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July 31, 2009

John Rashak
NYSDEC Region 3
Division of Environmental Remediation
21 South Putt Corners Road
New Paltz, New York 12561-1696

Re: **Final Engineering Report;** Former Lumelite Plastics (Joe Pietryka, Inc.),
85 Charles Colman Boulevard, Pawling, New York;
NYSDEC Site #EV00218;
Conrad Geoscience File #LP000351

Dear Mr. Rashak:

SITES Remediation & Technologies Inc. (SITES) is submitting this Final Engineering Report (FER) for the Lumelite Plastics site on Charles Colman Boulevard, Pawling, New York (Figure 1) in accordance with the provisions of the Voluntary Clean-Up Agreement with the NYSDEC. SITES worked with Conrad GeoScience in the development and implementation of the Remedial Action Workplan (RAW).

This FER document summarizes the site activities that were implemented and completed in accordance with the RAW for Groundwater Remediation, dated December 2000, approved by the NYSDEC April, 2001. Below is a summary of relevant site background information, pre-RAW site remedial activities and a technical summary of the installation, operation and performance of the groundwater treatment system, Coaxial Groundwater Circulation system; the site remedy approved by NYSDEC. On the basis of the work performed and accomplishment of the specific remedial objectives, it is requested that the NYSDEC accept this report as final closure and issue a No Further Action (NFA) determination. Upon receipt of the NFA from the NYSDEC, Conrad Geoscience will supervise the system decommissioning and site restoration work.

1.0 RELEVANT SITE INFORMATION

Conrad Geoscience was retained by Lumelite Plastics in June 1996 to investigate the source and extent of soil and groundwater contamination at the Lumelite facility (Figure 1). The solvent tetrachloroethylene (PCE) had been detected in groundwater at the Lumelite site and became the focus of a site investigation and remedial effort.

The findings and conclusions for previous investigations and remedial activities are presented in the following documents: *Underground Storage Tank (UST) Closure Report* (October 1996); *Final Investigative Report* (May 1999); and *Remedial Action Workplan* (December 2000), all of which have previously been submitted to NYSDEC. Following is a summary of remedial activities that were completed between 1996 and 1997:

- **Fuel Tank Removal and Soil Excavation** - August 1996. Three USTs were excavated and removed (One 5,000-gallon gasoline UST; one 3,000-gallon gasoline UST; and one 550-gallon waste oil UST). A total of 242 tons of contaminated soil were removed from the subject property and disposed of off-site.

- **Groundwater Sampling** - December 1996. Groundwater samples collected from wells in the vicinity of former gasoline tanks indicated that groundwater quality improved after removal of the USTs and contaminated soil. In addition, shallow Monitoring Well L-13S (see Figure 2) contained 100 µg/l of PCE, and Monitoring Well L-3 contained 790 µg/l of PCE, indicating that groundwater had been affected by discharge of wastes via the former Masonic Temple area floor drains, and former solvent storage tanks.

- **Geoprobe Samples** - March 1997. A soil boring and groundwater sampling program revealed chlorinated VOCs in seven of 16 groundwater samples. Samples collected from perimeter locations and the down-gradient side of the factory contained no detectable chlorinated VOCs, which indicated that a shallow, dissolved contaminant plume of limited extent was present at the site.

- **Drain Excavation** - 1997. Excavation activities included removal of the remaining foundation and floor slab of the former Masonic Temple area. During excavation, several drains and one dry well were encountered beneath the concrete foundation and were removed, along with soil containing PCE.

2.0 GROUNDWATER REMEDIATION- COAXIAL GROUNDWATER CIRCULATION SYSTEM

Based on the investigations summarized above, Conrad Geoscience prepared a *Remedial Action Workplan* (December 2000). Remedial objectives were to eliminate or mitigate significant threats to public health or the environment presented by past releases of VOCs at the Lumclite site. The plan was to reduce or eliminate potential sources and exposure routes for those VOCs and to restore groundwater quality to meet NYSDEC guidance values, to the extent practicable.

2.1 - CGC System Design and Installation

To accomplish these objectives the NYSDEC-approved *Remedial Action Workplan* included the installation of three Coaxial Groundwater Circulation (CGC) wells in a specific design configuration, each with an effective treatment radius of approximately 40 feet in the groundwater.

Three of the CGC wells were installed in the area west of the main Lumelite entrance (CW-1,2,3 - Figure 2). The CGC wells create an air-sparging effect by delivering compressed air to the bottom of the well, which is forced out the pressurized air distributor, creating a vertical pressure gradient within the water column. The screened interval at the water table is connected to a vacuum blower. Air bubbles travel vertically through the sand pack surrounding the well and strip VOCs from the water column. Air bubbles burst at the water table interface releasing VOCs to the unsaturated zone and are extracted through the screen under negative pressure at the air/water interface. Air effluent is pushed through two 75-gallon carbon filtration canisters (connected in series) and treated air is discharged to the atmosphere. As-built diagrams of the circulation system are appended (Figures 3, 4,and 5). Compressors and carbon filtration units were housed aboveground in a 10-ft. x 10-ft. shed on the western side of the Lumelite building.

2.2 - CGC System Performance Methodology

The CGC system operated for a period of 29 months during 2001 thru 2004. System effectiveness of air stripping of VOC from the groundwater was monitored by measurement of VOCs in the air effluent, and by groundwater data generated from periodic sampling of monitoring wells. Air samples were collected via summa canisters from air sampling ports before and after the carbon filtration units (see Figure 6), and were submitted to an approved laboratory for analysis of VOCs via USEPA Method TO-15. Shutdown of the CGC system was approved by NYSDEC in February 2004 (letter attached). A summary of system effectiveness monitoring is provided below.

3.0 SUMMARY REMEDIAL FINDINGS

3.1 - Air Effluent-VOC Removals

In accordance with the *Remedial Action Workplan*, pre- and post-treatment air effluent samples were collected daily for the first week of system operation, weekly for the following month, then quarterly thereafter until the system was shut down in 2004. Samples were collected via summa canisters from air sampling ports before and after carbon filtration canisters. Samples were submitted to an approved laboratory for analysis of VOCs via USEPA Method TO-15.

Total VOC concentrations in pre-treatment samples collected on October 16, 2001 were 434 $\mu g/m^3$. Samples collected 4 days later contained 1,057 $\mu g/m^3$ of total VOCs, and those collected on November 2, 2001 contained 3,590 $\mu g/m^3$ of total VOCs. These sample results demonstrate an increase in VOC recovery immediately following system installation. Based on Total VOC analyses between 2001 and 2004, and an average flow rate of approximately 900 cubic feet per minute (cfm), **approximately 58.65 pounds of PCE** were removed from groundwater after system startup in October 2001.

3.2 – Groundwater Monitoring -VOC Removals

Monitoring During the Groundwater Remediation

In accordance with the Remedial Action Work Plan, Monitoring Wells L-3S, L-11S, L-13S, L-15S, L-16S, L-17M and L-18S (Figure 2) were sampled quarterly for TCL and STARS VOCs via USEPA Method 8260. Sampling results were reported to the NYSDEC.

During the period of the active groundwater remediation between 2001 and 2004, dissolved VOC concentrations in on-site monitoring wells decreased significantly. Total VOC concentrations in L-17M, in particular, decreased from 10,686 µg/L in February 2002 to concentrations averaging less than 42 µg/L in 2004.

Post Remediation Monitoring

Following the system shut down in March 2004, the project provided significantly more than the five quarters of post-remedial monitoring required by the Voluntary Cleanup Agreement. After cessation of active remediation in March 2004, VOCs rebounded slightly, but concentrations remained within the post-remedial range. In 2007, concentrations began to decrease again as aquifer conditions appeared to stabilize.

Three years of groundwater monitoring data generated quarterly after system shut-down (attached, Table 1), indicate that dissolved VOCs continued to attenuate naturally through reductive dechlorination as demonstrated by degradation products of PCE, such as vinyl chloride and chloroethane.

There is no off-site migration of dissolved VOCs, based on the supporting laboratory data indicating non-detect for VOCs in down gradient well L-18S.

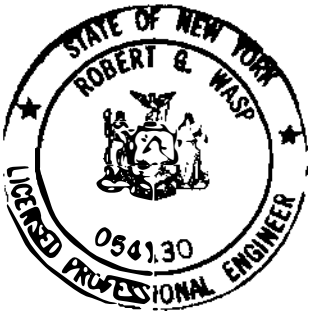
4.0 CONCLUSIONS

Based on the above findings with respect to the significant reductions of VOCs in the groundwater along with the post remediation sampling data supporting evidence of reductive dechorination and natural attenuation process, it is concluded that the specific remediation objectives have been completed in substantial conformance with those forth in the RAW document

5.0 ENGINEER CERTIFICATION

The remedial and construction activities were performed at the site according to generally accepted practices. To the best of its knowledge, information and belief, SITES Remediation & Technologies, Inc., based on our review of the field and laboratory data, hereby certifies that the remedial and construction activities implemented at the site complied with the remedial actions set forth in the Remedial Action Work Plan approved by the NYSDEC, pursuant to the Voluntary Clean-Up Program Agreement and that the remedial activities were completed in substantial conformance with the objectives set forth in said documents.

(Signature)



Robert G. Wasp, P.E., President

(Printed Name and Title)

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PO Box 404
Stormville, New York 12582

Attachments

cc: John Privitera, Esq. - w/ attachments
Joseph Pietryka - w/ attachments
Christopher Brown, CPG - w/ attachments
Becky Dixon - w/ attachments
Ram Pergadia - w/ attachments
Michael Lesser - w/ attachments

Table 1 **Volatile Organic Compounds (Total VOCs) in Groundwater Samples;** USEPA Method 8260; **Collected Quarterly August 27, 2001 to March 12, 2007**; Lumelite Plastics, Pawling, New York;
Conrad Geoscience File #LP000351

TOTAL VOCs (ppb)	Well Location					
Date Collected	L-3S (Main Entrance)	L-13S (Up-gradient)	L-17M (Center)	L-18S (Down-gradient)	L-15S (Cross Gradient)	L-16S (Cross Gradient)
08/27/2001	27.59	106.08	701.55	0	0.35	39.5
11/14/2001	52	736	3852	29.58	79.44	33.52
02/12/2002	40.99	254.5	10686	3.85	48.12	29.63
05/14/2002	4.8	337.92	352	0	58.69	31.2
08/15/2002	17.97	26.41	82.7	16.691	118.9	3534
11/21/2002	28.15	692.82	113.2	3.02	130.1	32.1
02/12/2003	68.3	139.1	104.07	0	30.9	83.73
05/13/2003	103.6	171.15	137.1	0	63.2	27.78
08/06/2003	53.7	67.9	65.5	2.63	27.7	71.3
12/11/2003	187.6	70.46	27.44	0	20.3	54.9
03/11/2004	340.24	45.63	64.68	NS	21.8	55.7
06/15/2004	177.3	304.96	54.08	18.1	32.7	4956
09/16/2004	49.8	440.7	31.78	NS	33.92	51.1
12/06/2004	195.2	67.04	16.95	0	40.07	4227
02/24/2005	259.47	140.76	57.34	NS	368.73	17.7
06/16/2005	206.89	1,187.50	37.01	11.7	36.49	26.94
09/01/2005	164.57	2,847.70	49.27	2.62	71890	25.04
11/14/2005	330.17	1059.3	9.75	NS	211.1	127.57
03/31/2006	29836	74.15	78.76	0	45.1	44.0
03/12/2007	150.28	449.6	NS	0	7.94	NS

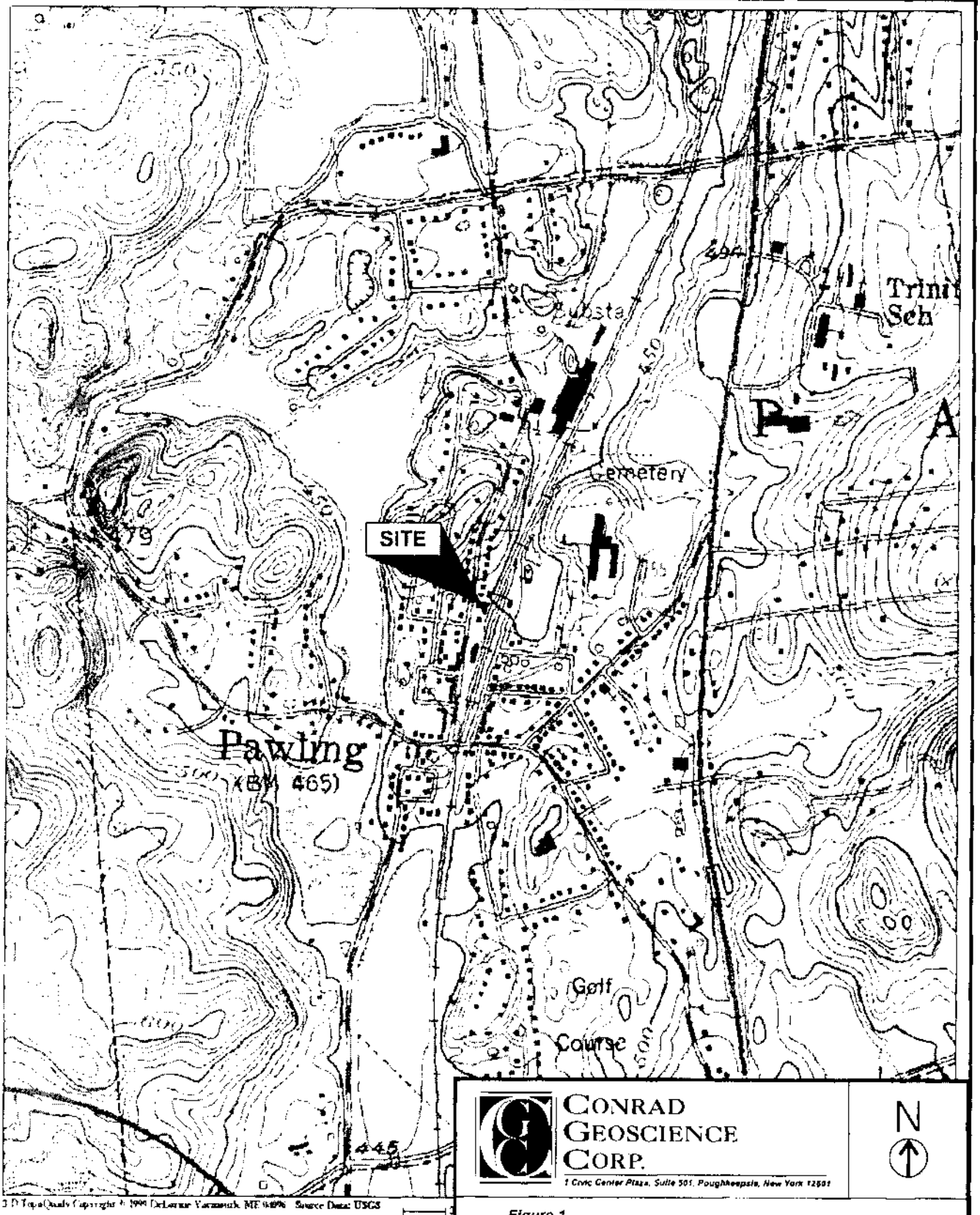

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Figure 1

SITE LOCATION MAP

Prepared By:	BPG 12/10/04
Reviewed By:	
Revised By:	
Approved By:	BPG 12/10/04

LUMELITE PLASTICS
Pawling, New York
LP000351

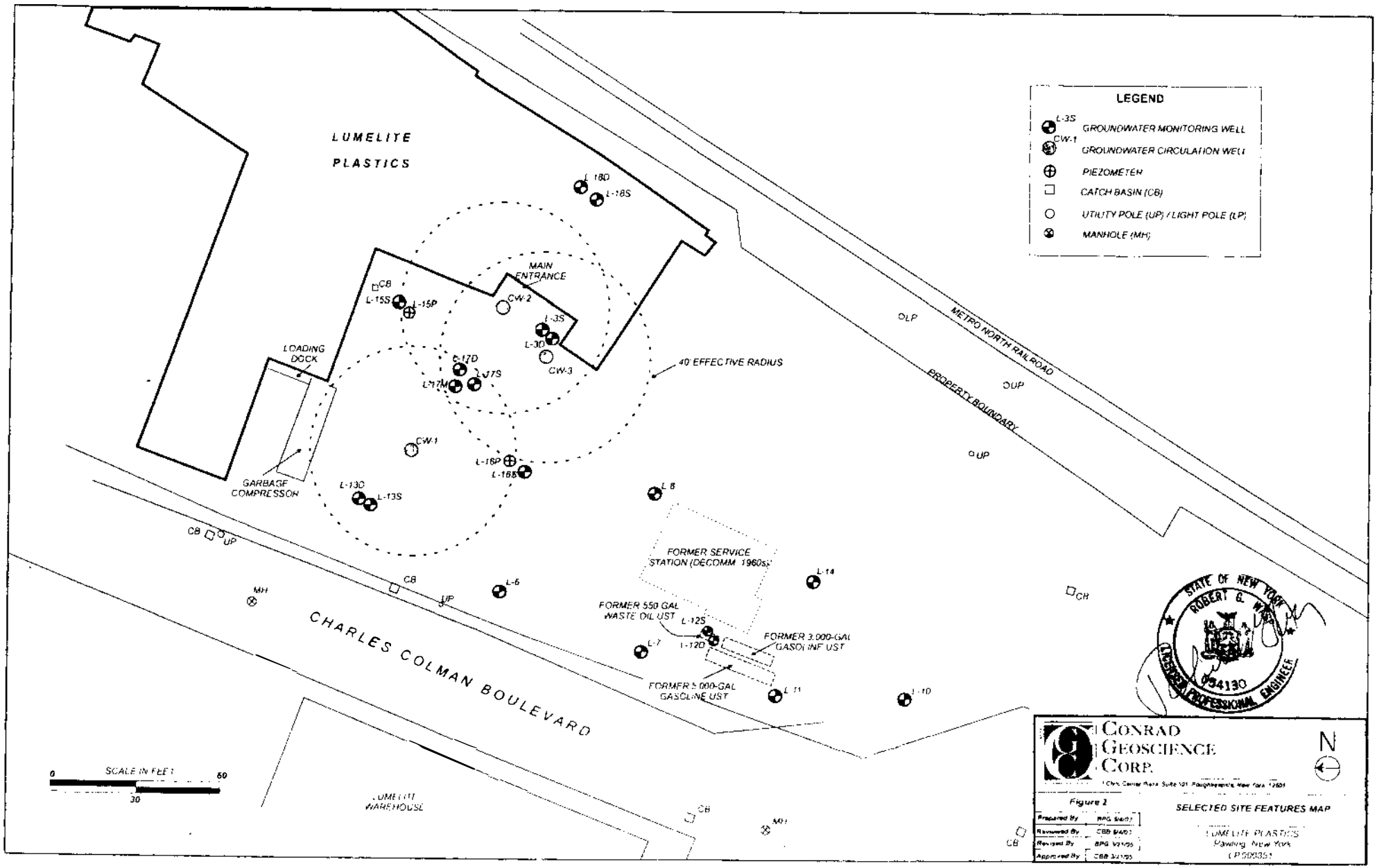
LEGEND
L-3S GROUNDWATER MONITORING WELL
CW-1 GROUNDWATER CIRCULATION WELL
PIEZOMETER
CATCH BASIN (CB)
UTILITY POLE (UP) / LIGHT POLE (LP)
MANHOLE (MH)
LUMELITE PLASTICS
MAIN ENTRANCE
LOADING DOCK
GARBAGE COMPRESSOR
40' EFFECTIVE RADIUS
METRO NORTH RAILROAD
PROPERTY BOUNDARY
CHARLES COLMAN BOULEVARD
FORMER SERVICE STATION (DECOMM 1960s)
FORMER 550 GAL WASTE OIL UST
FORMER 3,000-GAL GASOLINE UST
FORMER 5,000-GAL GASOLINE UST
LUMELITE WAREHOUSE
L-18D
L-18S
L-15S
L-15P
CW-2
L-3S
L-3D
CW-3
L-17D
L-17S
L-17M
CW-1
L-16P
L-16S
L-13D
L-13S
L-8
L-14
L-6
L-12S
L-12D
L-7
L-11
L-10
0 SCALE IN FEET 60
30
N
STATE OF NEW YORK ROBERT G. WARD 084130 LICENSED PROFESSIONAL ENGINEER
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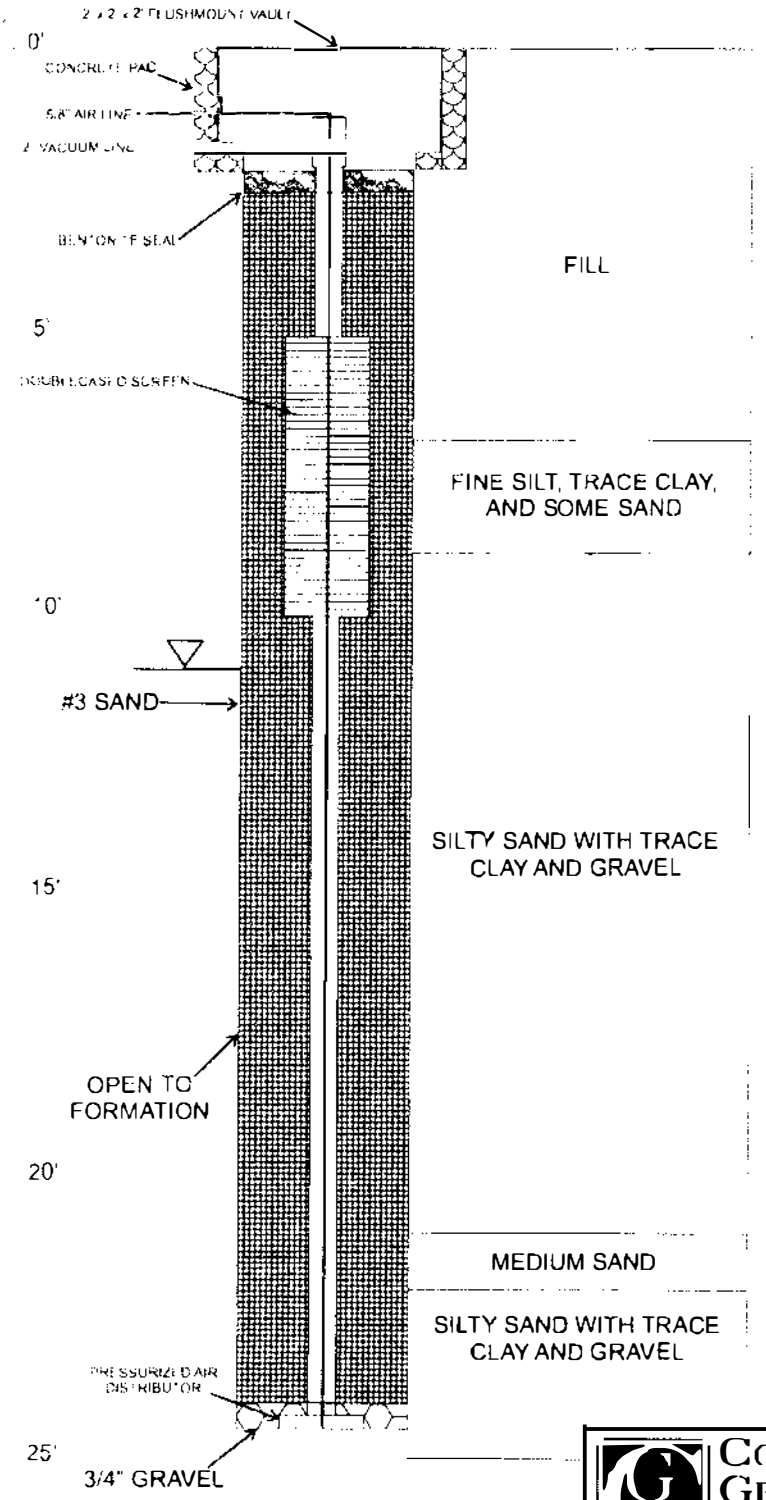
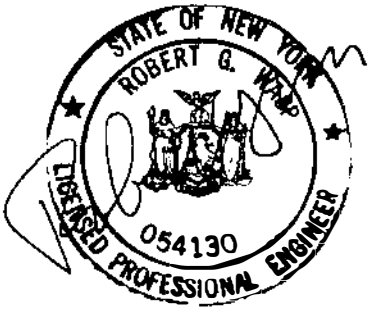
Figure 2
SELECTED SITE FEATURES MAP
Prepared By BPG 9/4/03
Reviewed By CBB 9/4/03
Revised By BPG 3/31/05
Approved By CBB 3/31/05
LUMELITE PLASTICS
Pawling, New York
CP 900351





▽ Depth to water at time of drilling.

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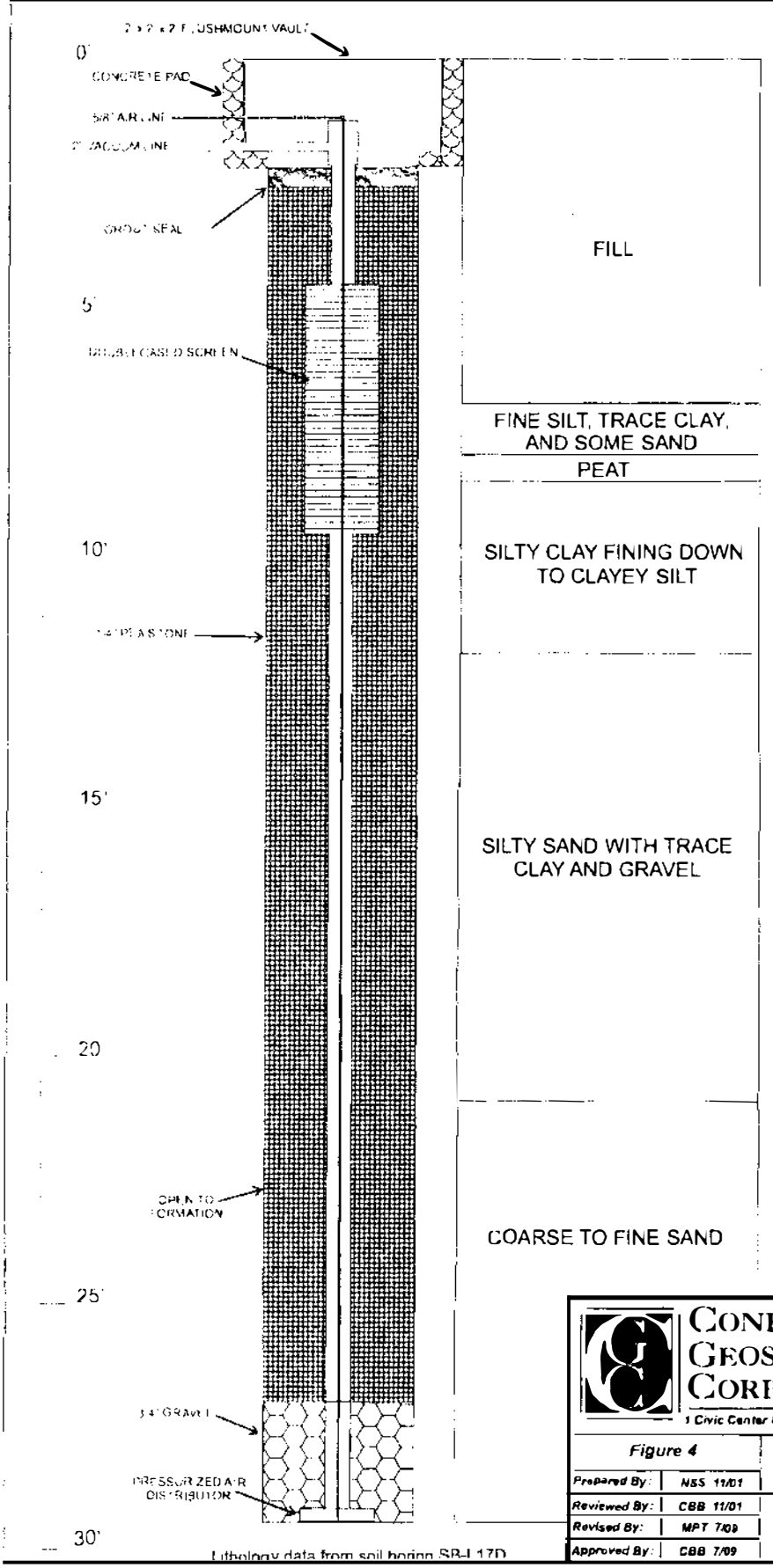
Figure 3		AS-BUILT DIAGRAM CIRCULATION WELL CW-1
Prepared By:	NSS 11/01	
Reviewed By:	CBB 11/01	LUMELITE PLASTICS
Revised By:	MPT 7/03	Pawling, New York
Approved By:	CBB 7/03	LP000351



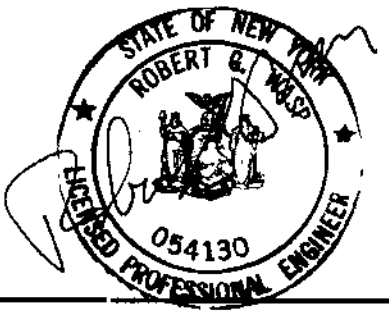


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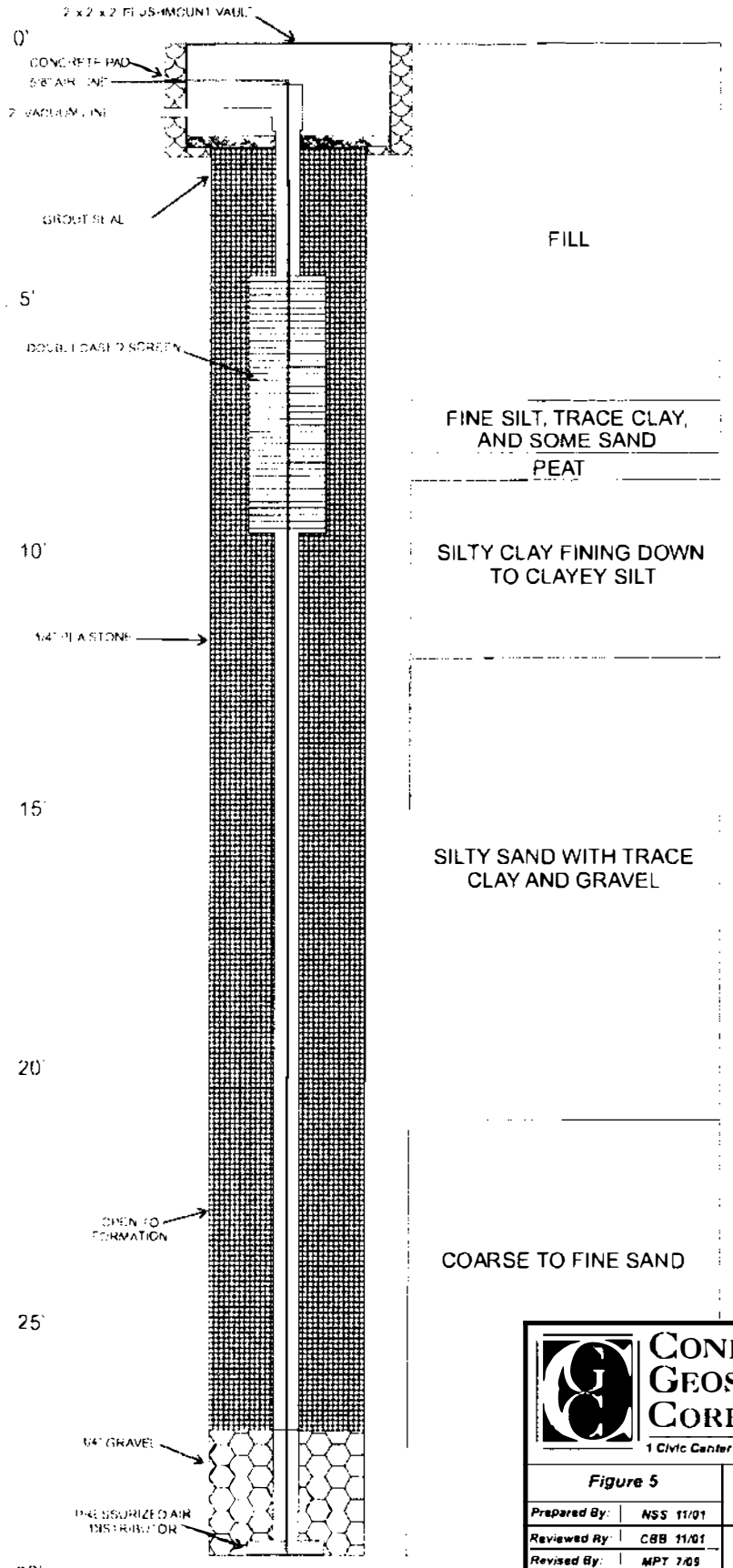
Figure 4	AS-BUILT DIAGRAM CIRCULATION WELL CW-2
Prepared By: NSS 11/01	LUMELITE PLASTICS
Reviewed By: CBB 11/01	Pawling, New York
Revised By: MPT 7/09	LP000351
Approved By: CBB 7/09	



Logging data from soil boring SB-1 17D

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Figure 5	AS-BUILT DIAGRAM CIRCULATION WELL CW-3
Prepared By: NSS 11/01	
Reviewed By: CBB 11/01	LUMELITE PLASTICS
Revised By: MPT 7/09	Pawling, New York
Approved By: CBB 7/09	LP000351

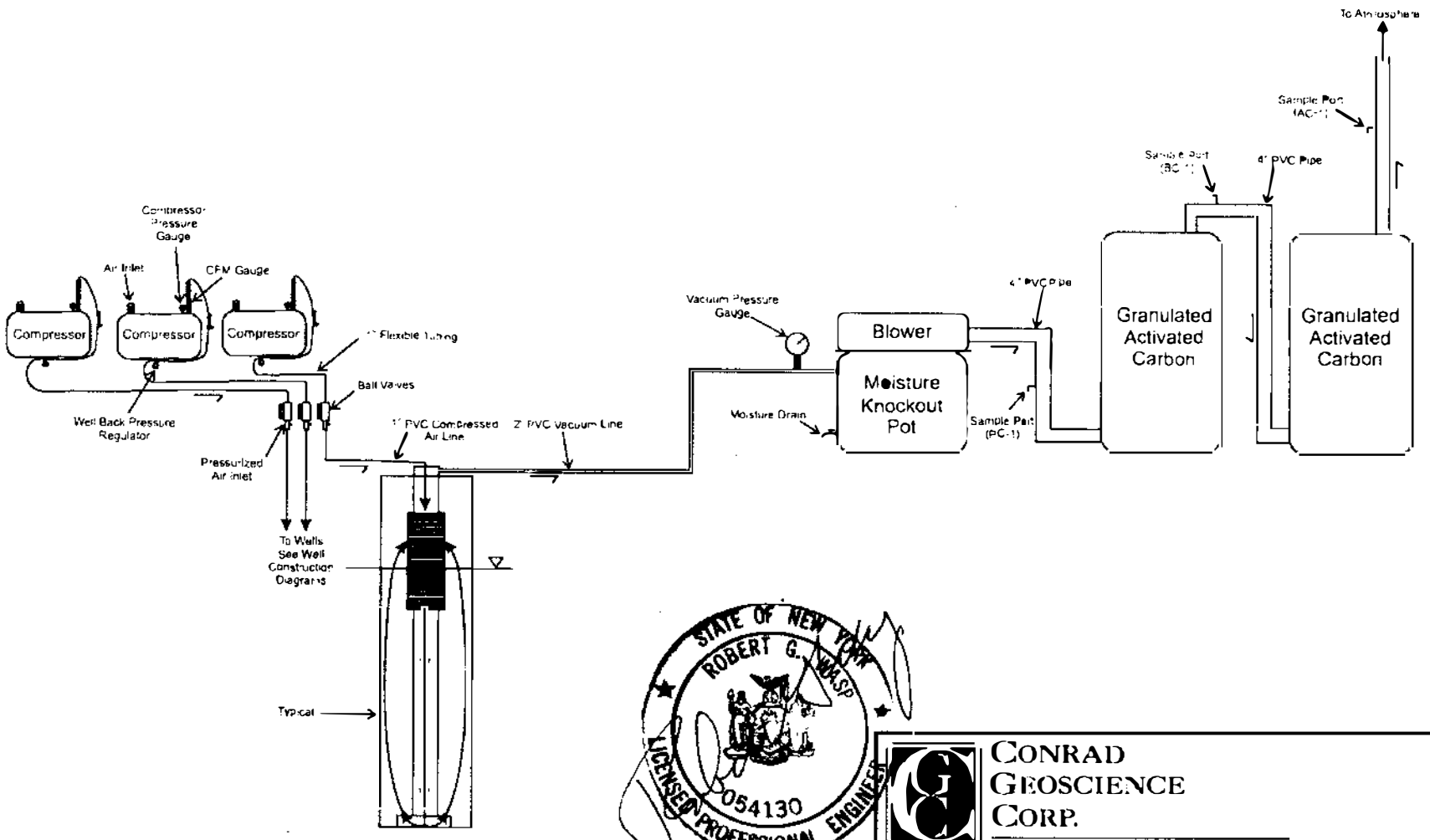

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Figure 6	
Prepared By:	NSS 11/01
Reviewed By:	CBB 11/01
Revised:	MPT 7/09
Approved By:	CBB 7/09

AS-BUILT DIAGRAM
COAXIAL GROUNDWATER CIRCULATION

LUMELITE PLASTICS
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