND	28	17	<5	<5	<5
1,1-Dichloroethane	BEQL	<5	5	ND	29	<5	33	21	BEQL	<5	7	10	9
1,1-Dichloroethene	3.6	<5	32	14	46	74	ND	BEQL	BEQL	<5	<5	<5	<5
Trichloroethene	ND	<5	ND	ND	ND	<5	ND	BEQL	BEQL	<5	<5	<5	<5
Chloroethane	ND	<5	80	5	16	<5	36	150	ND	<5	<5	<5	<5
Vinyl Chloride	ND	<5	ND	ND	ND	<5	ND	BEQL	ND	<5	<5	<5	<5
Toluene	ND	<5	ND	ND	ND	<5	ND	ND	BEQL	<5	<5	<5	<5
trans-1,2-Dichloroethene	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	<5	<5	<5
cis-1,2-Dichloroethene	BEQL	<5	ND	NA	16	<5	ND	NA	BEQL	<5	<5	<5	<5
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	ND	<5	NA	NA	ND	<5	NA	NA	ND	<5	<5	<5	<5
1,2-Dichloroethane	ND	<5	ND	ND	310	<5	ND	ND	98	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	<5	<5	<5
Acetone	ND	<10	ND	ND	ND	<10	ND	ND	ND	<10	<10	<10	<10
Perchloroethene	ND	<5	ND	ND	ND	<5	ND	ND	ND	<5	<5	<5	<5
Methylene Chloride	ND	<5	ND	ND	ND	7	ND	ND	ND	<5	<5	<5	<5
1,1,2-Trichloroethane	ND	<5	NA	NA	52	<5	NA	NA	7.4	<5	<5	<5	<5
2-Butanone (MEK)													
Sum of Detectable Compounds	3.6	0	117	19	487	81	69	171	133.4	17	7	10	9
Sum minus Acetone and MC (A),(B)	3.6	0	117	19	487	81	69	171	133.4	17	7	10	9

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-13 1/98 (ppb)	W-13 7/98 (ppb)	W-14A 9/91 (6) (ppb)	W-14A 3/92 (7) (ppb)	W-14A 12/96 (ppb)	W-14A DUP 3/92 (7) (ppb)	W-14A DUP 6/94 (ppb)	W-14B 9/91 (6) (ppb)	W-14B 3/92 (7) (ppb)	W-14B 6/94 (ppb)	W-14B 12/96 (ppb)	W-15A 9/91 (6) (ppb)	W-15A 3/92 (7) (ppb)
	See A	See B	J										
1,1,1-Trichloroethane	<5	1	31	ND	<5	ND	29	31	BEQL	ND	<5	ND	ND
1,1-Dichloroethane	12	5	45	BEQL	<5	BEQL	52	45	18	BEQL	<5	ND	BEQL
1,1-Dichloroethene	<5	<5	38	ND	<5	ND	40	38	33	ND	16	ND	ND
Trichloroethene	<5	<5	5.4	ND	<5	ND	BEQL	5.4	BEQL	ND	<5	ND	BEQL
Chloroethane	<5	<10	ND	ND	<5	ND	6.3	ND	18	ND	<5	ND	ND
Vinyl Chloride	<5	<10	ND	ND	<5	ND	ND	ND	BEQL	ND	<5	ND	ND
Toluene	<5	<5	ND	ND	<5	ND	ND	ND	ND	ND	<5	ND	ND
trans-1,2-Dichloroethene	<5	<5	ND	ND	<5	ND	BEQL	ND	ND	ND	<5	ND	6
cis-1,2-Dichloroethene	<5	2	NA	NA	<5	NA	8.8	NA	NA	4.1	<5	NA	NA
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	<5	<5	NA	NA	<5	NA	ND	NA	NA	ND	<5	NA	NA
1,2-Dichloroethane	<5	<5	ND	ND	<5	ND	ND	ND	ND	ND	<5	ND	ND
1,1,2,2-Tetrachloroethane	<5	<5	ND	ND	<5	ND	ND	ND	ND	ND	<5	ND	ND
Acetone	13	<10	ND	ND	<10	ND	ND	ND	ND	ND	<10	ND	ND
Perchloroethene	<5	<5	ND	ND	<5	ND	ND	ND	ND	ND	<5	ND	ND
Methylene Chloride	21	1	ND	ND	<5	ND	ND	ND	ND	ND	<5	ND	ND
1,1,2-Trichloroethane	<5	<5	NA	NA	<5	NA	ND	NA	NA	ND	<5	NA	NA
2-Butanone (MEK)	<10	<10											
Sum of Detectable Compounds	45	9	119.4	0	0	0	136.1	119.4	69	4.1	16	0	6
Sum minus Acetone and MC (A),(B)	12	8	119.4	0	0	0	136.1	119.4	69	4.1	16	0	6

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-15A 6/94 (ppb)	W-15A 12/96 (ppb)	W-15A 3/97 (ppb)	W-15A 6/97 (ppb)	W-15A 9/97 (ppb)	W-15A 1/98 (ppb)	W-15A 7/98 (ppb)	W-15A 9/91 (6) (ppb)	W-15B 3/92 (7) (ppb)	W-15B 6/94 (ppb)	W-15B 12/96 (ppb)	W-16 3/92 (7) (ppb)	W-16 6/94 (ppb)
1,1,1-Trichloroethane	ND	<5	<5	<5	<5	See (A)	See (B)	ND	ND	ND	<5	ND	ND
1,1-Dichloroethane	ND	<5	<5	<5	<5	<5	1	ND	ND	ND	<5	BEQL	BEQL
1,1-Dichloroethene	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
Trichloroethene	ND	<5	<5	<5	<5	<5	<5	ND	BEQL	ND	<5	ND	BEQL
Chloroethane	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
Vinyl Chloride	ND	<5	<5	<5	<5	<5	<10	ND	ND	ND	<5	ND	ND
Toluene	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
trans-1,2-Dichloroethene	ND	<5	<5	<5	<5	<5	0.9	ND	ND	ND	<5	ND	ND
cis-1,2-Dichloroethene	ND	18	30	34	24	24	12	NA	NA	ND	<5	NA	ND
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	ND	<5	<5	<5	<5	<5	<5	NA	NA	ND	<5	NA	ND
1,2-Dichloroethane	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
1,1,2,2-Tetrachloroethane	ND	<10	<10	<10	<10	24	<10	ND	ND	ND	<10	ND	ND
Acetone	ND	<10	<10	<10	<10	<10	<10	ND	ND	ND	<10	ND	ND
Perchloroethene	ND	<5	<5	<5	<5	<5	<5	ND	ND	ND	<5	ND	ND
Methylene Chloride	ND	<5	<5	<5	<5	31	<5	ND	ND	ND	<5	ND	ND
1,1,2-Trichloroethane	ND	<5	<5	<5	<5	<5	<5	NA	NA	ND	<5	NA	ND
2-Butanone (MEK)	0	18	30	34	24	24	<10	0	0	0	0	0	0
Sum of Detectable Compounds	0	18	30	34	24	24	13.9	0	0	0	0	0	0
Sum minus Acetone and MC (A),(B)	0	18	30	34	24	24	13.9	0	0	0	0	0	0

Notes:

(A) Laboratory contamination of samples likely. Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely. Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCS 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	W-16 12/96 (ppb)	S-3 9/84 (1) (ppb)	S-3 10/84 (2) (ppb)	S-3 10/84 (2) (ppb)	S-3 11/84 (2) (ppb)	S-3 4/86 (3) (ppb)	S-3 4/86 (3) (ppb)	S-3 8/90 (4) (ppb)	S-3 9/90 (5) (ppb)	S-3 1/91 (5) (ppb)	S-3 3/92 (7) (ppb)	S-3 5/94 (ppb)	S-3 6/94 (ppb)
1,1,1-Trichloroethane	<5	4900	6000	1300	1300	510	580	5600	3600	1700	390	1000	110
1,1-Dichloroethane	<5	3230	3100	740	940	ND	ND	1600	1200	860	450	1200	45
1,1-Dichloroethene	<5	150	170	29	25	<50	<50	58	29	33	50	ND	2.4
Trichloroethene	<5	<10	<10	<10	2	ND	ND	190	580	100	73	ND	7.5
Chloroethane	<5	<10	<10	180	75	<100	<100	110	140	210	110	120	28
Vinyl Chloride	<5	<10	<10	ND	3	ND	ND	ND	ND	26	43	ND	BEQL
Toluene	<5	ND	ND	ND	ND	ND	ND	38	39	ND	BEQL	ND	BEQL
trans-1,2-Dichloroethene	<5	ND	ND	ND	ND	220	260	17	16	5	BEQL	ND	ND
cis-1,2-Dichloroethene	<5	NA	NA	NA	NA	NA	NA	3400	5500	770	NA	BEQL	34
Mineral Spirits	NA	175	12	22	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	<5	<10	220	<10	<1	NA	NA	NA	NA	NA	NA	ND	ND
1,2-Dichloroethane	<5	ND	ND	ND	ND	1000	1200	ND	ND	ND	ND	ND	ND
1,1,1,2,2-Tetrachloroethane	<5	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND
Acetone	<10	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND
Perchloroethene	<5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	<5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	<5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
2-Butanone (MEK)													
Sum of Detectable Compounds	0	8455	9502	2271	2345	1730	2040	11013	11104	3704	1116	2320	226.9
Sum minus Acetone and MC (A),(B)	0	8455	9502	2271	2345	1730	2040	11013	11104	3704	1116	2320	226.9

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	S-3 12/96 (ppb)	S-3(DUP) 12/96 (ppb)	S-3 3/97 (ppb)	S-3(DL) 3/97 (ppb)	S-3 6/97 (ppb)	S-3 9/97 (ppb)	S-3 1/98 (ppb)	S-3 7/98 (ppb)	S-3-A 5/94 (ppb)	S-3-A 12/96 (ppb)	S-3-B 1/95 (ppb)	S-3-B 12/96 (ppb)	S-3-C 12/96 (ppb)
1,1,1-Trichloroethane	960	970	6900	12000	11000	12000	See A 4400	See B 6400	17000	970	ND	<125	14
1,1-Dichloroethane	1500	1500	3700	4600	4400	3900	2200	4400	13000	1300	490	1000	230
1,1-Dichloroethene	<125	<125	49	<50	<500	<5	36	<5	610	<125	ND	<125	<5
Trichloroethene	<125	<125	8	<50	<500	<5	110	<5	ND	<125	ND	<125	<5
Chloroethane	400	420	210	290	280	<5	<5	810	1200	470	830	320	81
Vinyl Chloride	<125	<125	<5	<50	<500	<5	<5	<10	ND	<125	ND	<125	<5
Toluene	<125	<125	<5	<50	<500	<5	<5	<5	ND	<125	ND	<125	<5
trans-1,2-Dichloroethene	<125	<125	<5	<50	<500	<5	<5	<5	ND	<125	ND	<125	<5
cis-1,2-Dichloroethene	<125	<125	7	<50	<500	<5	9	<5	ND	<125	2200	2000	6
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	<125	<125	<5	<50	<500	<5	<5	<5	ND	<125	ND	<125	<5
1,2-Dichloroethane	<125	<125	<5	<50	<500	<5	<5	<5	ND	<125	ND	<125	<5
1,1,2,2-Tetrachloroethane	<125	<125	<5	<50	<500	<5	<5	<5	ND	<125	ND	<125	<5
Acetone	<250	<250	<10	<100	<1000	<10	30	1000	ND	<250	ND	<250	61
Perchloroethene	<125	<125	<5	<50	<500	<5	<5	<5	ND	<125	ND	<125	<5
Methylene Chloride	<125	<125	<5	<50	<500	<5	22	75	ND	<125	ND	<125	<5
1,1,2-Trichloroethane	<125	<125	<5	<50	<500	<5	<5	<5	ND	<125	ND	<125	<5
2-Butanone (MEK)			14	<100	<1000	<10	19	<5	ND	<125	ND	<125	<5
Sum of Detectable Compounds	2860	2890	10888	16890	15680	15900	6826	12685	31810	2740	3520	3320	392
Sum minus Acetone and MC (A),(B)	2860	2890	10888	16890	15680	15900	6774	12685	31810	2740	3520	3320	392

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	S3-D 5/94 (ppb)	S3-D 6/94 (ppb)	S3-D 12/96 (ppb)	T-3 1984 (2) (ppb)	T-3 8/84 (1) (ppb)	EV-7 12/96 (ppb)	EV-8 12/96 (ppb)	EV-8 3/97 (ppb)	EV-8 6/97 (ppb)	EV-8 9/97 (ppb)	EV-8 1/98 (ppb)	EV-8 7/98 (ppb)	EV-9 12/96 (ppb)
1,1,1-Trichloroethane	130	190	420	ND	ND	9	10	<5	<5	<5	10	<5	180
1,1-Dichloroethane	48	21	66	ND	ND	<5	180	34	8	5	7	36	170
1,1-Dichloroethene	6.1	5.3	<50	ND	ND	<5	<5	6	<5	<5	<5	2	7
Trichloroethene	BEQL	ND	<50	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5
Chloroethane	2.6	BEQL	<50	ND	ND	<5	39	11	<5	<5	<5	16	<5
Vinyl Chloride	ND	ND	<50	ND	ND	<5	<5	<5	<5	<5	<5	<10	<5
Toluene	ND	BEQL	<50	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	ND	ND	<50	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	BEQL	BEQL	<50	NA	NA	<5	<5	<5	<5	<5	<5	<5	<5
Mineral Spirits	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	ND	ND	<50	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	ND	54	<50	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	ND	ND	<50	ND	ND	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	ND	3.9	<100	NA	NA	<10	<10	<10	<10	<10	16	<10	<10
Perchloroethene	ND	ND	<50	2.6	ND	<5	<5	<5	<5	<5	<5	<5	<5
Methylene Chloride	ND	ND	<50	ND	ND	<5	<5	<5	<5	<5	22	2	<5
1,1,2-Trichloroethane	ND	11	<50	NA	NA	<5	<5	<5	<5	<5	<5	<5	<5
2-Butanone (MEK)													
Sum of Detectable Compounds	186.7	285.2	486	2.6	0	9	229	51	8	5	55	56	357
Sum minus Acetone and MC (A),(B)	186.7	285.2	486	2.6	0	9	229	51	8	5	17	54	357

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 6

SUMMARY OF DETECTED VOCs 1984 TO CURRENT

The Torrington Company
South Bend, Indiana

Well Identification Sample Date Parameter	EV-10 12/96 (ppb)	EV-13 12/96 (ppb)	EV-13 3/97 (ppb)	EV-13 6/97 (ppb)	EV-13 9/97 (ppb)	EV-13 1/98 (ppb)	EV-13 7/98 (ppb)	EV-18 9/97 (ppb)	EV-18 1/98 (ppb)	EV-18 7/98 (ppb)
1,1,1-Trichloroethane	<5	15	12	<5	<5	See A <5	See B 12	<5	See A <5	See B <5
1,1-Dichloroethane	9	7	6	7	<5	<5	3	9	5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<5	13	18	<5	<5	<5	13	<5	<5	<5
Chloroethane	<5	<5	<5	<5	<5	<5	<10	12	<5	<10
Vinyl Chloride	<5	<5	<5	<5	<5	<5	<10	<5	<5	<10
Toluene	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	<5	<5	<5	<5	<5	<5	1	<5	<5	<5
cis-1,2-Dichloroethene	<5	28	21	64	51	30	16	<5	<5	<5
Mineral Spirits	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dichlorobromomethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,1,1,2,2-Tetrachloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	<10	<10	<10	<10	<10	13	<10	<10	13	<10
Perchloroethene	<5	21	27	<5	<5	6	21	<5	<5	<5
Methylene Chloride	<5	<5	<5	<5	<5	65	<5	<5	16	<5
1,1,2-Trichloroethane	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-Butanone (MEK)	<5	<5	<5	<10	<10	<10	<10	<10	<10	<10
Sum of Detectable Compounds	9	84	84	71	51	114	66	21	34	0
Sum minus Acetone and MC (A),(B)	9	84	84	71	51	36	66	21	5	0

Notes:

(A) Laboratory contamination of samples likely Acetone and methylene chloride in blanks.

(B) Laboratory contamination of samples likely Acetone and MC in blanks.

Table 7

Title: S-3A Bailing Log
 Project: South Bend, 001-412
 Date prepared: June 2, 1998
 Prepared by: John McDermott

Background: This worksheet provides a summary of the bailing logs submitted by Industrial Automators as they bailed monitoring well S-3A, as part of the three month bailing trial.

<u>Date</u>	<u>Oil Thickness (inches)</u>	<u>Volume Bailed (quarts)</u>	<u>Observer</u>	<u>Comments</u>
5/19/98	15.0	12.0	DM	partly cloudy; light brown
5/21/98	8.0	4.5	DM	dry weather; dark brown fuel oil, fuel oil smell
5/26/98	5.0	9.0	DM	honey like motor oil
5/29/98	--	--	DM	sunny, hot; brown watery foam
6/1/98	5.5	--	BU	like honey or motor oil
6/5/98	7.0	6.0	DM	
6/9/98	4.0	7.0	DM	cloudy, cool and little rain; fuel oil smell, dark
6/12/98	5.0	7.0	BU	sunny; look and smell of fuel oil
6/15/98	4.5	4.0	BU	sunny; fuel oil look and smell
6/23/98	4.0	4.0	BM	sunny, 80 degrees, fuel oil smell
6/26/98	2.0	4.0	BU	fuel oil smell
7/2/98	1.0	3.0	DM	sunny, cool, 80 degrees
7/7/98	3.0	3.0	DM	rainy, cool, clear with black oil
7/9/98	0.5	?	DM	sunny & warm, 79 degrees nice
7/14/98	3.0	7.0	DM	sunny, breezy, 80 degrees
7/16/98	2.0	4.0	DM	cool, cloudy, 75 degrees
7/22/98	1.0	3.0	DM	cloudy & cool, scattered showers
7/28/98	3.5	5.0	BU	black color; sunny, 86 degrees
7/31/98	3.5	5.0	BU	black color; sunny, 82 degrees
8/4/98	1.0	2.0	DM	rainy, cloudy, wet, 72 degrees
8/6/98	2.0	5.0	DM	cool, rainy, 72 degrees
8/11/98	4.0	7.0	DM	cool, 75 degrees, sunny
8/18/98	3.0	6.0	DM	high 82 degrees, scattered showers, oily; very black in color, thick
8/22/98	8.0	6.0	DM	sunny, warm partly cloudy

Table 8

Title: Summary of VOCs above and below federal MCLs
 Project: 001-412, Torrington, South Bend
 Date prepared: January 25, 1999

Background: This table summarizes whether the detected VOC is A, above the MCL; B, below the MCL, or --, no MCL for the 1998 sampling results

Well Identification Sample Date Parameter	Federal Maximum Contaminant Level (ppb)	W-7 1/98	W-7 7/98	W-10B 1/98	W-10B 7/98	W-13 1/98	W-13 7/98	W-15A 1/98	W-15A 7/98	S-3 1/98	S-3 7/98	EV-8 1/98	EV-8 7/98	EV-13 1/98	EV-13 7/98	EV-18 1/98	EV-18 7/98
1,1,1-Trichloroethane	200	B	B	B	B	B	B	B	B	A	A	B	B	B	B	B	B
1,1-Dichloroethane	No MCL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	7	B	B	A	A	B	B	B	B	A	A	B	B	B	B	B	B
Trichloroethene	5	B	B	A	A	B	B	B	B	A	A	B	B	B	A	B	B
Chloroethane	No MCL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	2	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Toluene	1000	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
trans-1,2-Dichloroethene	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
cis-1,2-Dichloroethene	70	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
Mineral Spirits																	
Dichlorobromomethane	100	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
1,2-Dichloroethane	5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
1,1,2,2-Tetrachloroethane	No MCL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetone (1),(2)	No MCL	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Perchloroethene	5	B	B	B	B	B	B	B	B	B	B	B	B	A	A	B	B
Methylene Chloride (1),(2)	5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
1,1,2-Trichloroethane	5	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Notes:

- (1) Laboratory contamination of samples likely. Acetone and methylene chloride in blanks.
- (2) Laboratory contamination of samples likely. Acetone and methylene chloride in blanks.