

BBL

ENVIRONMENTAL SERVICES, INC.

Remedial Action • Management and Construction



Transmitted Via Regular Mail

August 28, 1998

Ms. Mary Jane Peachey
Regional Hazardous Waste Remediation Engineer
New York State Department of Environmental Conservation
6274 Avon-Lima Road
Avon, New York 14414-9519

Re: Final Engineering Report
Crosmen Corporation Site
East Bloomfield, New York
Project #: 415.02. #2

Dear Ms. Peachey:

Enclosed please find BBL Environmental Services, Inc.'s (BBLES's) Certification of Construction for the Soil Vapor Extraction (SVE) system to remediate VOCs from the vadose zone at the Crosmen Site in East Bloomfield, New York. This certification satisfies the final engineering report requirements in Section I of the Administrative Order on Consent (Index No. B8-0404-92-04) between the New York State Department of Environmental Conservation (NYSDEC), Crosmen Corporation, and New Coleman Holdings, Inc. The SVE system was installed and constructed to meet the objectives of the Remedial Design/Remedial Action (RD/RA) Work Plan, Crosmen Corporation Site, East Bloomfield, New York, May 1997, prepared by Blasland, Bouck & Lee, Inc. (BBL), including the appended Remedial Design Plan, prepared by Terra Vac (May, 1997), which was approved by the NYSDEC on October 1, 1997. BBLES is also submitting, as part of the construction certification, the record drawings for the construction of the SVE system. The following summarizes the SVE system operations for the first month, which demonstrate the overall system effectiveness.

SVE system operations were initiated on June 29, 1998. In order to accurately monitor system performance, an hour meter was installed on the system on July 6, 1998. Through the first month of operation, the SVE system operated continuously, with the exception of a system shutdown between July 10 and July 13, 1998. The reason for the system shutdown was a temporary shutdown of the Crosmen facility's power to replace a transformer. The system was restarted by Crosmen personnel on the morning of July 13, 1998.

During the first month of operation, Terra Vac personnel collected air samples from the SVE system to monitor the TCE removal rate and to monitor the effectiveness of the carbon in removing TCE from extracted vapors. Samples were collected in accordance with the schedule presented in the RD Work Plan, at 1, 7, 14, and 28 days following system start-up. As part of the Terra Vac site visits, samples were

collected for Organic Vapor Monitor (OVM) measurements and Gas Chromatography (GC) analysis from each of the extraction wells, the carbon midpoint, and carbon effluent. In addition, system performance was evaluated by measuring vacuum and air flow in the extraction system for the shallow and deep wells (VE-1S and VE-1D, respectively) and in each of the nested piezometers (PZ-1S/PZ-1D, PZ-2S/PZ-2D, and PZ-3S/PZ-3D). Terra Vac personnel collected samples from the SVE system on the following dates:

- June 29, 1998;
- July 6, 1998;
- July 13, 1998; and
- July 27, 1998.

In addition, BBLES performed an additional site visit on July 17, 1998 to evaluate carbon performance. The following activities were performed on each of the above dates:

June 29, 1998:

- SVE System start-up;
- Collected vapor samples (OVM measurements and samples for GC analysis); and
- Collected vacuum and flow measurements.

July 6, 1998:

- Collected vapor samples (OVM measurements and samples for GC analysis);
- Installed hour meter to track specific hours of operation; and
- Collected vacuum and flow measurements.

July 13, 1998:

- Collected vapor samples (OVM measurements and samples for GC analysis);
- Collected vacuum and flow measurements; and
- Changed out carbon canisters.

July 17, 1998:

- OVM measurements of carbon influent, midpoint and effluent to monitor carbon usage;
- Changed out carbon canisters.

July 27, 1998:

- Collected vapor samples (OVM measurements and samples for GC analysis);
- Collected vacuum and flow measurements;
- Replaced PVC discharge stack with cast iron stack; and
- Changed out carbon canisters.

Tables 1 and 2 present a summary of VOC removal rates from SVE extraction wells VE-1D and VE-1S, respectively. These extraction rates are depicted in Figure 1, along with the combined VOC extraction rate. As shown on these figures, the extraction rates appear to have increased slightly during the first week of operations and, as expected, tailed off over the next two sampling events. The measured extraction rates for the deep zone peaked at 1.7 lbs/day (after 1 week of operation) and declined to 0.82 lbs/day (after 4 weeks of operation). The measured extraction rates for the shallow zone peaked at 5.1 lbs/day (after 1 week of operation) and declined to 1.8 lbs/day (after 4 weeks of operation).

Vacuum and flow measurements taken from each of the piezometers were used to evaluate system performance. Vacuum measurements collected from the piezometers are shown in Table 3. Based on these measurements, the calculated radius of influence (ROI) was 85 feet @ 1" w.c. for the shallow zone, and 95 feet @ 1" w.c. for the deep zone. (It should be noted that a 1" w.c. was selected for evaluation of the ROI. Typically, 0.1" w.c. is utilized as the baseline in evaluating the ROI. However, extrapolation of the ROI to 0.1" w.c. yields a significant overestimate of the ROI.) The calculated ROIs for the shallow and deep zones from the pilot test, which utilized a 2-Hp blower, were approximately 75' @ 0.1" w.c. and 80' @ 0.1" w.c., respectively. This indicates that the ROI for the full-scale system, which is utilizing a 3-Hp blower, is substantially larger. These results (along with the calculated average measured vacuums) are presented in Figures 2 and 3 for the shallow and deep zones, respectively.

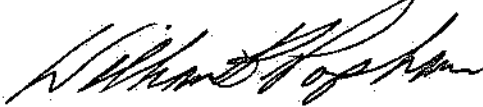
During the first month of operation, the SVE system operated as expected. With the exception of the aforementioned power shutoff, the SVE system operated continuously with no modifications made to the system other than those minor modifications previously mentioned. The carbon canisters provided effective removal of extracted VOCs. Initial VOC extraction rates appeared to increase during the first week of operations, followed by a gradual decrease in removal rates. By the end of the first month of operation, the measured VOC extraction rates were approximately one-half of the maximum measured rates for the deep zone and approximately one-third of the maximum measured rate for the shallow zone.

Ongoing SVE system performance data will be presented to the NYSDEC in the quarterly progress reports to be submitted throughout SVE system operations.

Please feel free to call me at 292-6740 if you have any questions or comments.

Very truly yours,

BBL ENVIRONMENTAL SERVICES, INC.



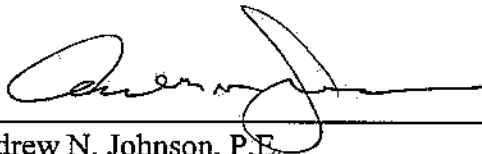
William B. Popham
Vice President

WBP/mwc
Attachments
27881592.WPD

cc: Ms. Lorelei J. Borland, Esq./Mr. Christopher W. McDermott, New Coleman Holdings, Inc.
Mr. Troy Overholt, Crosman Corporation
Mr. David Crosby, NYSDEC, Albany
Ms. Dawn Hettrick, NYSDOH, Albany
Mr. Joe Ryan, NYSDEC, Buffalo
Mr. Thomas F. Walsh, Esq., Jaeckle Fleischmann & Mugel, LLP

**CROSMAN CORPORATION SITE
SOIL VAPOR EXTRACTION SYSTEM
CERTIFICATION OF CONSTRUCTION**

I hereby certify that the construction phase of the Soil Vapor Extraction System to remediate VOCs from the vadose zone at the Crosman Site in East Bloomfield, New York has been implemented in general accordance with the requirements of the Administrative Order on Consent (Index #B8-0404-92-04) between the New York State Department of Environmental Conservation (NYSDEC), Crosman Corporation, and New Coleman Holdings, Inc. The SVE System was installed and constructed in accordance with the the NYSDEC-approved Remedial Design/Remedial Action Work Plan, Crosman Corporation Site, East Bloomfield, New York, 1997, prepared by Blasland, Bouck & Lee, Inc. and the design drawings prepared by Terra Vac. The SVE system construction was completed on June 29, 1998. The attached record drawings for the construction of the SVE system were prepared and sealed by a New York State licensed professional engineer, as required.

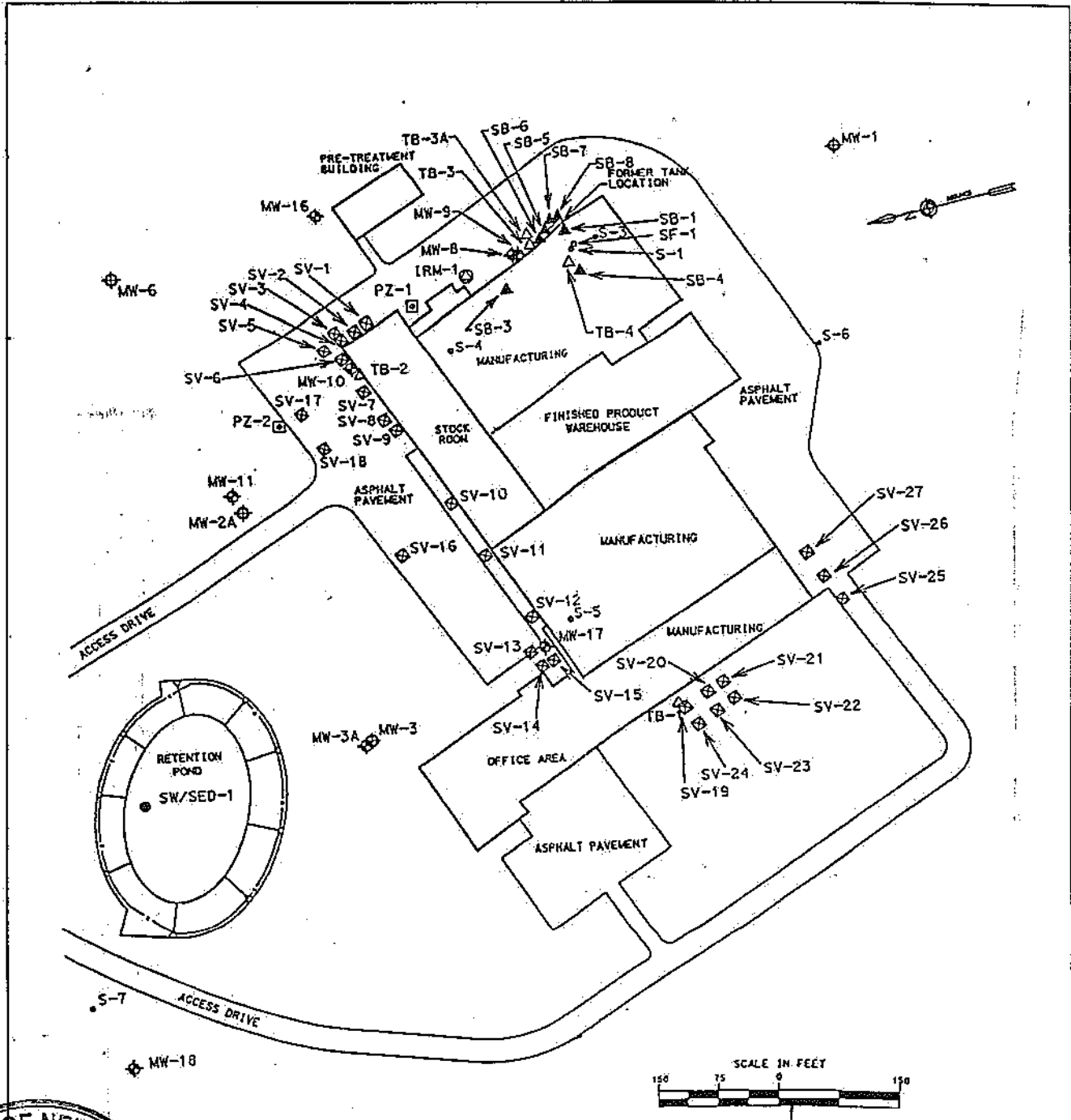


Andrew N. Johnson, P.E.
Executive Vice President

8/25/98

Date

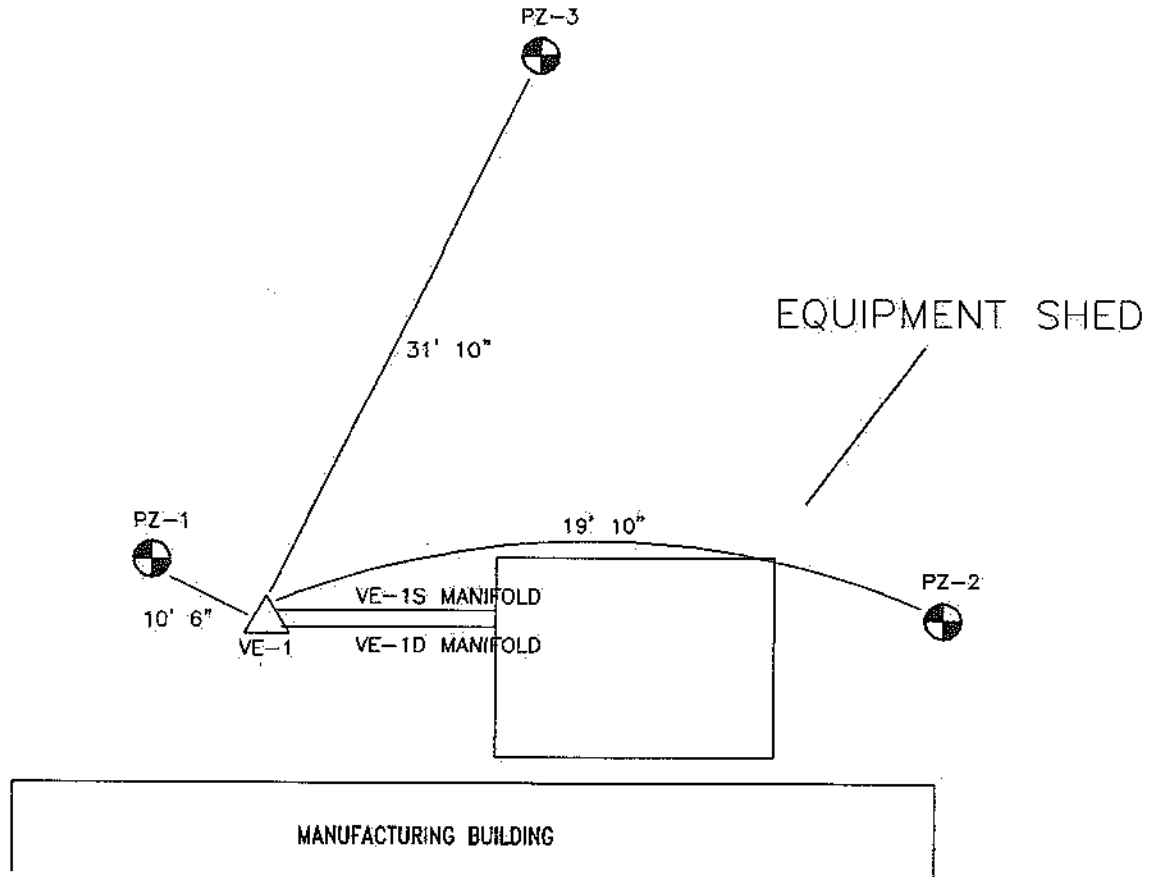






REV. NO.	DESCRIPTION	BY	DATE



CROSMAN CORPORATION SITE EAST BLOOMFIELD, NY			
SITE LAYOUT			
DESIGNED BY:	CHECKED BY:	DWG. NO. 42-0220	SHEET 1
DRAWN BY: D. ROSE	PROJECT MANAGER:	DATE: 8/5/88	SCALE: AS SHOWN



-  EXTRACTION WELL LOCATION
-  PIEZOMETER LOCATION



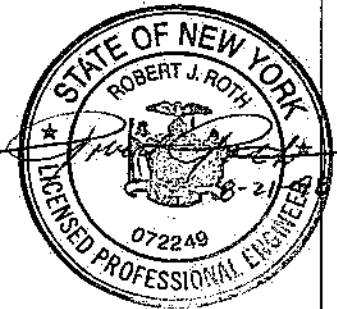
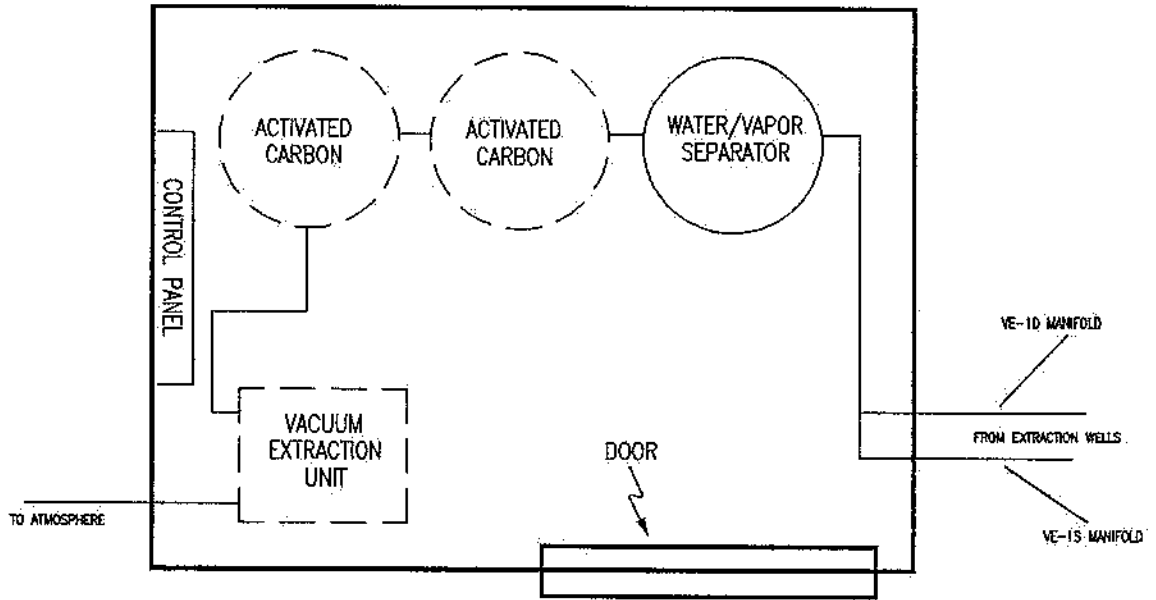
REV. NO.	DESCRIPTION	BY	DATE



CROSMAN CORPORATION SITE
EAST BLOOMFIELD, NY

SHED & MANIFOLD LAYOUT

DESIGNED BY:	CHECKED BY:	DWS. NO. 42-0220	FIGURE 2
DRAWN BY: D. ROSE	PROJECT MANAGER:	DATE: 8/5/98	SCALE: NOT TO SCALE



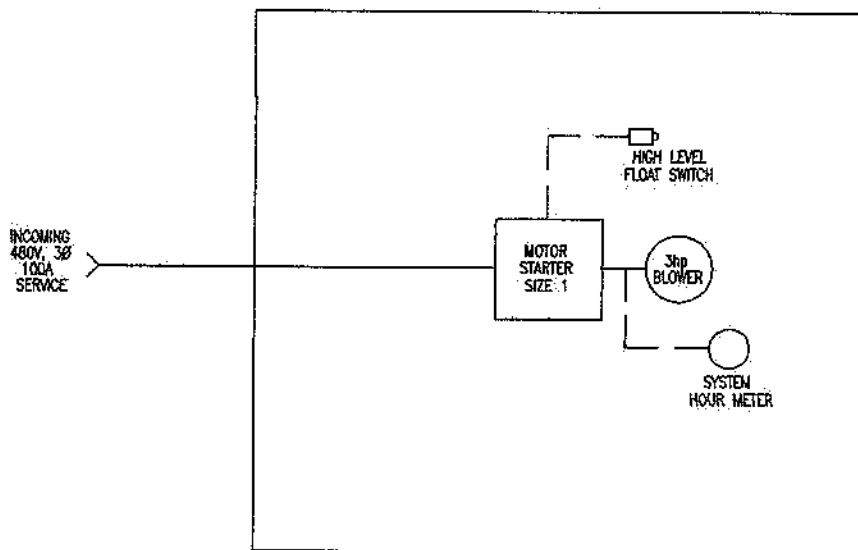
REV. NO.	DESCRIPTION	BY	DATE



CROSMAN CORPORATION SITE
EAST BLOOMFIELD, NY

EQUIPMENT SHED LAYOUT

DESIGNED BY:	CHECKED BY:	DWG. NO. 42-0220	SHEET: 4
DRAWN BY: D. ROSE	PROJECT MANAGER:	DATE: 8/5/98	SCALE: HTS



REV. NO.	DESCRIPTION	BY	DATE



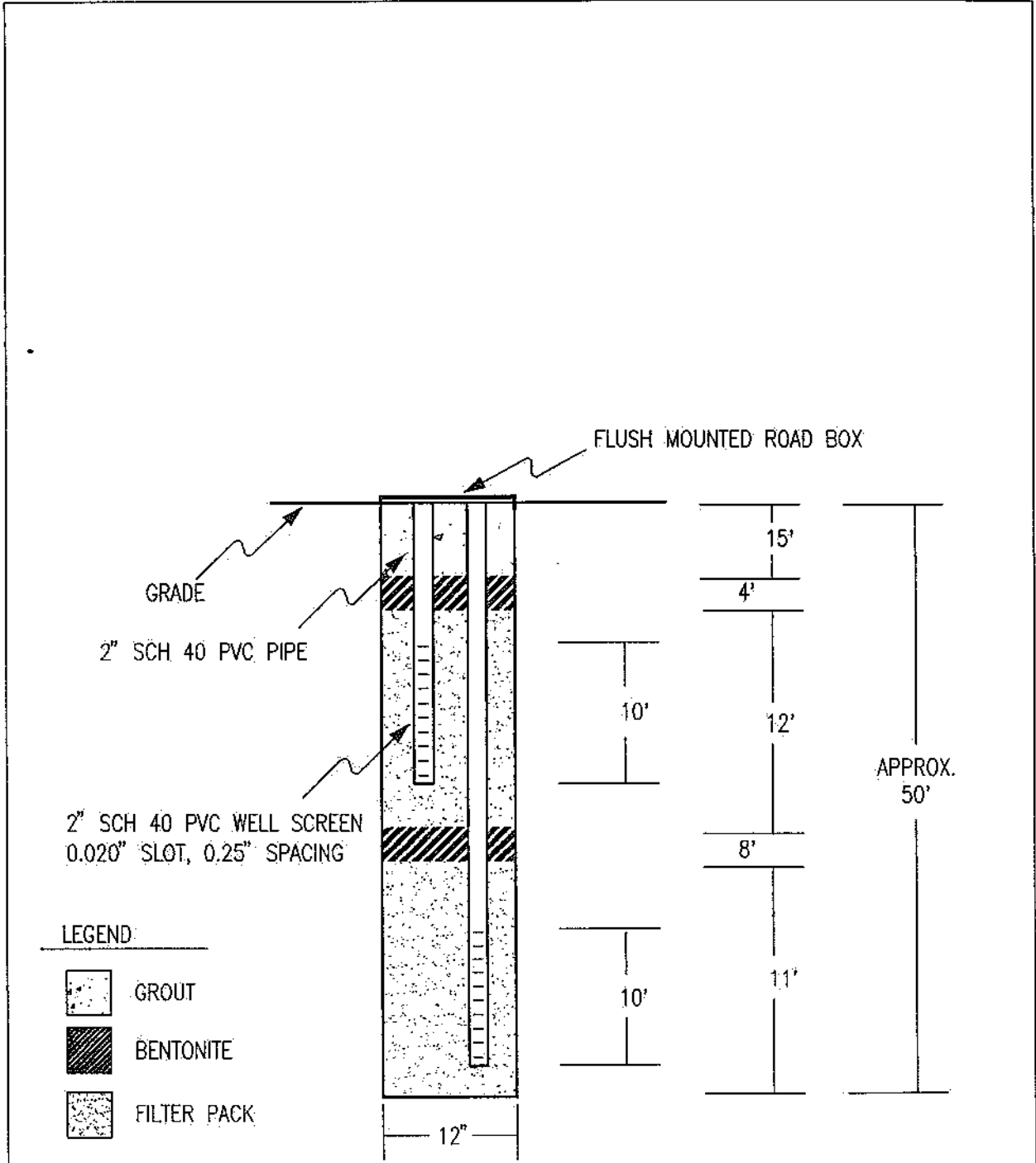
GROSMAN CORPORATION SITE
EAST BLOOMFIELD, NY

ELECTRICAL DISTRIBUTION




DESIGNED BY:	CHECKED BY:	DWG. NO. 42-0220	FIGURE 5
DRAWN BY: D. ROSE	PROJECT MANAGER:	DATE: 8/5/98	SCALE: NTS

Soil Vapor Extraction Well Construction Drawing
(submitted in Terra Vac's Remedial Design Plan, May 1997)

- ***VE-01S***
- ***VE-01D***



LEGEND:

-  GROUT
-  BENTONITE
-  FILTER PACK



REV. NO.	DESCRIPTION	BY	DATE



CROSMAN CORPORATION EAST BLOOMFIELD, NY			
WELL CONSTRUCTION			
DESIGNED BY:	CHECKED BY:	DWG. NO. 42-0216	FRAME: 4
DRAWN BY: D. ROSE	PROJECT MANAGER:	DATE: 3/17/97	SCALE: NTS

*Soil Vapor Extraction System
Performance Evaluation Data
Month 1*

Table 1
SVE Extraction Rates
Vapor Extraction Well VE-1D
Remedial Action
Crosman Corporation Site
East Bloomfield, New York

Date	Time	Run Time (Days)	SCFM	Well Vacuum ("H ₂ O)	Total VOCs (ppm) (2)	VOC Extraction Rate (lb/day)	Cumulative lbs. recovered
06/29/98	09:26	0.02	21.2	50.9	96.92	0.99	0.01
07/06/98	08:17	6.97	20.3	61.1	175.76	1.71	9.4
07/13/98	12:27	11.02 (1)	19.2	51.6	161.87	1.5	15.9
07/27/98	14:02	25.08	13.4	59.7	127.68	0.82	32.2

(1) Assumes 3 days of system shutdown between 7/10/98 and 7/13/98

(2) Based on GC analysis performed by Terra Vac.

Table 2
SVE Extraction Rates
Vapor Extraction Well VE-1S
Remedial Action
Crosman Corporation Site
East Bloomfield, New York

Date	Time	Run Time (Days)	SCFM	Well Vacuum ("H ₂ O)	Total VOCs (ppm) (2)	VOC Extraction Rate (lb/day)	Cumulative lbs. recovered
06/29/98	09:30	0.02	18.6	50.6	346.07	3.09	0.03
07/06/98	08:19	6.97	19.6	61.2	542.2	5.12	22.8
07/13/98	12:23	11.14 (1)	24.7	51.5	269.61	3.2	36.2
07/27/98	13:55	25.14	18.3	59.5	207.74	1.83	71.2

(1) Assumes 3 days of system shutdown between 7/10/98 and 7/13/98.

(2) Based on GC analysis performed by Terra Vac.

Table 3
Piezometer Well Vacuums
Remedial Action
Crosman Corporation Site
East Bloomfield, New York

Well ID	Distance (ft)	Measured Vacuum (in. H ₂ O)				
		06/29/98	07/06/98	07/13/98	07/27/98	
PZ-1S	10.50	0.52	3.57	3.26	1.75	2.28
PZ-2S	19.08	0.32	3.27	3.07	1.61	2.07
PZ-3S	31.83	0.12	3.13	2.57	1.44	1.82
PZ-1D	10.50	7.84	13.20	12.49	11.48	11.25
PZ-2D	19.08	3.98	11.37	11.43	8.88	8.92
PZ-3D	31.83	1.73	8.86	7.90	6.39	6.22
						Average

TABLE 4
PW-1 TOTALIZER SUMMARY
REMEDIAL ACTION
CROSMAN CORPORATION SITE
EAST BLOOMFIELD, NEW YORK

Date	06/01/98	06/08/98	06/15/98	06/22/98	06/29/98	07/06/98	07/13/98	07/20/98	07/27/98
Totalizer Reading (1,000 gallons)	12110	12312	12657	13299	13885	14152	14384	14961	15640
Total Flow (gallons)	NA	202,000	345,000	642,000	586,000	267,000	232,000	577,000	679,000
Estimated Weekly Flow Rate (gpm)*	NA	20.0	34.2	63.7	58.1	26.5	23.0	57.2	67.4

* Estimated weekly flow rate based on difference between current and previous week's totalizer readings from PW-1.

Figure 1
SVE System Extraction Rates vs. Time

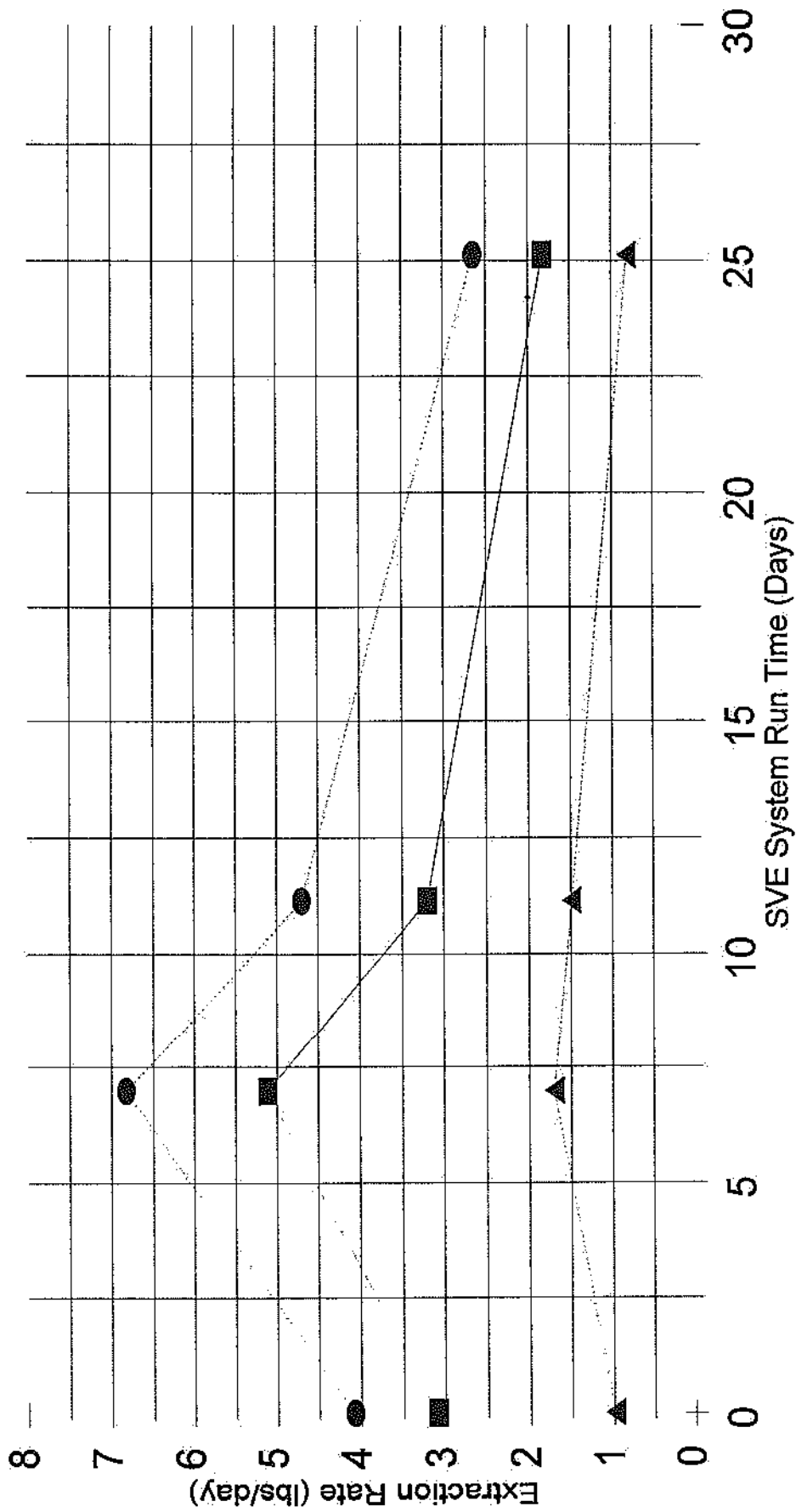


Figure 2
Shallow Well - Radius of Influence

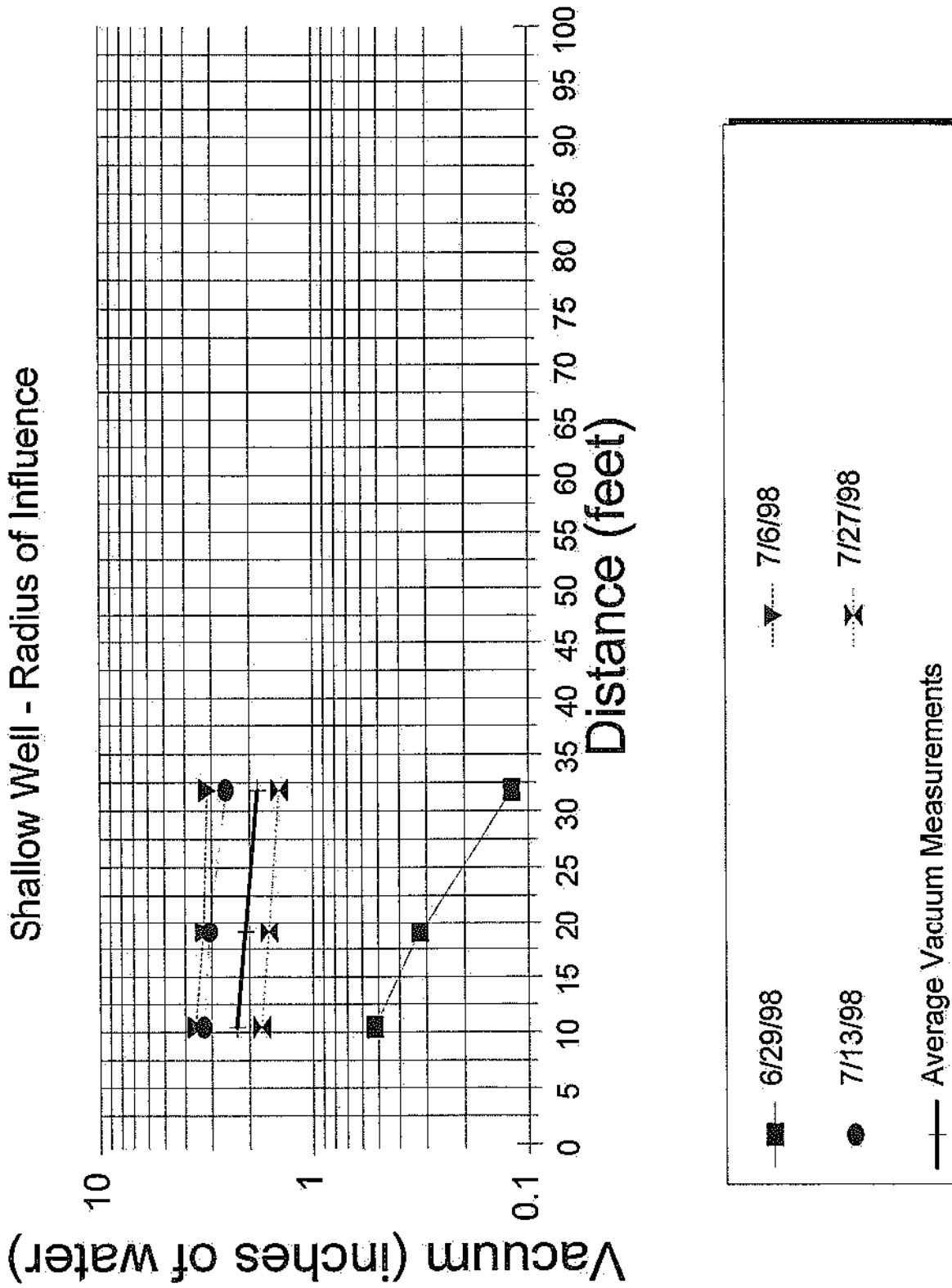


Figure 3
Deep Well - Radius of Influence

