REMEDIAL ACTION WORK PLAN

for the

QUANTA RESOURCES SITE
2802-2810 Lodi Street
City of Syracuse, Onondaga County, New York
Index No. D7-00001-07-07
DEC Site No. 7-34-013

Prepared for:

QUANTA RESOURCES / SYRACUSE PRP GROUP

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1.0 INTRODUCTION

This Work Plan presents the design of the remedial program at the former Quanta Resources site (Site), located at 2802-2810 Lodi Street in Syracuse, Onondaga County, New York. The remedial program was selected after completing a *Remedial Investigation*[1] in 2009 and a *Feasibility Study*[2] in 2010. The New York State Department of Environmental Conservation (DEC) issued a Record of Decision (ROD) outlining the approved remedial program in March 2011. The cleanup is being performed by the Quanta Resources/Syracuse PRP Group under the terms of a Consent Order with the DEC.

The remediation project includes the following main elements:

- ***Removal of Underground Steel Tank:*** Empty, excavate and remove an approximately 12,000-gallon underground oil/water separator tank.

- ***Soil Excavation and Disposal:*** Excavate subsurface soils impacted with free-phase oil at a depth of 2.5 to 12 feet.

- ***Capping of Surface Soils with a Clean Soil Layer:*** Remove the top 1 foot of surface soil from all area of the western parcel *outside* the free-phase oil impact area being excavated. Place the soil in the free-phase oil impacted soil excavation area and replace with a clean 1-foot soil cap. The soil cap will also extend across the entire area of final excavation for free-phase oil impacted soil.

- ***Vacuum Enhanced Manual Oil Recovery from the Groundwater:*** Install a vacuum system on eight recovery wells (four new, four existing) and manually bail oil for an estimated period of 3 to 7 years.

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[1] *Remedial Investigation Report*, prepared by Plumley Engineering, P.C., dated August 2009, revised December 2009 and approved by the DEC by letter dated December 29, 2009.

[2] *Feasibility Study Report*, prepared by Plumley Engineering, P.C., dated March 2010 and approved by the DEC by letter dated March 9, 2010.

- ***Environmental Easement:*** Implement easements to include prohibitions on groundwater use, restrictions of use to industrial purposes and implementation of the Site Management Plan.

- ***Site Management Plan***: Develop a Site Management Plan to govern future site reuse, inspection and repair of the soil cap, and soil vapor evaluation prior to construction of a site building intended for human occupation. This Plan will also include an annual effectiveness review of the implemented light non-aqueous phase liquid (LNAPL) recovery operations and a Monitoring Plan.

1.1 Organization

This Remedial Action Work Plan has been prepared in accordance with Section 5.3 of the DEC DER-10 – Technical Guidance for Site Investigation and Remediation, dated May 2010 and includes the following elements:

- ***Section 2:*** Detailed descriptions of the remedial measures, including Technical Specifications (bound separately), as needed for a contractor to excavate and dispose of soil in the areas targeted for removal, site restoration and construction of the oil recovery facilities.

- ***Section 3:*** Temporary construction facilities including security fencing, decontamination facilities and water handling procedures required to implement the remedial action. Also included is a list of applicable soil cleanup guidelines relating to the remediation, directives for inspection and Professional Engineer certification.

- ***Section 4:*** Descriptions of soil and sediment erosion control, stormwater management and monitoring, and dust and organic vapor monitoring procedures to be implemented during remedial activities.

- ***Section 5:*** Descriptions of the Health and Safety Plan (HASP) and Community Air Monitoring Program (CAMP) to be implemented during the remedial activities.

- ***Section 6:*** Outline of the soil confirmation sampling program to be implemented by the Engineer during the cleanup.

- ***Section 7:*** Description of the surface restoration plan.

- ***Section 8:*** The schedule for the project.

- ***Section 9:*** Outline of the institutional and engineering controls to be implemented following the remedial excavation.

- ***Section 10:*** Description of the contents of the Final Engineering Report that will be provided following completion of the remedial excavation work.

1.2 Site Description

The Site (identified as the “west lot” on the drawings), located at 2802-2810 Lodi Street in the City of Syracuse, Onondaga County, New York, is on the DEC Inactive Hazardous Waste Site list as Site No. 7-34-013. The 0.75-acre Site is a former waste oil recycling facility, located in a mixed commercial and industrial area. The Site is owned by Quanta Resources, Inc.

The Site is currently a vacant lot surrounded by a chain link fence. The Site is in an urban area, with current and historic commercial and industrial land use in the Site vicinity . The property is zoned Industrial District Class A. Raynor’s Auto Body Shop lot borders the Site to the north. Further to the north in the same block is Raynor’s Auto Used Car Sales lot and garage that was a former gasoline station (former Tassone’s CITGO). Immediately east of the Site is an abandoned railroad spur on a parcel owned by Raynor and a vacant, triangular lot (“east lot”) that is also owned by Quanta Resources. To the northeast is a vacant lot that was a former candle manufacturing facility (Mack-Miller Candle). An abandoned former gasoline station and auto repair shop (Victory Auto) is located east of the Site across Wolf Street. Vacant land that is part of the New York State Department of Transportation (DOT) right-of-way for Interstate Route 81 is south and west of the Site, across Lodi Street and Oswego Boulevard.

The Site is relatively flat, with a slight slope from east to west. Further to the southwest, across Oswego Boulevard, the land slopes steeply down to Interstate Route 81.

The Site and vicinity are served by public utilities, including City of Syracuse water and sewer and National Grid natural gas and electric. There are no live sewer or water services to the site. No public/private drinking water supply wells are known to exist within at least ½ mile of the Site.

Refer to *Figure 1 – Site Location Map* and *Figure 2 – Existing Site Conditions Plan* for additional information.

1.3 Site History

Sanborn Insurance Maps show that in 1892 and 1911, the Site was occupied by a single dwelling and outbuilding, and the Oswego Canal ran along the west side of the Site where Oswego Boulevard is currently located. The canal was closed in the early 1900's, after the Barge Canal was completed in 1915, and filled sometime thereafter. The 1950 and later maps show the Seitz Lubricating Oil facilities, including the aboveground tanks known to be in place while the facility was operating as Quanta Resources. The tanks and structures appear unchanged from 1950 to 1990 on the maps.

Oil-processing was conducted onsite from the 1920's until 1981. Production of lubricating oils ceased in the mid-1960's, although waste oils continued to be processed for use as heating oil. All facility operations ceased in 1981. Refer to *Figure 3 – Former Facilities Plan* for the former facility layout.

In May 1990, the United States Environmental Protection Agency (EPA) Region II Removal Action Branch began an emergency removal action at the Site. The removal action, which involved testing and removing stored wastes, aboveground tanks, sumps and drums, was performed in two phases. Phase I of the removal action involved inventorying and sampling of all drums and containers of unknown waste material at the Site. The contents of the storage containers were determined to include waste oils, oil/water mixtures, caustics and acids.

Phase II of the removal action provided for removal and disposal of hazardous materials stored in drums, sumps and tanks; dismantling, decontamination and removal of tanks and buildings; removal and disposal of asbestos insulation found at the Site; and disposal of affected soils. Fifty-two aboveground storage tanks (ASTs) and one UST were emptied and removed or disabled. Three USTs (Tanks 57, 58 and 59) were left onsite. The wastes were separated into twenty-three different waste streams and disposed of by various hazardous waste disposal firms.

In 1999, Earth Tech, Inc. removed three 20,000-gallon USTs (Tanks 57, 58 and 59). The liquid content and sludge from the three USTs, containing petroleum and solvents, were removed and disposed of. Soil surrounding Tanks 58 and 59 was removed and confirmation soil samples collected from this excavation.

1.4 Remedial Investigation Summary

The Remedial Investigation (RI) was performed in 2008 and 2009, including excavation of shallow test trenches and test pits, performing a shallow well boring program and a deep well drilling program, and collecting surface and subsurface soil samples. Groundwater sampling and analysis and free product thickness monitoring in groundwater wells where oil was present was performed to assess the groundwater conditions. Refer to *Figure 4 – Current and Historical Investigation Locations* and the RI Report for details of the investigation and findings. A brief summary of the findings is as follows:

1.4.1 Soils

The Site stratigraphy consists of a surficial layer of non-native fill materials consisting of sand and gravel with bricks, concrete chunks, glass and wood debris. This unit is typically 3 to 4 feet thick. Underlying the fill unit is a dense gray-green silt unit that is widely perforated by plant roots. This gray-green silt unit varies in thickness from 0 to

11 feet. The underlying bedrock is Vernon shale, which varies in color from green to gray to red. Drilling logs for the Site wells show the top surface of the Vernon shale is heavily weathered, indicating the rock is fragmented. Note that weathered Vernon shale was exposed at 2 to 3 feet below grade in the north end of test trench TT-3. Refer to *Figures 5* and *5A – Cross Sections* for additional information.

The RI identified an area where free-phase oil is present in the soil. Within this area, the surficial fill unit, and in some locations the underlying silt unit, has free-phase oil in the soils. In general, the fill unit is 2 to 4 feet thick on the eastern side of the impacted zone, but the fill reaches up to 11 feet on the western side. The approximate areal extent of oil-impacted soils is shown on *Figure 6 – Soil Data Summary*.

The northwestern portion of the Site that lies outside the free-phase oil affected soils contains stained soils, generally within 2 to 5 feet of the ground surface. These soils contain a few constituents at concentrations that exceed the DEC Soil Cleanup Objective (SCO)[3] thresholds, but not by large margins.

Of the eighteen soil samples analyzed for polychlorinated biphenyls (PCBs) at the site, fourteen had PCB concentrations of less than 1 part per million (ppm). The highest PCB concentration in any soil samples was 7 ppm.

Refer to *Appendix A – Test Trench and Test Pit Logs* and *Appendix B – Monitoring Well Installation and Soil Boring Logs* for additional information.

1.4.2 Groundwater

Groundwater is impacted with LNAPL, which is present in MW-1S, MW-2, MW-7 and MW-10. The LNAPL contains PCBs in concentrations of 66 ppm in MW-1S and 173 ppm in MW-2. In July 2009, the liquid surface in wells with LNAPL was between 31 and 34 feet below the ground surface.

[3]DEC Final Commissioner Policy, *CP-51 / Soil Cleanup Guidance*, issued October 21, 2010.

Dissolved impacts to groundwater onsite are most pronounced in MW-10 on the west side of the Site, with a total VOC content of less than 500 micrograms per liter (µg/L). This well subsequently developed an LNAPL layer. Well MW-1D is impacted by a single constituent, 2-butanone, at 7,800 µg/L.

Groundwater at the Site and surrounding wells is 22 to 34 feet below ground surface (bgs), which places the groundwater table below the bedrock surface in all wells.

Refer to *Figure 7 – Groundwater Data* for additional information.

2.0 REMEDIAL ACTIONS AND TECHNOLOGIES

The remedial actions at the site include the removal a ±12,000-gallon tank believed to be an oil/water separator, excavation and disposal of subsurface soils impacted with free-phase oil at anticipated depths of 2.5 to 12 feet, capping of the Site with a clean soil layer and vacuum enhanced manual oil recovery from the groundwater. Each of these is described further below.

2.1 Tank Removal

The tank has dimensions of 10 feet in diameter by 20.5 feet in length (12,000-gallon capacity) and appears to be full of liquid. The tank has three 2-inch diameter ports and one 18-inch diameter man-way. The tank appears to contain mostly water, with a thin oil film floating on the surface. Photoionization detection (PID) meter readings above the man-way opening and the north and midpoint 2-inch diameter ports were in the range of 30 to 80 ppm. The tank's southern port contained a floating oil layer approximately 1 foot thick in a drop tube, with a distinctly higher PID meter reading (1,400 ppm) than the other access points to this tank. The tank may contain sludge. A sample of the water in the tank was analyzed for PCBs and found to contain a total PCB concentration of 0.049 ppm.

The contractor will be required to do the following work to remove the tank:

- Obtain a permit from the City of Syracuse Codes Enforcement Office. Note that to obtain a permit, the contractor must have a Mechanical Contractor license from the City.

- Uncover and open the tank top.

- Collect samples of the tank contents from two compartments for disposal characterization.

- Submit documentation demonstrating the receiving facility(s) has approved the waste for acceptance and copy of any permits required to the Engineer.

- Upon approval of the Engineer, empty the tank.

- Disconnect piping, if any, excavate and remove the tank

- Clean the tank interior and exterior suitable for metal recycling.

- Dispose of the tank.

Refer to the Technical Specifications *Section 13100 – Tank Removal and Disposal* for additional information and requirements.

The tank is located within the planned remedial excavation, so the planned soil confirmation samples (Section 6) will serve as the confirmation samples for the tank area.

2.2 Remedial Excavation

It is anticipated the remedial excavation will encompass the area of oil-impacted soils at this site identified in the RI and shown on Figure 6. A 10-foot average excavation depth over the oil-impacted area equates to 5,800 cubic yards (11,000 tons) of affected soil. This average depth of excavation represents the estimated volume. Field inspection by the Engineer and prior sampling results will be used to determine the actual excavation depths and will be directed in the field by the Engineer. The lateral extent of the excavation may be restricted by subsurface utilities and highway boundaries. Clean fill will be placed and compacted into the excavation after completing the removal of impacted soil to the extent practical.

Field sampling conducted to date indicates impacted soil is non-hazardous but may contain low levels of PCBs. Non-hazardous soils excavated from the Site will be taken to the Seneca Meadows landfill in Seneca Falls, New York for disposal. Seneca Meadows classifies soils with less than 24 ppm of PCBs as cover material and has a lower disposal rate. Soils with 25 to 49 ppm PCBs is classified by Seneca Meadows as waste and have a higher tipping fee. Soils greater than 50 ppm are classified by the DEC as hazardous waste. If such soils are encountered, though not expected, they would be transported to the Waste Management, Inc. Model City facility in Youngstown, New York.

A pre-excavation soil profiling program is to be completed by the contractor prior to excavating any soil from the site. This program will consist of soil borings and composite sampling at ten locations in the grid pattern shown on *Figure 8 – Sampling Grid for Landfill Profiling*. The results of this sampling will be used to verify all soil can be profiled as cover material. If results are mixed, the data will be evaluated and submitted to the landfill to confirm the profiling determination. Seneca Meadows has informally agreed to accept each grid result and handle soil from each grid differently, if necessary.

The area to be excavated includes a portion of the strip of property east of the Site that is owned by Fred Raynor, the adjacent auto dealership property owner. We have obtained permission from Mr. Raynor to complete this work on this property. Quanta Resources, Inc., the Site owner, also owns the east lot. Access to both the Site and the east lot has been obtained from Quanta Resources, Inc. for this project. The east lot will be used for clean equipment and material staging, and temporary truck routing. No stockpiling of impacted soil nor other activities that could transfer contaminants to the east lot or Raynor parcel are planned.

The contractor will be required to do the following work for the remedial excavation:

- Obtain ten representative subsurface soil samples in the grid pattern shown on Figure 8 and have them analyzed for both Seneca Meadows and Model City disposal parameters. The Engineer will oversee the sampling.

- Submit appropriate applications to landfill(s) and obtain approvals.

- Clear and grub the site, chipping all vegetative material and stockpiling it onsite in order to utilize it as mulch in the final restoration.

- Implement the soil and erosion control measures specified in the Technical Specifications and Contract Drawings (*Sheet 3 - Erosion, Sediment and Stormwater Control Plan*). This will generally involve the following steps:

    - Excavate temporary swales along the western boundary of the Site to prevent any surface runoff from leaving the Site.

    - Prepare a construction entrance/exit.

    - Install silt fencing along the western boundary.

- Dismantle the eastern boundary fence and save for reinstallation. Install 6-foot high temporary chain link fence to enclose the work site along Lodi Street to the corner of Wolf Street, along Wolf Street and along the northern boundary of the triangular parcel back to the northeast corner of the Site (*Sheet 1 - Existing Conditions and General Requirements Plan*).

- Implement their Health and Safety Plan, including delineation of the exclusion zone and decontamination zone.

- Implement the Community Air Monitoring Program during all soil excavation and construction activities (Section 5.2).

- Proceed with excavation generally from west to east, starting at the tank removal excavation. Soil will be loaded directly into haul trucks. Trucks will enter from the south side along Raynor's strip of property, be loaded and exit the main gate onto Lodi Street. The extent of the excavation will generally be as shown on the *Sheet 2 – Remedial Excavation Plan*. The Engineer may modify the extent of the excavation based on field observations of the presence or absence of free-phase oil-impacted soil. The contractor will assist the Engineer in collecting soil samples for field screening and confirmation samples for laboratory analysis.

- Backfilling may proceed in stages or at the completion of the excavation work. It is anticipated that at least partial backfilling will be completed progressively with the excavation work to maintain sidewall slope stability of the deeper areas of the dig. Prior to completing the backfill work, the top 1 foot of soil from the remaining undisturbed areas of the Site will be excavated and placed in the free-phase oil impacted soil excavation. Refer to Section 2.3 for additional information. The excavation will be backfilled to 1 foot below finished grade with bank run sand and gravel per the Technical Specifications.

- Bank run sand and gravel backfill imported to the Site will be virgin rock or stone material from a DEC-permitted mine or quarry with less than 10% passing the No. 80 sieve. These materials are exempt from chemical testing prior to importation to the Site per DER-10 5.4(e)5.i.

- The contractor will make reasonable efforts to protect and preserve existing monitoring wells. Protective well heads, if disturbed, will be replaced at the completion of the work. If any wells are destroyed, the contractor will be responsible for replacing them as directed by the Engineer.

The Engineer will collect soil confirmation samples from the bottom and sidewalls of the excavation. The samples will be submitted for laboratory analysis for Full List Volatile Organic Compounds (VOCs) and Semi-Volatile Organic Compounds (SVOCs), Target Analyte List

(TAL) Metals and PCBs. This is further described in Section 6.0. It is recognized that some confirmation samples may exhibit concentrations exceeding SCOs, since the target of the remediation is free-phase oil impacted soils and in some areas where excavation may be limited by highway boundaries, utilities, etc.

2.3 Surface Soil Cap

The completion of the project will involve the construction of a clean soil cap over the Site. This work will be completed after the excavation and coordinated with construction of the oil recovery system described below. The contractor will be required to do the following work for the construction of the surface soil cap:

- Excavate an approximate 1-foot soil layer from the Site area, as shown on Sheet 2 (all remaining areas of the Site beyond the limits of the remedial soil excavation area).

- Place excavated surface soil in the free-phase oil impacted soil excavation at an elevation below the 12-inch cap and compact in accordance with the Technical Specifications.

- Place a filter fabric demarcation barrier (soil separation geotextile fabric) over the excavated areas.

- Replace the excavated 12-inch cut of surface soil with 9 inches of bank run sand and gravel as previously specified and a 3-inch lift of topsoil. Compact in accordance with the Technical Specifications.

- Cap sequence shall extend across the entire Site to the property line. The cap shall also cover the Raynor property, where excavated.

- Seed and mulch the topsoil in accordance with *Sheet 5 – Site Restoration Plan and Miscellaneous Details*.

- Topsoil shall be clean soil imported from DEC-permitted mine facilities. Source documentation, including representative sieve analysis, will be provided. Refer to the Technical Specifications for additional details. The imported topsoil must be evaluated and tested in accordance with Table 5.4(e)10 in DER-10, as further described in Section 3.2.

Refer to Sheets 2 and 5 and the Technical Specifications for additional details.

2.4 Vacuum Enhanced Oil Recovery

- Contractor shall provide a New York State certified well driller to install four new 4-inch diameter recovery wells. Wells will be constructed using 20 feet of screen set 8 feet below the average water table elevation, with a screen placement depth interval of 20 to 40 feet. Borehole annulus above the screen will be sealed to near surface grade. The Engineer will oversee the well installation.

- Contractor will install a buried piping system comprised of an air extraction pipe from each well to a central location where a proposed equipment shed will be installed. Four of the 2-inch diameter existing site wells that consistently have contained free product layers will also be plumbed into the system. Refer to *Sheet 4A – Recovery Well Construction* and *Sheet 4B – Oil Recovery Plan* for details.

- A vacuum pump system will be installed in a shed to extract air from the wells, inducing a low (±15-inch water column) vacuum in the wells. An activated carbon air filter drum unit will be installed for the air discharge until field monitoring and sampling indicates treatment is not needed. Pump equipment selected is currently based on an estimated 10 cubic feet per minute (cfm) air flow per well to induce the low vacuum target level. The Engineer will conduct short-term (±30-minute) air flow tests using a portable vacuum pump to confirm prior to construction.

- Manhole curb boxes will be installed at the well heads to allow room for valves to shut off the individual air extraction line from each well at the well head, measuring well head vacuum and permit manual bailing of product from the wells.

- Recovered product will be stored in a drum(s) in the shed and disposed of as needed, in accordance with RCRA and DEC requirements. Product recovery and system operation and maintenance will be the owner's responsibility following construction.

Refer to Sheets 4A and 4B and the Technical Specifications for locations and construction details.

3.0 CONSTRUCTION FACILITIES

3.1 Temporary Facilities

Temporary facilities that will be provided during the excavation and soil cap construction will be as follows:

- A 6-foot high chain link security fence surrounding the project Site, as shown on Sheet 1.

- Stormwater management and erosion control facilities, as shown on Sheet 3.

- An exclusion zone, decontamination zone and hot zone in accordance with the HASP.

- A decontamination area, as shown on Sheet 3. The pad will constructed so any water generated will drain back into the excavation.

- Upwind and downwind dust and vapor monitoring per the CAMP.

- No dewatering of groundwater is anticipated during the excavation, since groundwater is well below the bottom of the planned excavation. However, should localized perched groundwater conditions or other water conditions be encountered, the contractor will utilize a 20,000-gallon frac tank for storage. Depending on the character and quantity of water generated, groundwater would either be transported to an off-site disposal facility or an appropriate treatment system would be established onsite, with discharge to the sanitary sewer in accordance with a permit issued by the Onondaga County Department of Water Environment Protection (OCDWEP). The contractor will provide smaller portable water holding tank(s) to collect miscellaneous wastewater, if needed (e.g. well development).

Refer to the Technical Specifications for additional information and requirements.

3.2 Standards, Guidance and Criteria (SCGs)

3.2.1 Imported Fill Materials

Soils imported to the Site must meet soil cleanup objectives for commercial restricted use.

The estimated 5,800 cubic yards of backfill materials for the remedial soil excavation and 500 cubic yards for backfill in the soil cap layer imported to the Site will be bank run sand and gravel from a DEC-permitted mine. These materials are expected to be exempt from chemical testing prior to importation to the Site per DER-10 5.4(e)5.i. (<10% passing a size 80 sieve). The contractor shall submit representative sieve test report to the Engineer.

An estimated quantity of 200 cubic yards of topsoil requiring testing will be imported. Therefore, in accordance with Table 5.4(e)10 in DER-10, a total of three discrete samples will be tested for VOCs and one composite sample will be tested for SVOCs, inorganics and PCBs/pesticides. Testing will be for all compounds listed in DER-10 - Appendix 5 - Allowable Constituent Levels for Imported Fill or Soil.

Refer to *Appendix D – Imported Soil Testing Requirements* for additional information.

3.2.2 Soil Confirmation Samples

Soil confirmation samples will be collected as described in Section 6. Results will be compared to DEC Restricted Use Industrial SCOs in CP-51, as applicable.

3.2.3 Landfill Disposal

As described in Section 2.2, a soil boring program to collect soil samples for landfill disposal profiling prior to the excavation work will be implemented. The soil samples will be analyzed for hazardous waste characteristics and any other analyses required by the project landfills (Seneca Meadows and Waste Management, Inc. Model City).

3.2.4 Inspection

The Engineer will have a representative onsite during site preparation work, tank removal, soil excavation work, underground piping installation, soil cap construction and site restoration work to assure the work is performed in accordance with the Work Plan, the project plans and Technical Specifications. The Engineer will also be collecting soil confirmation samples as described in Section 6.

4.0 SITE CONTROLS

4.1 Erosion, Sediment and Stormwater Control Plan

Prior to any excavation activities, the measures specified on Sheet 3 will be implemented. The main measures include installing silt fence along the western down-slope boundary and constructing a swale to intercept runoff as shown on the plan. The construction entrance and exit shall be constructed according to the plans to minimize roadway impact. The exit will be graded so that runoff from the main area of the stone pad will drain to the swale and toward the excavation. A general purpose decontamination area will be similarly constructed and drain to the remedial excavation. Refer to the Contract Drawings for additional information.

4.2 Dust, Odor and Vapor Control

Based on the RI, excavation activities are not expected to generate a significant nuisance odor or vapor release to the community. The contractor will be responsible for controlling and minimizing dust generation on the work site. CAMP dust and vapor monitoring will be deployed by Plumley Engineering to monitor and confirm this.

The contractor will be required to undertake some or all of the following provisions, as needed, to minimize dust and vapor migration if dictated to be necessary by CAMP monitoring:

- No aboveground staging of impacted soil will be undertaken. Impacted soil will be loaded directly onto the haul trucks. Haul trucks will have covers.

- Imported soils hauled to the site will be directly placed and subsequently stabilized in accordance with the project *Erosion and Control Plan* in a timely fashion. Temporary covers or stabilizers will be deployed if needed to control dust.

- Contractor shall provide a water truck and sprayer to wet drive surfaces and any exposed soil cuts, as needed, to minimize dust and odor releases.

- Certain work activities exceeding CAMP criteria may need to be delayed or scheduled during more favorable weather conditions.

- Excavation faces that may be a source of release can be partially backfilled, covered with the imported bank run gravel or temporarily covered with plastic sheeting.

- Truck haul ways shall be surfaced with stone to minimize dust generation during dry weather. Speeds will be slow.

5.0 HEALTH AND SAFETY PLAN

5.1 Site Health and Safety Plan

A written health and safety plan (HASP) will be developed for the remediation project that will describe the anticipated hazards and control measures to be applied to activities related to the remediation. The contractor shall develop a site-specific HASP in accordance with the Technical Specifications. Copies of the HASP for the Remedial Investigation and the Remedial Investigation Report are included in *Appendix C – Site Health and Safety Plan* and will be supplied to the contactors for reference.

5.2 Community Air Monitoring Program

The Community Air Monitoring Program (CAMP) requires real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at the Site. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors, including residences and businesses, and onsite workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions and/or work shutdown.

Continuous monitoring will be conducted by Plumley Engineering for all ***ground intrusive*** activities, including excavation, loading soil, test pits, trenching, drilling soil borings and installing monitoring wells.

Periodic monitoring for VOCs and particulates (i.e., dust) will be conducted by Plumley Engineering during ***non-intrusive*** activities, such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location.

5.2.1 VOC Monitoring, Response Levels and Actions

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone). Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the chemicals of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions and monitoring continued. After these steps, work activities can resume, provided the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down, the source of vapors identified, corrective actions taken to abate emissions and monitoring continued.

5.2.2 Particulate Monitoring, Response Levels and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques, provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All 15-minute readings must be recorded and be available for DEC and New York State Department of Health (DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Additional requirements for the CAMP are included in the Technical Specifications.

6.0 CONFIRMATION SAMPLING

The Engineer will collect soil confirmation samples from the bottom and sidewalls of the excavation utilizing the contactor's excavator to assist with the collection of the samples. Sidewall samples will be collected at approximately 40 feet intervals, bottom samples at approximately every 900 square feet. Bottom samples will not be collected where bedrock is encountered. All samples will be grab samples. The samples will be submitted to an Environmental Laboratory Accreditation Program (ELAP) certified laboratory for analysis for the Full List VOCs and SVOCs, TAL Metals and PCBs. Data deliverables will be Category A with approximately 10% of the samples with Category B deliverables. It is recognized that some confirmation samples may exhibit concentrations exceeding SCGs, since the target of the remediation is oil-impacted soils and in some areas excavation will be limited by highway boundaries.

7.0 SITE RESTORATION

The Site will be restored to a grassy field with the only remaining facilities to be a shed for the oil recovery system and several well heads for recovery and monitoring wells. Upon completion of the oil recovery program in the future, all wells will be properly abandoned and sealed per DEC requirements. Details of the restoration are shown on Sheet 5.

8.0 SCHEDULE

The following schedule is anticipated:

- Distribution of Bid Package..July 22, 2011
- DEC Final Approval of RAWP and Construction Plans ....August 22, 2011
- Bid Package Addendum
  (if necessary, dependent upon DEC comments)
- Public Notice Fact Sheet Distribution...October 11 , 2011
- Implementation of Remedy (to include excavation and cap,
  installation of oil recovery wells and system)...................................October 12 to
  December 31, 2011

9.0 CONSTRUCTION COMPLETION

9.1 Final Engineering Report

Upon completion of the remedial excavation, construction of the soil cap and oil recovery facilities, a Final Engineering Report (FER) will be prepared in accordance with DER-10 Section 5.8. The FER will include:

- A description of the remedy, as constructed, according to this Work Plan.
- A summary of all remedial actions completed, including:
  - Description of any problems encountered or changes to the approved remedy.

    - Listing of the waste streams, quantity of materials disposed and facility where such materials were disposed.

    - Boundaries of the real property subject to the environmental easement, deed restriction or other institutional controls.

    - Site restoration work.

- Tables and figures containing all pre- and post-remedial data.

- Figures showing contamination remaining at the site to be managed by the Site Management Plan (SMP).

- “As-built” drawings, including:

    - The oil recovery system.

    - The surveyed remedial excavation area (plan view map), quantity and source documentation of imported backfills, backfill profile, survey restoration grade profile and location of all final documentation samples.

    - A site plan showing the location, including GPS level of accuracy for latitude and longitude, of the tank removed.

    - Permanent survey markers for horizontal and vertical control for site management.

    - Identification of the applicable institutional controls employed, along with a copy of the environmental easement or other institutional controls that apply.

- Figures showing groundwater conditions.

- Disposal documentation.

- The SMP for the project, including descriptions of all institutional and engineering controls.

- Results of all analyses, including laboratory data sheets and the required laboratory data deliverables.

The FER will include the following certification:

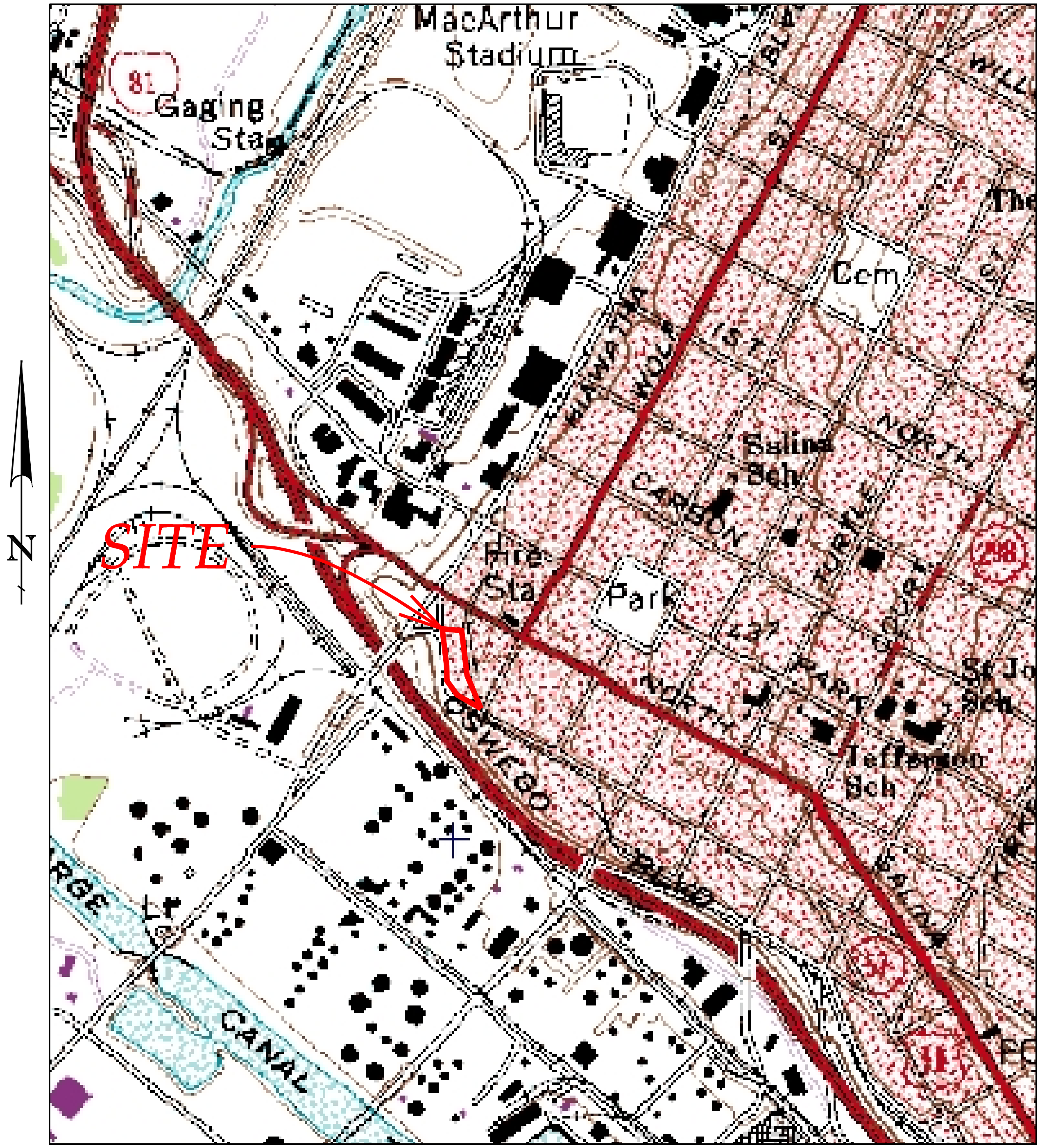
I ___________________________ certify that I am currently a NYS registered Professional Engineer, I had primary direct responsibility for the implementation of the subject construction program, and I certify that the Remedial Work Plan was implemented and all construction activities were completed in substantial conformance with the DER-approved Remedial Work Plan.

9.2 Environmental Easement and Site Management Plan

The Site will have an environmental easement that will include prohibitions on groundwater use, restrictions of use to industrial purposes and implementation of the Site Management Plan.

A Site Management Plan will be developed, consistent with DER-10, Section 6.1, to govern future site reuse. This document will address site security, inspection and repair of the soil cap and vegetative cover, and contain a requirement for soil vapor evaluation prior to construction of a Site building intended for human occupation. This Plan will also include an annual effectiveness review of the implemented oil recovery operations.

FIGURES



REF.: USGS - SYRACUSE WEST (NY) QUAD., 1978, 7.5 MIN. SCALE: 1"=1000'

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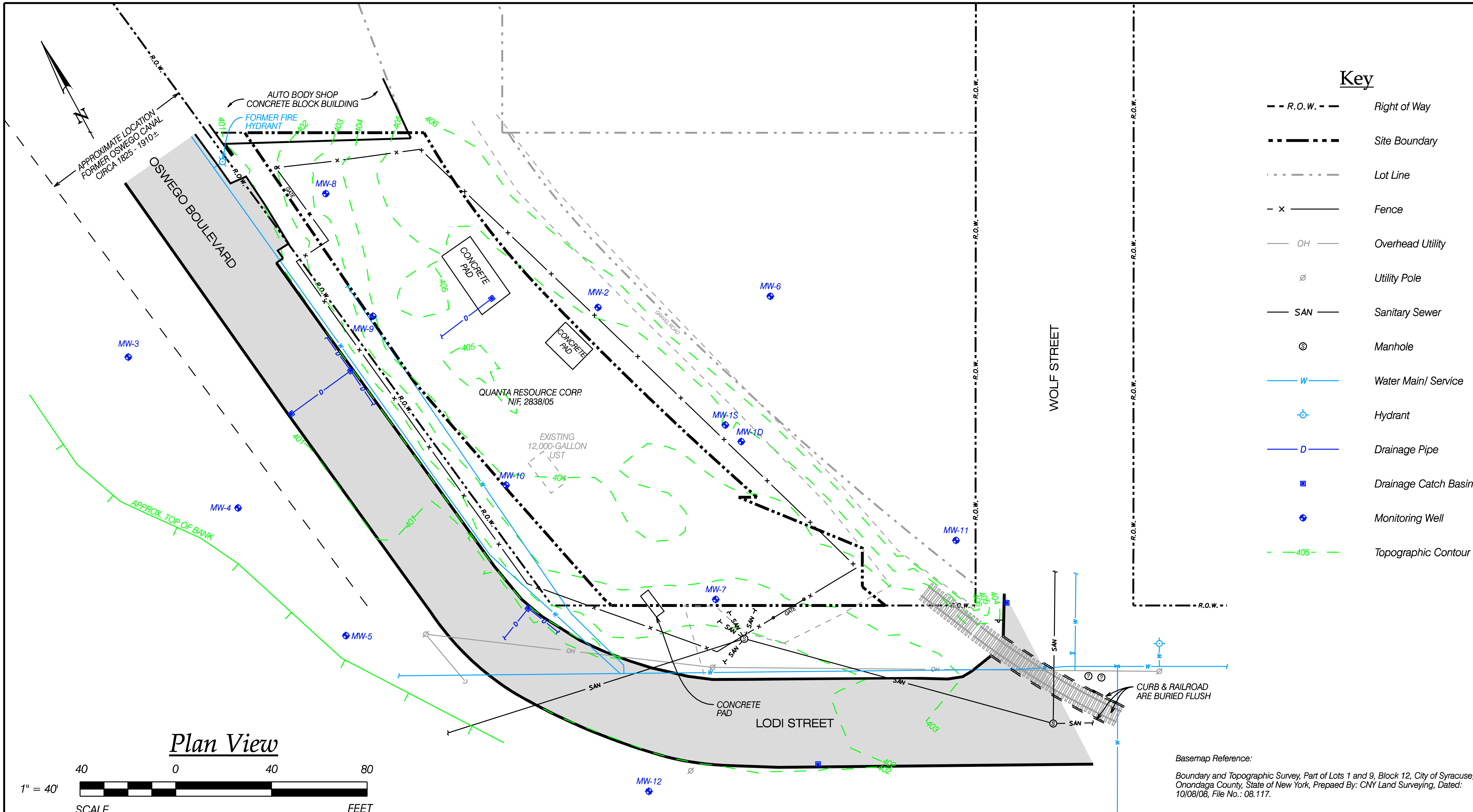
SITE LOCATION MAP

QUANTA RESOURCES - SYRACUSE

QUANTA RESOURCES/ SYRACUSE PRP GROUP

CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

PROJECT No.:	2008008
FILE NAME.:	FIGURE 1
SCALE:	1" =2000'
DATE:	JAN. 2008
ENG'D BY:	DRV
DRAWN BY:	JMD
CHECKED BY:	DRV



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REVISIONS:	DATE:	BY:

PROJECT: **QUANTA RESOURCES-SYRACUSE**

DWG. TITLE: **EXISTING SITE CONDITIONS PLAN**

CLIENT: QUANTA RESOURCES/ SYRACUSE PRP GROUP

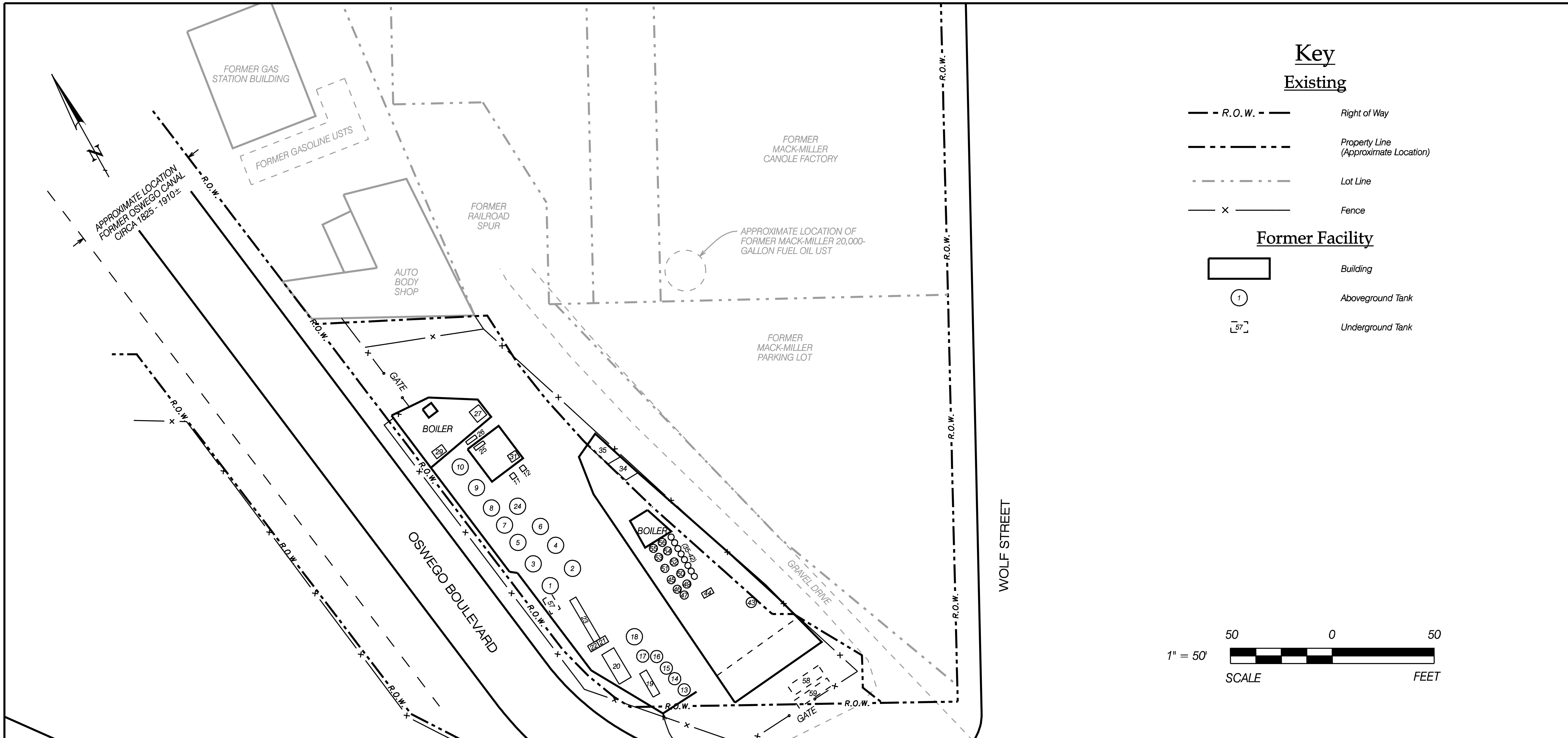
LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2008008
FILE NAME.:	Figure2
SCALE:	AS NOTED
DATE:	JULY 2009
ENG'D BY:	WJS
DRAWN BY:	JMD
CHECKED BY:	DRV

SHEET NO.:

FIGURE 2



Basemap References:

1. "Figure 3 Proposed and Existing Borehole and Monitoring Well Locations", Prepared By: LCS, Inc., Project No.: 01S941.23.
2. "Figure 2 Site PLan" Prepared By: LCS, Inc., Project No.: 01S941.23 (Lehr Land Surveyors).
3. Aerial Photograph (Lehr Land Surveyors).
4. URS Site Map - Pre-USEPA Action, Dec. 1992.

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Civil and Environmental Engineering

REVISIONS:	DATE:	BY:

PROJECT: QUANTA RESOURCES - SYRACUSE

DWG. TITLE: FORMER FACILITIES PLAN

CLIENT: QUANTA RESOURCES/ SYRACUSE PRP GROUP

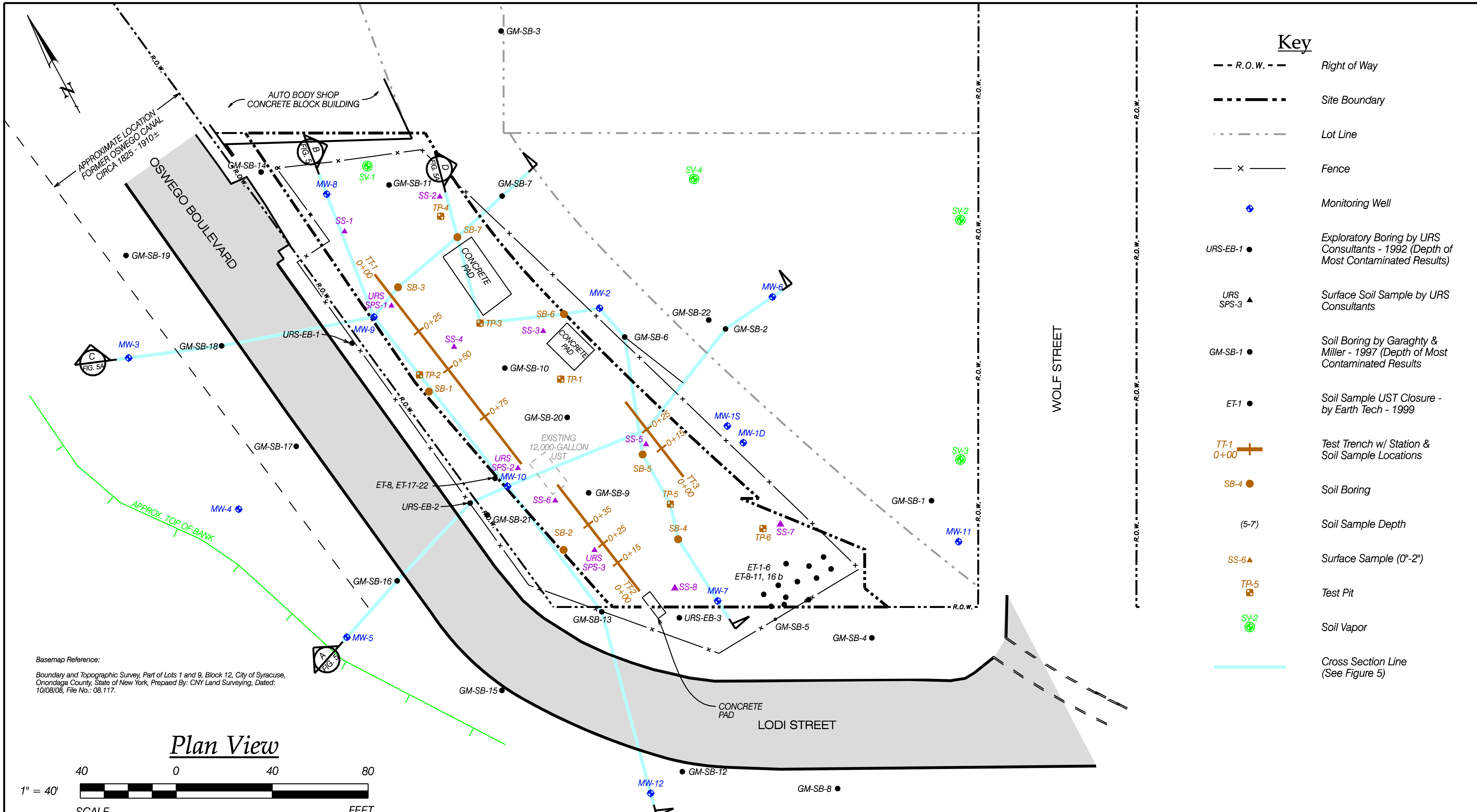
LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2008008
FILE NAME.:	Figure3
SCALE:	AS NOTED
DATE:	JAN. 2008
ENG'D BY:	DRV
DRAWN BY:	JMD
CHECKED BY:	DRV

SHEET NO.:

FIGURE 3



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REVISIONS:	DATE:	BY:
REVISED CROSS SECTION A & ADDED CROSS SECTION D.	10/07/09	DRV

PROJECT: QUANTA RESOURCES-SYRACUSE

DWG. TITLE: CURRENT AND HISTORICAL INVESTIGATION LOCATIONS

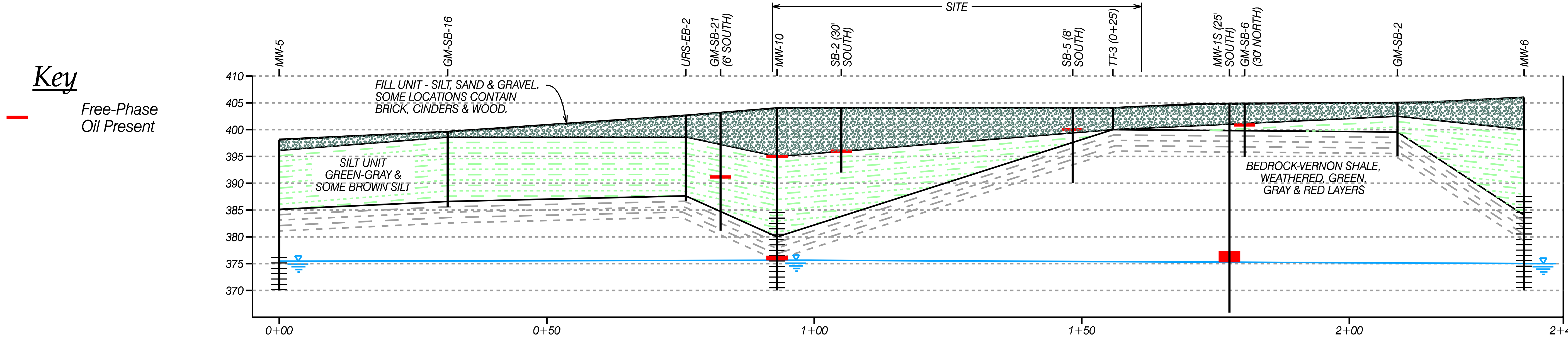
CLIENT: QUANTA RESOURCES/ SYRACUSE/ PRP GROUP

LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

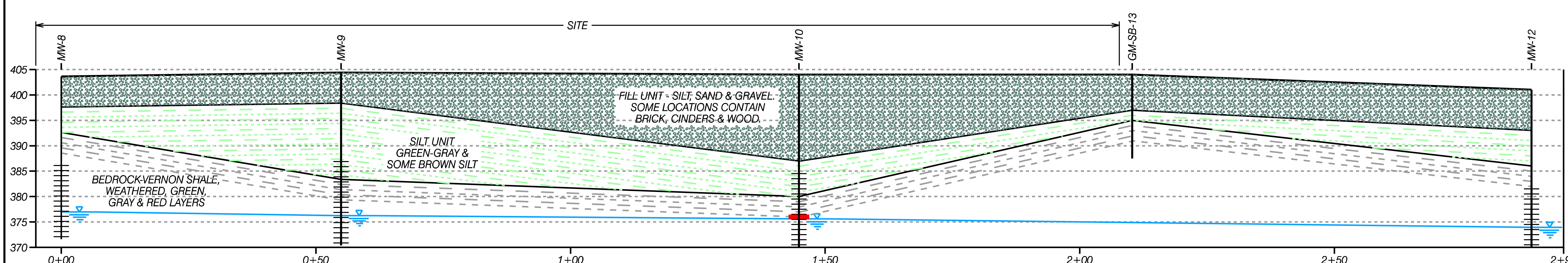
Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2008008
FILE NAME.:	Figure4
SCALE:	AS NOTED
DATE:	JULY 2009
ENG'D BY:	WJS
DRAWN BY:	JMD
CHECKED BY:	DRV

SHEET NO.: FIGURE 4



A
FIG. 4
Section
Scale: 1"=20'



B
FIG. 4
Section
Scale: 1"=20'

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REVISIONS:	DATE:	BY:
REVISED CROSS SECTION A & ADDED LNAPL IMPACT.	10/07/09	DRV

PROJECT: QUANTA RESOURCES-SYRACUSE

DWG. TITLE: CROSS SECTIONS

CLIENT: QUANTA RESOURCES/ SYRACUSE PRP GROUP

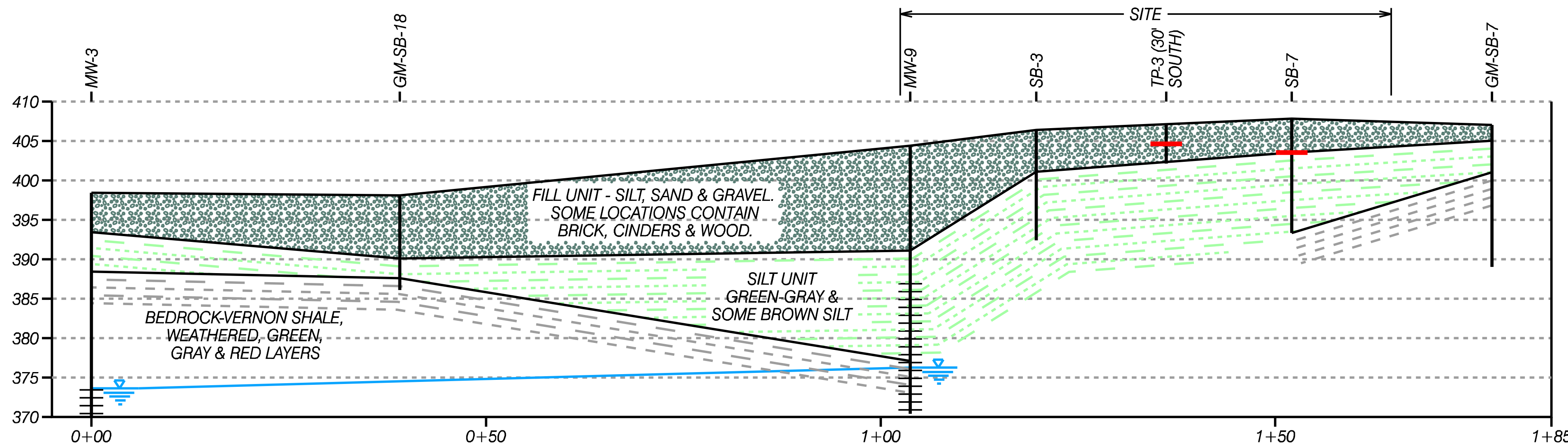
LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2008008
FILE NAME.:	Figure5
SCALE:	AS NOTED
DATE:	JULY 2009
ENG'D BY:	WJS
DRAWN BY:	JMD
CHECKED BY:	DRV

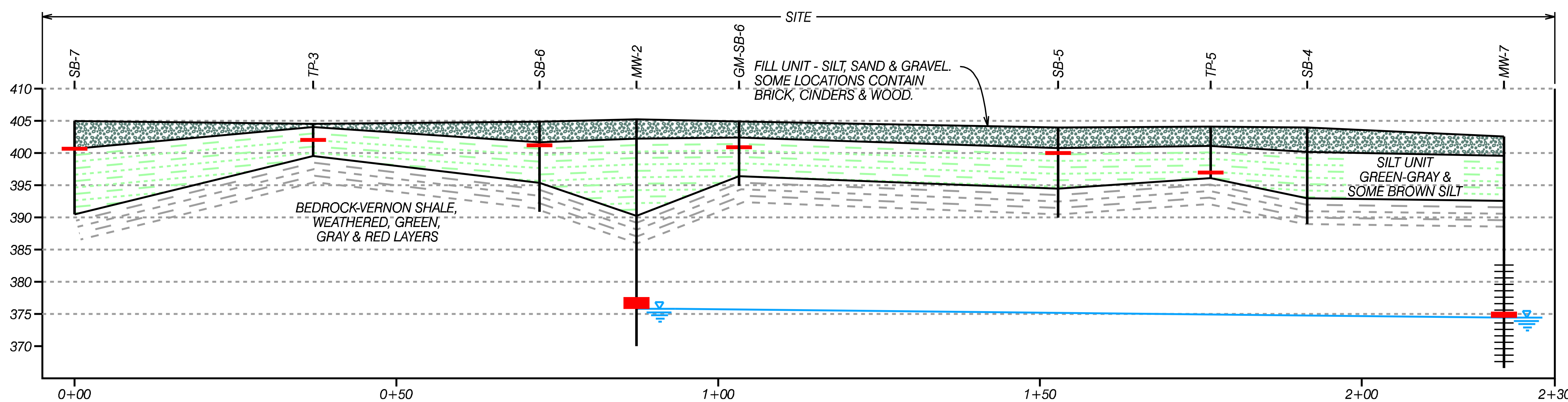
SHEET NO.:

FIGURE 5



C FIG. 4 **Section**

Scale: 1"=20'



D FIG. 4 **Section**

Scale: 1"=20'

Key

Free-Phase Oil Present

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PROJECT: QUANTA RESOURCES-SYRACUSE

DWG. TITLE: CROSS SECTIONS

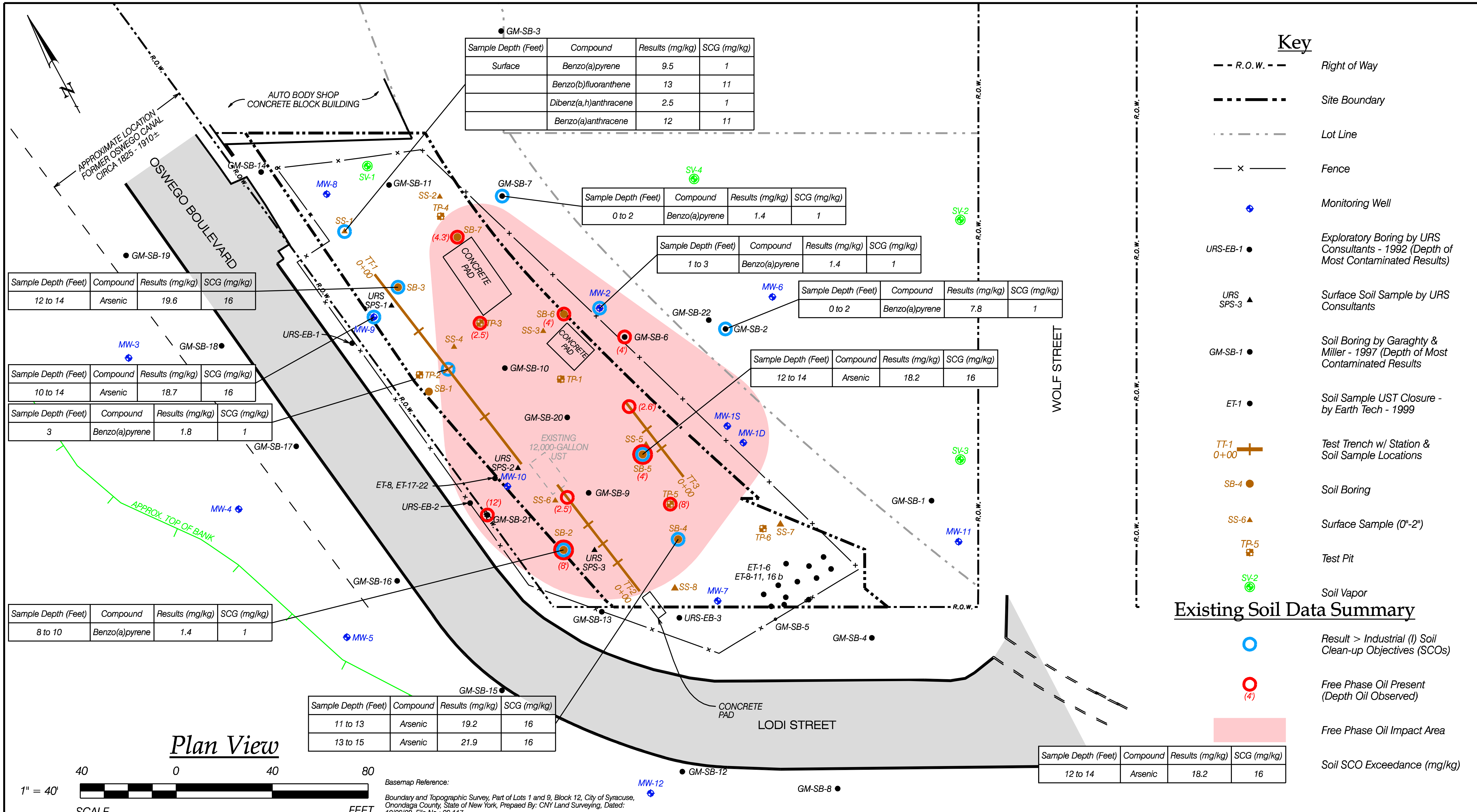
CLIENT: QUANTA RESOURCES/ SYRACUSE PRP GROUP

LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2008008
FILE NAME.:	Figure5A
SCALE:	AS NOTED
DATE:	OCT. 2009
ENG'D BY:	DRV
DRAWN BY:	JMD
CHECKED BY:	DRV

SHEET NO.: FIGURE 5A



Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
Surface	Benzo(a)pyrene	9.5	1
	Benzo(b)fluoranthene	13	11
	Dibenz(a,h)anthracene	2.5	1
	Benzo(a)anthracene	12	11

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
0 to 2	Benzo(a)pyrene	1.4	1

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
1 to 3	Benzo(a)pyrene	1.4	1

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
0 to 2	Benzo(a)pyrene	7.8	1

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
12 to 14	Arsenic	18.2	16

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
12 to 14	Arsenic	19.6	16

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
10 to 14	Arsenic	18.7	16

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
3	Benzo(a)pyrene	1.8	1

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
8 to 10	Benzo(a)pyrene	1.4	1

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
11 to 13	Arsenic	19.2	16
13 to 15	Arsenic	21.9	16

Sample Depth (Feet)	Compound	Results (mg/kg)	SCG (mg/kg)
12 to 14	Arsenic	18.2	16

Key

- R.O.W. — Right of Way
- Site Boundary
- Lot Line
- Fence
- Monitoring Well
- URS-EB-1 — Exploratory Boring by URS Consultants - 1992 (Depth of Most Contaminated Results)
- URS SPS-3 — Surface Soil Sample by URS Consultants
- GM-SB-1 — Soil Boring by Garaghty & Miller - 1997 (Depth of Most Contaminated Results)
- ET-1 — Soil Sample UST Closure - by Earth Tech - 1999
- TT-1 0+00 — Test Trench w/ Station & Soil Sample Locations
- SB-4 — Soil Boring
- SS-6 — Surface Sample (0"-2")
- TP-5 — Test Pit
- SV-2 — Soil Vapor

Existing Soil Data Summary

- Result > Industrial (I) Soil Clean-up Objectives (SCOs)
- (4') Free Phase Oil Present (Depth Oil Observed)
- Free Phase Oil Impact Area
- Soil SCO Exceedance (mg/kg)

Plan View

1" = 40'

40 0 40 80

SCALE FEET

Basemap Reference:

Boundary and Topographic Survey, Part of Lots 1 and 9, Block 12, City of Syracuse, Onondaga County, State of New York, Prepared By: CNY Land Surveying, Dated: 10/08/08, File No.: 08.117.

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REVISIONS: DATE: BY:

PROJECT: **QUANTA RESOURCES-SYRACUSE**

DWG. TITLE: **SOIL DATA SUMMARY**

CLIENT: QUANTA RESOURCES/ SYRACUSE PRP GROUP

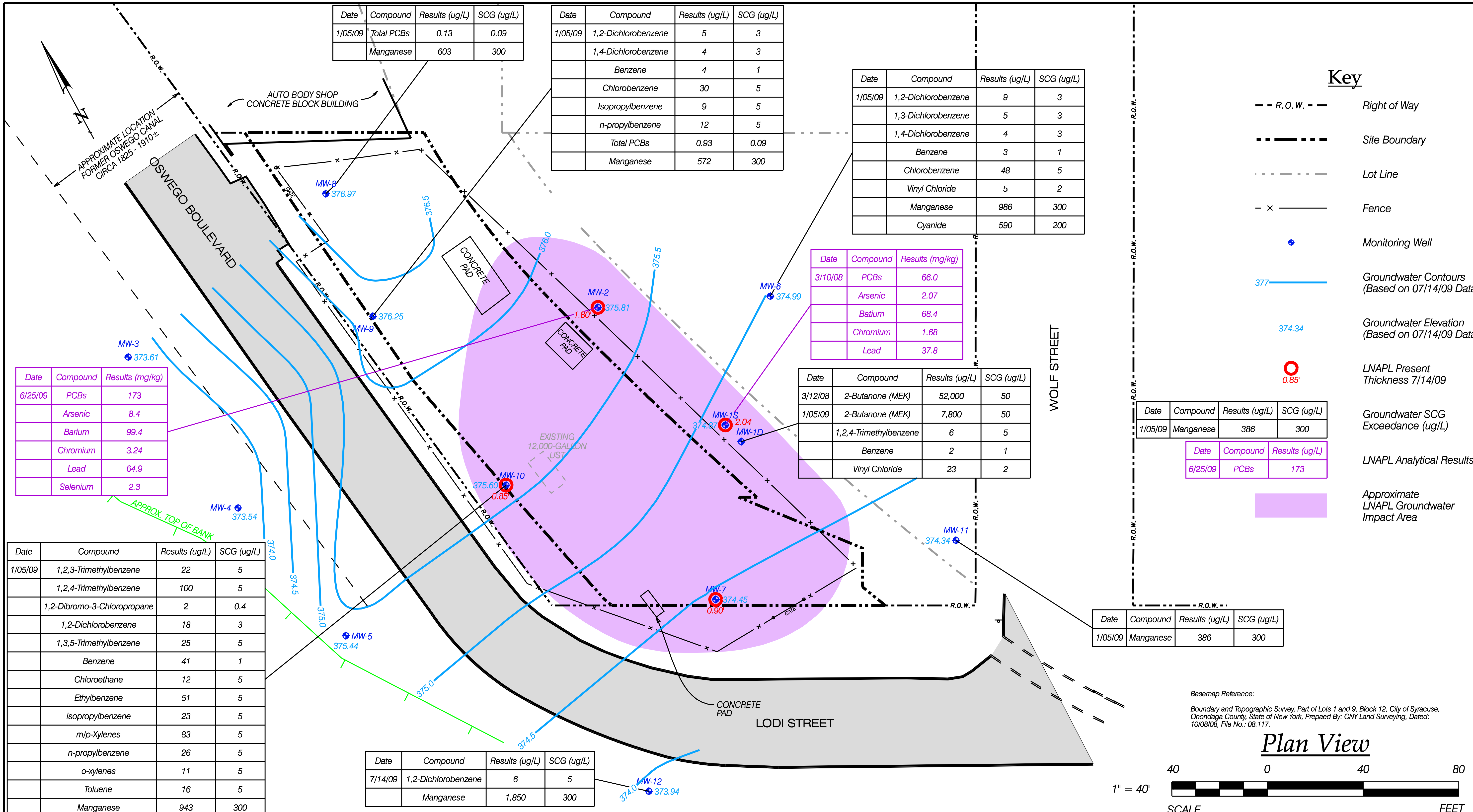
LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2008008
FILE NAME.:	Figure6
SCALE:	AS NOTED
DATE:	JULY 2009
ENG'D BY:	WJS
DRAWN BY:	JMD
CHECKED BY:	DRV

SHEET NO.:

FIGURE 6



Date	Compound	Results (ug/L)	SCG (ug/L)
1/05/09	Total PCBs	0.13	0.09
	Manganese	603	300

Date	Compound	Results (ug/L)	SCG (ug/L)
1/05/09	1,2-Dichlorobenzene	5	3
	1,4-Dichlorobenzene	4	3
	Benzene	4	1
	Chlorobenzene	30	5
	Isopropylbenzene	9	5
	n-propylbenzene	12	5
	Total PCBs	0.93	0.09
	Manganese	572	300

Date	Compound	Results (ug/L)	SCG (ug/L)
1/05/09	1,2-Dichlorobenzene	9	3
	1,3-Dichlorobenzene	5	3
	1,4-Dichlorobenzene	4	3
	Benzene	3	1
	Chlorobenzene	48	5
	Vinyl Chloride	5	2
	Manganese	986	300
	Cyanide	590	200

Date	Compound	Results (mg/kg)
3/10/08	PCBs	66.0
	Arsenic	2.07
	Barium	68.4
	Chromium	1.68
	Lead	37.8

Date	Compound	Results (ug/L)	SCG (ug/L)
3/12/08	2-Butanone (MEK)	52,000	50
1/05/09	2-Butanone (MEK)	7,800	50
	1,2,4-Trimethylbenzene	6	5
	Benzene	2	1
	Vinyl Chloride	23	2

Date	Compound	Results (mg/kg)
6/25/09	PCBs	173
	Arsenic	8.4
	Barium	99.4
	Chromium	3.24
	Lead	64.9
	Selenium	2.3

Date	Compound	Results (ug/L)	SCG (ug/L)
1/05/09	1,2,3-Trimethylbenzene	22	5
	1,2,4-Trimethylbenzene	100	5
	1,2-Dibromo-3-Chloropropane	2	0.4
	1,2-Dichlorobenzene	18	3
	1,3,5-Trimethylbenzene	25	5
	Benzene	41	1
	Chloroethane	12	5
	Ethylbenzene	51	5
	Isopropylbenzene	23	5
	m/p-Xylenes	83	5
	n-propylbenzene	26	5
	o-xylenes	11	5
	Toluene	16	5
	Manganese	943	300

Date	Compound	Results (ug/L)	SCG (ug/L)
7/14/09	1,2-Dichlorobenzene	6	5
	Manganese	1,850	300

Date	Compound	Results (ug/L)	SCG (ug/L)
1/05/09	Manganese	386	300

Date	Compound	Results (ug/L)	SCG (ug/L)
1/05/09	Manganese	386	300

Date	Compound	Results (ug/L)
6/25/09	PCBs	173

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REVISIONS:	DATE:	BY:
ADDED LNAPLI DATA & IMPACT AREA.	10/07/09	DRV

PROJECT: QUANTA RESOURCES-SYRACUSE

DWG. TITLE: GROUNDWATER DATA

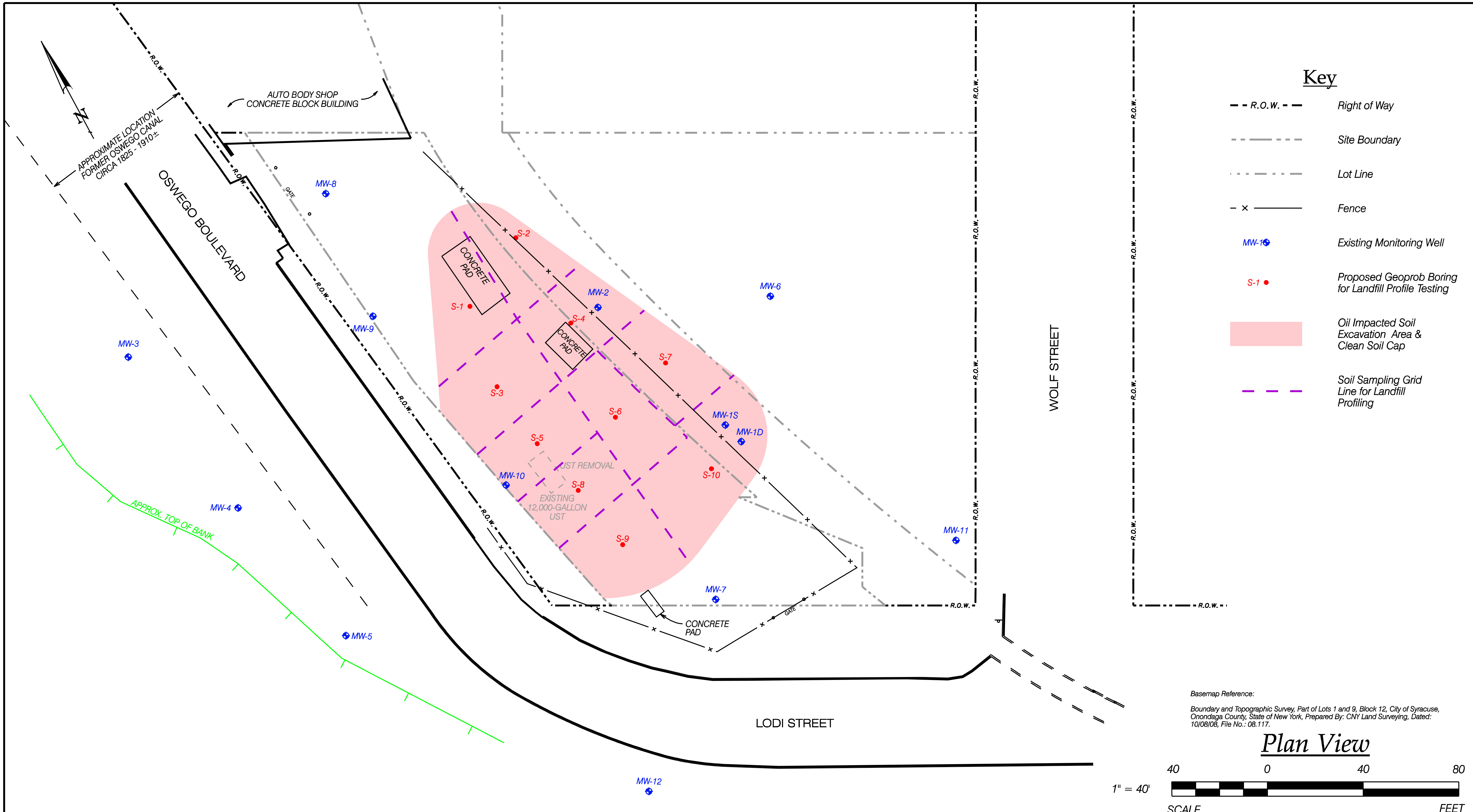
CLIENT: QUANTA RESOURCES/ SYRACUSE PRP GROUP

LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.: 2008008
FILE NAME.: GWC_07-14-09
SCALE: AS NOTED
DATE: JULY 2009
ENG'D BY: MTM
DRAWN BY: JMD
CHECKED BY: DRV

SHEET NO.: FIGURE 7



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REVISIONS:	DATE:	BY:

PROJECT:
QUANTA RESOURCES-SYRACUSE

DWG. TITLE:
SAMPLING GRID: SOIL LANDFILL PROFILING

CLIENT: QUANTA RESOURCES/ SYRACUSE PRP GROUP

LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2010131
FILE NAME.:	Figure8
SCALE:	AS NOTED
DATE:	JUNE 2010
ENG'D BY:	FAK
DRAWN BY:	JMD
CHECKED BY:	DRV

SHEET NO.:

FIGURE 8

APPENDICES

APPENDIX A

TEST TRENCH AND TEST PIT LOGS

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resources **DATE:** May 5, 2009
LOCATION: 2810 Lodi Street, Syracuse, NY **WEATHER:** Overcast, 5-10 mph East wind
JOB NO.: 2008008 **INSPECTOR:** B. Spizuoco

TEST PIT NO. TP-5 **ADDITIONAL:**

DEPTH	Sample Depth	PID (PPM)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	0 - 3'	0	Brown sand, bricks, gravel, roots	
	3' - 8'		Green silt w/root zone tubes filled with amber free product	
			Note:	
			Sampled 7' - 8' interval for disposal characterization: PCBs, TCLP RCRA metals, TCLP VOCs.	

TEST PIT NO. TP-6 **ADDITIONAL:**

DEPTH	Sample Depth	PID (PPM)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	0 - 2.5'	0	Brown sand & rounded cobbles - Fill	
	2.5' - 5.5'	0	Light brown to green silt with root holes	
			Note: Filter fabric at 2.5'	

standards/TPs/general/0108

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60°F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST PIT NO. TT-1 at 0'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	0.6	3.8	Top Soil - odor at ground break	±0.6
			Black staining at 0.6 grey/green moist silt, trace fine - medium gravel, parts of building foundation, petroleum odor	±4
5	4 - 5	20	Grey/green Silt unit	±6.8
	7	35	Brown/grey Silt, little-trace fine sand, trace fine gravel	
			Bottom of Test Pit	±7
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60^{o}F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST PIT NO. TT-1 at 30'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil	±0.5
	2	98	Black stained Sand and Gravel fill with petroleum odor and staining	±2
			Grey/green Silt unit	
	3.5	180		
5				
	7	146		
			Bottom of Test Pit	±7
10			Lab Sample	
			Collected at 11:05 AM, 7' bgs	

Comments:

Located just inside of the building former building corner

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60°F's
OBSERVER: DTH

TEST PIT NO. TT-1 at 35'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.5
	2	45	Dry moist fine to coarse Sand and fine to medium Gravel with black staining	±2
			Grey/green Silt unit	
	4	87		
5			Bottom of Test Pit	±4
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60°F's
OBSERVER: DTH

TEST PIT NO. TT-1 at 50'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.5
	2	60	Black moist fine to coarse Sand and fine to medium Gravel with black staining	±2
			Grey/green Silt unit	
	3 - 4	115		
5	5	74		
			Bottom of Test Pit	±5
			Lab Sample	
10			Collected at 10:55 AM, 3' bgs	
			Collected at 11:15 AM, 5' bgs	

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60^{o}F's
OBSERVER: DTH

TEST PIT NO. TT-1 at 75'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.6
	2	24	Black moist fine to coarse Sand and fine to medium Gravel with black staining	±2.5
			Grey/green Silt unit	
5	5	77		
	8	556		
			Bottom of Test Pit	±8
10				
			Lab Sample	
			Collected at 10:05 AM, 8' bgs	

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60^{o}F's
OBSERVER: DTH

TEST PIT NO. TT-1 at 100'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.5
	2	23	Black moist fine to coarse Sand and fine to medium Gravel with black staining	
				±3.5
			Grey/green with brown Silt unit	
5	4 - 5	140		
	6- 8	136	Grey/green silt	
			Bottom of Test Pit	±8
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60^{o}F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST TRENCH SUMMARY: TT-1

Station	Comment
0' + 00'	3.5 ppm with black staining from 0.5'-4' bgs, 35 ppm at 7' bgs
0' + 5'	Building foundation, black staining with petroleum odor
0' +10'	
0' + 15'	
0' + 20'	
0' + 25'	
0' + 30'	98 ppm with black staining from 0.5' to 2' bgs, 180 ppm at 3.5' bgs, strong waste oil/possible solvent odor, building foundation, LAB SAMPLE
0' + 35'	45 ppm with black stained sandy soils at 2' bgs, 87 ppm at 4' bgs
0' + 40'	At 0 + 39.5 feet a 4" diameter clay pipe encountered, partially filled with black sediment and water
0' + 45'	
0' + 50'	60 ppm with black stained soils at 0.5'-2.3', 115 ppm at 4' bgs, LAB SAMPLE
0' + 55'	
0' + 60'	
0' + 65'	
0' + 70'	
0' + 75'	24 ppm with black stained fill, 556 ppm at 8' bgs, LAB SAMPLE
0' + 80'	
0' + 85'	
0' + 90'	At 0 + 88 feet a concrete pad encountered, adjacent to pad was 6" diameter asbestos pipe 6 feet long appeared to be non-friable
0' + 95'	
0' + 100'	23 ppm with black staining at 2' bgs, 136-140 ppm at 4'-8' bgs

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60°F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST PIT NO. TT-2 at 0 + 00

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	8"	0	Top Soil - odor at ground break	±0.5
			Brown dry fine to coarse Sand. Little fine to coarse gravel (fill), stopped by concrete slab	
			Bottom of Test Pit	±1.4
5				
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60^{o}F's
OBSERVER: DTH

TEST PIT NO. TT-2 at 0 + 15'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil	±0.5
	2	0	Black stained Sand and Gravel fill with petroleum odor and staining	±2
	2.5 - 3	24.5	Grey/green moist Silt unit	
	4	65		
5	5	422		
			Bottom of Test Pit	±5
			Lab Sample	
10			Collected at 2:25 PM, 5' bgs	

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60^{o}F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST PIT NO. TT-2 at 0 + 25'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.5
	1.5	2.4	Black stained dry to moist fine to coarse Sand and fine to medium Gravel	±2
			Grey/green moist Silt unit, pockets of coarse gravel	
	3.5	23		
5	5	32		
			Bottom of Test Pit	±5
			Lab Sample	
			Collected at 2:35 PM, 5' bgs	
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60°F's
OBSERVER: DTH

TEST PIT NO. TT-2 at 0 + 35'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.6
	2.2	97	Black moist fine to coarse Sand and fine to medium Gravel with black staining, some cinders, trace clinkers	±2
			Grey/green moist Silt unit	
	4	62		
5			Bottom of Test Pit	±4
			Lab Sample	
			Collected at 2:45 PM, 2.2' bgs	
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site

LOCATION: 2802-2810 Lodi Street, Syracuse

JOB NO.: 2008008

DATE: 11/4/2008

WEATHER: mid 60^{o}F's

OBSERVER: DTH

TEST PIT NO. TT-2 at 0 + 50'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.6
	2.5	28	Black stained moist fine to coarse Sand and fine to medium Gravel, pipe nest on east side with oil in and around pipes	±2.5
			Grey/green dry to moist Silt unit	
5	5	8		
	7.5	84		
			Bottom of Test Pit	±7.5
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60°F's
OBSERVER: DTH

TEST PIT NO. TT-2 at 0 + 60'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil (brown)	±0.6
			Black stained moist fine to coarse Sand and fine to medium Gravel	±2.5
			Grey/green dry to moist Silt unit (encountered an underground storage tank at 3' bgs, bottom greater than 7' deep.)	
5				
	7	80		
			Bottom of Test Pit	±7
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60°F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST TRENCH SUMMARY: TT-2

Station	Comment
0' + 00'	Encountered concrete slab and old building foundation
0' + 5'	
0' +10'	
0' + 15'	24-432 ppm with black stained soils at 2.5'-5' bgs, LAB SAMPLE
0' + 20'	
0' + 25'	2.4 ppm at 2.4' bgs, 32 ppm at 5' bgs, LAB SAMPLE
0' + 30'	
0' + 35'	Bank of product piping encountered (+8 pipes), 97 ppm at 2.2' bgs, 62 ppm at 4' bgs, LAB SAMPLE
0' + 40'	Wood pile pole barn like construction foundation encountered
0' + 45'	
0' + 50'	28 ppm at 2.5' bgs with black stained soil, pipe nest with oil in pipe and surrounding soil, 7.5 ppm at 7.5' bgs
0' + 55'	Encountered 6" diameter asbestos sewer pipe encased in concrete filled with water
0' + 60'	80 ppm at 7'bgs, Encountered an underground storage tank, the tank appears to be greater then 7' deep

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60^{o}F's
OBSERVER: DTH

TEST PIT NO. TT-3 at 0 + 00

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Black stained Sand and Gravel (fill) (brown silt, little clay lens from 2.5' to 2.8' bgs)	
	2	2.3		
	3	7.7		±2.8
	4.5	4.5	Grey/green Silt unit	
5				
			Bottom of Test Pit	±4.5
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT: Quanta Resource Site
LOCATION: 2802-2810 Lodi Street, Syracuse
JOB NO.: 2008008

DATE: 11/4/2008
WEATHER: mid 60^{o}F's
OBSERVER: DTH

TEST PIT NO. TT-3 at 0 + 15'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Top Soil	±0.4
	2.8	2.5	Brown Sand and Gravel fill with petroleum odor and slight staining	±2.8
	3	0	Brown Silt and Clay zone 2" thick	±3.1
			Grey/green Silt unit	
5	4.5	1.2		
			Bottom of Test Pit	±4.5
			Lab Sample	
10			Collected at 3:05 PM, 2.8' bgs	
			Collected at 3:10 PM, 4.5' bgs	

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60^{o}F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST PIT NO. TT-3 at 0 + 25'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	1	0.5	Top Soil	+0.5
			Brown dry moist fine to coarse Sand and fine to medium Gravel	1.5
	3.5	6.2	Grey/green Silt unit, encountered a section of the fractured Vernon shale unit	
5				
	7.5	1.2		
			Bottom of Test Pit	+7.5
10				
			Lab Sample	
			Collected at 3:00 PM, 7.5' bgs	

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60^{o}F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST PIT NO. TT-3 at 0 + 40'

DEPTH	SAMPLE DEPTH (ft)	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
			Black moist fine to coarse Sand and fine to medium Gravel with black staining, some cinders, trace clinkers. North trench end, observed sheen and some oil at interface with silt.	
	2	0		
				+2.6
	3.5	2.2	Grey/green Silt unit with massive blocky Vernon shale	
5			Bottom of Test Pit	±3.5
10				

Comments:

PLUMLEY ENGINEERING, P.C.
TEST PIT LOG

PROJECT:	Quanta Resource Site	**DATE:**	11/4/2008
LOCATION:	2802-2810 Lodi Street, Syracuse	**WEATHER:**	mid 60^{o}F's
JOB NO.:	2008008	**OBSERVER:**	DTH

TEST TRENCH SUMMARY: TT-3

Station	Comment
0' + 00'	2.3 ppm at 2' bgs black stained soil, 4.4 ppm at 4.5 ppm
0' + 5'	
0' +10'	
0' + 15'	2.8 ppm at 2.5' bgs, 1.2 ppm at 4.5' bgs, SAMPLES at 2.8' and 4.5'
0' + 20'	
0' + 25'	0.5 ppm at 0.5 ppm, 6.2 ppm at 3.5 ppm, 1.2 at 7.5 ppm, SAMPLE at 7'
0' + 30'	
0' + 35'	
0' + 40'	0 ppm at 2 ppm, 2.2 ppm at 3.5 ppm, encountered Vernon shale at 3.5' bgs, north trench end oil seepe

APPENDIX B

MONITORING WELL INSTALLATION AND SOIL BORING LOGS

PLUMLEY ENGINEERING, P.C.
TEST BORING LOG

SITE: QUANTA RESOURCES SITE
LOCATION 2802-2810 Lodi Street, City of Syracuse
DATE STARTED: 11/7/08 **DATE COMPLETED:** 11/7/08

HOLE NO. SB-1
SURF. EL. 404
JOB NO. 2008008.007
GROUNDWATER DEPTH WHILE DRILLING ± 4

INSPECTOR: DTH
DRILLER: Paragon Environmental Construction, Inc.
DRILLING METHOD: Truck rig with percussion Geoprobe drill

TIME	ING/HOLE CONDI	DEPTH
	NA	

SAMPLER TYPE: 2"x48" sleeved *Macro-core* samplers used

SHEET 1 OF 1

Logged by: DTH

DEPTH (Ft.)	SAMPLE DEPTH (Ft.)	SAMPLE #	RECOVERY (Ft.)	STAINING	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH (Ft.)
						Brown dry Sand and Gravel (fill)	±1
	0 - 2	1		Present	1.4	Black stained moist Sand and Gravel (fill)	
						(staining from 1.4' to 3.6')	
4	2 -4	2	3.5	Present	67		±3.6
						Grey/Green with brown moist to wet silt	
	4 -6	3		NP	26		
8	6 - 8	4	3.4	NP	150		
	8 - 11	5	2.7	NP	55		
12							
	11 - 14	6	2.8	NP	91	(very dense)	
						Bottom of Boring	±14.0
16							

Lab Sample
Collected at 12:00 PM, 6' - 8' bgs

Piezometer Installation Notes:
Installed 1"-diameter piezometer with a bentonite surface seal to approximately 14' bgs and five feet of standard .20 slot well screen for water level measurements

Notes:
NA Not Available
NP Not Present
PID Photoionization Meter Reading
ppm parts per million
bgs Below the ground surface
Highlight indicates soil sampled in this depth range
▼ Field estimate of groundwater depth

Weather:
Lower 60°F's

PLUMLEY ENGINEERING, P.C.
TEST BORING LOG

SITE: QUANTA RESOURCES SITE
HOLE NO. SB-2

LOCATION 2802-2810 Lodi Street, City of Syracuse
SURF. EL. 403

DATE STARTED: 11/7/08 **DATE COMPLETED:** 11/7/08
JOB NO. 2008008.007

GROUNDWATER DEPTH WHILE DRILLING ± 8

INSPECTOR: DTH
DRILLER: Paragon Environmental Construction, Inc.
DRILLING METHOD: Truck rig with percussion Geoprobe drill

TIME	ING/HOLE CONDIT	DEPTH
	NA	

SAMPLER TYPE: 2"x48" sleeved *Macro-core* samplers used
SHEET 1 **OF** 1
Logged by: DTH

DEPTH (Ft.)	SAMPLE DEPTH (Ft.)	SAMPLE #	RECOVERY (Ft.)	STAINING	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH (Ft.)
						Top Soil	±1
	0 - 2	1	1.8	Present	0	Black stained moist Sand and Gravel, little to some silt (fill)	
						(staining from 1.3' to 11.2')	
4	2 -4	2	2	Present	21		
						(near piping product area)	
8	4 - 8	4	2.4	Present	101		
						(possible spots of free product in wet silty sand zone	
	8 - 10	5		Present	88	at 8' to 8.4' bgs)	
							±11.2
12	10 - 12	6	4	Present	73	Grey/Green with brown moist to wet silt (petroleum odor)	
						Bottom of Boring	±12.
16							

Lab Sample
Collected at 2:45 PM, 8' - 10' bgs

Piezometer Installation Notes:
Installed 1"-diameter piezometer with a bentonite surface seal to approximately 12' bgs and five feet of standard .20 slot well screen for water level measurements

Notes:
NA Not Available
NP Not Present
PID Photoionization Meter Reading
ppm parts per million
bgs Below the ground surface
Highlight indicates soil sampled in this depth range
▼ Field estimate of groundwater depth

Weather:
Lower 60°F's

PLUMLEY ENGINEERING, P.C.
TEST BORING LOG

SITE: QUANTA RESOURCES SITE
HOLE NO. SB-3
LOCATION 2802-2810 Lodi Street, City of Syracuse
SURF. EL. 405
DATE STARTED: 11/7/08 **DATE COMPLETED:** 11/7/08
JOB NO. 2008008.007
GROUNDWATER DEPTH WHILE DRILLING ± 7 .5' - 8.5'

INSPECTOR: DTH
DRILLER: Paragon Environmental Construction, Inc.
DRILLING METHOD: Truck rig with percussion Geoprobe drill

TIME	ING/HOLE CONDI	DEPTH
	NA	

SAMPLER TYPE:
SHEET 1 OF 1

2"x48" sleeved *Macro-core* samplers used **Logged by:** DTH

DEPTH (Ft.)	SAMPLE DEPTH (Ft.)	SAMPLE #	RECOVERY (Ft.)	STAINING	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH (Ft.)
						Top Soil	±1
	0 - 2	1		Present	0	Brown dry fine to coarse Sand, some fine to coarse gravel, trace brick (trace staining at 1.8' to 2.7', fill)	
4	2 -4	2	3.3	Present	9.1	Black and oil stained from 2.7' to 4.8'	±5.3
	4 - 6	3		Present	1.8	Green/grey Silt	
8	6 - 8	4	4	NP	4.1		±7.8
						Brown wet medium to coarse, some silt, trace fine gravel	±8.5
	8 - 10	5		NP	0	Grey/Green with brown moist to wet silt (petroleum odor)	
12	10 - 12	6	4	NP	38		
	12 - 14	7	0.2	NP	58		
16						Bottom of Boring	±14

Lab Sample
Collected at 9:45 AM, 12' - 14" bgs

Piezometer Installation Notes:
Installed 1"-diameter piezometer with a bentonite surface seal to approximately 14 bgs and five feet of standard .20 slot well screen for water level measurements

Notes:
NA Not Available
NP Not Present
PID Photoionization Meter Reading
ppm parts per million
bgs Below the ground surface
Highlight indicates soil sampled in this depth range
▼ Field estimate of groundwater depth

Weather:
Lower 60^{o}F's

PLUMLEY ENGINEERING, P.C.
TEST BORING LOG

SITE: QUANTA RESOURCES SITE
HOLE NO. SB-4
LOCATION 2802-2810 Lodi Street, City of Syracuse
SURF. EL. 440
DATE STARTED: 11/7/08 **DATE COMPLETED:** 11/7/08
JOB NO. 2008008.007
GROUNDWATER DEPTH WHILE DRILLING moist at ± 5.5

INSPECTOR: DTH
DRILLER: Paragon Environmental Construction, Inc.
DRILLING METHOD: Truck rig with percussion Geoprobe drill

TIME	ING/HOLE CONDIT	DEPTH
	NA	

SAMPLER TYPE:
SHEET 1 **OF** 1

2"x48" sleeved *Macro-core* samplers used **Logged by:** DTH

DEPTH (Ft.)	SAMPLE DEPTH (Ft.)	SAMPLE #	RECOVERY (Ft.)	STAINING	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH (Ft.)
						Top Soil	±1
	0 - 2	1		NP	0	Brown dry fine to coarse Sand, some fine to coarse gravel,	
						trace brick (fill, with no impact)	
4	2 -4	2	3.3	NP	0		±3.8
						Green/grey Silt	
	4 - 6	3		NP	24	(moist zone at 5.5' bgs)	
8	6 - 8	4	3.7	NP	15	same	
	8 - 11	5		Possible	31	same	
12						(possible staining around weather rock fragments)	
	11 - 13	6	3	NP	12	same and moist	
	13 - 15	7	2	NP	23	same and dry (4" thick moist silt/clay seam)	
16						Bottom of Boring	±15

Lab Sample
Collected at 2:25 PM, 11' - 13' bgs (soft moist zone)
Collected at 2:30 PM, 13' - 15' bgs (hard dry zone)

Piezometer Installation Notes:
Installed 1"-diameter piezometer with a bentonite surface seal to approximately 15 bgs and five feet of standard .20 slot well screen for water level measurements

Notes:
NA Not Available
NP Not Present
PID Photoionization Meter Reading
ppm parts per million
bgs Below the ground surface
Highlight indicates soil sampled in these depth ranges
▼ Field estimate of groundwater depth

Weather:
Lower 60°F's

PLUMLEY ENGINEERING, P.C.
TEST BORING LOG

SITE: QUANTA RESOURCES SITE
LOCATION 2802-2810 Lodi Street, City of Syracuse
DATE STARTED: 11/7/08 **DATE COMPLETED:** 11/7/08

HOLE NO. SB-5
SURF. EL. 404
JOB NO. 2008008.007
GROUNDWATER DEPTH WHILE DRILLING moist at + 3

INSPECTOR: DTH
DRILLER: Paragon Environmental Construction, Inc.
DRILLING METHOD: Truck rig with percussion Geoprobe drill

TIME	CASING/HOLE CONDITION	DEPTH
	NA	

SAMPLER TYPE:
SHEET 1 **OF** 1

2"x48" sleeved *Macro-core* samplers used **Logged by:** DTH

DEPTH (Ft.)	SAMPLE DEPTH (Ft.)	SAMPLE #	RECOVERY (Ft.)	STAINING	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH (Ft.)
						Brown moist fine to medium Sand, little fine to medium gravel	+0.6
	0 - 2	1		NP	0	Brown moist Silt, fine sand, trace sandy gravel fill, trace cinders, trace brick, trace glass	
4	2 -4	2	3.5	NP	0		+3.2
						Green/grey with brown Silt	
	4 - 6	3		NP	0	(a 3" to 4" thick wet to moist zone with a slight sheen at 4' bgs, 0 ppm, Lab Sample 1:36 PM)	+7
8	6 - 8	4	4	NP	0	Light brown moist with green Silt, little to trace fine sand	+9.5
						Green/grey with brown Silt	
	8 - 11	5	3	NP	0		
12							
	11 - 14	6	1.8	NP	3.9	(Lab Sample 1:42 PM)	
						Bottom of Boring	+14
16							

Lab Sample
Collected at 1:36 PM, 5' - 7' bgs
Collected at 1:42 PM, 12' - 14' bgs

Piezometer Installation Notes:
Installed 1"-diameter piezometer with a bentonite surface seal to approximately 14 bgs and five feet of standard .20 slot well screen for water level measurements

Notes:
NA Not Available
NP Not Present
PID Photoionization Meter Reading
ppm parts per million
bgs Below the ground surface
Highlight indicates soil sampled in these depth ranges
Field estimate of groundwater depth

Weather:
Lower 60^{o}F's

PLUMLEY ENGINEERING, P.C.
TEST BORING LOG

SITE: QUANTA RESOURCES SITE
LOCATION 2802-2810 Lodi Street, City of Syracuse
DATE STARTED: 11/7/08 **DATE COMPLETED:** 11/7/08

HOLE NO. SB-6
SURF. EL. 405
JOB NO. 2008008.007
GROUNDWATER DEPTH WHILE DRILLING moist at ± 3

INSPECTOR: DTH
DRILLER: Paragon Environmental Construction, Inc.
DRILLING METHOD: Truck rig with percussion Geoprobe drill

TIME	ING/HOLE CONDI	DEPTH
	NA	

SAMPLER TYPE:
SHEET 1 OF 1

2"x48" sleeved *Macro-core* samplers used **Logged by:** DTH

DEPTH (Ft.)	SAMPLE DEPTH (Ft.)	SAMPLE #	RECOVERY (Ft.)	STAINING	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH (Ft.)
						Top Soil	±0.2
	0 - 2	1		Present	36	Sand and	+1.2
						Black stained with free product Sand and Gravel fill from	
4	2 -4	2	3.6	Present	867	1.2' to 3.4' (moist at 3.4' bgs)	±3.4
						Green/grey with brown dry to moist Silt	
	4 - 6	3		NP	1,200		
8	6 - 8	4	3.4	NP	1,500	same	
	8 - 11	5	1.6	NP	2,500	same	
12							
						(Lab Sample 11:05 AM)	
	11 - 14	6	2.7	NP	361	same with sections of dense blocky seams	
						Bottom of Boring	±14
16							

Lab Sample
Collected at 1:05 PM, 8' - 11' bgs

Piezometer Installation Notes:
Installed 1"-diameter piezometer with a bentonite surface seal to approximately 14 bgs and five feet of standard .20 slot well screen for water level measurements

Notes:
NA Not Available
NP Not Present
PID Photoionization Meter Reading
ppm parts per million
bgs Below the ground surface
Highlight indicates soil sampled in this depth range

Weather:
Lower 60^{o}F's

PLUMLEY ENGINEERING, P.C.
TEST BORING LOG

SITE: QUANTA RESOURCES SITE
LOCATION 2802-2810 Lodi Street, City of Syracuse
DATE STARTED: 11/7/08 **DATE COMPLETED:** 11/7/08

HOLE NO. SB-7
SURF. EL. 405
JOB NO. 2008008.007
GROUNDWATER DEPTH WHILE DRILLING ± 8

INSPECTOR: DTH
DRILLER: Paragon Environmental Construction, Inc.
DRILLING METHOD: Truck rig with percussion Geoprobe drill

TIME	ING/HOLE CONDI	DEPTH
	NA	

SAMPLER TYPE: **SHEET 1 OF 1**

2"x48" sleeved *Macro-core* samplers used **Logged by:** DTH

DEPTH (Ft.)	SAMPLE DEPTH (Ft.)	SAMPLE #	RECOVERY (Ft.)	STAINING	PID (ppm)	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH (Ft.)
						Top Soil	±0.3
	0 - 2	1		Present	50	Dark brown Sand Gravel fill with cinders, trace glass, trace wood (railroad tie), wet seam at 4' bgs with a sheen	
4	2 -4	2	3.4	Present	0		±4.3
						Green/grey Silt	
	4 - 6	3		Present	23		±5.5
						Green/grey with brown Silt, some fine to medium sand, wet seam at approximately 10'	
8	6 - 8	4	4	NP	0		
	8 - 11	5	3	NP	10		
12							
	11 - 14	6	3	NP	11		
						Bottom of Boring	±14.5
16							

Lab Sample
Collected at 10:15 AM), 4' - 6' bgs
Collected at 10:25 AM), 11' - 14' bgs

Piezometer Installation Notes:
Installed 1"-diameter piezometer with a bentonite surface seal to approximately 14 bgs and five feet of standard .20 slot well screen for water level measurements

Notes:
NA Not Available
NP Not Present
PID Photoionization Meter Reading
ppm parts per million
bgs Below the ground surface
Highlight indicates soil sampled in these depth ranges
Field estimate of groundwater depth

Weather:
Lower 60°F's

URS CONSULANTS, INC.
Definition of Terms Used to Describe Subsurface Materials

I. Soil Terms

A. Grain Size

Size Fraction	Subcategory	Dimensions (mm)
o Boulder		> 12 inch
o Cobbles		76.2 (3 inch)-12 inch
o Gravel	Coarse	76.2 - 19.1
	Fine	19.1 - 4.76 (#4 mesh)
o Sand	Coarse	4.76 - 2.0
	Medium	2.0 - 0.42
	Fine	0.42 - 0.074 (#200 mesh)
o Silt	(Non-plastic/ granular)	0.074 - 0.005
o Clay	(Plastic/ cohesive)	< 0.005

B. Moisture Condition

o Dry:	Absence of moisture, dusty, dry to the touch, cohesive soils generally hard.
o Moist:	Damp but no visible water, cohesive soils deform with moderate effort.
o Very Moist:	Soil is damp and contains appreciable water, cohesive soils pliable.
o Wet:	Soil is completely saturated and may be dripping, cohesive soils soft to very soft.

C. Consistency

Granular Soils

Term	Blows per Foot.N
o Very Loose	0 - 4
o Loose	5 - 10
o Medium Dense	11 - 30
o Dense	31 - 50
o Very Dense	Over 50

Cohesive Soils

Term	Blows per Foot.	Field Identification
o Very Soft (<0.25 TSF)	<2	penetrated several inches by fist
o Soft (<0.5 TSF)	3 - 5	penetrated several inches by thumb
o Medium Stiff (<1.0 TSF)	6 - 15	penetrated several inches with moderate effort
o Stiff (<2 TSF)	16 - 25	indented by thumb with great effort
o Very Stiff (<4 TSF)	25 - 50	indented by thumbnail
o Hard (>4 TSF)	>50	indented with difficulty by thumbnail

NOTE: Large particles in the soils will often significantly influence the blows per foot recorded during the Penetration Test.

D. Textural Class Description

Textural classification of a soil is determined based on the distribution of grain size fractions. The portions by weight of each soil fraction is commonly used as the basis for determining textural class as follows:

o Primary component: >35% grain size fraction

o Secondary component: 15 - 35% grain size fraction

Example: Sample with 60% fine sand and 25% silt, described as Silty Fine Sand

Modifying Terms:

AND	Indicates approximately equal amounts of materials, such as a sand and gravel mixture. If the materials occur in thin separate seams, it is noted in the detailed work classification. The thickness is given where possible. Example: Medium dense sand and gravel, or dense interbedded coarse sand and gravel (1/4" - 3/4" thick)
SOME	Indicates a significant amount (10-25%) of the accessory material. Example: Medium dense silty sand - some gravel
TRACE	Indicates a minor amount (<10%) of the accessory material. Example: Loose silty sand - tracel of gravel
INTERBEDDED	Used to describe thin alternating seams. Thickness is given where possible. Example: Stiff interbedded silt and clay (approx. 1/16" thick)
POORLY GRADED	Indicates coarse grain soil that has a predominant grain size. Example: Poorly graded fine sand, trace silt
WELL GRADED	Indicates coarse grain soil that has a wide range of grain sizes. Example: Well graded silty sand, some fine gravel (15-20%)

3196A

E. Mass Structure

Term	Characteristic
Layer	Soil unit more than 6" thick
Seam	Soil unit less than 6" thick.
Parting	Soil unit less than 1/8" thick.
Stratified	Alternating seams of varying material with layers greater than 1/8" thick.
Laminated	Alternating lamina of varying soil with layers less than 1/8" thick.

II. ROCK TERMS

A. Sedimentary Rock Classification

Rock Type	Characteristics
Sandstone	Made up predominantly of granular material ranging between 1/16 and 2 mm in diameter.
Siltstone	Made up of granular materials less than 1/16 mm in diameter Fractures irregularly. Medium thick to thick bedded.
Claystone	Very fine grained rock made up of clay materials. Fractures irregularly. Very smooth to touch. Generally has irregularly spaced pitting on surface of drilled cores.
Shale	A fissile very fine grained rock. Fractures along bedding planes.
Limestone	Rock made up predominantly of calcite (calcium carbonate) effervesces upon the application of hydrochloric acid.
Coal	Rock consisting mainly of organic remains.

B. Modifying Terms

SEAM/LENS Areally continuous/discontinuous bed

Example: Coal seam/sandstone lens

SOME Indicates significant (15 to 40 percent) amounts of the accessory material.

Example: Rock composed of sandstone (70%) and seams of shale (30%) would be:

sandstone, some shale seams

FEW Indicates minor (0-15 percent) amounts of the accessory material.

Example: Rock composed of sandstone (90%) and seams of shale (10%) would be:

sandstone, few shale seams

INTERBEDDE Used to indicate thin or very thin alternating seams of material occurring in approximately equal amounts.

Example: Rock composed of sandstone (50%) and shale (50%) seams would be:

interbedded sandstone and shale

C. Hardness		D. Brokenness		E. Bedding		
Term	Definition	Terms	Spacing	Term		Dimensions
Soft	Scratched by fingernail	Very Broken (V.BR.)	< 2 inches	Very Thin	Natural breaks	<1"
Medium Hard	Scratched easily by knife	Broken (BR.)	2 in. - 1 ft.	Thin Bedded	in Rock Layers	1" - 4"
Hard	Scratched with difficulty by penknife	Blocky (BL.)	1 ft. - 3 ft.	Bedded		4" - 12"
		Massive (M.)	3 ft. - 10 ft.	Thick Bedded		12" - 36"
Very Hard	Cannot be scratched by penknife			Massive		>36"

RQD - Rock Quality Designation is cumulative length of pieces of core equal to or greater than four inches in length divided by the total length of core run, expressed as a percentage.

LEGEND

Residual Soil	Claystone	4.6 / 5.0 — Length of Core Recovered / Length of Drill Run
Gravel	Limestone	
Sand or Alluvium	Siltstone	
Silt	Sandstone	3-10-90 — Groundwater Level and Date of Observation
Clay	Shale	
Organic Material	Concrete	
Slag	Coal	60/0.3 — Indicates 60 Blows Required for Split Barrel to Penetrate 0.3 Feet
Fill	Void	
		Approximate Top of Rock

3196B

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. EB-1

PROJECT: QUANTA RESOURCES	SHEET NO. 1 OF 1
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION	JOB NO.: 35235.10
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.	BORING LOCATION:
	GROUND ELEVATION: 402.16 USC&GS
	DATE STARTED: 11-14-91
	DATE FINISHED: 11-14-91
	DRILLER: LEE PENROD
	GEOLOGIST: SCOTT SWANSON
	REVIEWED BY: DUANE LENHARDT

GROUND WATER:

DATE	TIME	LEV	TYPE		CAS.	SAMP	CORE	TUBE
				TYPE		SPLIT SPOON (SS)		
11-15	8:30am	8.75	BGS (BOREHOLE	DIA.		2"		
			(CAVE IN TO	WT.		140lb		
			T.D. OF 9.5'	FALL		30"		
			FROM ORIG. 12')	* POCKET PENETROMETER READING				

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (ppm)	REMARKS
		1		12 8 / 6 4	60%	BLACK	MEDIUM DENSE	GRAVELLY SILT	ML	2	STRONG PETROLEUM ODOR
		2		3 5 / 4 5	25%		LOOSE			5-7	
5		3*		2 1 / 1 1	60%		SOFT	GRAVELLY CLAYEY SILT	ML	5-10	
		4		2 1 / 1 2	100%						
10		5		3 8 / 30 15	30%		MEDIUM STIFF				
		6		6 16 / 12 6	50%	GRAY-GREEN		SILTY CLAY	CL		
								CLAYEY SILT	ML		
		7		50/3"				TOTAL DEPTH 12.25' TERMINATED BORING AFTER ENCOUNTERING SOLID OBJECT.			
15											
20											
25											
30											
35											

A-3205

COMMENTS DRILL RIG: TRUCK-MOUNTED MOBILE B-57
* ENVIRONMENTAL SOIL SAMPLE COLLECTED FOR FULL TCL AND CYANIDE ANALYSES

PROJECT NO. 35235.10
BORING NO. EB-1

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. EB-2

PROJECT: QUANTA RESOURCES	SHEET NO. 1 OF 1
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION	JOB NO.: 35235.10
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.	BORING LOCATION:

GROUND WATER:					CAS.	SAMP	CORE	TUBE	
DATE	TIME	LEV	TYPE	TYPE		SPLIT SPOON	(SS)		GROUND ELEVATION: 402.63' USCEGS
11-14	3:20AM	4'	BGS (HSA)	DIA.		2"			DATE STARTED: 11-14-91
11-15	8:30AM	4'	BGS (BOREHOLE (CAVE-IN TO 6.5' FROM ORIG. 16')	WT.		140lb			DATE FINISHED: 11-14-91
				FALL		30"			DRILLER: LEE PENROD
									GEOLOGIST: SCOTT SWANSON
				* POCKET PENETROMETER READING					REVIEWED BY: DUANE LENHARDT

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
		1	SS	13 19 16 14	60%	BLACK-GREEN	DENSE	SILTY GRAVELS	ML	12	ODOR DRY-SL. MOIST
		2	SS	11 10 11 15	40%	DARK BROWN-BLACK	MEDIUM DENSE	SANDY SILT, SOME GRAVELS	ML	15	STRONG OILY ODOR SL. MOIST
5		3	SS	3 2 1 1	15%	BLACK	VERY LOOSE	SILT	ML	5	V. STRONG WET ODOR
		4	SS	3 1 1 1	45%					5	V. MOIST-WET
		5*	SS	5 3 12 17	70%		MEDIUM DENSE			200	UPGRADE LEVEL C
10		6*	SS	18 11 11 8	50%	GRAY-OLIVE GREEN		SILT, SOME SAND	ML		BREATHING ZONE OK
		7	SS	6 15 12 12	30%	BLACK		TR. WHITE SAND		100	WET
15		8	SS	18 27 25 13	65%	RED OLIVE-GREEN	VERY DENSE	DECOMPOSED SILTSTONE		20	OILY DRY
								TOTAL DEPTH 16'			
20											
25											
30											
35											

A-3205

COMMENTS DRILL RIG: TRUCK MOUNTED MOBILE B-57
* ENVIRONMENTAL SOIL SAMPLE COLLECTED FOR FULL TCL AND CYANIDE ANALYSES

PROJECT NO. 35235.10
BORING NO. EB-2

URS CONSULTANTS, Inc.	TEST BORING LOG BORING NO. EB-3

PROJECT: QUANTA RESOURCES									SHEET NO. 1 OF 1
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION									JOB NO.: 35235.10
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.									BORING LOCATION:
GROUND WATER:					CAS.	SAMP	CORE	TUBE	GROUND ELEVATION: 402.92 USC&GS
DATE	TIME	LEV	TYPE	TYPE		SPLIT SPOON			DATE STARTED: 11-14-91
11-14	12:30	DRY	SL. WET ON BOTTOM	DIA.		2"			DATE FINISHED: 11-14-91
11-15	8:35AM	DRY	CAVE-IN TO	WT.		140lb.			DRILLER: LEE PENROD
			11' FROM ORIG. 14'	FALL		30"			GEOLOGIST: SCOTT SWANSON
				* POCKET PENETROMETER READING					REVIEWED BY: DUANE LENHARDT

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"		RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
		1	SS	20 / 20	30 / 15	75%	GRAY-LT. BROWN	DENSE	SANDY GRAVEL TR-SOME SILT	GP	0	DRY
		2	SS	15 / 7	14 / 6	50%		MEDIUM DENSE			0	DRY
5		3	SS	3 / 4	4 / 4	50%	OLIVE-BROWN-GRAY-GREEN SOME MOTTLED	MEDIUM STIFF	CLAYEY SILT	ML/CL	0	SL. ODOR SL. MOIST
		4	SS	2 / 5	2 / 10	50%					5	BLACK STAIN WET ODOR OF PETROLEUM
10		5	SS	2 / 7	1 / 5	60%					10	UPPER WET DOWNHOLE
		6*	SS	2 / 9	7 / 13	65%		STIFF			20	STONG ODOR HYDROCARBON
		7	SS	7 / 36	22 / 13	75%		V. DENSE	DECOMPOSED SILTSTONE/SHALE	VBR	30	DRY
15		8	SS	2 / 5	5 / 8	60%		LOOSE			20	MOIST-DRY
									TOTAL DEPTH 16'			
20												
25												
30												
35												

A-3205

COMMENTS DRILL RIG: TRUCK MOUNTED MOBILE B-57

* ENVIRONMENTAL SOIL SAMPLE COLLECTED FOR TCL ANALYSES AND CYANIDE

PROJECT NO. 35235.10

BORING NO. EB-3

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-1S

PROJECT: QUANTA RESOURCES	SHEET NO. 1 OF 1
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION	JOB NO.: 35235.10
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.	BORING LOCATION:
	GROUND ELEVATION: 405.46'
	DATE STARTED: 11-19-91
	DATE FINISHED: 11-20-91
	DRILLER: LEE PENROD
	GEOLOGIST: SCOTT SWANSON
	REVIEWED BY: DUANE LENHARDT

GROUND WATER:					CAS.	SAMP	CORE	TUBE
DATE	TIME	LEV	TYPE	TYPE		SPLIT SPOON	(SS)	
11-21	8:35AM	31.15'	TOP RISER	DIA.		2"		
11-25	6:10PM	31.75'	TOP RISER	WT.		140lb		
				FALL		30"		
				* POCKET PENETROMETER READING				

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"		RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
									SEE WELL LOG MW-1D FOR SOIL DESCRIPTIONS OF 0-16'			
15												
20		1	SS	6 / 50/4"	42	100%	BLACK OLIVE-BROWN LT. GREEN	VERY DENSE	DECOMPOSED SILTSTONE OR SHALE	VBR	VBR	V. MOIST-WET; CLAYEY SANDY SILT IN SPOON DUE TO SLOUGH
25												
		2	SS	22	50/2"	100%					5-20	DRY
30		3*	SS	44 / 22	32 / 30	100%	RED-SOME BLUE-GREEN MOTTLED				25	DRY-SL. MOIST
		4	SS	28	50/5"	100%			CRUMBLY SILT. SOFT WHERE MOIST		20	V. MOIST SL. MOIST
35		5	SS	36	50/4"	100%	RED				15-50	
		6	SS	50/2"		100%					20-30	MOIST UPPER LOWER DRY
		7	SS	22	50/5"	100%	GREEN		BROKEN FRACTURED SILTSTONE / MUDSTONE / SHALE		0	V. MOIST-WET
40									TOTAL DEPTH 39' WELL SCREEN 29-36			
45												

COMMENTS DRILL RIG: TRUCK-MOUNTED MOBILE B-57
* ENVIRONMENTAL SOIL SAMPLE COLLECTED FOR FULL TCL AND CYANIDE ANALYSES

PROJECT NO. 35235.10
BORING NO. MW-1S

A-3205

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-1D

PROJECT: QUANTA RESOURCES	SHEET NO. 1 OF 2
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION	JOB NO.: 35235.10
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.	BORING LOCATION:
	GROUND ELEVATION: 405.01' USC&GS
	DATE STARTED: 11-15-91
	DATE FINISHED: 11-18-91
	DRILLER: LEE PENROD
	GEOLOGIST: SCOTT SWANSON
	REVIEWED BY: DUANE LENHARDT

GROUND WATER:

DATE	TIME	LEV	TYPE	TYPE	CAS.	SAMP	CORE	TUBE
11-15	3:25PM	37.85	BGS (HSA)	TYPE		SPLIT SPOON (SS)		
11-18	9:45AM	30.15	BGS (HSA)	DIA.		2"		
11-19	1:25PM	31.80	TOP RISER	WT.		140lb.		
11-21	8:40AM	31.90	" "	FALL		30"		

* POCKET PENETROMETER READING

11-25 6:05PM 31.60 T. RISER

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
0–2		1	SS	4 7 / 9 4	60%	BLACK	MEDIUM DENSE	FINE GRAVELLY SILT	ML	0	SL. MOIST
2–4		2	SS	9 10 / 12 16	75%	GREEN-BLUE BROWN	STIFF	CLAYEY SILT SL. PLASTIC	ML/CL	0	MOIST
5		3	SS	17 18 / 18 20	100%	MOTTLED	VERY STIFF			0	SL. MOIST SL. ODOR
		4	SS	20 50 / 50/5"	75%		HARD			0	DRY
10		5	SS	7 9 / 20 22	50%	GRAY-GREEN	MEDIUM DENSE	DECOMPOSED SILTSTONE OR SHALE FISSILE/CRUMBLY	VBR	0	
15		6	SS	4 9 / 6 6	85%	GREEN				5-20	DRY
											CUTTINGS BALLING UP
20		7*	SS	22 32 / 30 17	100%		V. DENSE			90	SL. MOIST
25		8	SS	10 50/5"	90%	RED		BRITTLE CONSISTENCY EXTREMELY WEATHERED SILTSTONE SHALE		30	DRY
30		9	SS	7 10 / 10 12	95%	GREEN-RED MOTTLED		SOME CLAYEY SILTSTONE FISSILE		20-30	V. MOIST WET
		10	SS	22 50/4"	100%	RED				10	DRY
35		11	SS	38 50/2"	100%					5-10	

COMMENTS DRILL RIG: TRUCK-MOUNTED MOBILE B-57
* COLLECTED ENVIRONMENTAL SOIL SAMPLE FOR FULL TCL AND CYANIDE ANALYSES

PROJECT NO. 35235.10
BORING NO. MW-1D

A-3205

URS CONSULTANTS, Inc.	TEST BORING LOG BORING NO. MW-1 D
PROJECT: QUANTA RESOURCES	SHEET NO. 2 OF 2
CLIENT: NYSDEC	JOB NO.: 35235.10

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"		RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
36												
40		12	SS	22	42	100%	RED-GREEN-DK. GRAY	VERY DENSE	MUDSTONE/ SILTSTONE SHALE	BR	<5	WET / DRY
				50/3"								
45		13	SS	37	50/2"	100%	DK. GRAY				<1	WET
		14	SS	50/5"		100%			SOLID IN BOTTOM of SPOON		<1	DRY
									TOTAL DEPTH 48'			
50									WELL SCREEN 42-47'			

COMMENTS

PROJECT NO. 35235.10
BORING NO. MW-1D

A-3205A

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-2
SHEET NO. 1 OF 2
JOB NO.: 35235.10
BORING LOCATION:
GROUND ELEVATION: 405.73' USC&GS
DATE STARTED: 11-21-91
DATE FINISHED: 11-21-91
DRILLER: LEE PENROD
GEOLOGIST: SCOTT SWANSON
REVIEWED BY: DUANE LENHARDT

PROJECT: QUANTA RESOURCES
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.

GROUND WATER:					CAS.	SAMP	CORE	TUBE
DATE	TIME	LEV	TYPE	TYPE		SPLIT SPOON	(SS)	
11-25	6:25PM	30.70	TOP RISER	DIA.		2"		
				WT.		140lb.		
				FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"		RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
		12 * *	SS	4 / 10	4 / 11		BLACK	MEDIUM DENSE	SILT		0-4	WET, PETROLEUM ODOR
5		1	SS	3 / 5	3 / 7	100%	GREEN-BLUE SOME BROWN MOTTLED	MEDIUM STIFF	CLAYEY SILT SL. PLASTIC	ML/CL	10-15	MOIST
10		2	SS	4 / 7	4 / 8	100%	OLIVE GREEN BLUE-GRAY		CRUMBLY		5-20	MOIST-SL. MOIST
15		3	SS	6 / 9	9 / 9	50%		MEDIUM DENSE	DECOMPOSED SILTSTONE PLATY AND FRIABLE	VBR	20-40	SL. MOIST
20		4	SS	18 / 22	26 / 19	70%		DENSE			50-60	DRY
25		5	SS	41	50/2"	100%	RED		SEMI-BRITTLE AND SOME CRUMBLY, POWDERY		2-5	DRY
30		6+	SS	9 / 19	10 / 40	100%	SOME BLUE-GREEN MOTTLED				20-70	V. MOIST-WET
		7	SS	40	50/3.5"	100%		VERY DENSE			0-5	DRY-SL. MOIST
35		8	SS	31	50/3.5"	100%					50	V. MOIST

CONTINUED ON SHEET 2

COMMENTS DRILL RIG: TRUCK-MOUNTED MOBILE B-57
* ENVIRONMENTAL SOIL SAMPLE COLLECTED AT 1-3' FOR FULL TCL AND CYANIDE ANALYSES
+ GEOTECHNICAL SAMPLE COLLECTED FOR GRAIN SIZE ANALYSIS

PROJECT NO. 35235.10
BORING NO. MW-2

A-3205

URS CONSULTANTS, Inc.	TEST BORING LOG BORING NO. MW-2
PROJECT: QUANTA RESOURCES	SHEET NO. 2 OF 2
CLIENT: NEW YORK STATE DEPT. OF ENV. CONSERVATION	JOB NO.: 35235.10

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"		RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
35												
	S S S	9	SS	50/5"		100%	RED	VERY DENSE	DECOMPOSED SILTSTONE		12	MOIST - DRY
	S S											↓
	S S	10	SS	50/5"		100%	GREEN				10	
	S S	11	SS	66	100/3"	100%						MOISTURE
									TOTAL DEPTH 38'			DRIVEN OFF BY SPOON IMPACT
40									WELL SCREEN 28-38'			
45												

A-3205A

COMMENTS

PROJECT NO. 35235.10
BORING NO. MW-2

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-3

PROJECT: QUANTA RESOURCES	SHEET NO. 1 OF 2
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION	JOB NO.: 35235.10
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.	BORING LOCATION:

GROUND WATER:					CAS.	SAMP	CORE	TUBE	GROUND ELEVATION: 398.98' USGS
DATE	TIME	LEV	TYPE	TYPE		SPLIT SPOON	(SS)		DATE STARTED: 11-25-91
11-26	7:45AM	26.45	BGS (HSA)	DIA.		2"			DATE FINISHED: 11-26-91
				WT.		140lb			DRILLER: JOHN PIETRUCH
				FALL		30"			GEOLOGIST: SCOTT SWANSON
				* POCKET PENETROMETER READING					REVIEWED BY: DUANE LENHARDT

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
0	S	1	SS	2 8 9 13	30%	DARK BROWN	MEDIUM DENSE	SILT, TRACE SAND, ROOTS	ML		MOIST RAINY HNU NOT WORKING
5	S	2	SS	13 19 12 21	100%	DARK GRAY OLIVE-BROWN	DENSE	TR. BROKEN 1½" GRAVEL BECOMING COMPACTED TIGHTER			DRY
10	S	3	SS	14 18 13 18	50%	LT. GREEN		DECOMPOSED SILTSTONE, SHALE PLATY, FISSILE	VBR		
15	S	4	SS	16 26 12 16	50%	RED					
20	S	5	SS	14 26 46 55	60%	TR. GREEN	V. DENSE				
25	S	6	SS	24 88 50/3"	100%						ODOR WHILE DRILLING @ 29'
30	S	7*	SS	38 28 24 35	65%	DARK GREEN		Poorly fissile		50-100	SL. MOIST
35	S	8*	SS	7 9 43 64	100%	BLUE/GRAY		friable		3-4	

COMMENTS DRILL RIG: TRUCK-MOUNTED MOBILE B-57
* ENVIRONMENTAL SOIL SAMPLES COLLECTED FROM 29-31 (VOA'S ONLY) AND 34-36' (AB
PESTICIDES/PCB'S, METALS AND CYANIDE ANALYSES

PROJECT NO. 35235.10
BORING NO. MW-3

A-3205

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-3

PROJECT: QUANTA RESOURCES
CLIENT: NYSDEC

SHEET NO. 2 OF 2
JOB NO.: 35235.10

DEPTH FT 36	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
		9	SS	17 51 65 65	100%	BLUE GRAY	VERY DENSE	DECOMPOSED SILTSTONE 8' ROD WET		1	UPPER 6" WET LOWER 18" MOIST TO DRY
40		10+	SS	31 36 51 54	100%	DK GRAY	HARD	CLAYEY SILT SL. PLASTIC LOWER LAMINATED	ML	0	WET
		11	SS	36 43 50/3"	100%	LT. GRAY		SILT		0	SL. MOIST
								TOTAL DEPTH 41.5'			
45								WELL SCREEN 25-40'			

A-3205A

COMMENTS + GEOTECHNICAL SAMPLE COLLECTED FOR GRAIN SIZE ANALYSIS

PROJECT NO. 35235.10
BORING NO. MW-3

URS CONSULTANTS, Inc.

PROJECT: QUANTA RESOURCES	TEST BORING LOG BORING NO. MW-4
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION	SHEET NO. 1 OF 2
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.	JOB NO.: 35235.10
	BORING LOCATION:
	GROUND ELEVATION: 398.84' USC&GS
	DATE STARTED: 11-22-91
	DATE FINISHED: 11-25-91
	DRILLER: LEE PENROD
	GEOLOGIST: SCOTT SWANSON
	REVIEWED BY: DUANE LENHARDT

GROUND WATER:					CAS.	SAMP	CORE	TUBE
DATE	TIME	LEV	TYPE	TYPE		SPLIT SPOON (SS)		
11-25	8:20AM	23.2	BGS (HSA)	DIA.		2"		
11-25	5:45PM	25.65	T. RISER	WT.		140 lb		
				FALL		30"		

* POCKET PENETROMETER READING

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
		1	SS	7 5 / 7 7	75%	BROWN-BLACK GREEN RED BROWN WHITE	MEDIUM DENSE	SILT, BITS OF RED BRICK FILL	ML MATRIX	0	NO ODOR SL. MOIST
		2	SS	9 9 / 17 15	45%			TR. 1½" ROCK, GRAVEL			
5		3	SS	12 10 / 8 12	70%	TAN-BROWN GREEN-GRAY OLIVE		SILT, TRACE TINY GRAVEL CHIPS	ML		
		4	SS	6 15 / 16 15	60%		DENSE	THIN LAYERING			DRY-SL. MOIST
10		5	SS	10 35 / 40 50	75%	LIGHT YELLOW-GREEN	V. DENSE	DECOMPOSED SILTSTONE, SHALE	VBR		DRY
		6	SS	15 27 / 13 16	100%	BROWN ALONG PARTINGS	DENSE	POORLY FISSILE unfossiliferous			
		7	SS	14 40 / 40 32	75%		V. DENSE				
15		8	SS	18 28 / 32 50/5"	75%	RED					
		9	SS	25 50/5"	100%						
20		10	SS	17 50/4"	95%	GREEN					
		11	SS	16 25 / 40 16	65%	RED-SOME BLUE-GREEN MOTTLED RED					
		12	SS	16 31 / 50/5"	45%					7-25	
25		13	SS	25 50/5"	95%					5	
		14	SS	36 50/3"	100%					20	
30		15	SS	17 41 / 50/3"	90%	GREEN				100	
		16	SS	17 48 / 50/2"	100%					110	
		17	SS	32 32 / 50/5"	100%					10	MOIST
35		18	SS	28 32 / 50/1"	100%	BROWN		FINE SANDY SILT		0	

COMMENTS DRILL RIG: TRUCK MOUNTED MOBILE B-57

PROJECT NO. 35235.10
BORING NO. MW-4

A-3205

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-4

PROJECT: QUANTA RESOURCES
SHEET NO. 2 OF 2

CLIENT: NYSDEC
JOB NO.: 35235.10

DEPTH FT	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
36											
	S	19*	SS	11 17 50/4"	100%	BROWN	VERY DENSE	SILT, SOME FINE SAND		40	WET
	S					BLUE-GRAY		WEATHERED DECOMPOSED SILTSTONE, SHALE			V. MOIST
40	S	20	SS	24 50/4"	100%			CRUMBLY, POWDERY		25	DRY
	S	21+	SS	20 33 50/5"	100%					0	WET
								TOTAL DEPTH 42.5'			
45								WELL SCREEN 32-42			

COMMENTS * ENVIRONMENTAL SOIL SAMPLE COLLECTED FOR FULL TCL AND CYANIDE ANALYSES
+ GEOTECHNICAL SAMPLE COLLECTED FOR GRAIN SIZE ANALYSIS

PROJECT NO. 35235.10
BORING NO. MW-4

A-3205A

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-5

PROJECT: QUANTA RESOURCES	SHEET NO. 1 OF 2
CLIENT: NEW YORK STATE DEPT. OF ENVIRONMENTAL CONSERVATION	JOB NO.: 35235.10
BORING CONTRACTOR: AMERICAN AUGER & DITCHING CO.	BORING LOCATION:

GROUND WATER:					CAS.	SAMP	CORE	TUBE	GROUND ELEVATION: 398.62' USC&GS
DATE	TIME	LEV	TYPE	TYPE		SPLIT SPOON	(SS)		DATE STARTED: 11-26-91
11-26	4:30PM	34	BGS (HSA)	DIA.		2"			DATE FINISHED: 11-27-91
11-27	8:30AM	22.5	BGS (HSA)	WT.		140lb			DRILLER: LEE PENROD
				FALL		30"			GEOLOGIST: SCOTT SWANSON
				* POCKET PENETROMETER READING					REVIEWED BY: DUANE LENHARDT

DEPTH FT	SAMPLE NO.	TYPE	BLOWS PER 6"	RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (PPM)	REMARKS
0–2	1	SS	4 5 6 18	60%	OLIVE-BROWN	LOOSE	GRAVELLY SILT	ML	0	WET-V. MOIST
							SILT	ML		MOIST
3–5	2	SS	11 22 50/3"	40%	LT. GREEN	VERY DENSE			0	DRY
10	3	SS	35 50/3"	75%			SOFT TR 1" GRAVEL		0	
15	4	SS	28 41 50/5"	88%	LIGHT GREEN		DECOMPOSED SILTSTONE, SHALE SOFT, CRUMBLY	VBR	0	
20	5	SS	17 25 50/5"	82%	RED / LIGHT GREEN		PLATY, POORLY FISSILE SEMI-CONSOLIDATED		0	
25	6	SS	25 50/5"	100%	RED-GREEN MOTTLED				0	
30	7*	SS	26 50/5"	100%	RED				50-200	MOIST-DRY
35	8+	SS	20 50/5"						125	

COMMENTS DRILL RIG: TRUCK-MOUNTED MOBILE B-57
* ENVIRONMENTAL SOIL SAMPLE COLLECTED FOR FULL TCL AND CYANIDE ANALYSIS
+ GEOTECHNICAL SAMPLE COLLECTED FOR GRAIN SIZE ANALYSIS

PROJECT NO. 35235.10
BORING NO. MW-5

A-3205

URS CONSULTANTS, Inc.

TEST BORING LOG
BORING NO. MW-5
SHEET NO. 2 OF 2
JOB NO.: 35235.10

PROJECT: QUANTA RESOURCES
CLIENT: NYSDEC

DEPTH FT 36	STRATA	SAMPLE NO.	TYPE	BLOWS PER 6"		RECOVERY RQD %	COLOR	CONSISTENCY HARDNESS	MATERIAL DESCRIPTION	CLASS USCS	HNU (ppm)	REMARKS
	S S						GREEN		DECOMPOSED SILTSTONE			
	S S	9	SS	20	50/5"	90%	BLUE-GRAY		Poorly fissile		50	MOIST
40									TOTAL DEPTH 39'			4' WATER IN BOTTOM
									WELL SCREEN 22-36.5'			
45												

COMMENTS

PROJECT NO. 35235.10
BORING NO. MW-5

A-3205A

DRILLING SUMMARY

Geologist:
Scott Swanson

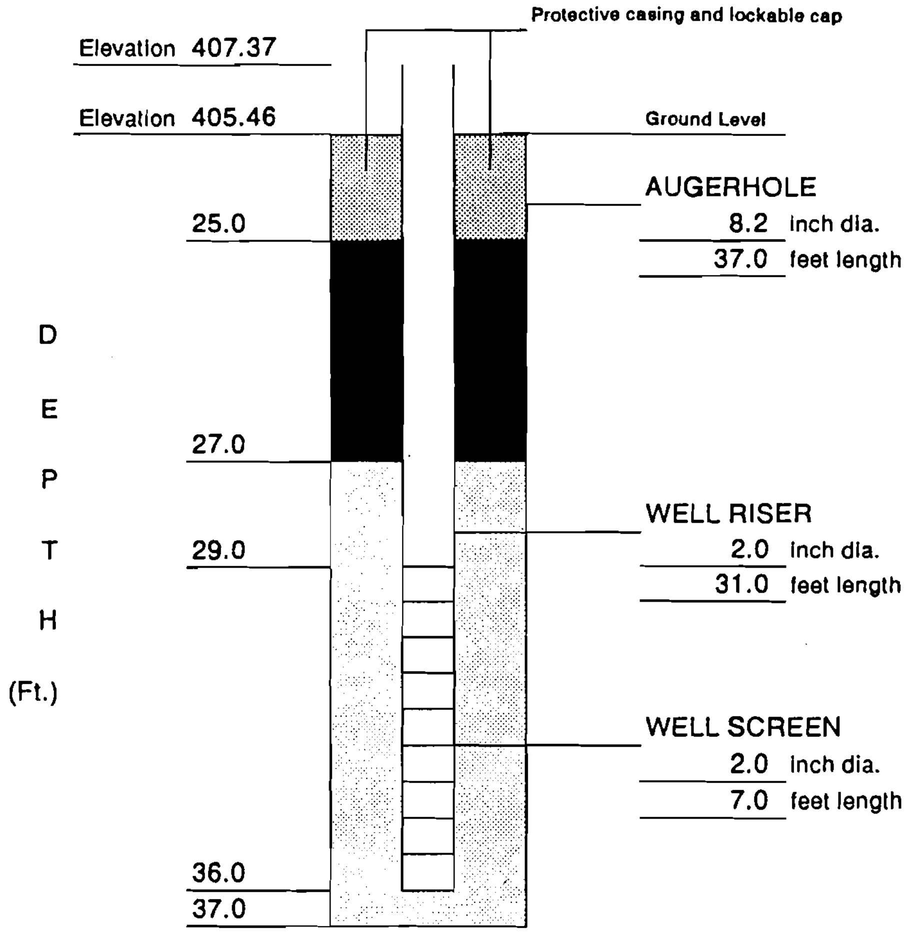
Drilling Company:
American Auger

Driller:
Lee Penrod

Date:
11/21-25/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2	Fine Gravelly silt
2-8	Clayey Silt
8-39	Decomposed Siltstone Shale



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Schedule 40 PVC	Seal #1 Type Bentonite Pellets Setting: 25-27'
Monitor: Schedule 40 PVC	Slot Size: .010"	Seal #2 Type Cement-Bentonite Setting: 0-25'

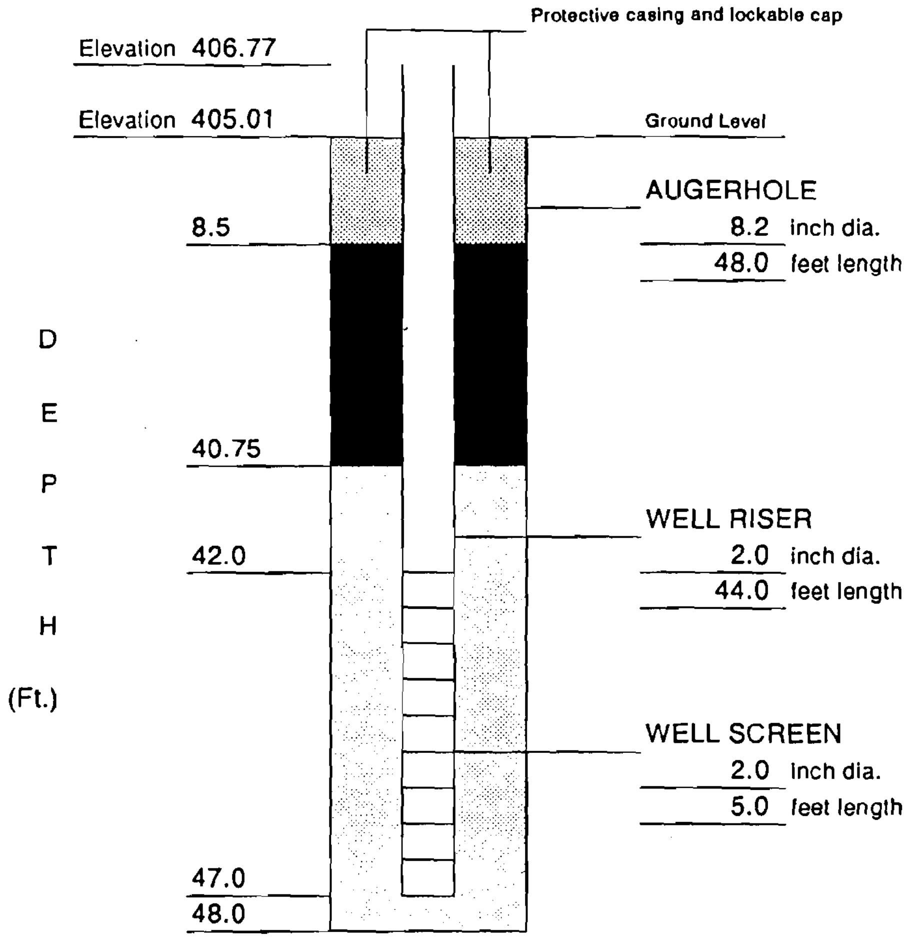
FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #3 Q-Rok	Cored Interval: NA	Cement/Bentonite Grout
	Core Diameter: NA	Bentonite Seal
Setting: 27-37'	Reamed Diameter: NA	Silica Sandpack

Client: NYSDEC	Project: Quanta Resources	Project No. 35235.10
URS Consultants Inc.	Monitoring Well Construction Details	Well Number: MW-1S

DRILLING SUMMARY
Geologist: Scott Swanson
Drilling Company: American Auger
Driller: Lee Penrod
Date: 11/15-18/91

GEOLOGIC LOG

depth(ft.)	lithology
0-2	Fine Gravelly Silt
2-8	ClayeySilt
8-48	Decomposed Siltstone Shale



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Schedule 40 PVC	Seal #1 Type Bentonite Slurry Setting: 8.5'-40.75'
Monitor: Schedule 40 PVC	Slot Size: .010"	Seal #2 Type Cement-Sand Setting: 0-8.5'

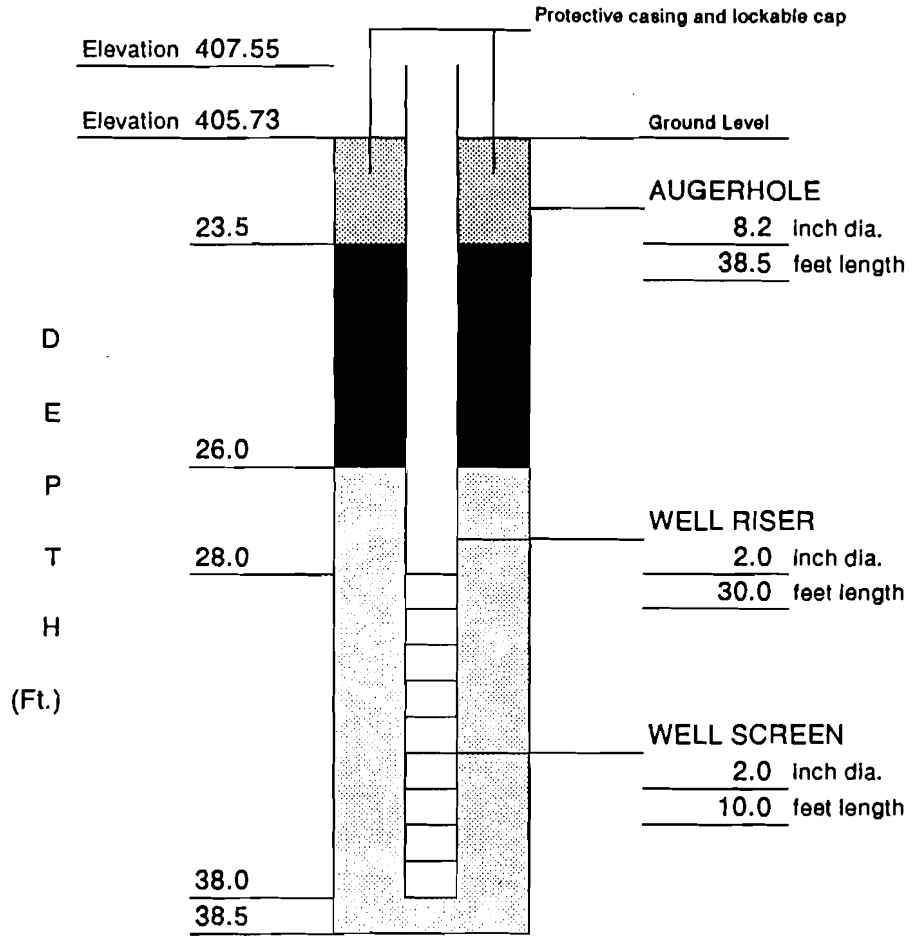
FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #3 Q-Rok	Cored Interval: NA	Cement/Bentonite Grout
	Core Diameter: NA	Bentonite Seal
Setting: 40.75'-48'	Reamed Diameter: NA	Silica Sandpack

Client: NYSDEC	Project: Quanta Resources	Project No. 35235.10
U R S Consultants Inc.	Monitoring Well Construction Details	Well Number: MW-1D

DRILLING SUMMARY
Geologist: Scott Swanson
Drilling Company: American Auger
Driller: Lee Penrod
Date: 11/21/91

GEOLOGIC LOG

depth(ft.)	lithology
0-4	Silt
4-14	Clayey Silt
14-38	Decompsed Siltstone Shale



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Schedule 40 PVC	Seal #1 Type Bentonite Pellets Setting: 23.5-26'
Monitor: Schedule 40 PVC	Slot Size: .010"	Seal #2 Type Cement-Bentonite Setting: 0-23.5'

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #3 Q-Rok	Cored Interval: NA	Cement/Bentonite Grout
	Core Diameter: NA	Bentonite Seal
Setting: 26-38.5'	Reamed Diameter: NA	Silica Sandpack

Client: NYSDEC	Project: Quanta Resources	Project No. 35235.10
URS Consultants Inc.	Monitoring Well Construction Details	Well Number: MW-2

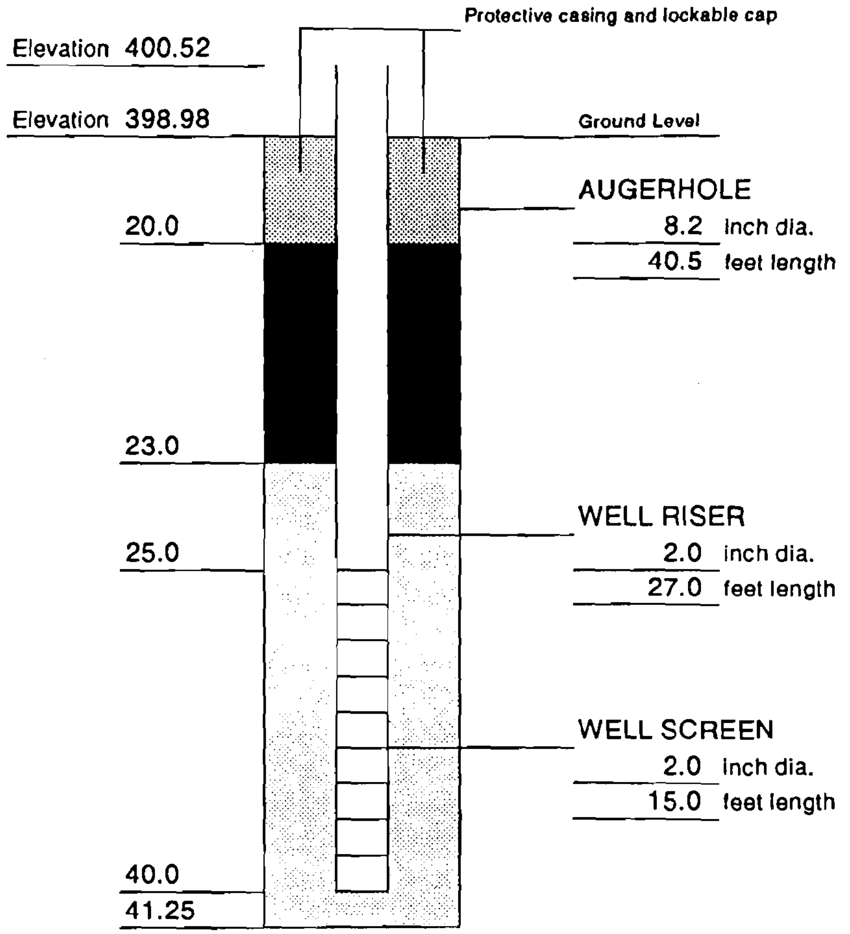
DRILLING SUMMARY

Geologist:	Scott Swanson
Drilling Company:	American Auger
Driller:	Lee Penrod
Date:	11/25,26/91

GEOLOGIC LOG

depth(ft.)	lithology
0–9	Silt trace Sand & Gravel
9–38	Decomposed Siltstone Shale
38–41.25	Clayey Silt

DEPTH (Ft.)



WELL DESIGN

CASING MATERIAL		*SCREEN MATERIAL*		*SEAL MATERIAL*	
Surface:	Steel	Type:	Schedule 40 PVC	Seal #1 Type	Bentonite Pellets
				Setting:	20–23'
Monitor:	Schedule 40 PVC	Slot Size:	.010"	Seal #2 Type	Cement–Bentonite
				Setting:	0–20'

FILTER MATERIAL		*ROCK CORING*		*LEGEND*
Type:	#3 Q–Rok	Cored Interval:	NA	Cement/Bentonite Grout
		Core Diameter:	NA	Bentonite Seal
Setting:	23–41.25'	Reamed Diameter:	NA	Silica Sandpack

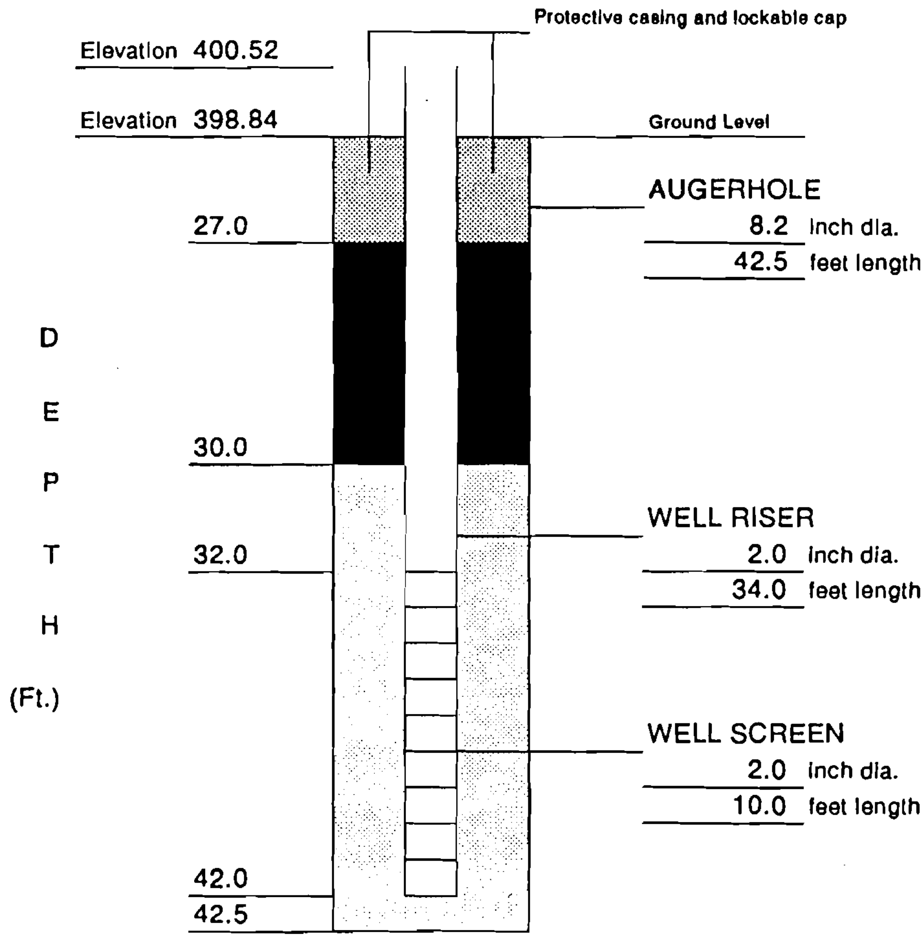
Client: NYSDEC	Project: Quanta Resources	Project No. 35235.10
URS Consultants Inc.	Monitoring Well Construction Details	Well Number: MW-3

DRILLING SUMMARY

Geologist:	Scott Swanson
Drilling Company:	American Auger
Driller:	Lee Penrod
Date:	11/22-25/91

GEOLOGIC LOG

depth(ft.)	lithology
0-4	Silt Fill
4-8	Silt trace tiny Gravel chips
8-35.5	Decomposed Siltstone Shale
35.5-37	Sandy Silt
37-42.5	Decomposed Siltstone Shale



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Schedule 40 PVC	Seal #1 Type Bentonite Pellets Setting: 27-30'
Monitor: Schedule 40 PVC	Slot Size: .010"	Seal #2 Type Cement-Bentonite Setting: 0-27'

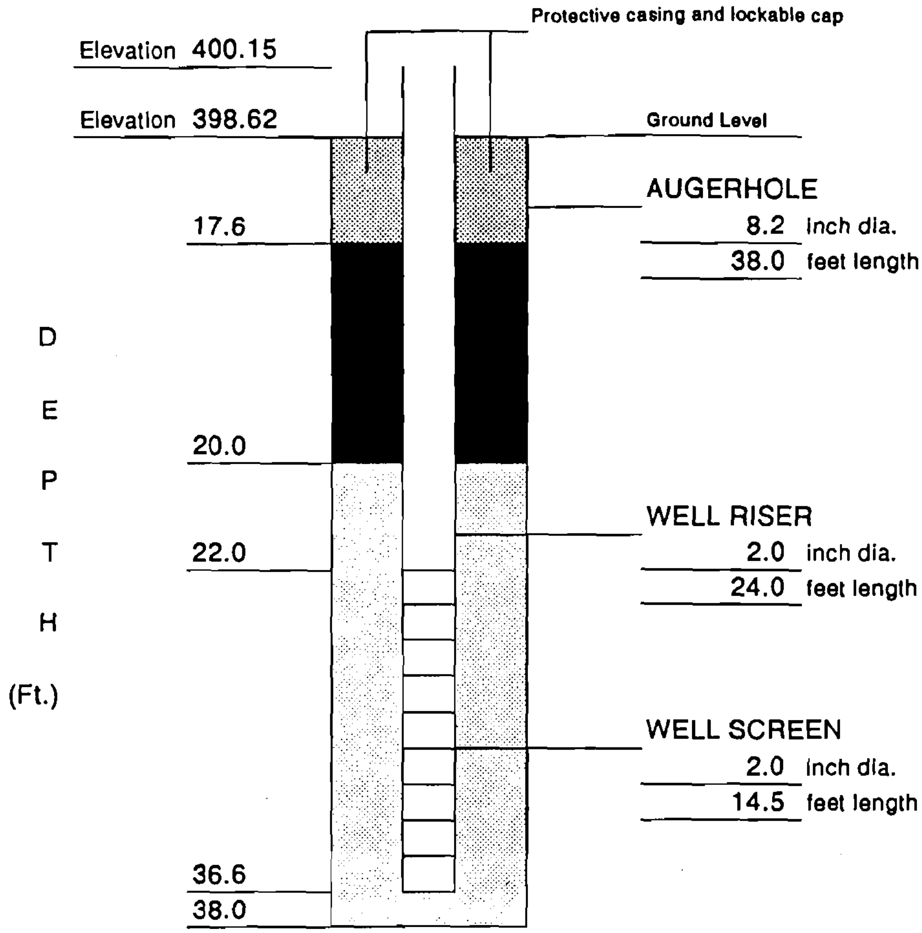
FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #3 Q-Rok	Cored Interval: NA	Cement/Bentonite Grout
	Core Diameter: NA	Bentonite Seal
Setting: 30-42.5'	Reamed Diameter: NA	Silica Sandpack

Client: NYSDEC	Project: Quanta Resources	Project No. 35235.10
U R S Consultants Inc.	Monitoring Well Construction Details	Well Number: MW-4

DRILLING SUMMARY
Geologist: Scott Swanson
Drilling Company: American Auger
Driller: Lee Penrod
Date: 11/26-27/91

GEOLOGIC LOG

depth(ft.)	lithology
0-1	Gravelly Silt
1-13.5	Silt trace Gravel
13.5-39	Decomposed Siltstone Shale



WELL DESIGN

CASING MATERIAL	*SCREEN MATERIAL*	*SEAL MATERIAL*
Surface: Steel	Type: Schedule 40 PVC	Seal #1 Type Bentonite Pellets Setting: 17.6-20
Monitor: Schedule 40 PVC	Slot Size: .010"	Seal #2 Type Cement-Bentonite Setting: 0-17.6'

FILTER MATERIAL	*ROCK CORING*	*LEGEND*
Type: #3 Q-Rok	Cored Interval: NA	Cement/Bentonite Grout
	Core Diameter: NA	Bentonite Seal
Setting: 20-38'	Reamed Diameter: NA	Silica Sandpack

Client: NYSDEC	Project: Quanta Resources	Project No. 35235.10
URS Consultants Inc.	Monitoring Well Construction Details	Well Number: MW-5

Paragon Environmental Construction, Inc.
8141 Brewerton Road
Cicero, NY 13039
Phone: 315-699-0840
Fax: 315-699-0845

Field Drilling Log

Boring No: MW-6
Project No: 2008008
Date Started: 12-17-08
Date Completed: 12-18-08
Sheet: 1 of 1

Project: Environmental Borings and Monitoring Wells
Location: Lodi and Wolf Streets, Syracuse, NY

Cave Depth: N/A

Depth of Water: 36 feet

Depth (ft.)	Sample No.	Blows on Soil Sampler 0.0'-0.5'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'	N	Recovery (ft.)	MATERIAL DESCRIPTION	REMARKS
0-2	1	3	3	7	11	10	.1	Brown m-c SAND and f-m Gravel, wet-loose 2.5'	
2-4	2	7	9	12	15	21	1.4		
4-6	3	13	14	39	14	53	1.6		
6-8	4	9	9	10	12	19	1.0	Brown SILT, little f-Sand, trace f-gravel, v-stiff 13.0'	
8-10	5	3	13	14	18	27	1.0		
10-12	6	6	9	5	5	14	1.3		
12-14	7	4	4	5	4	9	.6		
14-16	8	3	2	1	2	3	.7	Brown and Green SILT, trace f-sand, trace clay, trace f-gravel, saturated-medium 20.0'	
16-18	9	2	2	3	2	5	.8		
18-20	10	2	4	5	2	9	.9		
20-22	11	5	6	9	7	15	.8		
22-24	12	20	24	20	32	44	1.3	Light Brown and Green SILT, little f-Sand, trace f-gravel (Vernon shale), dry-hard 25.0'	
24-26	13	15	15	32	50	47	1.3		
26-26.4	14	50/.4					.4		
28-29.4	15	15	15	50/.4			1.4	Red weathered SHALE, dry-v-compact 28.5'	
30-30.4	16	50/.4					.4		
32-34	17	8	14	28	34	42	1.6	Gray and Green weathered SHALE, moist- v-compact 32.2'	
34-34.9	18	38	50/.4				.9		
36-36.7	19	37	50/.2				.7	Red weathered SHALE, dry-hard 36.0'	
38-38.9	20	42	50.4				.9	Red weathered SHALE, wet-v-compact Set well at 39 feet, 20' of .020 screen B.O.B. 39.0' 39.0'	

Sampling Method: ASTM D-1586, unless otherwise noted
Notes: 4 1/4" I.D. Hollow Stem Augers

Visually Classified by: Robert Baldoze

Paragon Environmental Construction, Inc.
8141 Brewerton Road
Cicero, NY 13039
Phone: 315-699-0840
Fax: 315-699-0845

Field Drilling Log

Boring No: MW-7
Project No: 2008008
Date Started: 12-11-08
Date Completed: 12-11-08
Sheet: 1 of 1

Project: Environmental Borings and Monitoring Wells
Location: Lodi and Wolf Streets, Syracuse, NY

Cave Depth: N/A

Depth of Water: 30 feet

Depth (ft.)	Sample No.	Blows on Soil Sampler				N	Recovery (ft.)	MATERIAL DESCRIPTION	REMARKS
		0.0'-0.5'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'				
0-2	1	6	5	7	4	12	1.5	Brown SILT, trace Sand, trace f-Gravel, moist-stiff 3.5'	
2-4	2	8	11	11	15	22	1.0		
4-6	3	7	18	21	25	39	1.5	Gray SILT and weathered Shale, moist-stiff	
6-6.4	4	50/.4					.4		
8-10	5	12	17	18	21	35	2.0	10.0'	
10-12	6	6	7	11	14	18	2.0	Brown and Gray SILT, trace clay,stiff-moist	
12-13	7	14	32				1.0	14.5'	
14-15	8	27	50				1.0	Gray weathered SHALE, dry-hard	
18-20	9	37	39	44	50	83	1.5		
20-22	10	18	21	19	55	40	1.5	22.5'	
22-23.2	11	19	30	50/.2			1.0	Red weathered SHALE, dry-hard	
24-24.3	12	50/.3					.3		
26-26.2	13	50/.2					.2		
28-29	14	42	50				1.0		
30-30.3	15	50/.3					.3	30.0'	
32-32.3	16	50/.3					.3	Red weathered SHALE, wet-hard Set well at 36 feet, 16' of .020 screen B.O.B. 36 feet	

Sampling Method: ASTM D-1586, unless otherwise noted
Notes:______4______1/4" I.D. Hollow Stem Augers

Visually Classified by: Robert Baldoze

Paragon Environmental Construction, Inc. 8141 Brewerton Road Cicero, NY 13039 Phone: 315-699-0840 Fax: 315-699-0845	**Field Drilling Log**	Boring No: MW-8 Project No:20008008 Date Started:12-8-08 Date Completed: 12-9-08 Sheet: 1 of 1

Project: Environmental Borings and Monitoring Wells
Location: Lodi and Wolf Streets, Syracuse, NY

Cave Depth: N/A

Depth of Water: 25 feet

Depth (ft.)	Sample No.	Blows on Soil Sampler 0.0'-0.5'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'	N	Recovery (ft.)	MATERIAL DESCRIPTION	REMARKS
0-2	1	5	7	7	8	14	1.0	Brown SILT, trace f-c Gravel, trace Sand,moist-stiff 2.0'	
2-4	2	4	7	14	3	21	1.0	Brown and Black SILT ,trace f-c Gravel moist v-stiff 4.0'	
4-6	3	3	4	8	15	12	1.5	Gray SILT, trace f-sand moist-stiff	
6-8	4	5	7	7	11	14	1.5		
8-10	5	11	8	7	10	15	1.5		
10-12	6	2	7	7	11	14	1.5	13.5'	
12-14	7	8	15	27	41	42	1.5	Green and Gray weathered SHALE, moist-v-compact	
14-16	8	17	42	25	21	67	1.5	18.5'	
16-17.9	9	17	44	41	50/.4	85	2.0	Red weathered SHALE, dry-hard	
18-19.2	10	25	44	50/.2			1.2		
20-20.7	11	50	50/.2				.7	25.0'	
25-27	12	16	8	12	15	20	2.0	Red weathered SHALE, wet-hard Set well at 32 feet 14'of .020 screen B.O.B. 32 feet	
27-28.4	13	33	42	50/.4			1.4		
29-29.8	14	43	50/.3				.8		
30-30.4	15	50/.4					.4	32.0'	

Sampling Method: ASTM D-1586, unless otherwise noted
Notes:______4______1/4" I.D. Hollow Stem Augers

Visually Classified by: Robert Baldoze

Paragon Environmental Construction, Inc.
8141 Brewerton Road
Cicero, NY 13039
Phone: 315-699-0840
Fax: 315-699-0845

Field Drilling Log

Boring No: MW-9
Project No: 2008008
Date Started: 12-9-08
Date Completed: 12-9-08
Sheet: 1 of 1

Project: Environmental Borings and Monitoring Wells
Location: Lodi and Wolf Streets, Syracuse, NY

Cave Depth: N/A

Depth of Water: 29 feet

Depth (ft.)	Sample No.	Blows on Soil Sampler				N	Recovery (ft.)	MATERIAL DESCRIPTION	REMARKS
		0.0'-0.5'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'				
0-2	1	3	2	2	3	5	1.5	Brown f-c GRAVEL and Brick, trace silt, trace f-sand, moist loose	
2-4	2	5	5	6	6	11	1.5		
4-6	3	2	2	1	2	3	1.0	7.0'	
6-8	4	5	7	8	11	15	1.5	Gray SILT, trace f-sand, moist-stiff	
8-10	5	5	7	7	7	14	1.5		
10-12	6	7	8	11	18	19	1.5		
12-14	7	19	10	14	10	24	1.5		
14-15.4	8	22	28	50/.4			1.0		
16-18	9	11	21	23	18	44	1.5		
18-19.4	10	10	18	50/.4			1.4		
20-21.4	11	22	28	50/.4			1.4	21.0'	
22-24	12	11	17	12	24	29	1.2	Red weathered SHALE, dry-v-compact 22.0'	
24-24.4	13	50/.4					.4	Gray weathered SHALE, moist-firm 23.0'	
26-27.2	14	28	32	50/.2			1.0	Red weathered SHALE, dry-hard 29.0'	
30-30.9	15	37	50/.4				.9	Red weathered SHALE, wet-v-compact	
								Set well at 34 feet, 16' of .020 screen B.O.B. 34.0' 34.0'	

Sampling Method: ASTM D-1586, unless otherwise noted
Notes:______4______1/4" I.D. Hollow Stem Augers

Visually Classified by: Robert Baldoze

Paragon Environmental Construction, Inc.
8141 Brewerton Road
Cicero, NY 13039
Phone: 315-699-0840
Fax: 315-699-0845

Field Drilling Log

Boring No: MW-10
Project No: 2008008
Date Started: 12-16-08
Date Completed: 12-16-08
Sheet: 1 of 1

Project: Environmental Borings and Monitoring Wells
Location: Lodi and Wolf Streets, Syracuse, NY

Cave Depth: N/A

Depth of Water: 28 feet

Depth (ft.)	Sample No.	Blows on Soil Sampler 0.0'-0.5'	0.5'-1.0'	1.0'-1.5'	1.5'-2.0'	N	Recovery (ft.)	MATERIAL DESCRIPTION	REMARKS
16-18	1	9	8	11	5	19	.5	Gray weathered SHALE, dry-v-stiff	Drilled to 16' before sampling
18-20	2	9	9	15	14	24	1.5	21.0'	
20-21.2	3	15	21	50/.2			1.0	Red weathered SHALE, dry-hard	
22-23.5	4	9	11	42		53	1.0	28.0'	
24-25.7	5	25	32	32	50/.2	64	1.5	Red weathered SHALE, wet-hard Set well at 35 feet, 15' of .020 screen B.O.B. 35 feet	
26-28	6	19	27	29	34	56	1.5		
28-29.3	7	25	47	50/.3			1.0		
30-31.2	8	42	48	50/.2			1.0		
32-33.4	9	42	44	50/.4			1.0	35.0'	

Sampling Method: ASTM D-1586, unless otherwise noted
Notes:______4______1/4" I.D. Hollow Stem Augers

Visually Classified by: Robert Baldoze

parratt wolff inc

TEST BORING LOG

5879 Fisher Road
East Syracuse, NY 13057

PROJECT **Quanta Site - Lodi Street**

LOCATION **Syracuse, New York**

HOLE NO. MW-11
JOB NUMBER: **08011C**
SURF. EL.
DATE STARTED: **06/25/09**
DATE COMPLETED: **06/25/09**

GROUNDWATER DEPTH
WHILE DRILLING **30.5'**

BEFORE CASING
REMOVED **Dry**

AFTER CASING REMOVED **Installed Well**

N - NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" - ASTM D-1586 STANDARD PENETRATION TEST

C - NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING "/ OR PERCENT CORE RECOVERY

CASING TYPE **HOLLOW STEM AUGER**

DRILLERS FIELD LOG

DEPTH	SAMPLE DEPTH	SAMPLE NO.	Rec	SAMPLE DRIVE RECORD PER 6"		N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	0.0'-	1		5	8		Brown-black moist medium dense fine to	
	2.0'			5	5	13	coarse SAND and CINDERS	
	2.0'-	2		4	5			
	4.0'			6	6	11		4.3'
5.0	4.0'-	3		12	22		Gray-green dry very dense to medium	
	6.0'			40	28	62	dense weathered SHALE	
	6.0'-	4		23	19			
	8.0'			22	23	41		
	8.0'-	5		12	17			
10.0	10.0'			24	27	41		
	10.0'-	6		10	11			
	12.0'			15	17	26		
	12.0'-	7		13	16			
	14.0'			21	28	37	Note:	
15.0	14.0'-	8		19	21		Installed 2" PVC 10-slot screen from 36.3' to 26.3'	
	16.0'			29	36	50	Installed 2" PVC riser from 26.3' to grade	
	16.0'-	9		26	36		Installed #0 sand from 36.3' to 24.3'	
	18.0'			32	36	62	Installed bentonite seal from 24.3' to 22.3'	
	18.0'-	10		50-.4'			Installed grout seal from 22.3' to grade	
20.0	18.4'						Completed installation with 4" stick-up protective	
	20.0'-	11		50-.4'			cover	
	20.4'							
	22.0'-	12		50-.4'				
	22.4'							
25.0	24.0'-	13		30	50-.2'			
	24.7'							
	26.0'-	14		11	50-.4'			
	26.9'							
	28.0'-	15		50-.4'				
30.0	28.4'							
WL▼	30.0'-	16		18	50-.4'			30.5'
	30.9'						Red wet hard very dense weathered	
	32.0'-	17		30	50-.3'		SHALE	
	32.8'							
35.0	34.0'-	18		50-.3'				
	34.3'							
	36.0'-	19		50-.3'			Bottom of Boring	36.3'
	36.3'							
40.0								

parratt wolff inc

TEST BORING LOG

5879 Fisher Road
East Syracuse, NY 13057

PROJECT **Quanta Site - Lodi Street**

LOCATION **Syracuse, New York**

HOLE NO. MW-12
JOB NUMBER: **08011D**
SURF. EL.
DATE STARTED: **07/09/09**
DATE COMPLETED: **07/09/09**

GROUNDWATER DEPTH
WHILE DRILLING

BEFORE CASING
REMOVED

N - NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" - ASTM D-1586 STANDARD PENETRATION TEST

AFTER CASING **Installed**
REMOVED **Well**

C - NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING "/ OR PERCENT CORE RECOVERY

CASING TYPE **HOLLOW STEM AUGER**

SHEET 1 OF 1

DRILLERS FIELD LOG

DEPTH	SAMPLE DEPTH	SAMPLE NO.	Rec	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
	0.0'-	1		DIRECT		Brown moist SILT, some fine to medium sand, little fine to medium gravel	
	2.0'			PUSH			
	2.0'-	2		DIRECT			
	4.0'			PUSH			4.0'
5.0	4.0'-	3		DIRECT		Brown moist SILT, some fine to medium sand, little fine to medium gravel, little brick fragments	
	6.0'			PUSH			
	6.0'-	4		DIRECT			
	8.0'			PUSH			8.0'
	8.0'-	5		DIRECT		Gray-red-brown moist SILT, little fine to medium sand, trace fine gravel, trace clay	
10.0	10.0'			PUSH			
	10.0'-	6		DIRECT			
	12.0'			PUSH			12.0'
	12.0'-	7		DIRECT		Red-brown-gray SILT, little clay, little fine sand	
	14.0'			PUSH			14.0'
15.0	14.0'-	8		DIRECT		Green-tan moist SILT, little shale fragments, little fine sand	
	15.5'			PUSH			
	16.0'-	9		DIRECT			
	16.9'			PUSH			
	18.0'-	10		DIRECT			
20.0	20.0'			PUSH			
	20.0'-	11		DIRECT			
	20.6'			PUSH			22.0'
	22.0'-	12		DIRECT		Red-brown moist damp SILT, little shale fragments, trace clay, trace fine sand	
	23.1'			PUSH			24.0'
25.0	24.0'-	13		DIRECT		Green-red moist SILT, some shale fragments, little clay, trace fine sand	
	25.0'			PUSH			26.0'
	26.0'-	14		DIRECT		Red moist to wet SILT, some clay, some shale fragments	
	27.4'			PUSH			
	28.0'-	15		DIRECT		Note: Installed 2" PVC 20-slot screen from 36.0' to 26.0, installed 2" PVC riser from 26.0' to grade, installed #1 sand from 36.0' to 24.0', installed bentonite seal from 24.0' to 21.5', installed grout seal from 21.5' to grade, completed installation with 4" stick-up protective cover	
30.0	29.5'			PUSH			
	30.0'-	16		DIRECT			
	30.4'			PUSH			
	32.0'-	17		DIRECT			
	32.5'			PUSH			34.0'
35.0	34.0'-	18		DIRECT		Green moist weathered SHALE, little clay	
	34.5'			PUSH			
						Bottom of Boring	36.0'
40.0							

APPENDIX C

SITE HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN

for

REMEDIAL INVESTIGATION ACTIVITIES

at the

QUANTA RESOURCES SITE
2802-2810 Lodi Street
City of Syracuse, Onondaga County, New York
NYSDEC Site No. 7-34-013

Prepared for:

Quanta Resources – Syracuse Site
PRP Group

Prepared by:

PLUMLEY ENGINEERING

8232 Loop Road
Baldwinsville, New York 13027
(315) 638-8587
Project No. 2008008

January 2008
Revised February 28, 2008

TABLE OF CONTENTS

1.0 PURPOSE AND APPLICABILITY

This Health and Safety Plan (HASP) outlines precautions and protective measures that employees and subcontractors ("Workers") of Plumley Engineering must take to minimize the risk to health and safety while performing field tasks for remedial investigation activities to be conducted at the Quanta Resources site located at 2802-2810 Lodi Street in the City of Syracuse, Onondaga County, New York. The site is a listed on the New York Department of Environmental Conservation (DEC) list of inactive hazardous waste sites and requires the completion of a Remedial Investigation/Feasibility Study (RI/FS). Each worker shall review the HASP prior to working on the site and sign an acknowledgement indicating the worker agrees to comply with the HASP requirements. Some activities may require parties other than the engineer or its subcontractors to be at the site. These parties are solely responsible for maintaining compliance with all applicable regulations and for their own health and safety procedures. All on-site workers must have received the appropriate level of training for their specific duties in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 (e).

2.0 SITE DESCRIPTION

The site investigation area (Site) is located in a commercial-industrial area at 2802-2810 Lodi Street in Syracuse New York (*Figure 1 – Site Location Map*) and is an abandoned waste-oil recycling facility[1] with an operational period beginning in the 1920's through 1981. Through the 1990's, site investigation and remedial activities administered by the United States Environmental Protection Agency (EPA) led to the abandonment and removal of the former buildings, above and below ground tanks, highly contaminated soils adjacent to the below ground

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[1]Historical information cited in this HASP regarding the Site has been obtained from:

- *Site Summary Report, Quanta Resources Syracuse Site PRP Group*, ARCADIS Geraghty & Miller; March 26, 1998; revised September 23, 1999.
- *Phase II Investigation* by URS; December 1992
- *UST Closure Report*, Earth Tech; 1999

tanks, and the processing infrastructure associated with the waste-oil plant. The site is 0.75 acres in size and is now vacant of any buildings or other aboveground structures associated with the former waste-oil plant. The site is currently completely fenced in, with a locked gate. The grounds have not been maintained and are currently overgrown with grass and brush vegetation

Refer to the *Figure 2 - Site Plan* for additional information.

3.0 SCOPE OF WORK

The RI will be completed in steps, first involving the completion of a groundwater sampling event using existing monitoring wells remaining at the site, which in conjunction with a review of available site-report information, will provide the basis to develop a RI/FS Work Plan for review and approval, followed by the implementation of the investigation activities.

RI activities conducted at the site will include an array of field tasks and inspection services commonly used to investigate the surface and subsurface extent of site contaminants of concern in soil and groundwater media. Specific field tasks that are planned or may be required at the site are listed below:

- Collection of groundwater samples from monitoring wells for laboratory analysis.
- The on-site collection of surface and subsurface soil samples for laboratory analysis.
- The completion of soil borings and installation of groundwater monitoring wells using standard environmental drilling equipment.
- Digging test pits using a backhoe.
- Inspection of backhoe test pits and environmental drilling activities.

- Surveying to determine elevations, test locations and geographic features for site plan updating and data evaluations.

These field activities are anticipated to take place at various times throughout the 2008 calendar year.

4.0 HEALTH AND SAFETY PERSONNEL

The following personnel are responsible for the development, implementation and maintenance of this HASP:

Project Manager..Dale R. Vollmer, P.E.

Site Safety Officers...Derk T. Hudson, Geologist
Matthew Martin, Technician

Although responsibility for implementing this HASP is with the Site Safety Officer, the primary responsibility for health and safety lies with the individual workers. Each worker must be familiar with and conform to the safety procedures outlined in this HASP. The Site Safety Officer is responsible for all decisions regarding health and safety policies, procedures and protective measures. It is the responsibility of the Site Safety Officer to provide the resources required to allow the work to be conducted in conformance with this HASP.

The Site Safety Officer will also be responsible for:

- Maintaining a complete copy of the HASP at the site during all field activities.
- Assuring that all workers at the site are familiar with the procedures outlined in the HASP.
- Assuring that all workers have undergone the required OSHA training program.

- Assuring that workers have, and properly use and maintain, all specified personal protective and other health and safety equipment.

- Assuring that proper decontamination procedures are followed.

- Initiating immediate response actions, if necessary, and coordinating these actions with all workers at the site, any other individuals at the site, any involved agencies or medical facilities.

- Recommending improvements to this HASP, if needed.

The Site Safety Officer has the authority to:

- Direct any worker to alter or suspend any work practice they deem is not sufficient to protect human health.

- Deny access to the site to any individual or organization that does not have a complete copy of the HASP, and the appropriate training and personal protective equipment (PPE) for the potential health and safety hazards at the site.

The presence or absence of the Site Safety Officer shall in no way relieve any person or organization of its obligation to comply with the HASP or any applicable Federal, State and local laws and regulations.

5.0 GENERAL INFORMATION

Plan Prepared By/Date:

Plumley Engineering / January 2008

Plan Approved By/Date:

Dale R. Vollmer, P.E. / January 2008

Proposed Date(s) of Work:

Initial activities will be in January 2008. Follow-up activities are expected at various times throughout 2008.

Background Review:

Preliminary __X__ Complete ____

A preliminary review of site investigation and remedial reports has been completed sufficiently to support the preparation of the site HASP. As more detailed information is obtained or if new information is obtained that requires a modification to the HASP, an addendum will be issued.

6.0 SITE CONTAMINANT CHARACTERISTICS

Definition of Site Contaminants of Concern (COCs):

The site was a former waste-oil recovery recycling facility reported to have handled a variety of waste oils. As such, a variety of different chemicals are anticipated. Based on our review of site report information,[1] the following types of chemical compounds are identified as site contaminants:

Main Constituents (believed to be more prevalent at the site):

- Halogenated and non-halogenated volatile organic compounds (VOCs)

- Semi-volatile organic compounds (SVOCs)

Lesser Constituents (believed to be less prevalent at the site):

- Pesticides

- Polychlorinated biphenyls (PCBs)

- Metals (RCRA list)

There are no uncontrolled surface exposures of these materials, such as heavily stained areas, open lagoons, etc. at the site.

Potential Hazardous Material(s):

The more prevalent halogenated VOCs at the site include 1,1,1-trichloroethane, tetra-chloroethene, trichloroethene, 1,1-dichloroethane, 1,2-dichloroethene chlorobenzene and vinyl chloride.

The more prevalent non-halogenated VOCS present at the site include benzene, xylene and toluene.

SVOCs compounds found prevalently at the site include a large number of polycyclic aromatic hydrocarbons (PAHs), including acenaphthene, fluorene, phenanthrene, anthracene, chrysene, benzo(a)pyrene, naphthalene, 2-methylnaphthalene, among others.

Hazardous Substance Fact Sheets for selected COCs are included in *Attachment B.*

Media and Contaminant Types (X):

[X] Liquid	[ ] Solid	[ ] Sediment	[X] Soil Gas	[X] Soil
[X] Toxic	[ ] Reactive	[ ] Radioactive	[ ] Unknown	

COCs are known to occur at the site in the soil and groundwater. It is to be assumed that COCs may be present in site surface soils at relatively low concentrations.

7.0 HAZARD EVALUATION AND REDUCTION

Health and safety information relevant to the most prevalent COCs is included in *Table 1*. The VOCs are volatile and can present an inhalation hazard from breathing air contaminated with these materials resulting from direct contact with contaminated equipment, site soils or groundwater disturbed by investigation activities. The SVOCs are also volatile, but less so than the VOCs, and may be also be present in the breathing zone. Metals, pesticides and PCBs are not significantly volatile compounds.

All chemicals are anticipated to occur in soil and groundwater at the site, and thus pose a dermal exposure risk that can result from handling site soil and groundwater or equipment that has come into contact with impacted soil or groundwater.

According to the Hazardous Substance Fact Sheets, the COCs are recognized to pose a variety of hazards, including irritation of the eyes, respiratory tract and skin, and potentially increased risk of cancer and reproductive damage. The current OSHA permissible exposure limits (PEL) standards are provided in *Table 1*. Workers are not expected to be exposed to conditions exceeding the PEL.

Based on the nature of the contaminant and the type of work being performed, the most significant hazards at this site are:

- Direct contact with COC-bearing materials or equipment during intrusive subsurface investigation activities and soil and groundwater sampling activities. The PPE requirements for the project are designed to eliminate this risk to the extent practical.

- Physical hazards related to operating and working with drilling machinery and heavy drilling tools used for performing soil borings and installing monitoring wells, and heavy construction equipment used for the excavation of backhoe test pits. All equipment operators and inspectors shall be familiar with the associated physical hazards and shall have had at least five years of related experience. The project driller and environmental contractors shall provide copies of their current HASP to the project engineer for review. The PPE requirements for the project are designed to eliminate this risk to the extent practical.

There are three primary pathways by which site workers can be exposed to chemical hazards: inhalation, ingestion and dermal contact. The chemical exposures across these pathways can cause two types of effects: acute and chronic. Acute effects happen during or shortly after exposure to a sufficiently high concentration of a chemical. Chronic effects occur after repeated or constant exposures for a long period of time. Regulatory exposure limits, such as PELs, are related to both acute effects, such as respiratory irritation, and chronic effects, such as cancer. Symptoms of chemical exposure may include behavioral changes, breathing difficulties, skin color changes, coordination difficulties, coughing, dizziness, weakness, irritability, skin irritation, eye irritation, respiratory tract irritation, headache, nausea, lightheadedness, sneezing, etc.

The primary pathway exposures associated with site VOCs is inhalation and dermal contact with affected media or tools that have come into contact with the affected media. SVOCs may also be present in the breathing air, although typically at concentrations less than VOCs. Real-time ambient air monitoring, appropriate engineering controls, PPE and good hygiene practices will be employed to minimize exposure to VOCs. Exposures to SVOCs, metals, pesticides and PCBs is primarily by dermal contact with affected media or tools that have come into contact with the affected media.

Another potential pathway for exposure to COCs is through inhalation and dermal contact with airborne dust derived from contaminated soil. However, there are no site activities proposed at this time that will expose large areas of unstabilized soil, and vegetation is well developed at the site. Backhoe test pits, if dug, will be backfilled upon completion of logging and sampling activities, and are not expected to be a source of dust.

The following precautions will be taken to reduce the potential exposure to site COCs during site investigation and remediation activities:

- During the drilling or backhoe test pit and related logging and sampling activities, field personnel will conduct air monitoring with a photoionization detection (PID) meter to measure total concentrations of VOCs in the work zone breathing space.

- During groundwater sampling work, the field samplers will conduct air monitoring with a PID meter to measure total concentrations of VOCs in the work zone breathing space.

- If visible dust does become present in the breathing space, engineering controls and/or appropriate respiratory protection will be used.

- The work procedures shall be modified and/or a portable fan will be used as an engineering control if VOCs in the breathing space rise above action levels.

- Site investigation activities will be conducted in Level D PPE to minimize dermal exposure to potentially affected media (i.e., specifying the use of disposable protective gloves when handling site materials during field sampling activities) and reduce the risk of physical hazards (by requiring hard hats and safety glasses when inspecting drilling or test pits) as detailed in Section 8. The PPE will be upgraded, as necessary, for organic vapor, dermal and dust inhalation hazards.

- Any non-disposable PPE that comes in contact with potentially affected facility media will be decontaminated prior to leaving the work area.

- Soap, clean water and paper towels for washing hands will be provided at the site during all field activities. Hands will be washed thoroughly prior to eating, drinking and leaving the site.

The Site Safety Officer will have the NIOSH *Pocket Guide to Chemical Hazards* available for reference at the site. This reference identifies exposure routes, exposure symptoms, physical properties, chemical incompatibilities, first aid treatment and other information for many chemical compounds.

Physical hazards expected during the investigation and remediation activities are related to working with hydraulic and rotary drilling equipment, heavy construction equipment (backhoe), potential utility conflicts for drilling and test pit work, and slip, trip and fall hazards. Additional physical hazards may include heat or cold stress. These hazards will be evaluated by the Site Safety Officer prior to beginning work in a new area and as conditions change in the work area. The following precautions will be taken to reduce the physical hazard:

- A utility clearance program shall be completed prior to initiating the project, to include contacting Dig Safely New York and researching private utilities. The *Site Plan* for the project will show all identified utilities. No subsurface borings or test pits will be started at any location prior to utility clearances.

- "Tailgate" safety briefings will be conducted by the Site Safety Officer to identify additional safety protocols, as needed.

- The specified PPE shall be worn by all workers in the project exclusion zone.

- No confined space entries will take place under this HASP. If a confined space entry becomes necessary, appropriate confined space entry procedures will be detailed in an addendum to this plan.

- A warming space will be provided during cold weather, if needed.

- Good housekeeping in the work area will be maintained.

If necessary, a portable fan will be used during drilling and sampling activities to reduce the potential inhalation hazards. If VOCs in the breathing space are detected above action levels (or as determined by the monitoring plan), the fan will be used to blow fresh air through the work area, thereby increasing vapor diffusion. The fresh air source must be free of exhaust from generators or vehicles. All personnel will work on the upwind side of the vapor source, and air monitoring will continue as determined by the Site Safety Officer.

If necessary, engineering controls will be developed to minimize dust generation at the sampling location. For example, water may be sprayed on the surface soils to reduce breathing space dust concentrations.

Encountering unknown or unexpected substances or containers of a hazardous nature is possible, though not expected based on the degree of prior investigation and remedial activities undertaken at the site. Work will be discontinued if field measurements or observations indicate there is potential exposure to a hazard that was not anticipated, is not adequately characterized and controlled, or may exceed the protection provided by the PPE specified for the task.

8.0 SITE SAFETY WORK PLAN

Site Map:

- Refer to the attached *Site Plan (Figure 2)*.

- The *Site Plan* shows the main features on and adjacent to the site, and the locations of proposed sampling points.

Site Security:

A security fence with a locked gate encloses the site. The gate is kept locked at all times except during times when investigation activities are underway. The gate will be closed when personnel are on-site working to limit incoming traffic to authorized personnel only.

Training:

All authorized workers will receive a HASP briefing and will be required to read and sign the HASP at the beginning of the field project. The following main items shall be covered:

- The tasks the workers will be required to perform, as detailed in the Work Plan.
- Site ingress, egress and decontamination procedures.
- Site hazards, accident prevention and overexposure symptoms.
- The required PPE plan and exclusion zone requirements.
- Emergency response procedures.

Attachment A is a record of all authorized workers who have either attended the startup training session or received a similar briefing from the Site Safety Officer, to include any visitors. This shall be kept up-to-date throughout the project.

Should unexpected site conditions be encountered requiring utilization of Level C or higher protection and/or other specialized operations (e.g., a confined space entry), the work shall not be carried out until a Response Team is formed to carry out such work, comprised of personnel with proper training in accordance 29 CFR Part 1910.120 (e) (f) (g), as appropriate.

When any new personnel are assigned to this project, they shall receive the HASP briefing and shall be required to read and sign the HASP before being allowed to perform work. The briefing will be given by the Site Safety Officer or a delegated safety representative who has previously completed this training.

The Site Safety Officer will be responsible for insuring that visitors receive the necessary site-specific visitor training applicable to the visitors' anticipated activities. Site visitors shall not be allowed access to the project exclusion zone unless they receive a site-specific training brief, can demonstrate they have received the appropriate training per 29 CFR Part 1910.120 (e) and have received the required project PPE equipment.

Zone(s) of Contamination Identified:

The site is relatively small and was formerly occupied by a large number of oil storage tanks and various processing facilities. However, no one area is currently identified as having the greatest potential for contamination. Workers are to assume that COCs may occur anywhere on the site in the surface soils, subsurface soil and groundwater. Currently reviewed information has not indicated the presence of a contamination "hot spot".

Medical Surveillance:

The project driller shall be current with medical surveillance requirements in accordance with 29 CFR Part 1910.120 (f).

Attachment B details the symptoms of overexposure to the COCs. All site workers shall be familiar with these.

Exclusion Zone:

Temporary exclusion zones will be established around all subsurface drilling and sampling locations while such operations are being conducted. No unauthorized personnel will be allowed to approach the location, as monitored by the Site Safety Officer. Traffic cones will be used to designate the area, set at a safe distance from the associated hazard, as determined by the Site Safety Officer. Alternatively, the security fence may be used to designate the exclusion zone. Any worker in the exclusion zone shall comply with all aspects of the HASP.

Decontamination Area:

A central decontamination area, where decontamination materials shall be placed and stored, and procedures conducted, will be designated at the outset of the project. Portable decontamination equipment will also be used to expedite the work.

Personal Protection Equipment (PPE):

- Level of protection in the exclusion zone shall be Level D – Modified.

- Level D PPE in the exclusion zone shall consist of the use of hard hats, rubber (nitrile) gloves, steel-toed boots if inspecting drilling or test pits operations, ear plugs and safety glasses. Latex gloves will be used by inspectors for handling soil samples.

- Disposable Tyvek coveralls shall be worn by drillers and any other site worker who is in close contact with soils during ground intrusive activities.

- A cellular telephone in proper working order shall be available at the work site at all times.

- Eating, drinking, smoking and carrying food or tobacco products are prohibited in the exclusion zone.

Decontamination Procedures:

- ***Personnel:*** Workers shall remove coveralls and wash face and hands with soap and water prior to eating, drinking, using restroom facilities or leaving the site.

- ***Protective Equipment:*** A detergent wash and clean water rinse will be used for rubber boots, hard hats, safety glasses and hand sampling tools.

- ***Drilling and Sampling Equipment:*** Hot water pressure wash and rinse for drilling tools shall be used before exiting the work site. Decontamination of drilling tools shall be performed at the designated decontamination pad facility. Dry brush sampling tools, as appropriate.

- ***Disposal:*** Gloves, coveralls, etc., used at the site will be collected at a central location for disposal in accordance with all applicable laws of the State of New York or, where applicable, properly cleaned and disinfected for reuse. All water generated from decontamination shall be collected and containerized for proper testing and disposal in accordance with all applicable laws of the State of New York.

Equipment Checklist:

Level D Modified

Hard hat

Steel toed work boots and rubber overshoes, or steel toed rubber boots

Safety glasses

Safety goggles or shield

Tyvek coveralls

Rubber and latex gloves

Hearing Protection

Ear Plugs

Decontamination Materials

Alconox

Brushes

Buckets

Potable water source and portable containers

Low pressure sprayer

Decontamination pad materials, including water containment

Plastic drop cloth material

Garbage can and plastic liners

Field Instruments

PID / Calibrated HNU, 11.7 eV

Other

Eye wash bottles

Portable body washing equipment; water, soap and paper towels

Small portable generator and fan for ventilation for optimal use

First aid kit

Disposal dust masks

Glove and helmet liners for cold weather

9.0 ENVIRONMENTAL MONITORING PLAN

Work Zone Monitoring:

Air monitoring in the exclusion zone near the point of operation will be periodically tested by the Site Safety Officer using a PID meter as a general precaution at a frequency of once every 60 minutes, or whenever a fugitive odor suggestive of possible VOCs is encountered. Should readings exceeding 5 parts per million (ppm) be recorded, additional readings in the operator breathing zone will be obtained. Should these levels continue to exceed 5 ppm over a sustained period of one minute, work will be discontinued until appropriate engineering controls (e.g. fan ventilating, vapor suppression) are employed. The Site Safety Officer will continue to evaluate the situation and, if necessary, upgrade the PPE requirements to include air-purifying respirators. Should Level C respirator PPE be required, all workers shall have had the proper training for their use and have had a fitness test performed current within the previous one year period in accordance with 29 CFR 1910.120.134, Appendix A. Readings will be documented on the form provided in *Attachment C*.

Community Air Monitoring Program:

The Community Air Monitoring Plan (CAMP) requires real-time monitoring for VOCs and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at the site. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors, including residences and businesses, and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions and/or work shutdown.

Continuous monitoring will be required for all ***ground intrusive*** activities, including digging test pits, trenching, drilling soil borings and installing monitoring wells.

Periodic monitoring for VOCs and particulates (i.e., dust) will be required during ***non-intrusive*** activities, such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well bailing/purging, and taking a reading prior to leaving a sample location.

VOC Monitoring, Response Levels, and Actions

VOCs must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone). Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the COCs or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 ppm above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

- If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions and monitoring continued. After these steps, work activities can resume, provided the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less (but in no case less than 20 feet), is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored **continuously** at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m^3 above the upwind level and provided that no visible dust is migrating from the work area.

- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m^3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m^3 of the upwind level and in preventing visible dust migration.

All 15-minute readings must be recorded and be available for State (DEC and DOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

10.0 EMERGENCY RESPONSE PLAN

A copy of the HASP and a NIOSH *Pocket Guide of Chemical Hazards* shall be available at the site at all times.

The Site Safety Officer is to be immediately notified of any on-site emergency.

USE THE 911 SYSTEM FOR ANY THREATENING EMERGENCY.

Upon the occurrence of an emergency involving a potentially ongoing dangerous condition, for example a fire, explosion or electrical condition within or adjacent to the site, all workers will be alerted and the affected area evacuated immediately.

Emergency situations will be evaluated by the Site Safety Officer and initial emergency response measures will be undertaken, if appropriate.

Contact the Project Manager as soon as possible. Emergency telephone numbers are provided.

The following general sequential guidelines are provided for emergency situations:

1. If possible, remove the exposed or injured person(s) from the immediate danger. Other personnel on the property shall be evacuated to a safe distance until the Site Safety Officer determines it is safe to return to work.

2. Obtain paramedic and ambulance service (or fire department response, if needed) immediately by calling 911. Render first aid, as applicable to the rescuers' training.

3. If there is any doubt regarding the condition of the area, work shall not commence until all safety issues are resolved.

4. At the earliest time practical, the Site Safety Officer shall contact the Project Manager, giving details of the incident.

5. A written report of the incident shall be forwarded to the Project Manager within 24 hours following the incident.

EMERGENCY TELEPHONE NUMBERS

Plumley Engineering.. (315) 638-8587

FOR ALL EMERGENCIES.. 911

(Fire Department, Police Department, Ambulance)

Other Agencies:

Syracuse Fire Department – Prevention Section .... (315) 473-5525

Onondaga County Department of Water Environment Protection............. (315) 435-2260

National Grid (Gas or Electrical Emergency).. (800) 892-2345

Syracuse Water Department – Emergencies... (315) 473-2860

St. Joseph's Hospital Emergency Room... (315) 448-5101

DEC Region 7, Syracuse Office Spill Section.. (315) 426-7519

DEC Spill Hotline.. (800) 457-7362

Nearest Hospital (*Hospital Location Map, Figure 3*):

Name: St. Joseph's Hospital Health Center

Location 301 Prospect Avenue
Syracuse, New York 13203
(approximately 1.5 miles from site)

Telephone: (315) 448-5101 (Emergency Room)

<u>Written directions to Hospital from the site</u>:

- Head southeast on Lodi Street
- Turn right on North Salina Street
- Bear left onto Prospect Avenue to Emergency Department

FIGURES

REF.: USGS - SYRACUSE WEST (NY) QUAD., 1978, 7.5 MIN. SCALE: 1"=2000'

PLUMLEY ENGINEERING

Civil and Environmental Engineering

PLUMLEY ENGINEERING, P.C.
8232 LOOP ROAD
BALDWINSVILLE, NY 13027

TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
WWW.PLUMLEYENG.COM

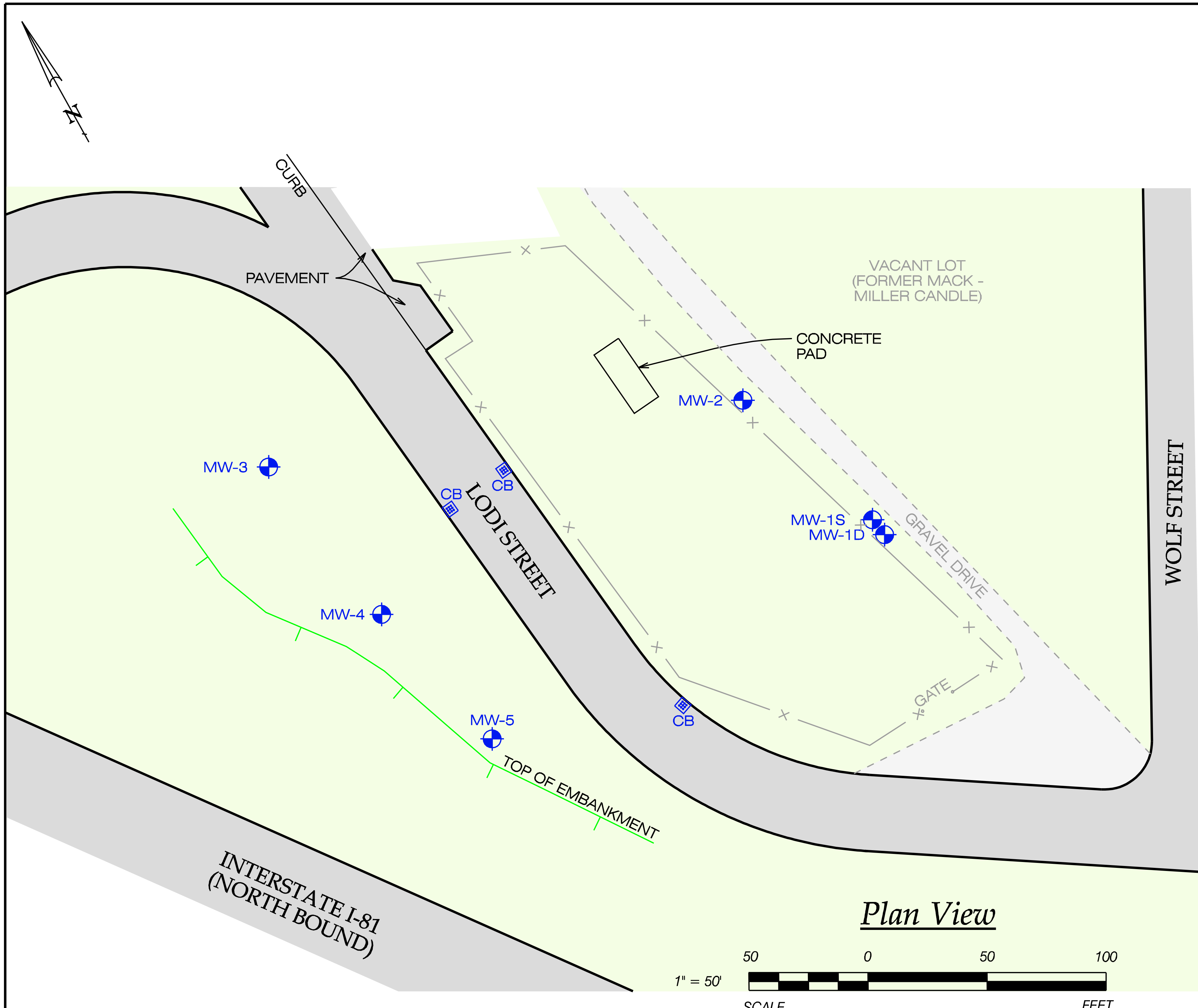
SITE LOCATION MAP

QUANTA RESOURCES - SYRACUSE

QUANTA RESOURCES PRP GROUP

CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

PROJECT No.:	2008008
FILE NAME.:	FIGURE 1
SCALE:	1" =2000'
DATE:	JAN. 2008
ENG'D BY:	DRV
DRAWN BY:	JMD
CHECKED BY:	DRV



Key

— × — Fence

Monitoring Well Installed By URS

Basemap References:

"Quanta Resources Site Sample Location Map", Prepared By: URS Consuliants, Inc., Figure 3-1.

Aerial Photograph

PLUMLEY ENGINEERING

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Civil and Environmental Engineering

REVISIONS: DATE: BY:

PROJECT: QUANTA RESOURCES - SYRACUSE

DWG. TITLE: SITE PLAN

CLIENT: QUANTA RESOURCES PRP GROUP

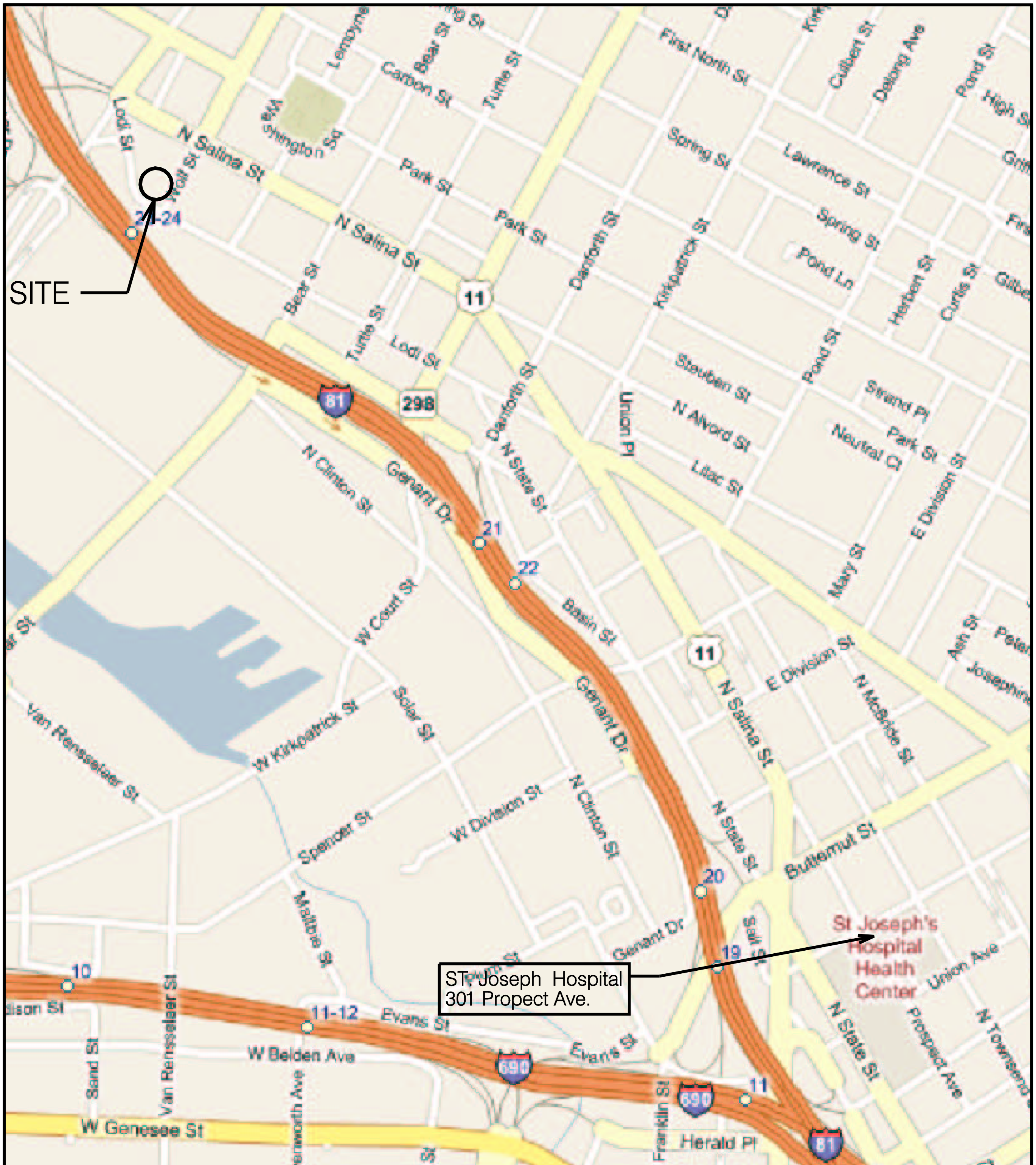
LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

Note: No alteration permitted hereon except as provided under Section 7209 Subdivision 2 of the New York State Education Law.

PROJECT No.:	2008008
FILE NAME.:	EV01P
SCALE:	AS NOTED
DATE:	JAN. 2008
ENG'D BY:	DRV
DRAWN BY:	JMD
CHECKED BY:	DRV

SHEET NO.:

FIGURE 2



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BALDWINSVILLE, NY 13027

TELEPHONE: (315) 638-8587
FAX: (315) 638-9740
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DESCRIPTION: HOSPITAL LOCATION MAP

PROJECT: QUANTA RESOURCES - SYSRACUSE

CLIENT: QUANTA RESOURCES PRP GROUP

LOCATION: CITY OF SYRACUSE, ONONDAGA COUNTY, NEW YORK

FIGURE 3

TABLES

QUANTA RESOURCES SITE
2802-2810 Lodi Street
City of Syracuse, Onondaga County, New York
NYSDEC Site No. 7-34-013

TABLE 1 - HEALTH AND SAFETY DATA FOR SELECTED CHEMICALS OF CONCERN

Contaminant	Synonyms	CAS Number	Ionization Potential (eV)	Odor Threshold (ppm)	PEL 8 hour (ppm)	PEL 15 minute (ppm)	TLV/ TWA (ppm)	STEL (ppm)	Flammable	Explosive Limits	
										LEL	UEL
1,1,1-Trichloroethane	Methyl chloroform	71-55-6	11.00	390	350	NL	350	450	No	NA	NA
1,1-Dichloroethane	Ethylidene chloride	75-34-3	NA	NA	100	NL	100	NL	Yes	NL	NL
Benzene	Benzol	71-43-2	9.24	NA	1	5	0.1	1	Yes	1.2%	7.8%
Chlorobenzene	Benzene chloride	106-90-7	9.07	NA	75	NA	NA	NA	Yes	1.3%	9.6%
cis-1,2-Dichloroethene	1,2- Dichloroethylene	156-59-2	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	Ethylbenzol	100-41-4	8.76	NA	100	NA	100	125	Yes	0.8%	6.7%
m-Xylene	Xylol	108-38-3	8.56	NA	100	NA	100	150	Yes	1.1%	7.0%
o-Xylene	Xylol	95-47-6	8.56	NA	100	NA	100	150	Yes	0.9%	6.7%
p-Xylene	Xylol	106-42-3	8.44	NA	100	NA	100	150	Yes	1.1%	7.0%
Tetrachloroethene	Perchloroethylene	127-18-4	9.32	47	100	200	25	100	No	NA	NA
Toluene	Methyl benzene	108-88-3	NA	2.9	200	300	50	150	Yes	1.3%	7.0%
trans-1,2-Dichloroethene	NA	156-60-5	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichloroethene	Trichloroethylene	79-01-6	9.45	82-110	100	200	50	100	No	NA	NA
Vinyl Chloride	Chloroethene, Chloroethylene	75-01-4	9.995	NA	1	5	5	NA	Yes	4.0%	22.0%

ATTACHMENTS

ATTACHMENT A
NYSDEC Site No. 7-34-013

AUTHORIZED PERSONNEL

I have read, understand and by signing, agree to comply with the provisions contained in the health and safety plan for this site.

	Name	**Representing**	**Signature**	**Date**
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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ATTACHMENT B
HAZARDOUS SUBSTANCE FACT SHEETS

Aldrin	**Formula:** $C_{12}H_8Cl_6$	**CAS#:** 309-00-2	**RTECS#:** IO2100000	**IDLH:** Ca [25 mg/m^3]
Conversion:	**DOT:** 2761 151			

Synonyms/Trade Names: HHDN, Octalene, 1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-endo-1,4-exo-5,8-dimethanonaphthalene

Exposure Limits:
NIOSH REL: Ca
TWA 0.25 mg/m^3 [skin]
See Appendix A
OSHA PEL: TWA 0.25 mg/m^3 [skin]

Measurement Methods (see Table 1):
NIOSH 5502

Physical Description: Colorless to dark-brown crystalline solid with a mild chemical odor. [**Note:** Formerly used as an insecticide.]

Chemical & Physical Properties:
MW: 364.9
BP: Decomposes
Sol: 0.003%
Fl.P: NA
IP: ?
Sp.Gr: 1.60
VP: 0.00008 mmHg
MLT: 219°F
UEL: NA
LEL: NA
Noncombustible Solid, but may be dissolved in flammable liquids.

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam/Daily
Remove: When wet or contam
Change: Daily
Provide: Eyewash
Quick drench

Respirator Recommendations (see Tables 3 and 4):
NIOSH
¥: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: GmFOv100/ScbaE

Incompatibilities and Reactivities: Concentrated mineral acids, active metals, acid catalysts, acid oxidizing agents, phenol

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Abs, Ing, Con
SY: Head, dizz; nau, vomit, mal; myoclonic jerks of limbs; clonic, tonic convuls; coma; hema, azotemia; [carc]
TO: CNS, liver, kidneys, skin [in animals: tumors of the lungs, liver, thyroid & adrenal glands]

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap wash immed
Breath: Resp support
Swallow: Medical attention immed

Antimony	**Formula:** Sb	**CAS#:** 7440-36-0	**RTECS#:** CC4025000	**IDLH:** 50 mg/m^3 (as Sb)
Conversion:	**DOT:** 1549 157 (inorganic compounds, n.o.s.); 2871 170 (powder); 3141 157 (inorganic liquid compounds, n.o.s.)			

Synonyms/Trade Names: Antimony metal, Antimony powder, Stibium

Exposure Limits:
NIOSH REL*: TWA 0.5 mg/m^3
OSHA PEL*: TWA 0.5 mg/m^3
[***Note:** The REL and PEL also apply to other antimony compounds (as Sb).]

Measurement Methods (see Table 1):
NIOSH 7301, 7303, P&CAM 261 (II-4)
OSHA ID121, ID125G, ID206

Physical Description: Silver-white, lustrous, hard, brittle solid; scale-like crystals; or a dark-gray, lustrous powder.

Chemical & Physical Properties:
MW: 121.8
BP: 2975°F
Sol: Insoluble
Fl.P: NA
IP: NA
Sp.Gr: 6.69
VP: 0 mmHg (approx)
MLT: 1166°F
UEL: NA
LEL: NA

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam
Remove: When wet or contam
Change: Daily

Respirator Recommendations (see Tables 3 and 4):
NIOSH/OSHA
5 mg/m^3: 95XQ/Sa
12.5 mg/m^3: Sa:Cf/PaprHie
25 mg/m^3: 100F/SaT:Cf/PaprTHie/ScbaF/SaF
50 mg/m^3: Sa:Pd,Pp
§: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: 100F/ScbaE

Noncombustible Solid in bulk form, but a moderate explosion hazard in the form of dust when exposed to flame.

Incompatibilities and Reactivities: Strong oxidizers, acids, halogenated acids
[**Note:** Stibine is formed when antimony is exposed to nascent (freshly formed) hydrogen.]

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Ing, Con
SY: Irrit eyes, skin, nose, throat, mouth; cough; dizz; head; nau, vomit, diarr; stomach cramps; insom; anor; unable to smell properly
TO: Eyes, skin, resp sys, CVS

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap wash immed
Breath: Resp support
Swallow: Medical attention immed

Arsenic (inorganic compounds, as As)

Arsenic (inorganic compounds, as As)	Formula: As (metal)	CAS#: 7440-38-2 (metal)	RTECS#: CG0525000 (metal)	IDLH: Ca [5 mg/m³ (as As)]

Conversion: | **DOT:** 1558 152 (metal); 1562 152 (dust)

Synonyms/Trade Names: **Arsenic metal:** Arsenia
Other synonyms vary depending upon the specific As compound. [**Note:** OSHA considers "Inorganic Arsenic" to mean copper acetoarsenite & all inorganic compounds containing arsenic except ARSINE.]

Exposure Limits:
NIOSH REL: Ca
C 0.002 mg/m³ [15-minute]
See Appendix A
OSHA PEL: [1910.1018] TWA 0.010 mg/m³

Measurement Methods (see Table 1):
NIOSH 7300, 7301, 7303, 9102, 7900
OSHA ID105

Physical Description: Metal: Silver-gray or tin-white, brittle, odorless solid.

Chemical & Physical Properties:
MW: 74.9
BP: Sublimes
Sol: Insoluble
Fl.P: NA
IP: NA
Sp.Gr: 5.73 (metal)
VP: 0 mmHg (approx)
MLT: 1135°F (Sublimes)
UEL: NA
LEL: NA

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam/Daily
Remove: When wet or contam
Change: Daily
Provide: Eyewash
Quick drench

Respirator Recommendations (see Tables 3 and 4):
NIOSH
¥: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: GmFAg100/ScbaE

See Appendix E (page 351)

Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of dust when exposed to flame.

Incompatibilities and Reactivities: Strong oxidizers, bromine azide
[**Note:** Hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.]

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Abs, Con, Ing
SY: Ulceration of nasal septum, derm, GI disturbances, peri neur, resp irrit, hyperpig of skin, [carc]
TO: Liver, kidneys, skin, lungs, lymphatic sys [lung & lymphatic cancer]

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap wash immed
Breath: Resp support
Swallow: Medical attention immed

Benzene

Benzene	Formula: C_6H_6	CAS#: 71-43-2	RTECS#: CY1400000	IDLH: Ca [500 ppm]

Conversion: 1 ppm = 3.19 mg/m³ | **DOT:** 1114 130

Synonyms/Trade Names: Benzol, Phenyl hydride

Exposure Limits:
NIOSH REL: Ca
TWA 0.1 ppm
ST 1 ppm
See Appendix A

OSHA PEL: [1910.1028]
TWA 1 ppm
ST 5 ppm
See Appendix F

Measurement Methods (see Table 1):
NIOSH 1500, 1501, 3700, 3800
OSHA 12, 1005

Physical Description: Colorless to light-yellow liquid with an aromatic odor. [**Note:** A solid below 42°F.]

Chemical & Physical Properties:
MW: 78.1
BP: 176°F
Sol: 0.07%
Fl.P: 12°F
IP: 9.24 eV
Sp.Gr: 0.88
VP: 75 mmHg
FRZ: 42°F
UEL: 7.8%
LEL: 1.2%
Class IB Flammable Liquid

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam
Remove: When wet (flamm)
Change: N.R.
Provide: Eyewash
Quick drench

Respirator Recommendations (see Tables 3 and 4):
NIOSH
¥: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: GmFOv/ScbaE

See Appendix E (page 351)

Incompatibilities and Reactivities: Strong oxidizers, many fluorides & perchlorates, nitric acid

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Abs, Ing, Con
SY: Irrit eyes, skin, nose, resp sys; dizz; head, nau, staggered gait; anor, lass; derm; bone marrow depres; [carc]
TO: Eyes, skin, resp sys, blood, CNS, bone marrow [leukemia]

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap wash immed
Breath: Resp support
Swallow: Medical attention immed

Chlorodiphenyl (42% chlorine)	Formula: $C_6H_4ClC_6H_3Cl_2$ (approx)	CAS#: 53469-21-9	RTECS#: TQ1356000	IDLH: Ca [5 mg/m^3]
Conversion:	DOT: 2315 171			

Synonyms/Trade Names: Aroclor® 1242, PCB, Polychlorinated biphenyl

Exposure Limits:
NIOSH REL*: Ca
TWA 0.001 mg/m^3
See Appendix A
[***Note:** The REL also applies to other PCBs.]
OSHA PEL: TWA 1 mg/m^3 [skin]

Measurement Methods (see Table 1):
NIOSH 5503
OSHA PV2089

Physical Description: Colorless to light-colored, viscous liquid with a mild, hydrocarbon odor.

Chemical & Physical Properties:
MW: 258 (approx)
BP: 617-691°F
Sol: Insoluble
Fl.P: NA
IP: ?
Sp.Gr(77°F): 1.39
VP: 0.001 mmHg
FRZ: -2°F
UEL: NA
LEL: NA

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam
Remove: When wet or contam
Change: Daily
Provide: Eyewash
Quick drench

Respirator Recommendations (see Tables 3 and 4):
NIOSH
¥: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: GmFOv100/ScbaE

Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans & chlorinated dibenzo-p-dioxins.

Incompatibilities and Reactivities: Strong oxidizers

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Abs, Ing, Con
SY: Irrit eyes; chloracne; liver damage; repro effects; [carc]
TO: Skin, eyes, liver, repro sys [in animals: tumors of the pituitary gland & liver, leukemia]

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap wash immed
Breath: Resp support
Swallow: Medical attention immed

Chlorodiphenyl (54% chlorine)	Formula: $C_6H_3Cl_2C_6H_2Cl_3$ (approx)	CAS#: 11097-69-1	RTECS#: TQ1360000	IDLH: Ca [5 mg/m^3]
Conversion:	DOT: 2315 171			

Synonyms/Trade Names: Aroclor® 1254, PCB, Polychlorinated biphenyl

Exposure Limits:
NIOSH REL*: Ca
TWA 0.001 mg/m^3
See Appendix A
[***Note:** The REL also applies to other PCBs.]
OSHA PEL: TWA 0.5 mg/m^3 [skin]

Measurement Methods (see Table 1):
NIOSH 5503
OSHA PV2088

Physical Description: Colorless to pale-yellow, viscous liquid or solid (below 50°F) with a mild, hydrocarbon odor.

Chemical & Physical Properties:
MW: 326 (approx)
BP: 689-734°F
Sol: Insoluble
Fl.P: NA
IP: ?
Sp.Gr(77°F): 1.38
VP: 0.00006 mmHg
FRZ: 50°F
UEL: NA
LEL: NA

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam
Remove: When wet or contam
Change: Daily
Provide: Eyewash
Quick drench

Respirator Recommendations (see Tables 3 and 4):
NIOSH
¥: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: GmFOv100/ScbaE

Nonflammable Liquid, but exposure in a fire results in the formation of a black soot containing PCBs, polychlorinated dibenzofurans, and chlorinated dibenzo-p-dioxins.

Incompatibilities and Reactivities: Strong oxidizers

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Abs, Ing, Con
SY: Irrit eyes, chloracne; liver damage; repro effects; [carc]
TO: Skin, eyes, liver, repro sys [in animals: tumors of the pituitary gland & liver, leukemia]

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap wash immed
Breath: Resp support
Swallow: Medical attention immed

Coal tar pitch volatiles	Formula:	CAS#: 65996-93-2	RTECS#: GF8655000	IDLH: Ca [80 mg/m^3]
Conversion:	**DOT:** 2713 153 (acridine)			

Synonyms/Trade Names: Synonyms vary depending upon the specific compound (e.g., pyrene, phenanthrene, acridine, chrysene, anthracene & benzo(a)pyrene).
[**Note:** NIOSH considers coal tar, coal tar pitch, and creosote to be coal tar products.]

Exposure Limits	Measurement Methods (see Table 1)
NIOSH REL: Ca TWA 0.1 mg/m^3 (cyclohexane-extractable fraction) See Appendix A See Appendix C **OSHA PEL:** TWA 0.2 mg/m^3 (benzene-soluble fraction) [1910.1002] See Appendix C	**OSHA** 58

Physical Description: Black or dark-brown amorphous residue.

Chemical & Physical Properties:	Personal Protection/Sanitation (see Table 2):	Respirator Recommendations (see Tables 3 and 4):
Properties vary depending upon the specific compound. Combustible Solids	**Skin:** Prevent skin contact **Eyes:** Prevent eye contact **Wash skin:** Daily **Remove:** N.R. **Change:** Daily	**NIOSH** **¥:** ScbaF:Pd,Pp/SaF:Pd,Pp:AScba **Escape:** GmFOv100/ScbaE

Incompatibilities and Reactivities: Strong oxidizers

Exposure Routes, Symptoms, Target Organs (see Table 5):	First Aid (see Table 6):
ER: Inh, Con **SY:** Derm, bron, [carc] **TO:** Resp sys, skin, bladder, kidneys [lung, kidney & skin cancer]	**Eye:** Irr immed **Skin:** Soap wash immed **Breath:** Resp support **Swallow:** Medical attention immed

1,1-Dichloroethane	Formula: $CHCl_2CH_3$	CAS#: 75-34-3	RTECS#: KI0175000	IDLH: 3000 ppm
Conversion: 1 ppm = 4.05 mg/m^3	**DOT:** 2362 130			

Synonyms/Trade Names: Asymmetrical dichloroethane; Ethylidene chloride; 1,1-Ethylidene dichloride

Exposure Limits	Measurement Methods (see Table 1)
NIOSH REL: TWA 100 ppm (400 mg/m^3) See Appendix C (Chloroethanes) **OSHA PEL:** TWA 100 ppm (400 mg/m^3)	**NIOSH** 1003 **OSHA** 7

Physical Description: Colorless, oily liquid with a chloroform-like odor.

Chemical & Physical Properties:	Personal Protection/Sanitation (see Table 2):	Respirator Recommendations (see Tables 3 and 4):
MW: 99.0 **BP:** 135°F **Sol:** 0.6% **Fl.P:** 2°F **IP:** 11.06 eV **Sp.Gr:** 1.18 **VP:** 182 mmHg **FRZ:** -143°F **UEL:** 11.4% **LEL:** 5.4% Class IB Flammable Liquid	**Skin:** Prevent skin contact **Eyes:** Prevent eye contact **Wash skin:** When contam **Remove:** When wet (flamm) **Change:** N.R.	**NIOSH/OSHA** **1000 ppm:** Sa **2500 ppm:** Sa:Cf **3000 ppm:** ScbaF/SaF **§:** ScbaF:Pd,Pp/SaF:Pd,Pp:AScba **Escape:** GmFOv/ScbaE

Incompatibilities and Reactivities: Strong oxidizers, strong caustics

Exposure Routes, Symptoms, Target Organs (see Table 5):	First Aid (see Table 6):
ER: Inh, Ing, Con **SY:** Irrit skin; CNS depres; liver, kidney, lung damage **TO:** Skin, liver, kidneys, lungs, CNS	**Eye:** Irr immed **Skin:** Soap flush prompt **Breath:** Resp support **Swallow:** Medical attention immed

Ethyl benzene	Formula: $CH_3CH_2C_6H_5$	CAS#: 100-41-4	RTECS#: DA0700000	IDLH: 800 ppm [10%LEL]
Conversion: 1 ppm = 4.34 mg/m^3	DOT: 1175 130			

Synonyms/Trade Names: Ethylbenzol, Phenylethane

Exposure Limits:
NIOSH REL: TWA 100 ppm (435 mg/m^3)
ST 125 ppm (545 mg/m^3)
OSHA PEL†: TWA 100 ppm (435 mg/m^3)

Measurement Methods (see Table 1):
NIOSH 1501
OSHA 7, 1002

Physical Description: Colorless liquid with an aromatic odor.

Chemical & Physical Properties:
MW: 106.2
BP: 277°F
Sol: 0.01%
Fl.P: 55°F
IP: 8.76 eV
Sp.Gr: 0.87
VP: 7 mmHg
FRZ: -139°F
UEL: 6.7%
LEL: 0.8%
Class IB Flammable Liquid

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam
Remove: When wet (flamm)
Change: N.R.

Respirator Recommendations (see Tables 3 and 4):
NIOSH/OSHA
800 ppm: CcrOv*/GmFOv/PaprOv*/Sa*/ScbaF
§: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: GmFOv/ScbaE

Incompatibilities and Reactivities: Strong oxidizers

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Ing, Con
SY: Irrit eyes, skin, muc memb; head; derm; narco, coma
TO: Eyes, skin, resp sys, CNS

First Aid (see Table 6):
Eye: Irr immed
Skin: Water flush prompt
Breath: Resp support
Swallow: Medical attention immed

Lead	Formula: Pb	CAS#: 7439-92-1	RTECS#: OF7525000	IDLH: 100 mg/m^3 (as Pb)
Conversion:	DOT:			

Synonyms/Trade Names: Lead metal, Plumbum

Exposure Limits:
NIOSH REL*: TWA 0.050 mg/m^3
See Appendix C
OSHA PEL*: [1910.1025] TWA 0.050 mg/m^3
See Appendix C
[***Note:** The REL and PEL also apply to other lead compounds (as Pb) -- see Appendix C.]

Measurement Methods (see Table 1):
NIOSH 7082, 7105, 7300, 7301, 7303, 7700, 7701, 7702, 9102, 9105
OSHA ID121, ID125G, ID206

Physical Description: A heavy, ductile, soft, gray solid.

Chemical & Physical Properties:
MW: 207.2
BP: 3164°F
Sol: Insoluble
Fl.P: NA
IP: NA
Sp.Gr: 11.34
VP: 0 mmHg (approx)
MLT: 621°F
UEL: NA
LEL: NA
Noncombustible Solid in bulk form.

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: Daily
Remove: When wet or contam
Change: Daily

Respirator Recommendations (see Tables 3 and 4):
NIOSH/OSHA
0.5 mg/m^3: 100XQ/Sa
1.25 mg/m^3: Sa:Cf/PaprHie
2.5 mg/m^3: 100F/SaT:Cf/PaprTHie/ScbaF/SaF
50 mg/m^3: Sa:Pd,Pp
100 mg/m^3: SaF:Pd,Pp
§: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: 100F/ScbaE

See Appendix E (page 351)

Incompatibilities and Reactivities: Strong oxidizers, hydrogen peroxide, acids

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Ing, Con
SY: Lass, insom; facial pallor; anor, low-wgt, malnut; constip, abdom pain, colic; anemia; gingival lead line; tremor, para wrist, ankles; encephalopathy; kidney disease; irrit eyes; hypotension
TO: Eyes, GI tract, CNS, kidneys, blood, gingival tissue

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap flush prompt
Breath: Resp support
Swallow: Medical attention immed

m-Xylene	Formula: $C_6H_4(CH_3)_2$	CAS#: 108-38-3	RTECS#: ZE2275000	IDLH: 900 ppm

Conversion: 1 ppm = 4.34 mg/m^3 | **DOT:** 1307 130

Synonyms/Trade Names: 1,3-Dimethylbenzene; meta-Xylene; m-Xylol

Exposure Limits:
NIOSH REL: TWA 100 ppm (435 mg/m^3)
ST 150 ppm (655 mg/m^3)
OSHA PEL†: TWA 100 ppm (435 mg/m^3)

Measurement Methods (see Table 1):
NIOSH 1501, 3800
OSHA 1002

Physical Description: Colorless liquid with an aromatic odor.

Chemical & Physical Properties:
MW: 106.2
BP: 282°F
Sol: Slight
Fl.P: 82°F
IP: 8.56 eV
Sp.Gr: 0.86
VP: 9 mmHg
FRZ: -54°F
UEL: 7.0%
LEL: 1.1%
Class IC Flammable Liquid

Personal Protection/Sanitation (see Table 2):
Skin: Prevent skin contact
Eyes: Prevent eye contact
Wash skin: When contam
Remove: When wet (flamm)
Change: N.R.

Respirator Recommendations (see Tables 3 and 4):
NIOSH/OSHA
900 ppm: CcrOv*/PaprOv*/Sa*/ScbaF
§: ScbaF:Pd,Pp/SaF:Pd,Pp:AScba
Escape: GmFOv/ScbaE

Incompatibilities and Reactivities: Strong oxidizers, strong acids

Exposure Routes, Symptoms, Target Organs (see Table 5):
ER: Inh, Abs, Ing, Con
SY: Irrit eyes, skin, nose, throat; dizz, excitement, drow, inco, staggering gait; corn vacuolization; anor, nau, vomit, abdom pain; derm
TO: Eyes, skin, resp sys, CNS, GI tract, blood, liver, kidneys

First Aid (see Table 6):
Eye: Irr immed
Skin: Soap wash prompt
Breath: Resp support
Swallow: Medical attention immed

ATTACHMENT C
NYSDEC Site No. 7-34-013

DAILY WORK ZONE AND PERIMETER AIR MONITORING LOG SHEET

Job:_________________________________ Date:____________ Start Time:____________

Monitoring Personnel:____

Instruments (circle): PID:________________ HNU LEL Draeger Tubes Other_________

Weather Conditions

Temperature:________ Sky (circle): Clear P. Cloudy Cloudy Overcast

Wind Speed (approx.):__________ Wind Direction:______________ Precipitation:__________

TIME	PID/LEL READINGS	WORK ZONE OR PERIMETER	COMMENTS (activities, changes in wind direction, temperature, etc.)

Monitoring Performed By:____

Were Respirators Worn: Yes No

How Long? __________ Who? ____

Why? ____

APPENDIX D

IMPORTED SOIL
TESTING REQUIREMENTS

Table 5.4(e) 10 Recommended Number of Soil Samples for Soil Imported To or Exported From a Site			
Contaminant	**VOCs**	**SVOCs, Inorganics & PCBs/Pesticides**	
Soil Quantity (cubic yards)	**Discrete Samples**	**Composite**	**Discrete Samples/Composite**
0-50	1	1	3-5 discrete samples from different locations in the fill being provided will comprise a composite sample for analysis
50-100	2	1	
100-200	3	1	
200-300	4	1	
300-400	4	2	
400-500	5	2	
500-800	6	2	
800-1000	7	2	
➢ 1000	Add an additional 2 VOC and 1 composite for each additional 1000 Cubic yards or consult with DER		

Appendix 5
Allowable Constituent Levels for Imported Fill or Soil
Subdivision 5.4(e)

Source: This table is derived from soil cleanup objective (SCO) tables in 6 NYCRR 375. Table 375-6.8(a) is the source for unrestricted use and Table 375-6.8(b) is the source for restricted use.

Note: For constituents not included in this table, refer to the contaminant for supplemental soil cleanup objectives (SSCOs) in the Commissioner Policy on _Soil Cleanup Guidance_. If an SSCO is not provided for a constituent, contact the DER PM to determine a site-specific level.

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Metals					
Arsenic	13	16	16	16	13
Barium	350	350	400	400	433
Beryllium	7.2	14	47	47	10
Cadmium	2.5	2.5	4.3	7.5	4
Chromium, Hexavalent[1]	1 [3]	19	19	19	1 [3]
Chromium, Trivalent[1]	30	36	180	1500	41
Copper	50	270	270	270	50
Cyanide	27	27	27	27	NS
Lead	63	400	400	450	63
Manganese	1600	2000	2000	2000	1600
Mercury (total)	0.18	0.73	0.73	0.73	0.18
Nickel	30	130	130	130	30
Selenium	3.9	4	4	4	3.9
Silver	2	8.3	8.3	8.3	2
Zinc	109	2200	2480	2480	109
PCBs/Pesticides					
2,4,5-TP Acid (Silvex)	3.8	3.8	3.8	3.8	NS
4,4'-DDE	0.0033 [3]	1.8	8.9	17	0.0033 [3]
4,4'-DDT	0.0033 [3]	1.7	7.9	47	0.0033 [3]
4,4'-DDD	0.0033 [3]	2.6	13	14	0.0033 [3]
Aldrin	0.005	0.019	0.097	0.19	0.14
Alpha-BHC	0.02	0.02	0.02	0.02	0.04 [4]
Beta-BHC	0.036	0.072	0.09	0.09	0.6
Chlordane (alpha)	0.094	0.91	2.9	2.9	1.3
Delta-BHC	0.04	0.25	0.25	0.25	0.04 [4]
Dibenzofuran	7	14	59	210	NS
Dieldrin	0.005	0.039	0.1	0.1	0.006
Endosulfan I	2.4[2]	4.8	24	102	NS
Endosulfan II	2.4[2]	4.8	24	102	NS
Endosulfan sulfate	2.4[2]	4.8	24	200	NS
Endrin	0.014	0.06	0.06	0.06	0.014
Heptachlor	0.042	0.38	0.38	0.38	0.14
Lindane	0.1	0.1	0.1	0.1	6
Polychlorinated biphenyls	0.1	1	1	1	1

Constituent	Unrestricted Use	Residential Use	Restricted Residential Use	Commercial or Industrial Use	If Ecological Resources are Present
Semi-volatile Organic Compounds					
Acenaphthene	20	98	98	98	20
Acenaphthylene	100	100	100	107	NS
Anthracene	100	100	100	500	NS
Benzo(a)anthracene	1	1	1	1	NS
Benzo(a)pyrene	1	1	1	1	2.6
Benzo(b)fluoranthene	1	1	1	1.7	NS
Benzo(g,h,i)perylene	100	100	100	500	NS
Benzo(k)fluoranthene	0.8	1	1.7	1.7	NS
Chrysene	1	1	1	1	NS
Dibenz(a,h)anthracene	0.33 [3]	0.33 [3]	0.33 [3]	0.56	NS
Fluoranthene	100	100	100	500	NS
Fluorene	30	100	100	386	30
Indeno(1,2,3-cd)pyrene	0.5	0.5	0.5	5.6	NS
m-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
Naphthalene	12	12	12	12	NS
o-Cresol(s)	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	NS
p-Cresol(s)	0.33	0.33	0.33	0.33	NS
Pentachlorophenol	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]	0.8 [3]
Phenanthrene	100	100	100	500	NS
Phenol	0.33 [3]	0.33 [3]	0.33 [3]	0.33 [3]	30
Pyrene	100	100	100	500	NS
Volatile Organic Compounds					
1,1,1-Trichloroethane	0.68	0.68	0.68	0.68	NS
1,1-Dichloroethane	0.27	0.27	0.27	0.27	NS
1,1-Dichloroethene	0.33	0.33	0.33	0.33	NS
1,2-Dichlorobenzene	1.1	1.1	1.1	1.1	NS
1,2-Dichloroethane	0.02	0.02	0.02	0.02	10
1,2-Dichloroethene(cis)	0.25	0.25	0.25	0.25	NS
1,2-Dichloroethene(trans)	0.19	0.19	0.19	0.19	NS
1,3-Dichlorobenzene	2.4	2.4	2.4	2.4	NS
1,4-Dichlorobenzene	1.8	1.8	1.8	1.8	20
1,4-Dioxane	0.1 [3]	0.1 [3]	0.1 [3]	0.1 [3]	0.1
Acetone	0.05	0.05	0.05	0.05	2.2
Benzene	0.06	0.06	0.06	0.06	70
Butylbenzene	12	12	12	12	NS
Carbon tetrachloride	0.76	0.76	0.76	0.76	NS
Chlorobenzene	1.1	1.1	1.1	1.1	40
Chloroform	0.37	0.37	0.37	0.37	12
Ethylbenzene	1	1	1	1	NS
Hexachlorobenzene	0.33 [3]	0.33 [3]	1.2	3.2	NS
Methyl ethyl ketone	0.12	0.12	0.12	0.12	100
Methyl tert-butyl ether	0.93	0.93	0.93	0.93	NS
Methylene chloride	0.05	0.05	0.05	0.05	12

Volatile Organic Compounds (continued)					
Propylbenzene-n	3.9	3.9	3.9	3.9	NS
Sec-Butylbenzene	11	11	11	11	NS
Tert-Butylbenzene	5.9	5.9	5.9	5.9	NS
Tetrachloroethene	1.3	1.3	1.3	1.3	2
Toluene	0.7	0.7	0.7	0.7	36
Trichloroethene	0.47	0.47	0.47	0.47	2
Trimethylbenzene-1,2,4	3.6	3.6	3.6	3.6	NS
Trimethylbenzene-1,3,5	8.4	8.4	8.4	8.4	NS
Vinyl chloride	0.02	0.02	0.02	0.02	NS
Xylene (mixed)	0.26	1.6	1.6	1.6	0.26

All concentrations are in parts per million (ppm)
NS = Not Specified

Footnotes:
[1] The SCO for Hexavalent or Trivalent Chromium is considered to be met if the analysis for the total species of this contaminant is below the specific SCO for Hexavalent Chromium.
[2] The SCO is the sum of endosulfan I, endosulfan II and endosulfan sulfate.
[3] For constituents where the calculated SCO was lower than the contract required quantitation limit (CRQL), the CRQL is used as the Track 1 SCO value.
[4] This SCO is derived from data on mixed isomers of BHC.