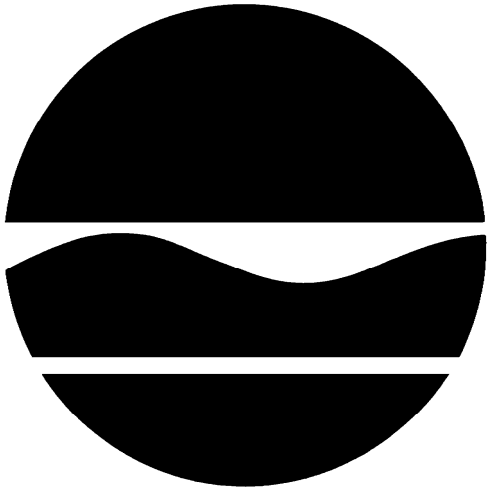
PROPOSED REMEDIAL ACTION PLAN
Target Rock Corp.
East Farmingdale, Suffolk County, New York
Site No. 152119

February 2011



Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

PROPOSED REMEDIAL ACTION PLAN

Target Rock Corp.

East Farmingdale, Suffolk County, **New York**
Site No. 152119
February 2011

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (Department or NYSDEC), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Target Rock Corp. site Remedial Program more fully described in Sections 3 and 5 of this document. Wastewater discharge from valve manufacturing for nuclear submarine power applications, and improper material storage resulted in the disposal of hazardous wastes, including chlorinated volatile organic compounds (CVOC).

The most recent findings of the investigation of this site, indicate that the site no longer poses a significant threat to human health or the environment; therefore No Further Action, with periodic monitoring of sub-slab vapor, soil vapor, indoor air and groundwater; continued monitoring and operation of the heating, ventilation and air conditioning (HVAC) system in the West building; maintenance of asphalt ground cover; and the placement of institutional and engineering controls (IC/EC), described in Section 6, is proposed as the remedy for this site.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy and discusses the reasons for this preference. The Department will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The Department has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the October 28, 2009 "Remedial Investigation Report", the July 16, 2010 "Groundwater Monitoring Event No. 1: June 2010" report, the September 8, 2010 "Groundwater Sampling Event: August 2010" report, the July 30, 2010 "Indoor Air Quality Assessment: June 2010" report, and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

Farmingdale Public Library
116 Merritts Rd.
Farmingdale, NY 11735
Phone: (516) 249-9090

NYSDEC - Region One Headquarters
50 Circle Road
Stony Brook, NY 11790-3409
Phone: (631) 444-0240
By appointment

NYSDEC Central Office
Attn: Mr. Robert Corcoran
Division of Environmental Remediation
NYS Dept. of Environmental Conservation
625 Broadway, 11th Floor
Albany, NY 12233-7015
Phone: (518) 402-9620

The Department seeks input from the community on all PRAPs. A public comment period has been set from February 13, 2011 through March 15, 2011 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for February 17, 2011 at the Village of Farmingdale Village Hall, Farmingdale NY beginning at 7:00pm, with an inclement weather make-up date of March 3, 2011 at 7:00pm.

At the meeting, the results of the remedial investigation will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. Robert Corcoran at the above address through March 15, 2011.

The Department may modify the proposed remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on this document.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

As shown in Figure 1, The Target Rock Corporation, a subsidiary of Curtiss-Wright Corporation, is a manufacturing facility located at 1966 East Broad Hollow Road (Route 110) in East Farmingdale, Suffolk County, New York. The approximately 11 acre site is located in the south-west corner of a commercial/industrial area off of Broad Hollow Road. The site is bounded to the north and east by large, widely-spaced commercial buildings and parking lots; to the south by a residential neighborhood, the closest street being Alexander Avenue; and to the west by an apartment building on Melville Road. Across Melville Road lies the SUNY Farmingdale campus.

The following State Superfund sites are located within 0.5 miles of this site:

a) Brandt-Airflex (Site No. 152183) – 0.5 miles south
b) Hazardous Waste Disposal (Site No. 152113) – 0.5 miles southeast
c) Circuitron Corp (Site No. 152182) – 0.5 miles northeast

Site elevation ranges from 73 feet to 67 feet above sea level. The site is relatively flat, gradually sloping downward to the east and southeast. Because the site is part of a former sand and gravel mine, a sharp rise in elevation, approximately 30 feet, occurs at the southern and western property boundaries. Bedrock is approximately 1200 feet below sea level. Soils around the site consist of minor amounts of fill, sand and gravel in the medium to fine range, getting finer with depth.

The groundwater table beneath the site historically varies from 10-15 feet below ground surface (bgs) and flows generally to the south south-east, consistent with regional flow (Figure 2). The average horizontal groundwater flow velocity is approximately 0.23 feet per day (ft/day).

There are two primary aquifers beneath the site: the upper glacial aquifer and the Magothy aquifer. The upper glacial aquifer is approximately 20 to 40 ft thick at the site and comprises Pleistocene outwash sands and gravels that tend to fine with depth. Generally, the upper 30 ft. of material is tan sand and gravel that grades into a laminated sand layer of variable thickness. The outwash sands and gravels are moderately to highly permeable, with an average horizontal hydraulic conductivity of 270 ft/day and vertical hydraulic conductivity of 27 ft/day.

The average horizontal hydraulic conductivity of the Magothy is 50 ft/day; the vertical hydraulic conductivity is about 0.5 ft/day. At the Target Rock Corp. site the Magothy and upper glacial aquifers are in direct contact. The much lower hydraulic conductivity of the Magothy tends to slow downward movement of a contaminant. The top of the Magothy was found at approximately 39 ft above sea level during the installation of monitoring well TRMW-1. Materials typical of the Magothy were not found during installation of the other monitoring wells, indicating its top surface drops off to the south.

The site contains two manufacturing buildings (East 350 ft. x 300 ft.; West 400 ft. x 250 ft.). The west building is used for manufacturing and contains office space; the east building is used for shipping and receiving, valve testing, and contains additional manufacturing and office space.

The site was originally used as a sand and gravel bank. In 1972 the east building was built; it housed a J.C. Penney warehouse until Target Rock Corp. moved into the building in 1981. The exact date of construction of the west building is unknown. It was leased as office space by Target Rock Corp. then purchased and expanded by 40,000 ft^2 in 1975.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

Target Rock Corp. manufactures valves for nuclear submarine power operations. Manufacturing includes machining and testing of the valves. Valve testing is conducted using a non-destructive technique which involves cleaning by flood-washing them with an aqueous solution of 5% 1,1,1 trichlorethane (1,1,1-TCA). Then a dye with a high-penetrant oil base is applied to reveal any cracks. Operations began in 1981 and continue to the present day.

1981-1983: process wastewater containing 1,1,1-TCA (5%) was discharged directly into a drywell behind the rear of the east building. Wastewater discharges were reportedly about 2,000 gal./month and lasted approximately 1.5 years. The concentration of a 5% solution is 50 million parts per billion or 50,000,000 ppb.

1982: an inspection by Suffolk County Department of Health Services (SCDHS) cited improperly stored and leaking drums, and the discharge of valve testing wastewater to a dry well without New York State Pollutant Discharge Elimination System (SPDES) Permit in violation of Article 12, Section 1205.

3.2: Remedial History

There has been substantial investigative and remedial work undertaken at the site over many years which has had a positive impact on soil and groundwater contamination. Figure 2 shows the locations of three areas of concern (AOC) identified at the Target Rock Corp. site and discussed in this section.

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for waste, soil, and sediment. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$).

A chronology of the site's remedial history is as follows:

1983-1984: The drum storage area was upgraded and drum storage practices were improved. An SCDHS approved, covered containment area was built and surrounded by chain-link fence.

July 1983: The dry well soil was sampled by SCDHS; 11 organic compounds were detected, including l,l,l-TCA – detected at 43 ppm, and tetrachloroethene (PCE) at 2.3 ppm.

September 1983: A temporary collection tank for wastewater was installed; drywell sediments were pumped out and the structure was excavated and removed.

1984: Contaminated soils surrounding the former drywell were excavated and removed and the area was backfilled with clean sand. Process wastewater was rerouted to a newly constructed, covered, concrete containment area housing two 2,000 gallon wastewater holding tanks. The tanks are emptied periodically by a licensed waste hauler.

1986: The Department first listed the site as a Class 2a site in the Registry of Inactive Hazardous Waste Disposal Sites in New York (the Registry). Class 2a was a temporary classification assigned to a site that had inadequate and/or insufficient data for inclusion in any of the other classifications.

1992-1994: A State-funded Phase 2 investigation was completed in 1992 with a report issued in 1993. During the Phase 2, four monitoring wells were installed and sampled. Soil and groundwater samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), metals, pesticides and polychlorinated biphenyls (PCBs). VOCs were the primary contaminants of concern (COC), particularly 1,1,1-TCA, which was detected at 66 ppb in well TRMW-4. The NYSDEC groundwater standard for 1,1,1-TCA is 5 ppb. Although groundwater contamination exceeding NYSDEC standards was documented, the site was delisted in 1994 (re-classed as Class D1) when the discharged wastewater (containing 5% - 1,1,1 TCA) was defined as a hazardous substance, rather than a hazardous waste, as outlined in the Environmental Conservation Law (ECL). The site was immediately included in the database of hazardous substance waste disposal sites which was developed by the Department pursuant to amendments to the ECL which was signed into law on March 14, 1994.

1996: Target Rock Corp. conducted a hydrogeologic investigation, to adequately characterize groundwater quality across the site; evaluate potential downgradient migration of contamination resulting from wastewater discharge; and identify potential downgradient receptors. A fifth monitoring well, TRMW-5 was installed to assess upgradient groundwater conditions .

2003-2004: Target Rock Corp. discovered and unilaterally removed a 550 gallon underground storage tank (UST), associated piping and surrounding contaminated soils located outside the NW corner of the West building. The leaking tank was confirmed to be a source of chlorinated volatile organic compounds (CVOC), particularly PCE. During the excavation, two nearby underground leaching structures were discovered. Sampling determined them to be heavily contaminated with CVOC and metals. The soil removal action was expanded to include the leaching structures, associated piping and surrounding contaminated soils. Soils were removed to about 12 ft bgs, until integrity of the building footings became a concern. Overall, approximately 275 tons (212 cubic yards) of contaminated soil was removed and disposed of at a hazardous waste landfill. The expanded excavation was conducted under the supervision of SCDHS. Documentation sampling indicated that some contaminated soil still remained: a high of 8.2 ppm PCE was detected in the excavation bottom, 12 feet below grade, in the area of the former leaching structures. The NYSDEC unrestricted soil cleanup objective (SCO) for PCE is 1.3 ppm.

2004: The site was re-listed on the Registry as a Class 2 site following the 2003 amendments to the ECL redefining hazardous waste to included hazardous substances. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required. The site was assigned to DEC attorneys to negotiate an Order on Consent.

2008-2009: Under an Order on Consent with the Department, Target Rock Corp. conducted a Remedial Investigation. The investigation included groundwater, soil, soil vapor, sub-slab vapor and indoor air sampling for VOC. The RI report was issued in October 2009. At the request of NYSDEC, Target Rock Corp. conducted additional air sampling of the West building in conjunction with an evaluation of the building's HVAC system, to determine its ability to maintain a positive pressure environment within the building. The HVAC, air quality and follow-up groundwater monitoring reports were issued in 2010.

2010: Based on the results of the 2009 RI, Target Rock Corp. installed two additional monitoring wells, TRMW-6 and TRMW-7 and resampled all seven wells to characterize current groundwater quality across the site. The results of the 2010 sampling are found on Figure 6.

SECTION 4: ENFORCEMENT STATUS

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

Target Rock Corp. signed a consent order with SCHDS in 1983. With county oversight, Target Rock Corp. upgraded the drum storage area, constructed a collection tank system for process wastewater, and conducted a dry well and soil removal action.

The Department and the Curtiss-Wright Flow Control Corporation entered into a Consent Order on July 31, 2008. The Order obligates the responsible parties to implement a full remedial program.

SECTION 5: SITE CONTAMINATION

A remedial investigation study (RI) has been conducted to evaluate the nature and extent of contamination and whether it poses a significant threat to human health or the environment.

5.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The RI was conducted between March 2009 and August 2010. The field activities and findings of the investigation are described in the RI report and subsequent supplemental reports.

The activities conducted during the RI included:

- Groundwater monitoring well installation
- Groundwater sampling and analysis
- Soil boring, soil sampling and analysis
- Soil Vapor Sampling and analysis
- Indoor Air and Sub-slab Vapor sampling and analysis
- HVAC System evaluation

5.1.1: Standards, Criteria, and Guidance (SCGs)

To determine whether the contaminants identified by the RI are present in the subsurface soil, groundwater and soil vapor at levels of concern, the data from the investigation were compared to the following SCGs:

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

- Soil SCGs are based on the Soil Cleanup Objectives (SCO) Tables found in 6 NYCRR Part 375-6.8.

- Concentrations of VOCs in air were evaluated using the air guidelines provided in the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006.

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require mitigation. These are summarized in Section 5.1.2. More complete information can be found in the RI report.

5.1.2: Nature and Extent of Contamination

Previous sample analysis determined that SVOC, metals, pesticides and PCBs are not contaminants of concern at the Target Rock Corp. site. Therefore, the 2009 remedial investigation focused specifically on VOC. Figure 3 shows the locations of all sampling locations during the 2009 RI.

Shown in Figures 4, 5 & 6 and summarized in Tables 1, 2 & 3, are the specific VOCs that exceed their SCGs. For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water, parts per million (ppm) for waste, soil, and sediment. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$).

Groundwater

Thirty-two groundwater samples were collected at sixteen locations and from various depths to determine the nature and extent of the groundwater contamination. Permanent groundwater monitoring wells and temporary groundwater probes were installed throughout the site to locate the groundwater contamination. A number of VOCs were detected in shallow groundwater above SCGs at two of the sixteen locations. Both locations, AGW-9 and AGW-11, were temporary probe locations. At all other locations, VOC detections were below SCGs or not detected above the laboratory reporting limit.

Table 1 summarizes the degree of VOC contamination found in groundwater samples collected during the 2009 RI and compares the data with the SCGs. Figure 4 shows the locations where groundwater contamination exceeded SCGs.

Table 1 - Groundwater Exceedences of SCG[a]
Sample Date: March 2009 RI

Detected Compounds (VOCs)	Concentration Range (ppb)[b]	SCG[a] (ppb)	No. of Samples Exceeding SCG
1,1,1-trichloroethane (1,1,1-TCA)	ND[c] – 18	5	1 of 32
1,1-dichloroethane (1,1-DCA)	ND – 6	5	1 of 32
Tetrachlorethene (PCE)	ND – 10	5	1 of 32
Toluene	ND – 9.9	5	1 of 32
Ethylbenzene	ND – 29	5	1 of 32
Total Xylenes	ND – 35	5	1 of 32
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	ND - 29J	5	1 of 32

a - SCG: standards, criteria, and guidance values; NYSDEC Division of Water Technical and Operational Guidance Series (1.1.1) "Ambient Water Quality Standards and Guidance Values"
b - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
c – ND: Compound was not detected above laboratory detection limits.
J – estimated value.

In 2010, Target Rock Corp. installed two more permanent monitoring wells in the locations where VOCs were detected above SCGs during the 2009 RI. The site now contains seven permanent on-

site groundwater monitoring wells which are available for periodic groundwater monitoring. The wells were sampled in 2010 to assess site-wide groundwater quality. Only one well had a VOC detection which was above the groundwater SCG: chloroform was detected at 7.9 ppb in well TRMW-2, marginally higher than its 7 ppb SCG. Figure 6 shows the well locations and the results of the 2010 monitoring well sampling event.

The groundwater data collected during and after the RI, in conjunction with previous investigation data and the RI soil data, indicate that there are no source strength groundwater impacts or "source areas" and suggests that there is no groundwater plume. Furthermore, the remediation of former soil impacts has had a beneficial effect on groundwater quality.

Due to the isolated and low level detections of VOC in the groundwater, no active remediation is required.

Subsurface Soil

Subsurface soil samples were collected to a depth of 15 feet below ground surface to determine the nature and extent of the subsurface soil contamination. Several soil samples were collected from the subsurface and screened with a field screening device known as a Photo-Ionization Detector to determine which samples to analyze at a laboratory. The 2009 RI focused on VOCs as the contaminants of concern.

Five samples were collected at three locations during the 2009 RI. The only detected VOC in soil were PCE and toluene. Both were detected at levels below their respective Part 375 Unrestricted Soil Cleanup Objective (SCO).

As discussed in the August 2004 Soil Remediation and Groundwater Testing Report, approximately 212 yd^3 of contaminated soil was removed from the former UST area. One of the twelve documentation samples exceeded SCGs for VOC. 8.2 ppm of PCE was documented in one soil sample in the excavation bottom, twelve feet below grade. The NYSDEC Part 375 Unrestricted SCO for PCE is 1.3 ppm. Table 2 summarizes the 2004 subsurface soil exceedence of SCGs.

Table 2 - Subsurface Soil Sample Results: Exceedence of SCG [b]
Sample Date June 2004

Detected Compounds (VOCs)	Concentration Range Detected (ppm)[a]	Protection of Groundwater (Part 375-6.8a) SCG[b] (ppm)	Residential (Part 375-6.8a) SCG[b] (ppm)	Commercial (Part 375-6.8a) SCG[b] (ppm)
Tetrachlorethene (PCE)	ND[c] – 8.2	1.3	5.5	150

a - ppm: parts per million, which is equivalent to milligrams per kilogram mg/kg, in soil
b – SCG: SCG: standards, criteria, and guidance values
c – ND: Compound was not detected above laboratory detection limits.

Due to the isolated and low level detections of VOC in the subsurface soil, no active remediation is required.

Surface Soils

Surface soils were not collected during the 2009 RI as the earlier investigations (See Remedial History section 3.2) did not indicate surface soil had been impacted by the on-site disposal of hazardous waste. Additionally, the majority of the surface area around the site is covered by either buildings or asphalt pavement and is not exposed to receptors.

Soil Vapor / Sub-slab Vapor / Indoor Air Quality

Soil Vapor Intrusion sampling was conducted to evaluate the potential for soil vapor intrusion into onsite structures and to determine if there was substantial soil vapor contamination from the disposal of hazardous wastes.

Table 3 summarizes the degree of contamination for the contaminants of concern (COC) in sub-slab soil vapor samples and compares the data with the SCGs. None of the listed COCs was detected in any indoor air samples, though laboratory detection limits were slightly elevated due to the presence of acetone in the indoor air samples. Figure 5 shows the locations where sub-slab soil vapor contamination exceeded SCGs.

Table 3 -Sub-Slab Soil Vapor Exceedences of SCGs [a]
Sample Date: March 2009

Detected Compounds (VOCs)	Concentration Range Detected ($\mu g/m^3$)[b]	SCG[a] ($\mu g/m^3$)	No. of Samples Exceeding SCG
1,1,1-trichloroethane (1,1,1-TCA)	4.1 – 50,000	100	5 of 8
Tetrachlorethene (PCE)	120 – 51,000	100	8 of 8
Trichloroethene (TCE)	ND[c] – 32,000	5	6 of 8

a - SCG: standards, criteria, and guidance values; No Further Action value from NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006.
b - $\mu g/m^3$: micrograms per cubic meter, in air.
c – ND: Compound was not detected above laboratory detection limits.

West Building:

PCE, 1,1,1-TCA, and trichloroethene (TCE) were detected in sub-slab soil vapor above SCGs beneath the west building. The highest concentration of each compound [PCE -51,000 $\mu g/m^3$; 1,1,1-TCA – 50,000 $\mu g/m^3$; and TCE- 32,000 $\mu g/m^3$] was found at vapor point SS-1, located under the NW corner of the west building, and nearest to the former UST remediation area. All of the six

sub-slab vapor samples in the west building [SS-1 through SS-6] exceeded SCGs for at least one of the aforementioned compounds.

Vapor concentrations decreased sharply in sample points toward the downgradient, southern end of the building.

The sub-slab vapor data suggest that there remains some residual VOC contamination in the soil near the former UST area and SS-1, consistent with documentation sampling from 2004 which confirms that 8.2 ppm of PCE was left behind after the extensive soil excavation.

Due to increased levels of acetone in the indoor air samples, laboratory detection limits were slightly elevated for all compounds. Indoor air sampling of the building documented no detections of the contaminants of concern at these higher detection limits.

Sub-slab vapor contamination present under the west building represents a significant threat to indoor air quality through the soil vapor intrusion pathway. Target Rock Corp. has evaluated the building's heating, ventilating and air conditioning (HVAC) system and submitted data documenting that the system is maintaining positive atmospheric pressure relative to the sub-slab. Operation of the HVAC system, in conjunction with the building's competent concrete floor slab mitigates the potential for indoor air to be contaminated from sub-slab soil vapor intrusion.

East Building:

PCE, 1,1,1-TCA, and TCE were detected in sub-slab soil vapor beneath the east building. PCE concentrations of 140 $\mu g/m^3$ and 150 $\mu g/m^3$ were detected in SS-7 and SS-8, respectively. 1,1,1-TCA wase detected in SS-7 at a concentration of 180 $\mu g/m^3$, and TCE was detected in SS-8 at a concentration of 5.5 $\mu g/m^3$.

Due to increased levels of acetone in the indoor air samples, laboratory detection limits were slightly elevated for all compounds. Indoor air sampling of the building documented no detections of the contaminants of concern at these higher detection limits.

Based on the sub-slab concentrations detected underneath the east building, the NYSDOH guidance recommends monitoring of the sub-slab soil vapor and indoor air to evaluate the potential for exposure in the east building.

Soil Vapor:

Soil vapor samples were collected from nine exterior locations around the Target Rock Corp. property. Numerous individual VOCs were detected in the soil vapor samples. An evaluation of the data identified PCE, 1,1,1-TCA, and 1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113) as the compounds detected with the greatest frequency and in the highest concentrations. As no SCGs for soil vapor currently exist, these three compounds were used to best approximate the overall distribution of VOCs in soil vapor. Figure 5 shows the locations where soil vapor sampling was conducted.

The analytical results indicate that PCE was detected in all nine soil vapor samples at concentrations ranging from 17 $\mu g/m^3$ to 590 $\mu g/m^3$. The highest PCE concentrations in soil vapor were detected at soil vapor points SV-5 and SV-6, which were located in the vicinity of the former UST area, and in SV-3, which was located along the eastern side of the west building.

1,1,1-TCA was detected in the majority of soil vapor samples at concentrations ranging from 2.8 $\mu g/m^3$ to 260 $\mu g/m^3$. The highest 1,1,1-TCA concentrations in soil vapor were detected at soil vapor points SV-1 and SV-7, which were located in the vicinity of the former dry well area.

Freon 113 was detected in six of nine soil vapor samples at concentrations ranging from 11 $\mu g/m^3$ to 310 $\mu g/m^3$. The highest concentration of Freon 113 was detected at soil vapor point SV-9, which was located adjacent to groundwater sample point AGW-11, where Freon 113 was detected in a groundwater sample above its respective SCG.

The East and West buildings were constructed on a former sand quarry which is at a lower elevation than the surrounding area. The closest off-site residence is located approximately 100 feet from the site boundary, and approximately 30 feet higher in elevation. These physical factors (i.e. change in elevation and distance of the site relative to the adjacent properties) indicate that the potential for off-site soil vapors to impact indoor air quality is unlikely. However, due to the concentration of VOCs found in soil vapor along the western and southern site boundary, on-site soil vapor points will be monitored to evaluate the potential for off-site migration of soil vapor, and whether further action is necessary, as part of the site remedy.

5.2: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 5.5 of the RI report.

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

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

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

People are not drinking the contaminated groundwater because the area is served by a public water supply.

The site is covered with pavement and buildings, so people are not coming into contact with residual soil contamination, which is found at depth.

Volatile organic compounds in the groundwater and soil may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Sampling indicated that the potential for sub-slab soil vapor to impact indoor air quality exists in the West building. Inhalation of site contaminants via soil vapor intrusion in the West building is mitigated by the operation of the heating, ventilation and air conditioning (HVAC) system, which creates a positive pressure inside of the building. Sampling of the East building showed that there may be potential impacts to indoor air quality via soil vapor intrusion and actions will be taken to monitor the indoor air quality.

5.3: Summary of Environmental Assessment

The results of the RI indicate that there are no current or potential future environmental exposure pathways that require active remediation. There remains some residual contamination in the deeper soil in the former UST removal area where one documentation sample out of twelve slightly exceeded residential SCG. The residual soil contamination, which lies twelve feet below grade and is covered by asphalt, is not an environmental concern.

There is isolated and low-level groundwater contamination from VOCs which slightly exceeds NYSDEC groundwater standards. Site contamination has impacted the groundwater resource in the upper glacial aquifer. While the upper glacial aquifer is not typically used for potable water, the Long Island aquifer system is designated a sole source aquifer by the USEPA. A site-wide groundwater use restriction is necessary to prevent future exposures to contamination via contact with the groundwater, until such time as all contaminant levels fall below SCG.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS AND PROPOSED REMEDY

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

The remediation goals for this site were to eliminate or reduce to the extent practicable:

PUBLIC HEALTH PROTECTION

Groundwater

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards;

- Prevent inhalation of or exposure to contaminants volatilizing from contaminants in groundwater;

Soil
- Prevent ingestion of or direct contact with contaminated soil;

- Prevent inhalation of or exposure to contaminants volatilizing from contaminants in soil;

Soil Vapor
- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at the site;

ENVIRONMENTAL PROTECTION

Groundwater
- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable;

- Remove the source of ground water contamination and

Soil
- Prevent migration of contaminants that would result in groundwater water contamination

The main SCGs applicable to this project are as follows:

Soil vapor intrusion guidelines as described in the NYSDOH Guidance for Evaluating Soil Vapor Intrusion in the State of New York;

Ambient groundwater quality standards as described in 6 NYCRR Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations;

Based on the results of the investigations at the site, extensive remedial work done in the past and the evaluation presented here, the Department is proposing No Further Action: with continued operation of the HVAC system in the West building, sub-slab vapor and indoor air monitoring in both onsite buildings, periodic groundwater and soil vapor monitoring, maintenance of asphalt cover, and the IC/ECs, as the preferred alternative for the site. The Department believes that this alternative would be protective of human health and the environment and would satisfy all SCGs as described above. Overall protectiveness is achieved through meeting the remediation goals listed above.

Therefore, the Department concludes that No Further Action is needed other than operation, maintenance, monitoring, and institutional and engineering controls. The institutional and engineering controls are listed below:

1. Imposition of an institutional control in the form of an environmental easement that would require (a) limiting the use and development of the property to restricted residential use, which would also permit commercial or industrial uses; (b) compliance with the approved site management plan; (c) restricting the use of groundwater as a source of potable or process

water, without necessary water quality treatment as determined by the Department, NYSDOH or county DOH; and (d) the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

2. Development of a site management plan which would include the following institutional and engineering controls: (a) continued evaluation of the potential for vapor intrusion for any buildings developed on the site, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion; (b) monitoring of groundwater, soil vapor, sub-slab vapor and indoor air; (c) identification of any use restrictions on the site; and (d) provisions for the continued proper operation and maintenance of the components of the remedy.

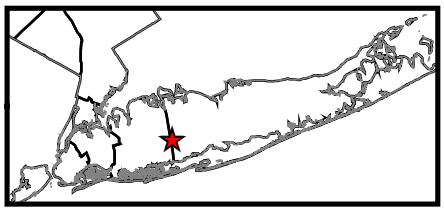
3. The property owner would provide a periodic certification of institutional and engineering controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department, until the Department notifies the property owner in writing that this certification is no longer needed. This submittal would: (a) contain certification that the institutional controls and engineering controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site; and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

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

Legend

Target Rock Corp. Site

0 500 1,000 2,000 Feet

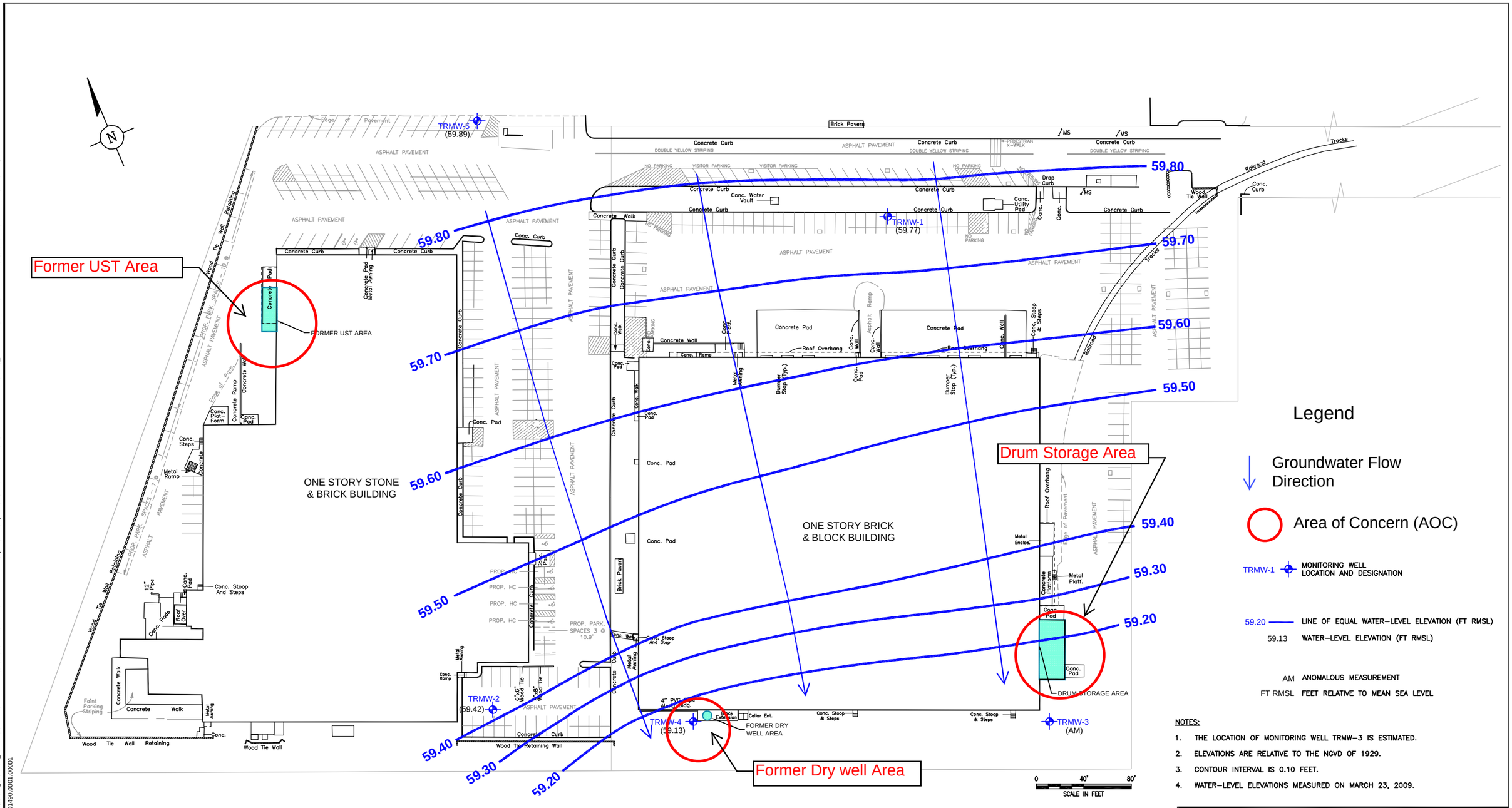


N

New York State Department of Environmental Conservation
Target Rock Corp. Site (class 2) Site No.152119
1966 Broadhollow Road, E. Farmingdale, 11735
Town of Babylon, Suffolk County, New York

Figure 1- Site Location Map

Created by: RKC
Date:1/5/11



NOTES:

1. THE LOCATION OF MONITORING WELL TRMW-3 IS ESTIMATED.
2. ELEVATIONS ARE RELATIVE TO THE NGVD OF 1929.
3. CONTOUR INTERVAL IS 0.10 FEET.
4. WATER-LEVEL ELEVATIONS MEASURED ON MARCH 23, 2009.

Figure 2 - Groundwater Flow Direction and Areas of Concern (AOC) Map

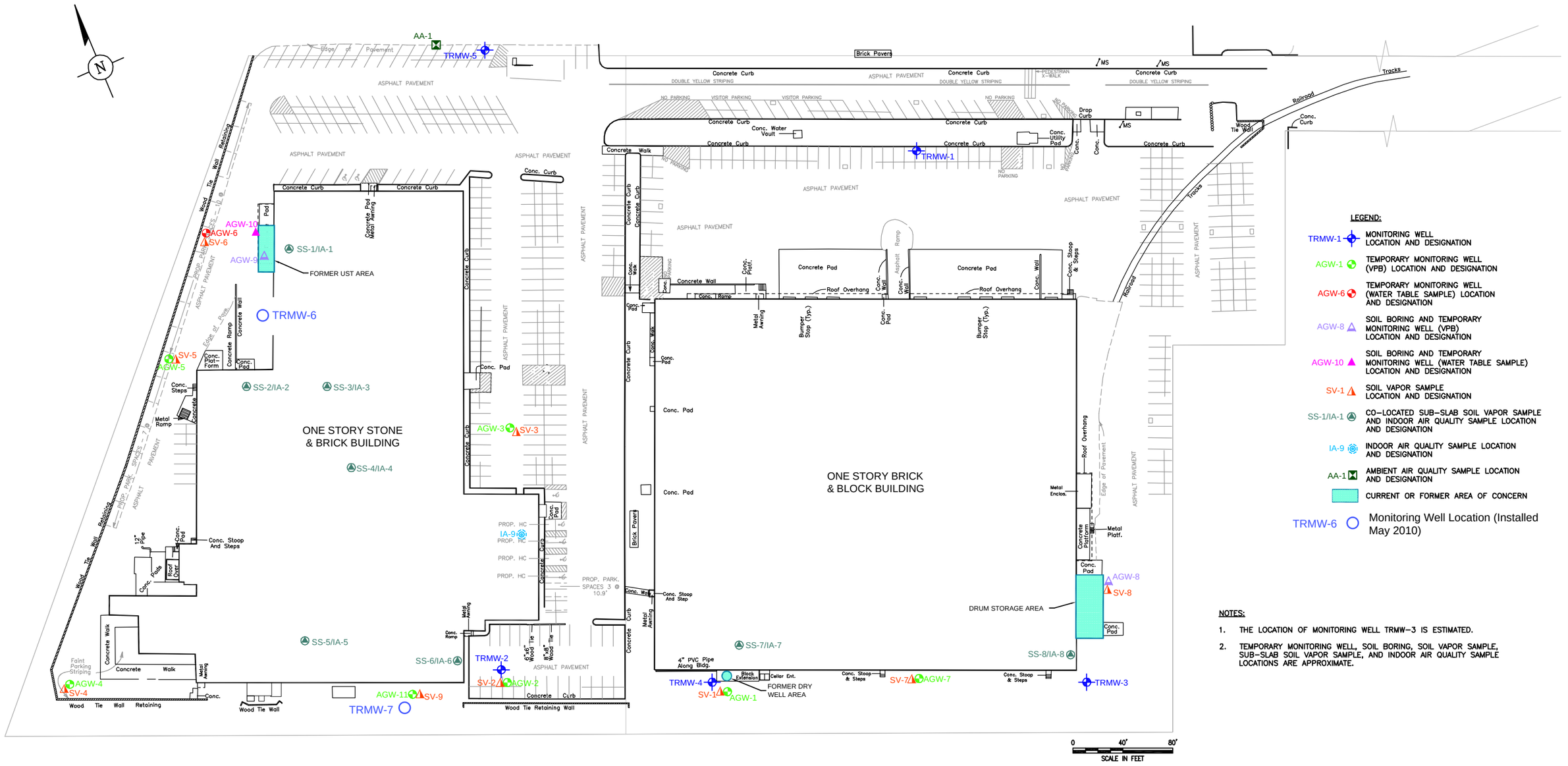
Target Rock Corp. Site, Site No. 152119

TARGET ROCK SITE
EAST FARMINGDALE, NEW YORK

CONFIGURATION OF THE WATER TABLE AND GROUNDWATER FLOW DIRECTION MARCH 2009

ARCADIS

CITY:MELVILLE DIV/GROUP:ENV DB:ALS LD: PIC: PM:MW TM:CK LYR:ON=*;OFF=*REF*
G:\ENVCAD\Melville-NY\NY001490\0001100\05\RI Report\Figure 3.dwg LAYOUT: 4 SAVED: 10/20/2009 11:46 AM ACADVER: 17.1S (LMS TECH) PAGESETUP: ----PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 10/28/2009 2:46 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: NY001490.0001.00001
Basemap GWC 2009-03.jpg



LEGEND:

- TRMW-1 — MONITORING WELL LOCATION AND DESIGNATION
- AGW-1 — TEMPORARY MONITORING WELL (VPB) LOCATION AND DESIGNATION
- AGW-6 — TEMPORARY MONITORING WELL (WATER TABLE SAMPLE) LOCATION AND DESIGNATION
- AGW-8 — SOIL BORING AND TEMPORARY MONITORING WELL (VPB) LOCATION AND DESIGNATION
- AGW-10 — SOIL BORING AND TEMPORARY MONITORING WELL (WATER TABLE SAMPLE) LOCATION AND DESIGNATION
- SV-1 — SOIL VAPOR SAMPLE LOCATION AND DESIGNATION
- SS-1/IA-1 — CO-LOCATED SUB-SLAB SOIL VAPOR SAMPLE AND INDOOR AIR QUALITY SAMPLE LOCATION AND DESIGNATION
- IA-9 — INDOOR AIR QUALITY SAMPLE LOCATION AND DESIGNATION
- AA-1 — AMBIENT AIR QUALITY SAMPLE LOCATION AND DESIGNATION
- CURRENT OR FORMER AREA OF CONCERN
- TRMW-6 — Monitoring Well Location (Installed May 2010)

NOTES:

1. THE LOCATION OF MONITORING WELL TRMW-3 IS ESTIMATED.
2. TEMPORARY MONITORING WELL, SOIL BORING, SOIL VAPOR SAMPLE, SUB-SLAB SOIL VAPOR SAMPLE, AND INDOOR AIR QUALITY SAMPLE LOCATIONS ARE APPROXIMATE.

Figure 3 - 2009 Remedial Investigation Sample Locations

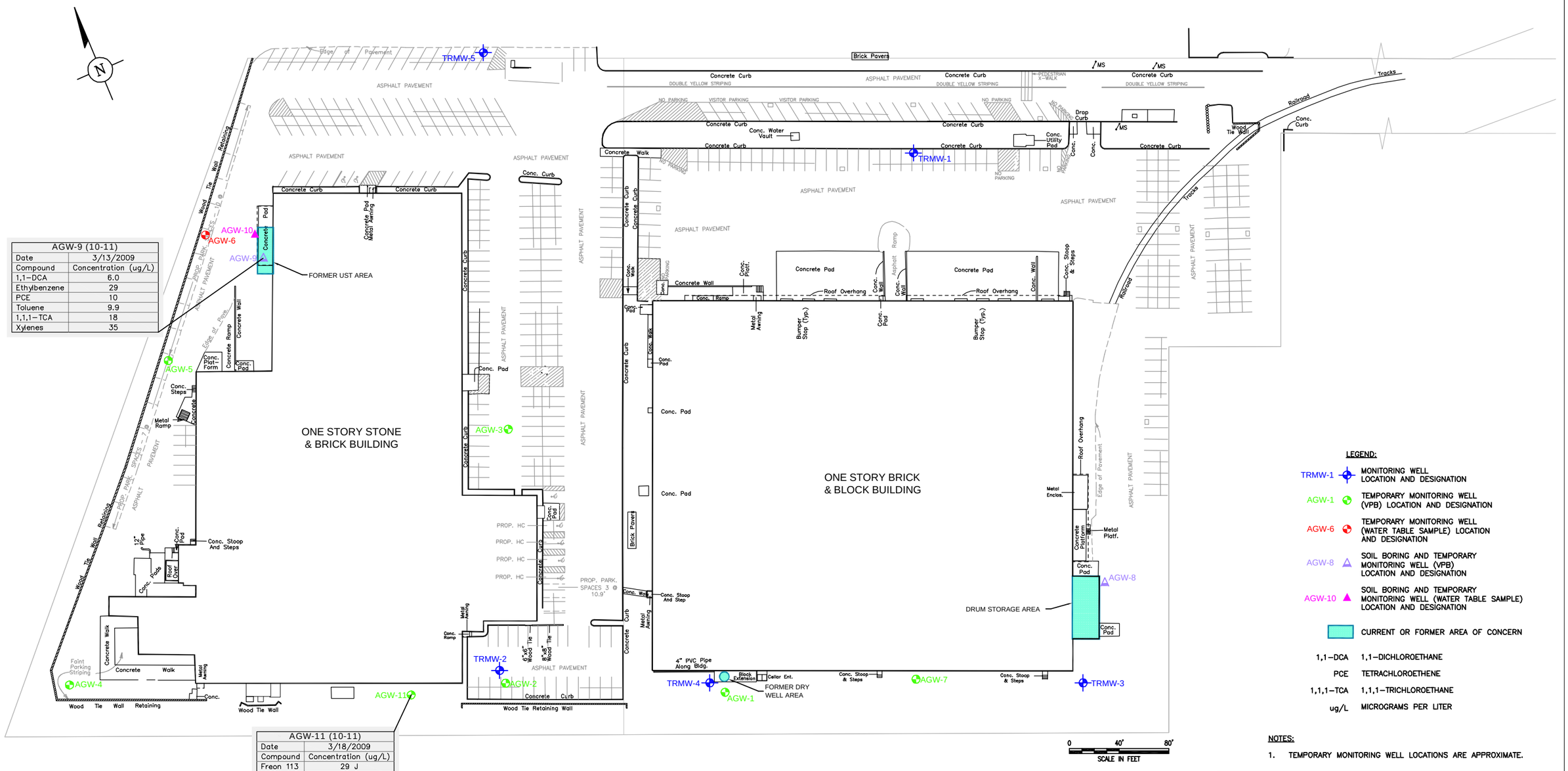
Target Rock Corp. Site, Site No. 152119

TARGET ROCK SITE
EAST FARMINGDALE, NEW YORK

REMEDIAL INVESTIGATION SAMPLE LOCATIONS

ARCADIS

CITY:MELVILLE DIV/GROUP:ENV DB:ALS LD: PIC: PM:MW TM:CK LYR:ON=*;OFF=*REF*
G:\ENVCAD\Melville-NY\NY001490\0001\00005\RI Report\Figure 2.dwg LAYOUT: 4 SAVED: 10/20/2009 2:06 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: ---PLOTSTYLETABLE: ARCADIS_MELVILLE.CTB PLOTTED: 10/28/2009 2:46 PM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: NY001490.0001.00001
Basemap



AGW-9 (10-11)	
Date	3/13/2009
Compound	Concentration (ug/L)
1,1-DCA	6.0
Ethylbenzene	29
PCE	10
Toluene	9.9
1,1,1-TCA	18
Xylenes	35

AGW-11 (10-11)	
Date	3/18/2009
Compound	Concentration (ug/L)
Freon 113	29 J

LEGEND:

- TRMW-1 — MONITORING WELL LOCATION AND DESIGNATION
- AGW-1 — TEMPORARY MONITORING WELL (VPB) LOCATION AND DESIGNATION
- AGW-6 — TEMPORARY MONITORING WELL (WATER TABLE SAMPLE) LOCATION AND DESIGNATION
- AGW-8 — SOIL BORING AND TEMPORARY MONITORING WELL (VPB) LOCATION AND DESIGNATION
- AGW-10 — SOIL BORING AND TEMPORARY MONITORING WELL (WATER TABLE SAMPLE) LOCATION AND DESIGNATION
- CURRENT OR FORMER AREA OF CONCERN
- 1,1-DCA — 1,1-DICHLOROETHANE
- PCE — TETRACHLOROETHENE
- 1,1,1-TCA — 1,1,1-TRICHLOROETHANE
- ug/L — MICROGRAMS PER LITER

NOTES:

1. TEMPORARY MONITORING WELL LOCATIONS ARE APPROXIMATE.

Figure 4 - 2009 Groundwater VOC Exceedences of SCG

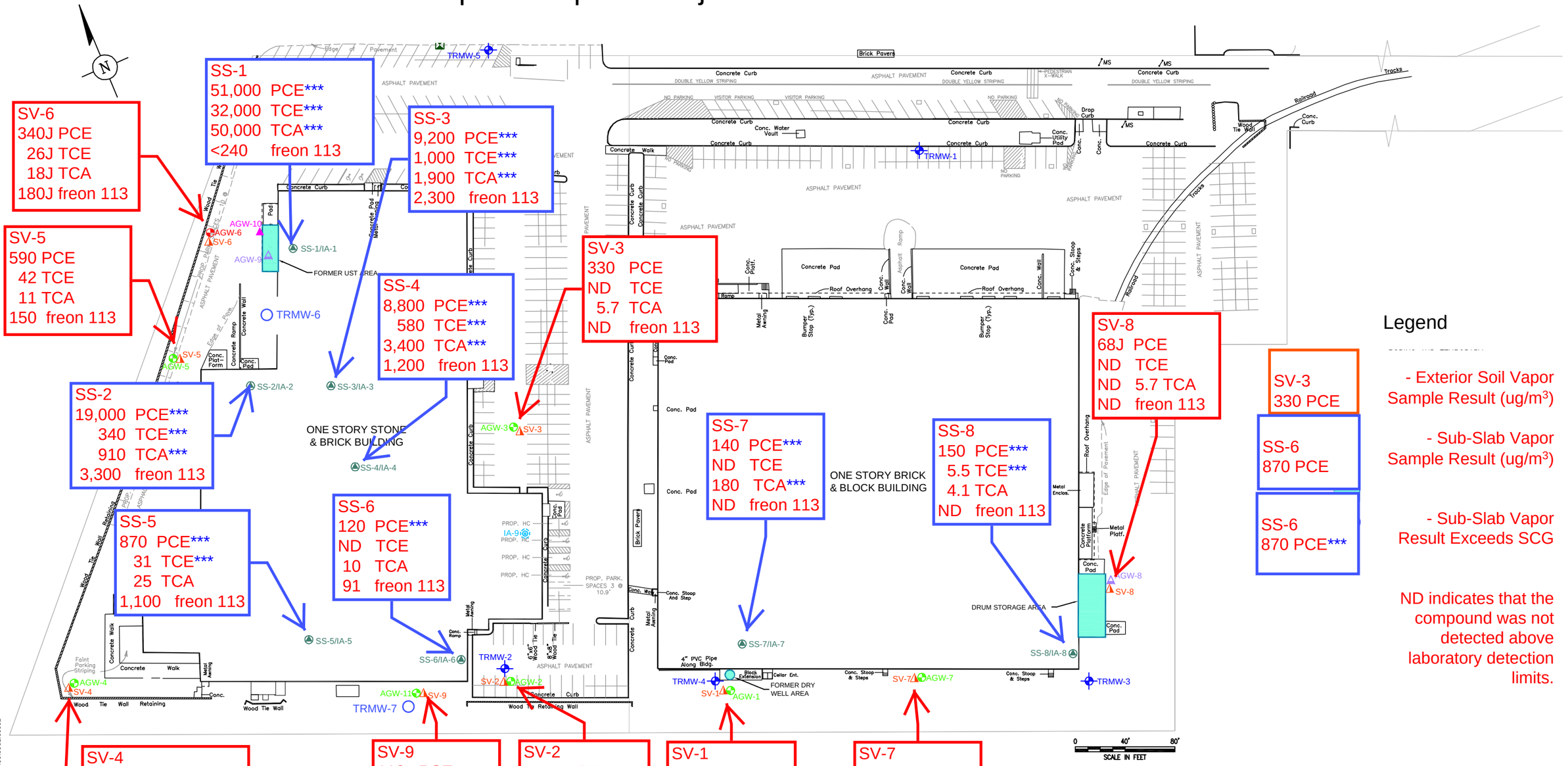
Target Rock Corp. Site, Site No. 152119

TARGET ROCK SITE
EAST FARMINGDALE, NEW YORK

VOLATILE ORGANIC COMPOUNDS IN SHALLOW GROUNDWATER EXCEEDING SCGs

ARCADIS

Figure 5 - March 2009 Sub-slab Vapor and Exterior Soil Vapor Samples - Major Detections of Contaminants



Legend

- Exterior Soil Vapor Sample Result (ug/m^3)
- Sub-Slab Vapor Sample Result (ug/m^3)
- Sub-Slab Vapor Result Exceeds SCG

ND indicates that the compound was not detected above laboratory detection limits.

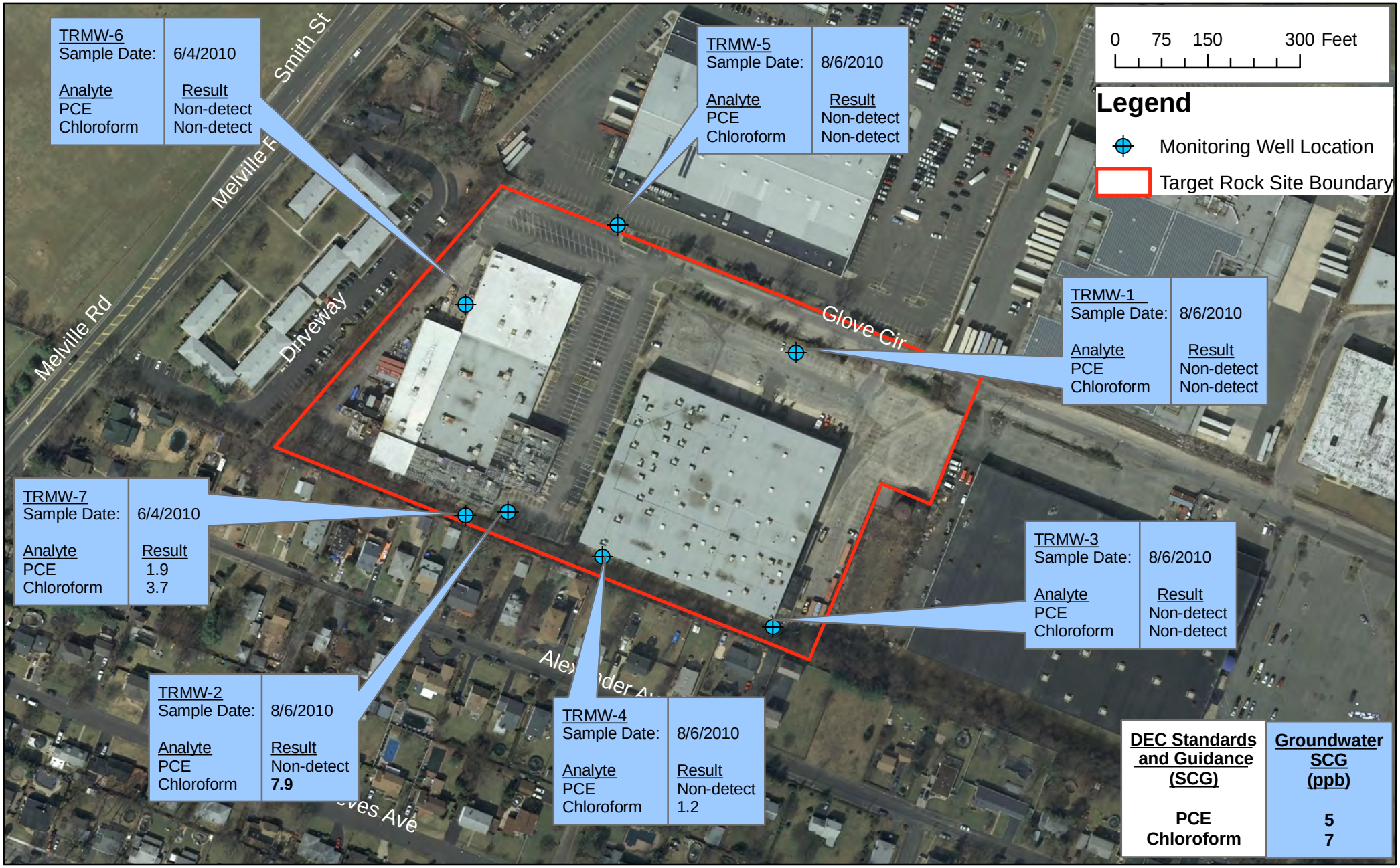
Note 1: *** indicates that the contaminant concentration has exceeded Standards, Criteria and Guidance (SCG) values for Sub-Slab Vapor.

Note 2: No vapor guidance value (SCG) currently exists for Freon 113.

TARGET ROCK SITE
EAST FARMINGDALE, NEW YORK

Figure 5

ARCADIS



N

New York State Department of Environmental Conservation
Target Rock Site (class 2) Site No.152119
1966 Broadhollow Road, E. Farmingdale, 11735
Town of Babylon, Suffolk County, New York

Figure 6 - VOC Detections in Groundwater Monitoring Wells - 2010

(sample results reported as parts per billion - ppb)

Created by: RKC
Date:11/17/10