March 2012
Remedial Action Workplan

Former Grant Hardware Facility – West Nyack, NY

NYSDEC Site ID Number 344031

March 19, 2012

Prepared for:

Gussack Realty
44 High Street
West Nyack, New York 10994

Prepared by:

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I, Robert Zimmer, certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 37 and that this Remedial Design/ Remedial Action Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10)

Robert Zimmer, P.E.
NYS Lic. No. 082496-1

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March 2012 Remedial Action Workplan
Former Grant Hardware Facility, West Nyack, NY
NYSDEC Site ID Number 344031

1.0 Background.

The Former Grant Hardware site is located in West Nyack, NY (NYSDEC Site No. 344031; Figure 1). Site soil and groundwater are impacted primarily with trichloroethene (TCE) and its degradation products; cis-1,2-dichloroethene, and vinyl chloride. Additional information of the nature and extent of site contaminants are available in NYSDEC's 2010 *Record of Decision* (ROD); Geovation's 2004 *Revised Remedial Investigation Report* (RIR), and Geovation's 2009 *Feasibility Study* (FS). As a summary of the environmental conditions at the site, diagrams of the extent of soil and groundwater impacts from the 2009 FS report are provided as figures 2 and 3 respectively.

2.0 Project Goals and Organization.

The first phase of implementation of the ROD at this property is; (i) the completion of required groundwater investigation activities, (ii) excavation of source area soils, and replacement of the removed materials with clean backfill, (iii) installation of a Soil Vapor Extraction (SVE) system around and beneath the approximate area where soil excavation activities were conducted, and (iv) installation of additional groundwater treatment wells in the source area. The installation of SVE equipment, as proposed in the ROD, will be conducted in two parts. This workplan describes the required additional groundwater investigation activities, soil excavation activities, the installation and operation of the first part of the SVE equipment, and installation of additional groundwater treatment wells in the source area. These activities do not constitute all the remediation requirements laid out in the ROD. Prior to, or at, the completion of the work discussed herein, one or more additional workplans will be prepared to address the additional work required to complete site remediation, including; design and implementation of Phase II of the VES system, expansion of the existing sub slab depressurization system, installation of the mid-plume bio barrier, and installation of groundwater treatment wells adjacent to the river.

Geovation employee, Mr. Robert Zimmer, P.E., will serve as the project manager and prime contact on this project. Mr. Zimmer will oversee field operations, other Geovation employees, subcontractors and data management. A copy of Mr. Zimmer's resume is provided in Appendix A.

3.0 Soil Excavation.

While the area of soil excavation has been previously determined and was included in the ROD, the goal of this excavation effort is not to remove all impacted soils, but rather to perform limited excavation of the most heavily impacted soils to achieve immediate reduction of contaminant mass in the source area and decrease the burden placed on the *in-situ* technologies which will be utilized to perform the bulk of remediation in this area. Confirmation samples will not be collected from the excavation, rather selected soil samples will be collected to serve as baseline values prior to progressing to soil vapor extraction to handle the majority of the impacted soil remediation. A diagram showing the approximate area to be excavated, to a depth of 5 feet below grade, is provided as figure 4. The area is mostly covered by existing asphalt and includes the area up to the building. To maintain the structural safety of the building, excavation near the building will maintain a forty five degree slope. A Community Air Monitoring Plan (CAMP) will be employed during the soil excavation activities. The details of the CAMP are provided in Appendix B. Excavation will be conducted by a qualified environmental contractor, while air monitoring and enforcement of the Health and Safety Plan (HASP) will be conducted by Geovation personnel. A copy of the HASP is provided as appendix C. Upon completion of the excavation, four side wall soil samples, and one bottom of excavation sample will be collected. The analytical sampling parameters and other Quality Assurance Project Plans (QUAPP) information are provided on Table 1. Reduced laboratory deliverables will be submitted and all laboratory data will also be provided in EDD format.

Shallow overburden soils will be excavated and stockpiled. The stockpiled soil will be analyzed and characterized for off-site disposal to either a New York State certified Storage, Treatment and Disposal Facility (TSDF), or other approved soil disposal alternative. Analyses will be performed by a New York State Department of Health (NYSDOH) certified laboratory and all activities will be performed in accordance with New York State Department of Environmental Conservation (NYSDEC) guidelines and industry accepted procedures.

Prior to backfilling the excavation, a demarcation barrier will be installed. Subsequently, the excavated area will be backfilled with clean soil, meeting the requirements of 6NYCRR375-6.7(d). It is estimated that approximately 93 cubic yards of fill material will be required to fill the excavation. Based on the testing requirements outlined in Table 5.4(e)10 of DER-10, testing requirements of the fill material include sampling for two grab samples of VOCs and a single composite sample for SVOCs, Inorganics and PCB/Pesticides, as listed in Appendix 5 of DER-10.

It is anticipated that all field work can be completed in Level D personal protective equipment. All Field work will be conducted in accordance with the Health and Safety Plan provided in Appendix C and the CAMP provided in Appendix B. All field personnel will be informed of the location of the nearest hospital (Appendix C) and be provided with a copy of

the emergency contact list (Appendix C). Field Supervisory personnel will be familiar with the route to the hospital.

4.0 Soil Vapor Extraction System.

The first phase of the installation and operation of the soil vapor extraction system has been previously provided to the NYSDEC in Geovation's 2009 FS document. This information is repeated below .

The SVE system will be installed in a two-phase approach for treating impacted soils remaining in the source area after soil excavation is complete. The first phase will consist of installation of SVE equipment in the most heavily impacted area and include start-up and operation of this equipment. The second phase will consist of evaluation of the area of influence of the installed equipment and subsequent expansion of the SVE system to include the full targeted area of soil remediation. Each phase of the installation of the SVE system will include an operation and monitoring program to be implemented to optimize system performance, evaluate the carbon use and monitor system effluent. Additionally, quarterly sampling and reporting will be provided to verify system performance.

Following the repair of the soil excavation area, SVE will be utilized to treat unsaturated impacted soils in the area approximately 55 feet by 55 feet using four soil vapor extraction wells as shown on Figure 5. The layout of the treatment wells is based on the results of SVE pilot testing and the results of historical soil sampling. SVE pilot tested concluded that the Effective Radius of Influence (ROI_{eff}), utilizing 36 to 70 cubic feet per minute (cfm) of negative air flow under 63 to 65 inches of water (in H_2O) of negative pressure (vacuum), to be approximately 15 feet. Geovation has designed the SVE system (Figure 5 –Remedial System Layout) based on the parameters defined in the pilot test as discussed in more detail below.

Soil Vapor Extraction System Recovery Wells and Piping

The SVE system design, Figure 5, utilizes four (4) vertical vapor extraction points, configured in a diamond shape and plumbed to two parallel 4 inch PVC manifolds with each manifold accepting soil gas from two SVE wells. The SVE wells will be spaced approximately 25 feet apart and will be screened from 3 feet below grade to bedrock (approximately 15 feet below grade). Each SVE well will be constructed using two inch inside diameter schedule 40 PVC pipe with 0.020 inch slotted screen. The annular space between the borehole and the well screen will be filled with No. 2 silica sand from the bottom of the boring to above the the top of the screened PVC, then sealed with 2-feet of wetted benonite. Each SVE well will be housed within a 12-inch corrugated PVC pipe and capped with a 12-inch curb box. The area over the SVE system will be paved which will

provide a relatively impervious surface to both optimize the recovery of vapors and allow for vehicles to drive across the area.

The individual SVE wells will utilize two inch Schedule 40 PVC horizontal piping to connect to the four inch Schedule 40 PVC manifold. Prior to connection to the manifold, each SVE well will be fitted with a ball valve, pressure gauge and air flow port, to monitor and regulate soil vapor flow.

The pair of four (4) inch Schedule 40 PVC headers will run parallel, in a common trench. These pipe headers are sized to allow for the expansion of the extraction well system at a later date. The headers will be utilized to transport extracted soil vapors from the SVE wells back to the treatment shed (Figure 5). All piping will be installed to a depth of twelve (12) inches below grade.

The system will also include four monitoring points to verify the radius of influence achieved and evaluate changes in the ROI_{eff} over time. The monitoring points will be constructed in a similar manner as the recovery points, however the diameter of the monitoring points will be one inch rather than two and they will be protected at the ground surface with 6 inch flush mount covers rather than twelve inch covers. Construction details of the monitoring points are shown on Figure 6. The proposed locations for the two monitoring points are shown on Figure 5.

Recovery System Mechanical Components and Treatment Shed

The pilot test data showed that a sufficient vacuum of 0.1 inches of water was achieved at a 15 ft distance from the test well with a vacuum of 63 to 65 inches at the test well, with corresponding air flow rates ranging from 36 scfm to 71 scfm, with the 36 scfm measurement being the final measurement recorded at a time period of 210 minutes into the test. In analyzing these data in conjunction with the review of pump curves from multiple blower manufacturers, it appears that a total design flow of approximately 200 cfm should both provide an adequate radius of influence while being practical in terms of the available blowers.

Head loss calculations based on the system components described above and shown in Figure 5 are included in Appendix D. The friction loss through the system is estimated at 15 inches of water based on the available information. Assuming that a negative pressure of 63 inches of water is actually required under the final field conditions to effect the 15 ft radius of influence, the total requirement for the blower would be 200 cfm at 78 inches of water. In order to meet this requirement a 10-hp blower is required.

The pilot test conducted at the site was of short duration – 210 minutes from start to finish. The motor requirements for the blower calculated for use with the four extraction wells and discussed above may be excessive. As noted above, the piping headers and other

appurtenances have been sized such that it may be possible to add additional extraction wells to the system once the system has started up and stabilized (e.g., the second phase of the SVE System). At that time system design parameters may change based on the information obtained from the system monitoring points measured during the implementation of this first phase of operation.

The regenerative blower is designed to be 230V, with a 3 phase explosion proof motor. A 40-gal moisture separator with explosion proof emergency high sump switch, manway, sight glass, and manual drain will provide vapor stream moisture removal. An in-line filter will provide vapor stream particulate matter removal and a silencer will be utilized to minimize noise emissions. A telemetry system will be installed to notify facility personnel should an operational error occur.

Off-gas treatment will be provided by four 140-lb vapor phase granular activated carbon (GAC) treatment canisters. Sample ports will be provided such that breakthrough in the first unit can be detected and the influent and effluent from the GAC system can be monitored. It is expected that the carbon canisters will have to be replaced frequently during the first several days or weeks of operation, based on the analytical data for the air samples collected during the SVE pilot test; however, concentrations in the vapor typically decline very quickly following system startup.

Following treatment, the effluent will be discharged to the atmosphere. The vent line will extend to more than twenty feet above grade and will be constructed of four (4) inch Schedule 40 PVC. The vent line will be attached to the side of the Grant Hardware facility, exhausting approximately two feet above the roof line. Pressure gauges, air flow monitoring, sampling ports and temperature gauges will be provided to monitor system operating conditions and to allow system optimization. Emergency shut-off switches will be provided to deactivate the system in the event of pressure, temperature or moisture build-up.

All equipment and gauges will be housed in an eight feet wide by ten feet long treatment trailer. The treatment trailer will be constructed of metal with sound proofing, insulated walls with a wood floor. The trailer will be transported to the site, demobilized by removing the tires, leveled and positioned on stationary louver jacks.

Electrical Power Supply

A 100 amp 3 phase electrical power supply with individual circuit breaker capabilities will be provided to power the treatment trailer. An emergency shut-off will be supplied to remotely deactivate the system in the event of an emergency.

System Operation & Maintenance

Upon completion of installation of the SVE system, Geovation will initiate start-up and optimization activities. This will include monitoring and adjusting the negative pressure attained at each of the four vertical extraction wells, and monitoring of air flow rates, and vapor recovery rates. Individual SVE well recovery rates, cumulative recovery rates, after treatment air flow rates and contaminant removal efficiency will be recorded to verify that the effluent air contaminant concentrations are below NYSDEC guidelines.

During initial start-up, the system will be monitored daily for the first week, weekly for the first month, bi-monthly for the next two months and monthly thereafter. During these site visits for monitoring the SVE system will be evaluated and optimized. System operating parameters will be recorded utilizing a field calibrated photo-ionization detector (PID) and relative removal rates will be determined. Additional data that will be collected includes; shed interior temperature, and pressure within each of the SVE wells. Groundwater head levels will be recorded if groundwater is noted within the treatment wells.

Quarterly Sampling & Reporting

The data generated during startup activities and subsequent site visits will be summarized and provided to the NYSDEC in quarterly reports. These reports will include the results of PID sampling performed and calculations of system operation efficiency.

5.0 Groundwater Investigation.

Part of the approved remedy for this site includes the construction of a line of wells across the axis of the groundwater plume which will serve as a biobarrier retarding the migration of groundwater contaminants and shortening the time required to remediate the site. Additional investigation is required along a portion of the proposed biobarrier to the north of the facility. This area of additional investigation is shown on Figure 7 along with the full extent of the proposed bio barrier. The construction of the biobarrier will be more fully described in a future workplan.

A fracture trace analysis has previously been conducted at this site and this study was reviewed to assist in locating the wells for this additional investigation. A copy of the results of the fracture trace analysis from Geovation's July 2004 Revised Remedial Investigation Report is included as figure 8. Review of the fracture trace study and this figure indicates that specific bedrock fractures were not identified in the portion of the site being investigated, and therefore the proposed well locations could not be aligned with identified bedrock fractures.

The number and location of additional wells was discussed with the NYSDEC and NYSDOH. The approximate locations of these additional wells are shown on figure 9. Construction of the wells will be equivalent to the biobarrier wells and they will become part of the biobarrier system if groundwater quality data indicates groundwater treatment is appropriate in these wells. The wells will be installed using standard mud/water rotary drilling techniques. The bedrock wells will be installed by advancing three-inch or four-inch diameter steel casing approximately two-to-five feet into bedrock and grouting the casing in place. Subsequently, a three-inch diameter open-hole bedrock well will be advanced from the bottom of the casing approximately ten to fifteen feet into the bedrock. It is anticipated that well construction will consist of approximately 30-to-35 feet of solid steel casing installed from the ground surface down and into the bedrock, and open hole well construction to approximately 40-to-50 feet below grade. Monitoring well construction logs will be prepared to document well construction. Air monitoriing pursuant to the CAMP will be conducted during well installation activities.

After the wells are installed, they will be developed by surging and pumping with a Waterra® inertial pump or equivalent. The wells will be developed until the discharge from the well is visibly clear of sediments and five to ten well volumes of development water are removed from the well. Development water will be drummed and the solids allowed to settle out. Subsequently, development water will be passed through granulated activated carbon and discharged to the ground surface in a manner that prevents ponding. Solids will be drummed and staged on-site prior to waste characterization sampling and off-site disposal. Previous sampling has shown that this method of treatment is able to reduce groundwater contaminants to acceptable levels. Information provided by the GAC manufacturer, Carbtrol, indicates that this equipment is calculated to treat more than 1,000 gallons of groundwater, given the average loading of contaminants from site wells and a large safety multiplier. Currently less than 150 gallons have been treated with the carbon that is presently in use. Geovation proposes to collect a sample of the treated water after the next use of the GAC to confirm that treatment remains effective and subsequently collect samples of the treated effluent at each point after the equipment has been used to treat a cumulative volume of 500 gals, 750 gals, 850 gals, 950 gals, 1,000 gals or the carbon is replaced and the sampling cycle is restarted.

Ground Water Elevation measurements

After the wells are installed, Geovation will survey the elevation of the protective casing and well casing of each well relative to the datum established at the other existing wells. At the time of collection of ground water samples, Geovation will measure the depth to water at each well using a Sonic Interface Probe. The depth to water and surveyed elevation will be used to integrate the new wells into subsequent ground water table contour diagrams prepared for the site.

Ground Water Sampling

The newly installed wells will be added to the existing ground water sampling program and sampled along with the existing wells as part of Geovation's ground water sampling program. It is anticipated that a full round of sampling of the new and existing wells will be conducted in the fall of 2012. Prior to sampling, at each well the depth to water will be recorded and the well purged by low-flow low volume techniques with a Wattera® inertial pump. Purge water that is removed from each well will be contained on-site for subsequent treatment and disposal. Ground water samples will be collected directly from the Wattera® pump tubing into laboratory provided glassware. Samples will then be labeled, placed into a cooler with ice and shipped to EnviroTest Laboratories of Newburgh, NY (NYSDOH Certification No. 10142) for analysis of volatile organic compound (VOC) analysis via EPA Method 8260 with a library search. The analytical sampling parameters and other Quality Assurance Project Plans (QUAPP) information are provided on Table 1. Reduced laboratory deliverables will be submitted and all laboratory data will also be provided in EDD format. Collected purge water will be temporarily staged on-site prior to treatment by passing it through granulated activated cabron (GAC) and discharging to the ground surface in a manner which avoids ponding of the water.

6.0 Installation of Treatment Wells in Source Area

After the excavation activities and the installation of the first phase of the the VES system are complete, Geovation will install three additional groundwater treatment wells in the source area. The proposed locations for the three additional treatment wells are shown on Figure 10. Information obtained during the pilot study indicated that the majority of the source area contamination is adsorbed to the overburden and shallow bedrock. The VES system previously discussed is designed to treat the overburden and shallow bedrock above the water table. The additional treatment wells are designed to treat the saturated media below the water table.

Each of the three wells will be installed using standard mud/water rotary drilling techniques. The bedrock wells will be installed by advancing three-inch or four-inch diameter steel casing approximately two-to-five feet into bedrock and grouting the casing in place. Subsequently, a three-inch diameter open-hole bedrock well will be advanced from the bottom of the casing approximately ten to fifteen feet into the bedrock. It is anticipated that well construction will consist of approximately 15-to-25 feet of solid steel casing installed from the ground surface down and into the bedrock, and open hole well construction to approximately 45-to-55 feet below grade. Monitoring well construction logs will be prepared to document well construction. Air monitoriing pursuant to the CAMP will be conducted during well installation activities.

7.0 Source Area Groundwater Sampling and Treatment

As described above, the three newly installed source area wells are designed to be used for groundwater treatment; however, each will be sampled prior to their use as treatment wells. Prior to sampling, at each well the depth to water will be recorded and the well purged by low-flow low volume techniques with a Wattera® inertial pump. Purge water that is removed from each well will be contained on-site for subsequent treatment and disposal. Ground water samples will be collected directly from the Wattera® pump tubing into laboratory provided glassware. Samples will then be labeled, placed into a cooler with ice and shipped to EnviroTest Laboratories of Newburgh, NY (NYSDOH Certification No. 10142) for analysis of volatile organic compound (VOC) analysis via EPA Method 8260 with a library search. In addition, the following field parameters will be recorded at each wells, temperature, conductivity, pH, dissolved oxygen, turbidity, and ORP. The analytical sampling parameters and other Quality Assurance Project Plans (QUAPP) information are provided on Table 1. As these wells are not intended to be used as groundwater monitoring wells, they will not be developed to a 50 NTU standard. As treatment wells, liquid solutions of biological nutrients will be applied to the subsurface through these wells. Through this process media flow through the filter pack will be primarily in the outward direction. Standard development of the wells to the 50 NTU standard could be detrimental to the treatment performance of the wells as well development brings groundwater and silt through the filter pack in the inward direction, unnecessarily setting the filter pack in the reverse direction of how it will be subsequently used.

The liquid biological nutrients used to treat groundwater will continue to be Geovation's liquid SRC product which was used during the pilot scale test and the use of which continues to the present time. The NYSDEC has previously reviewed the composition of this product and a letter from the NYSDEC approving its continued use is provided in Appendix E.

8.0 Sub-slab Depressurization System

Expansion of the existing sub-slab depressurization system (SSDS) is required. Geovation and Gussack Realty are currently in the process of evaluating SSDS performance data to expand the system to provide full coverage of the occupied indoor work areas. Recent data collected from the existing SSDS points is provided in Appendix F. This data shows that the SSDS performance is consistent to when it was installed and that expansion of the SSDS is required. Additional testing is currently being conducted to establish the floor penetration spacing that will be required to provide full coverage of the occupied areas. The results of this additional testing and the information regarding system performance and expansion will be provided to the NYSDEC/NYSDOH when testing is completed.

9.0 Reporting

Monthly progress reports will be prepared summarizing completed activities. After the results of the soil and ground water testing are received from the analytical laboratory, Geovation will prepare a report to be submitted to the NYSDEC and NYSDOH. The report will include a description of the soil excavation, well installations and groundwater sampling activities, a summary table of the analytical results, a figure representing the locations where the samples were collected and our interpretation of the data indicating the extent of CVOCs in groundwater. The report will also include a groundwater flow diagram and a discussion of the extension of the proposed biobarrier, in light of the data collected and Geovation's recommendations.

A separate report will be prepared summarizing the installation and start-up of the vapor extraction system. The VES report will include an as-built of the VES and the results of start-up air sampling as described in Section 4.

A separate report will also be prepared describing the the results of ongoing SSDS testing and system expansion. This report will describe the area within the facility where a negative pressure field has been established below the building slab, and provide recommendations for further expansion of the SSDS, if required.

9.0 Schedule

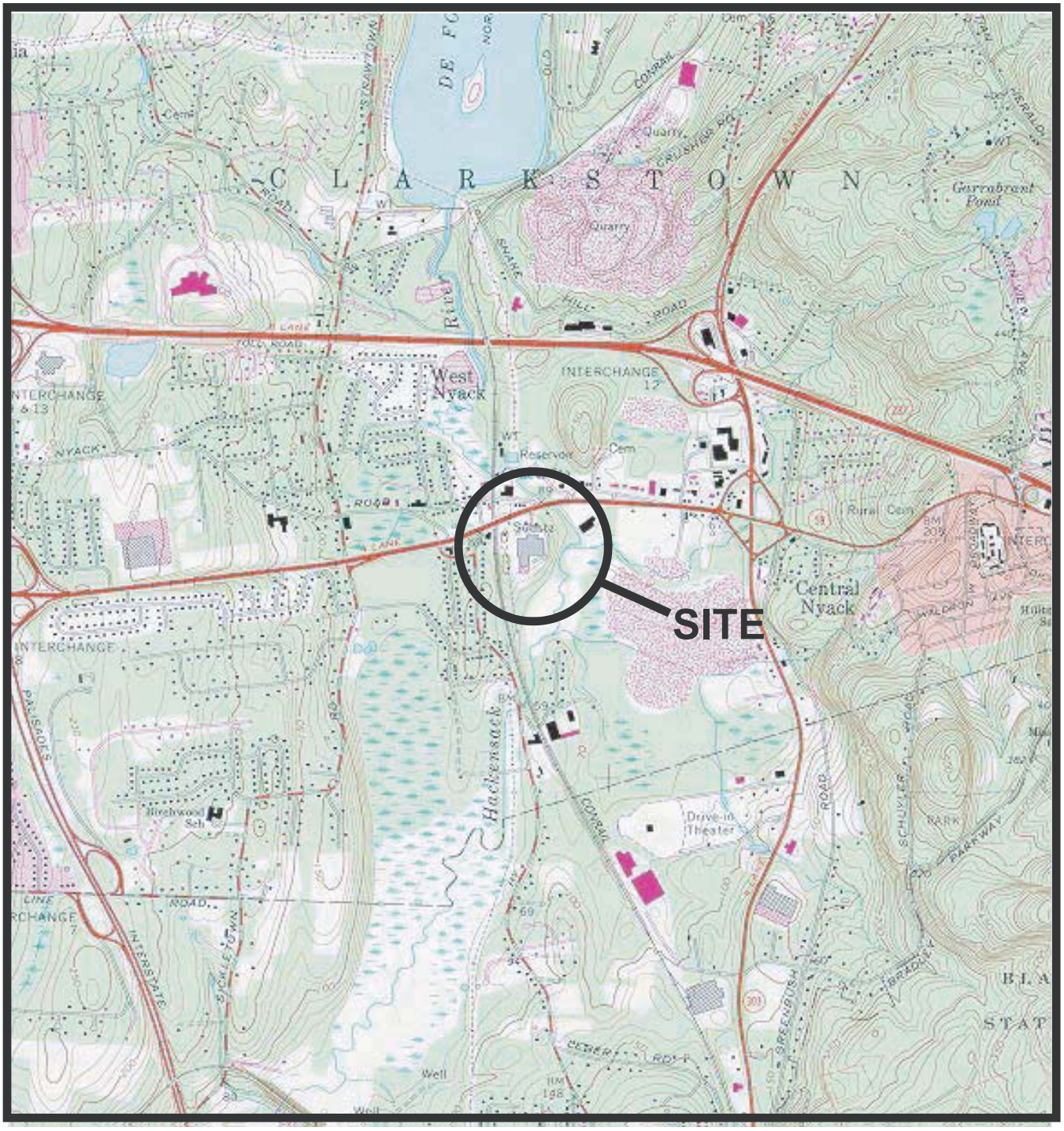
A schedule for the implementation of these activities is provided as figure 11. It is proposed that the biobarrier investigation wells will be installed and the soil excavation completed prior to the end of 2012. As the soil excavation area needs to be repaired and repaved, the installation of the VES is proposed to be completed in the Fall of 2012.

Tables

TABLE 1. - Sampling Parameters and Analyses

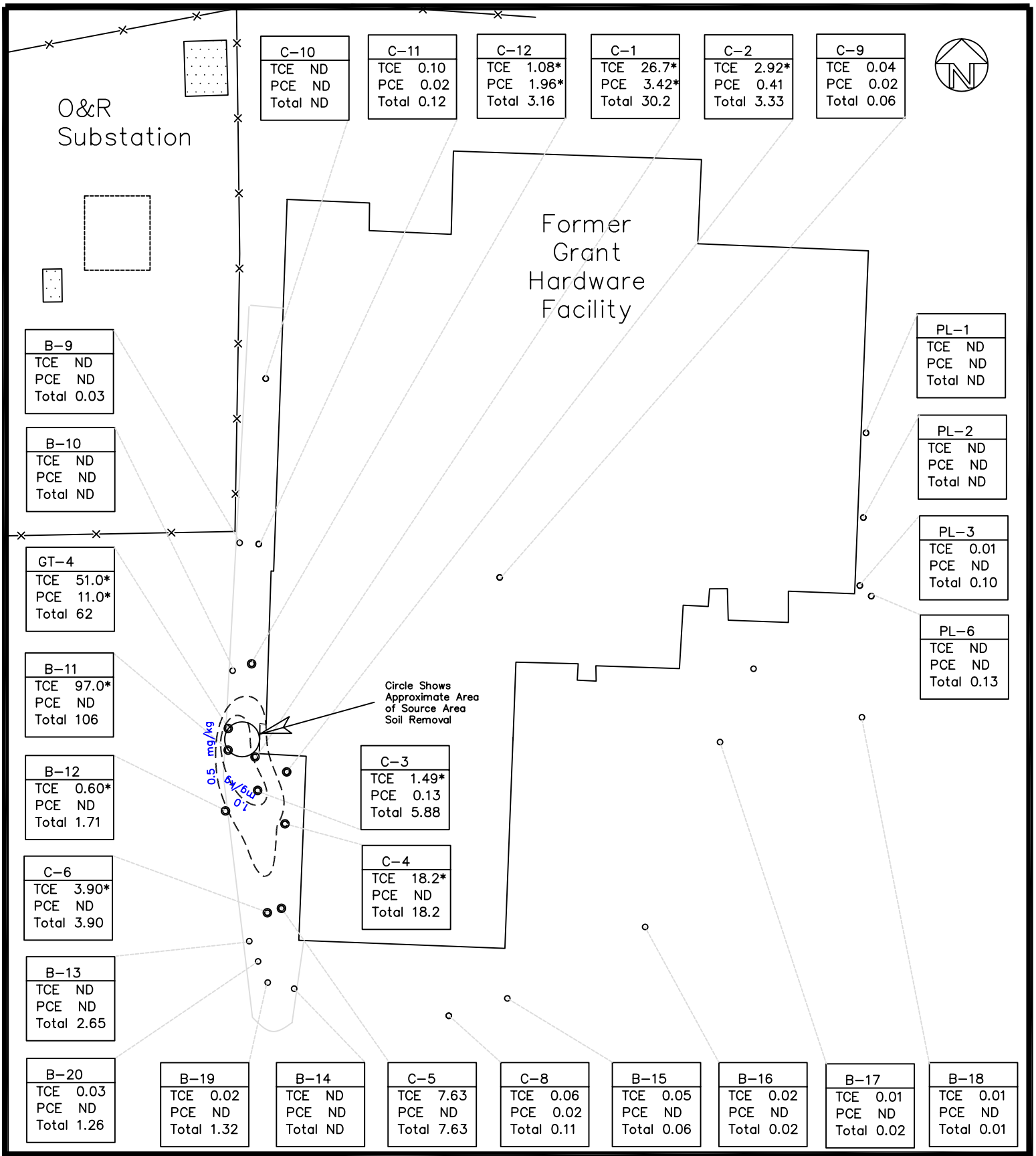
Parameter (Method)	Matrix	Sample Container & Volume	Preservative	Holding Time	Number of Samples	Field Duplicates	Trip Blank	Field Blank	MS/MSD or Spike Duplicate
Soil Excavation Sampling									
TCL VOCs +10 (Methed 8260B)	Soil	3x Terra-core	H2O and MeOH	48 hours to Freeze – 14 days to Analysis	5	0	0	0	0
Additional Groundwater Investigation Sampling									
TCL VOCs +10 (Method 8260B)	Groundwater	3 x 40ml glass vial-TLC	4° C HCL to pH≤2	14 days from Collection	7	1	1	0	0
VES System Startup Sampling									
TCL VOCs +10 (Methed TO-15)	Soil-Gas	6Liter Summa	None	30 days	4	0	0	0	0
PID – Field Screening	Soil-Gas	Air-Stream	Not Applicable	Not Applicable	17	N/A	N\A	N\A	N\A
Additional Source Area Treatment Well Sampling									
TCL VOCs +10 (Method 8260B)	Groundwater	3 x 40ml glass vial-TLC	4° C HCL to pH≤2	14 days from Collection	5	1	1	0	0

Figures



Source: USG S 7.5 Minute Series Topographi c Map West Nyack , NY 1979

GEOVATION Geovation Engineering, P.C. 468 Route 17A - Florida, NY 10921	SITE MAP Remedi al In vestigation Former Gra nt Hardware Facility West Nyack, New York	Figure 1



LEGEND

1.0 mg/kg — Isocon of Total VOC Concentration (mg/kg)

C-3 TCE 1.49* PCE 0.13 Total 5.88 — Sample Location Designation; Principle Contaminant Concentration and Total VOC Concentration. *=exceeds Part 375 SCOs

Soil Sample Location

Soil Sampling Location where Parameters exceed NYDEC Part 375 SCOs

Approximate Scale: 0 100 200 ft.

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Distribution of Total VOCs (in mg/Kg) reported in Soil at Sample Depths Less than 10 feet BGS.

Date: 3-14-12 | RLZ | Figure 2

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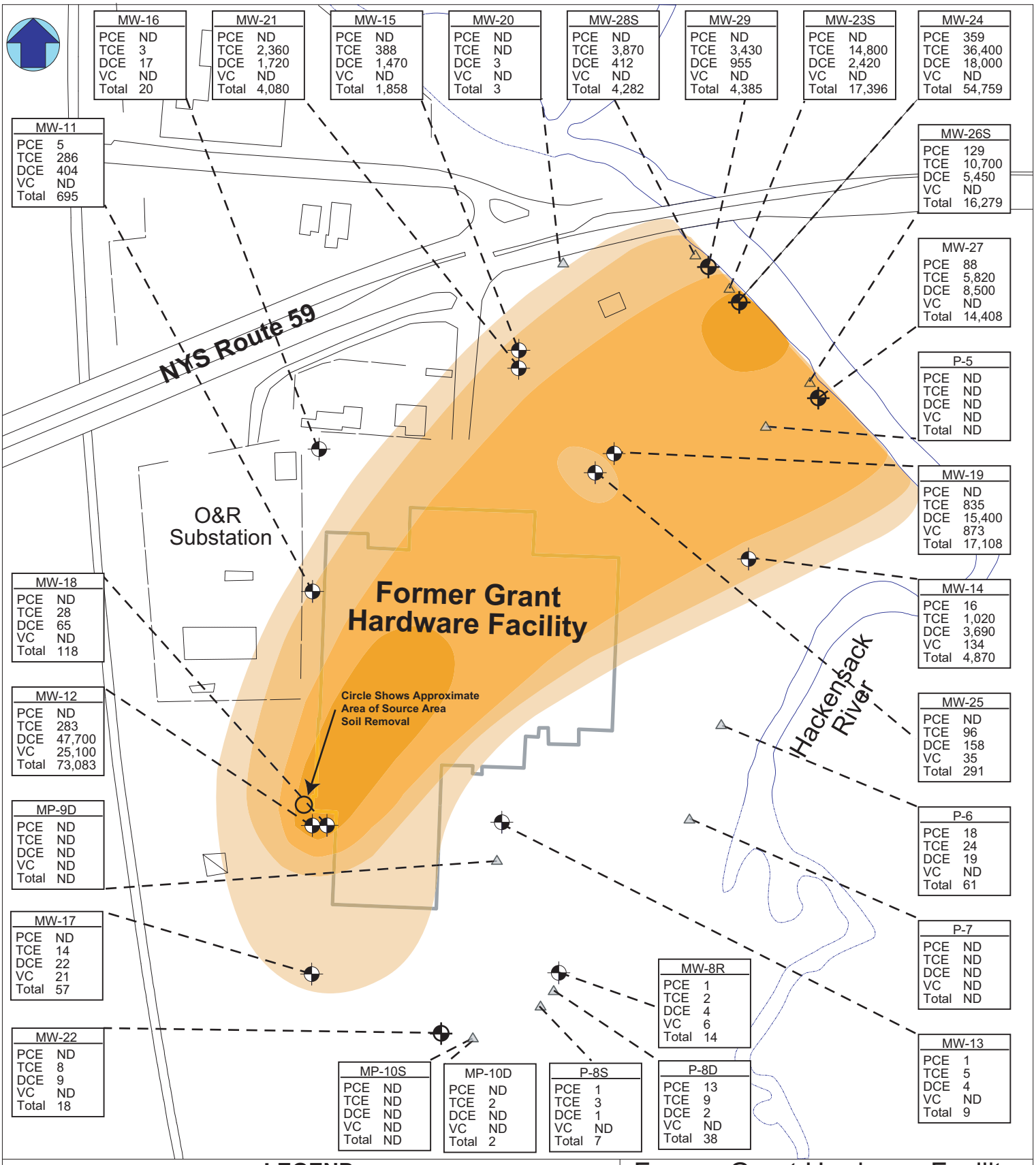


LEGEND

MW-8R Bedrock monitor well locations

P-5 Overburden piezometer / monitor well locations

Buildings

Total VOCs in GW (ug/L)

50 5,000

500 50,000+

Approximate Scale

0 200 ft.

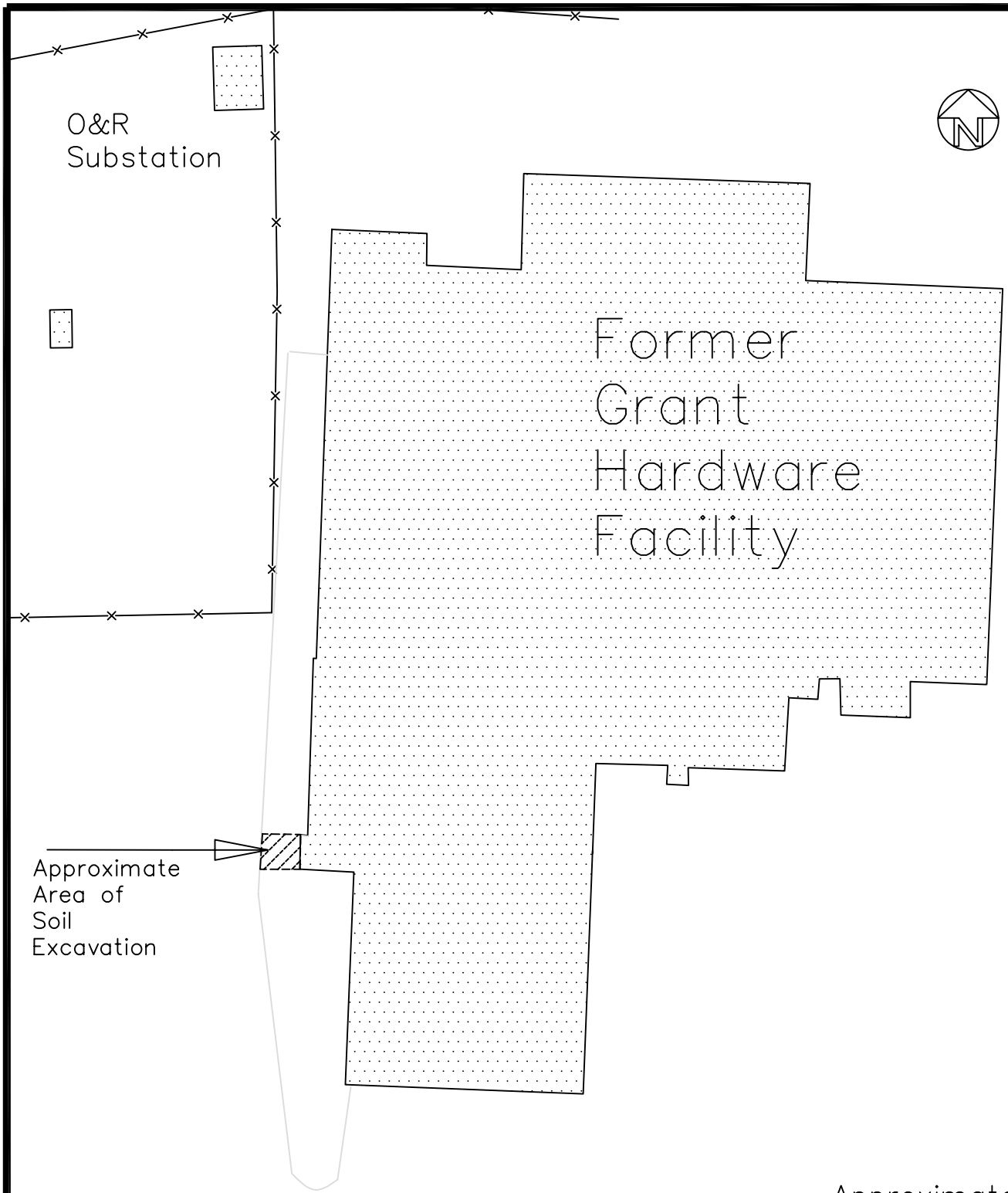
100

Former Grant Hardware Facility

West Nyack, New York

Total CVOCs in Bedrock Ground Water
July 2008 Data

3-14-12	RLZ	**Figure**
GEOVATION Geovation Engineering, P.C. 2016 Route 284 - Slate Hill, NY		**3**



LEGEND

Approximate Area of Soil Excavation

Building

Former Grant Hardware Facility
West Nyack, New York

Approximate Location of Source Area Soil Excavation

Date: 9–22–11	RLZ	Figure

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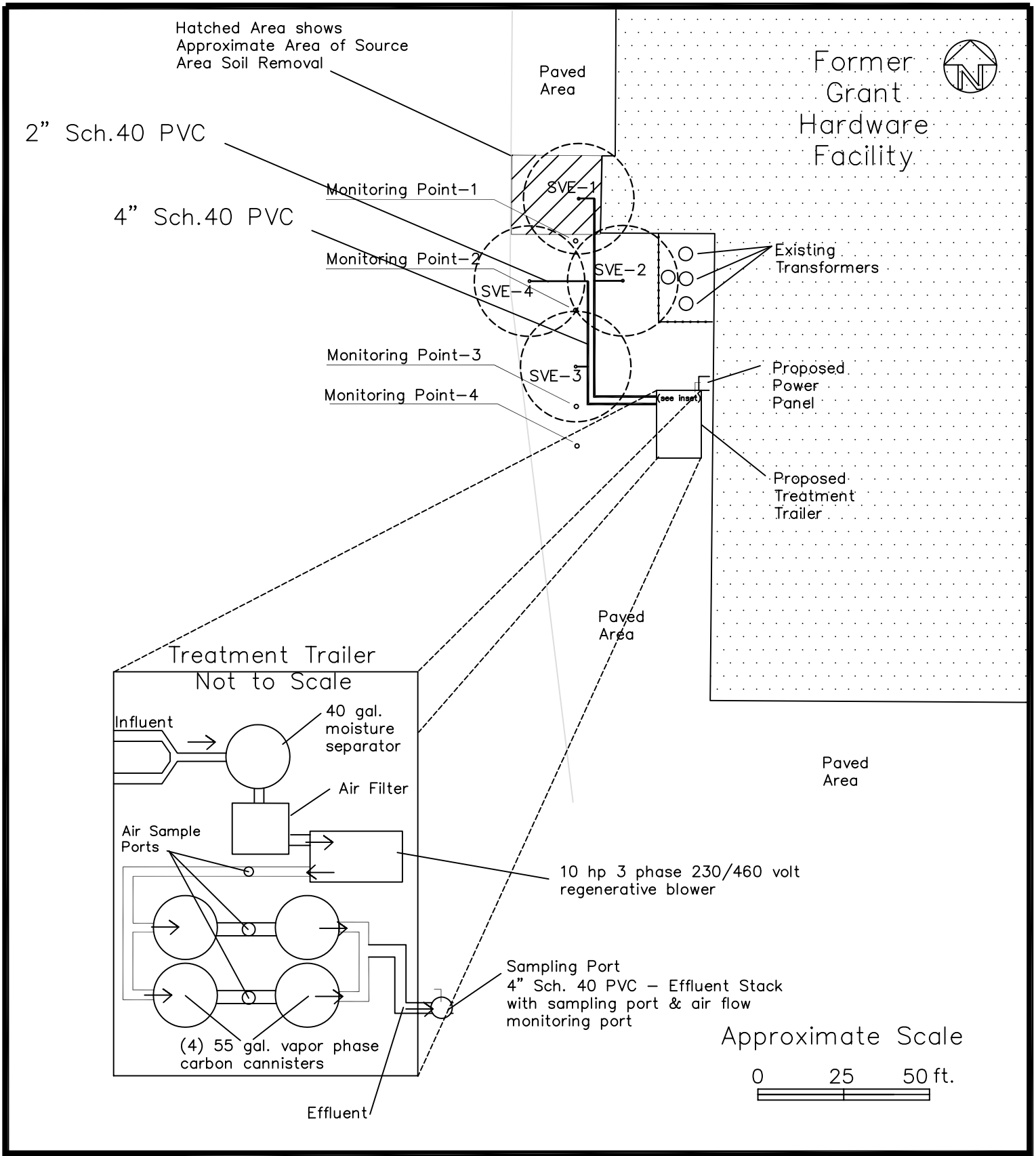

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Building

Former Grant Hardware Facility
West Nyack, New York

Soil Vapor Extraction System
IRM

Date: 3-13-12 | RLZ | Figure

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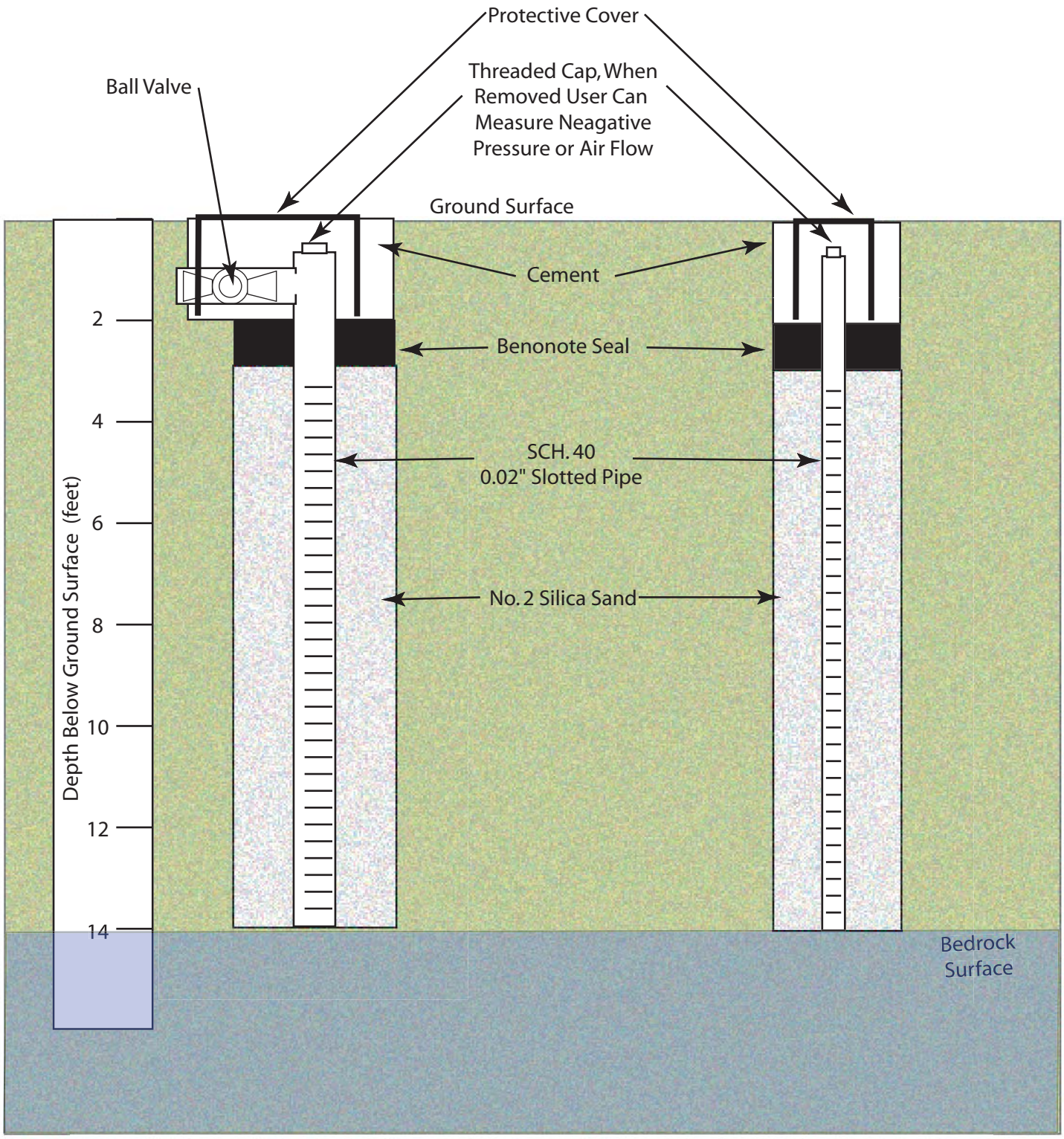
5

SVE WELL Design

SVE Monitoring Well Design



Not to Scale: Horizontal Scale Exaggerated for Clarity

Notes:

Former Grant Hardware - West Nyack, NY
Site No. 344031

SVE Well Design and
SVE Monitoring Point Design

DATE: 3-19-12 | RLZ | Figure

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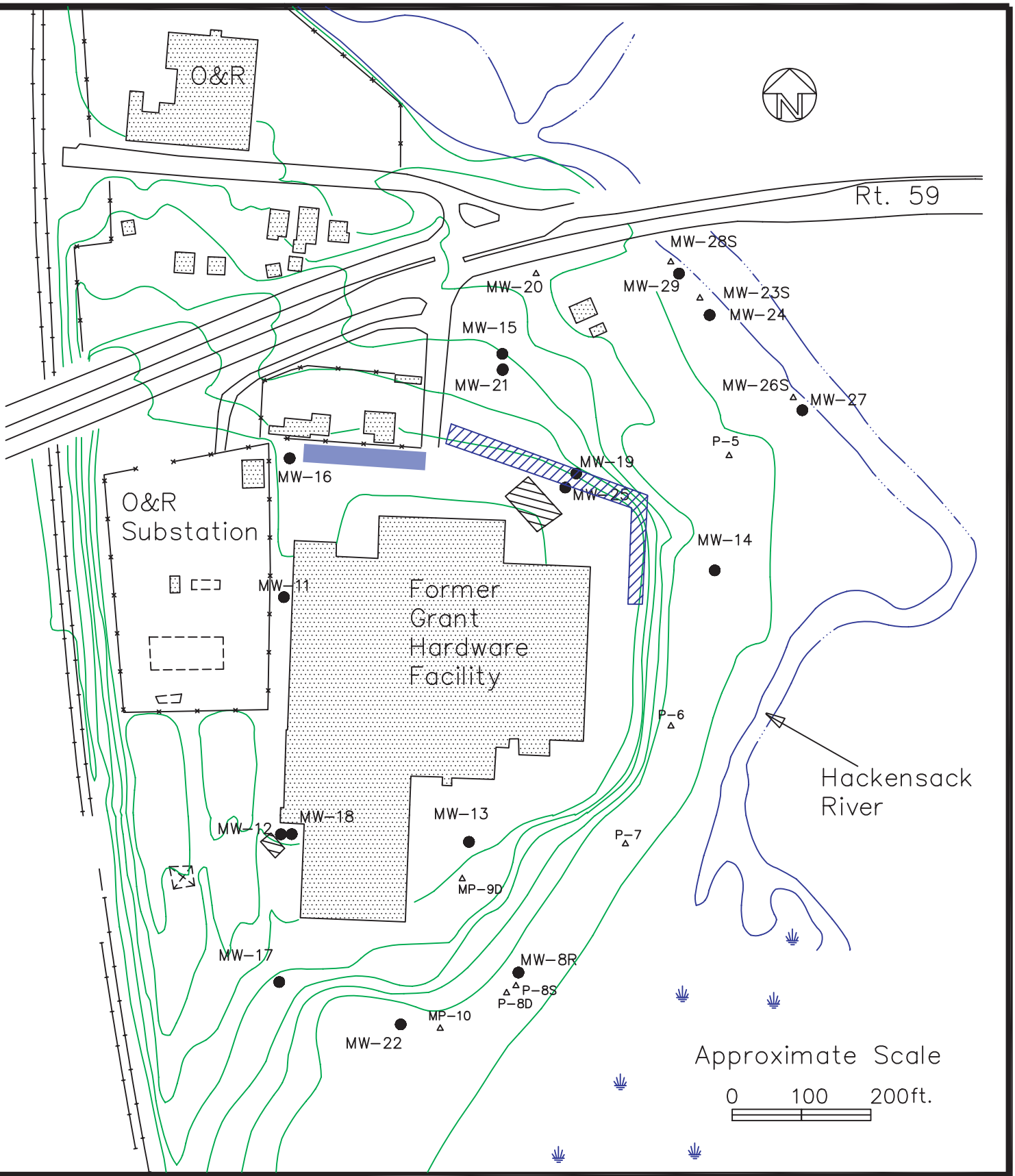


LEGEND

MW-8R Bedrock Well locations

P-5 Overburden Well locations

Area of Bioremediation Pilot Tests

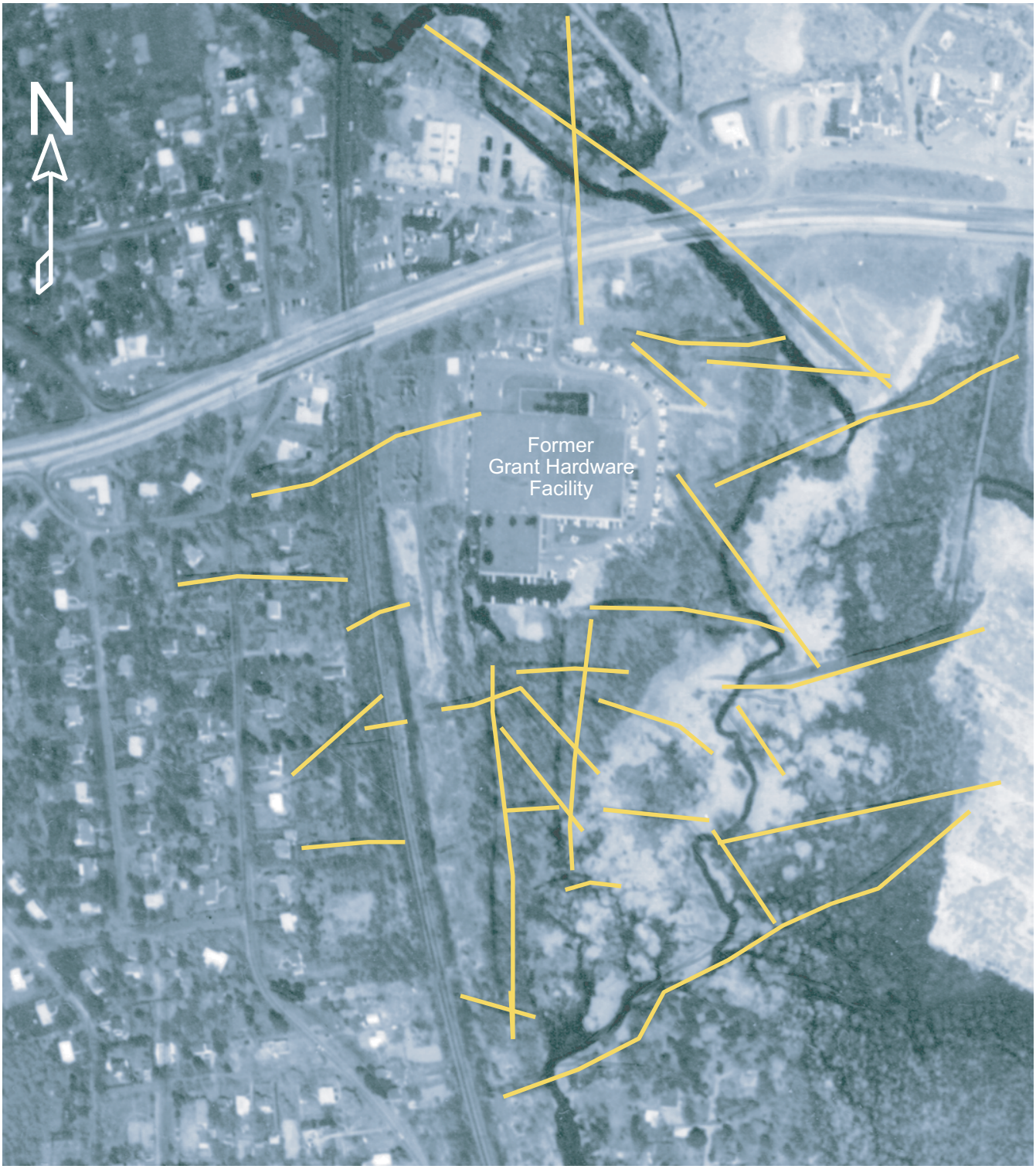
Area of Additional Biobarrier Investigation

Area of Proposed Biobarrier

Former Grant Hardware Facility
West Nyack, New York

Location of Proposed Biobarrier and Additional Biobarrier Investigation

Date: 9-26-11	RLZ	Figure
GEOVATION Geovation Engineering, P.C. Innovative Solutions to Environmental Problems FLORIDA, NEW YORK		7



Legend

Lineament Feature

Approximate Scale

0 200 400 Feet

GEOVATION CONSULTANTS, Inc.
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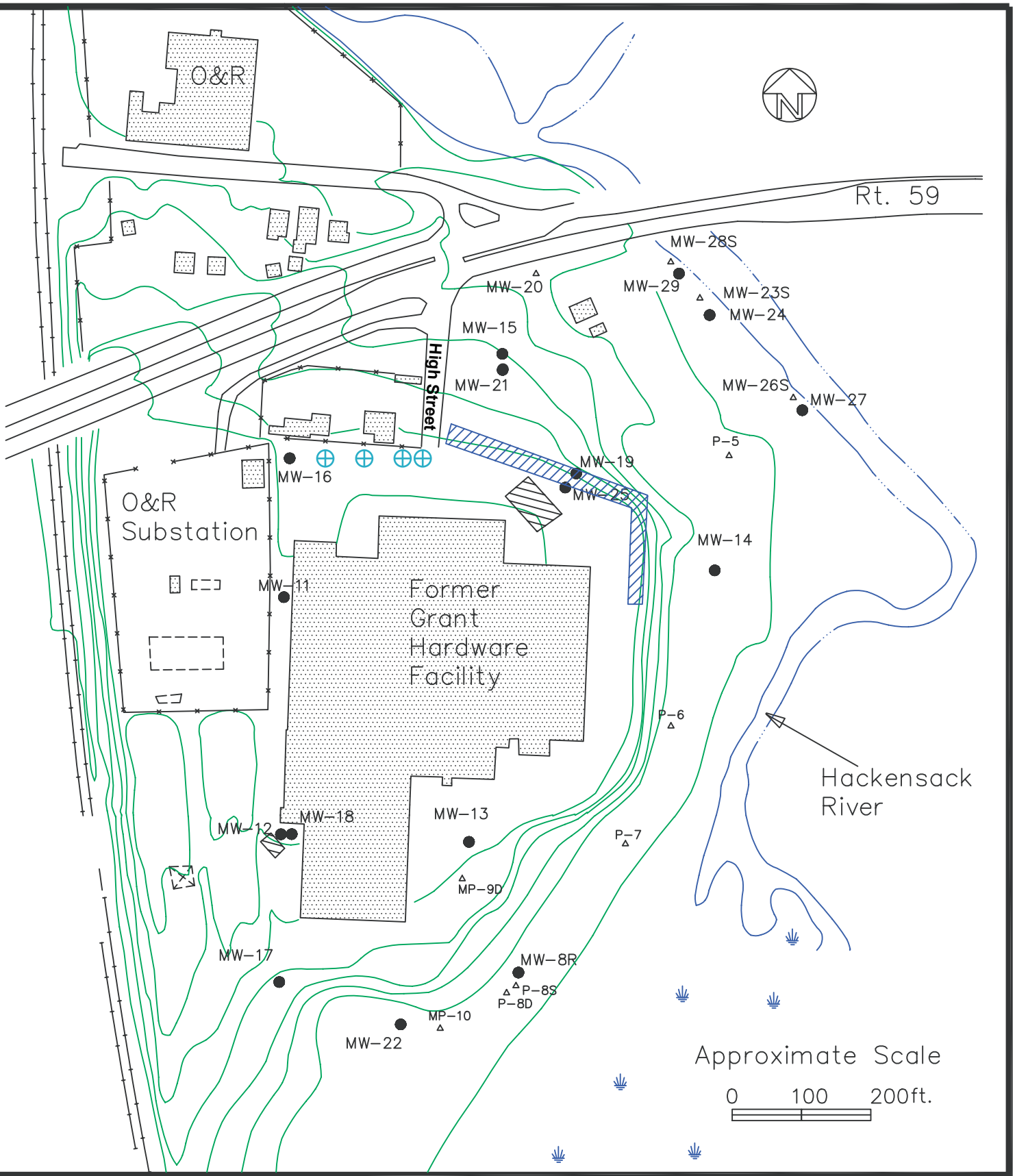
FLORIDA, NEW YORK

Results of Fracture Trace Analysis
Remedial Investigation, NYSDEC Site No. 344031
Former Grant Hardware Facility, West Nyack, NY

FIGURE
8



LEGEND

MW–8R Bedrock Well locations

P–5 Overburden Well locations

Location of Biobarrier Pilot Tests

Location of Proposed Additional Biobarrier Investigation Wells

Location of Proposed Biobarrier

Former Grant Hardware Facility
West Nyack, New York

Locations of Additional Biobarrier Investigation Wells

Date: 9-26-11 | RLZ | Figure

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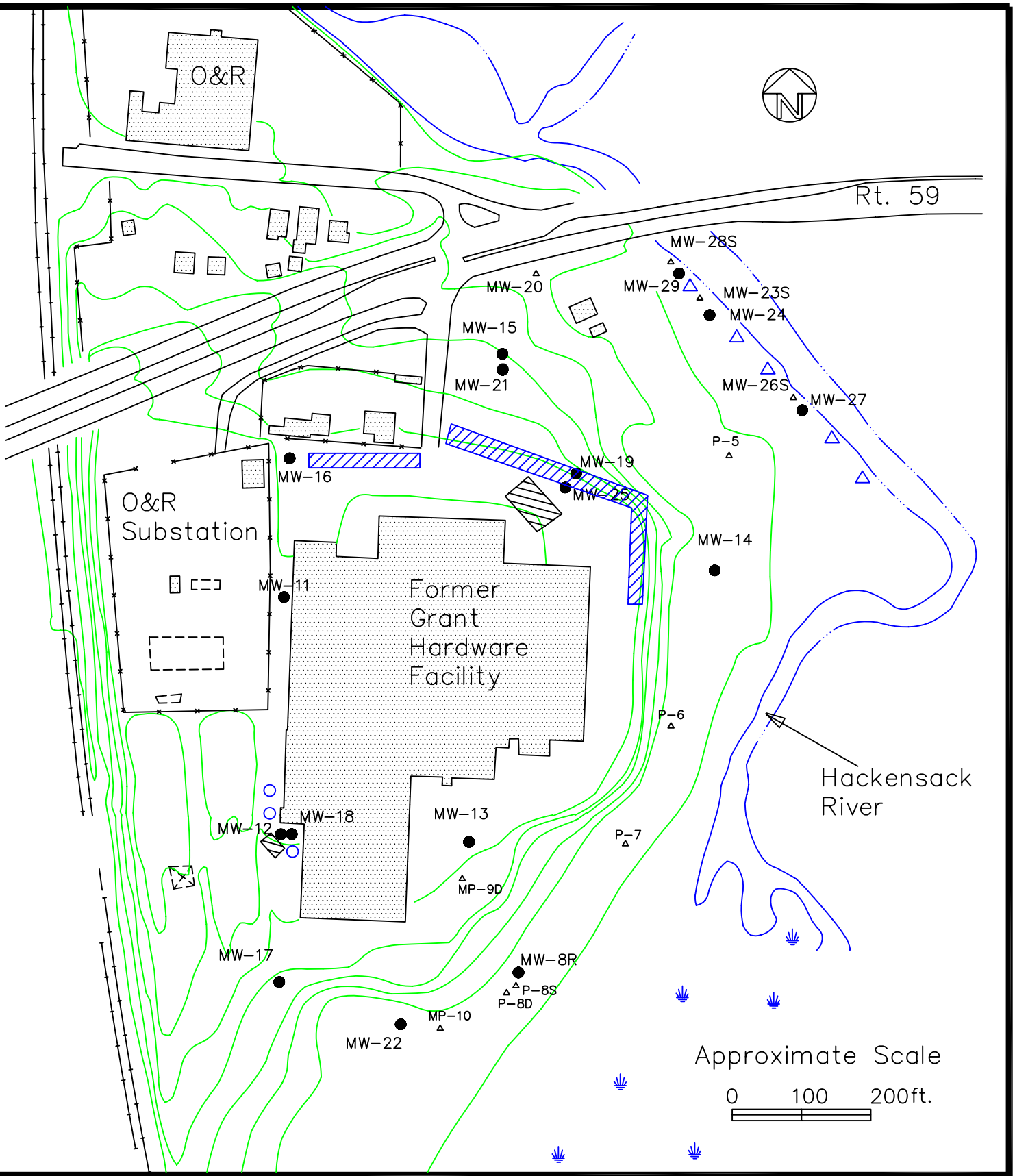

LEGEND

- MW-8R — Bedrock Well locations
- P-5 — Overburden Well locations
- Proposed Location of Additional Riverside Well/Treatment Cluster
- Location of SRC Pilot Study Treatment Wells
- Proposed Location of Additional Source Area Treatment Wells
- Proposed Location of Phase II Biobarrier

Former Grant Hardware Facility
West Nyack, New York

Locations of Proposed Additional Source Area Treatment Wells

Date: 3-21-12 | RLZ | Figure

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Figure 11 – Tentative Schedule of Implementation of Workplan Activities
Former Grant Hardware Facility - West Nyack, NY – Site No. 344031
Prepared 5/9/12

Task	Description	May 2012	Months after Approval of Investigation Workplan															
			1-3	3-5	6-8	9-11	12-14	15-17	18-20	21-23	24-26	27-29	30-32	33-35	36-38	39-41	42-44	45-48
Task 1	Prepare Workplan to Install Additional bio-barrier Investigation Wells, Soil Excavation and SVE System	←	→															
Task 2	Install Additonal Bio-barrier Groundwater Investigation Wells and Evaluate Groundwater Quality		←	→														
Task 3	Excavate Required Source Area Soil and Repair Excavated Area			←	→													
Task 4	Install/Operate First Phase of SVE System and Collect Data to Complete Expansion of the SVE System				←	→												
Task 5	Continued Groundwater Treatment Using Pilot Test Treatment Wells	←					→											
Task 6	Prepare Report Describing Results of Soil Excavation and Additional bio-barrier Groundwater Investigation			←	→													
Task 7	Prepare Report Describing Results of Installation and Operation of Soil Vapor Extraction System				←	→												
Task 8	Testing and Expansion of Sub Slab Depressurization System	←	→															
Task 9	Prepare Report on Expansion on Sub Slab Depressurization System		←	→														
Task 10	Install Additional Source Area Treatment Wells							←	→									
Task 11	Continued Groundwater Treatment Using Pilot Test Treatment Wells and Additional Source Area Treatment Wells							←			→							
Task 12	Installation of Second Phase of VES System						Submission of Phase II VES Design Document		←	→								
Task 13	Installation of Groundwater Treatment Wells on Floodplain Adjacent to River								Submission of Treatment Well Design Document		←	→						
Task 14	Continued Groundwater Treatment Using Pilot Test Treatment Wells, Additional Source Area Treatment Wells, and Floodplain Treatment Wells											←			→			
Task 15	Installation of the Mid Plume BioBarrier System of Groundwater Treatment Wells												Submission of Treatment Well Design Document		←	→		
Task 16	Continued Groundwater Treatment Using All Installed Treatment Wells														←			→
Task 17	Reporting (Monthly)	←																→

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F