APPROVED 3-30-05

REMEDIAL ACTION REPORT

For:

Operable Unit No. 1

Former Brooklyn Borough Gas Works Site
Brooklyn, New York
Site Number 2-24-026

Prepared for:

KEYSPAN CORPORATION

One MetroTech Center
Brooklyn, New York 11210-3850

JULY 2004

Prepared by:

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KeySpan Corporation
Environmental Asset Management
Department
One Metro Tech Center
Brooklyn, NY 11201-3850

July 30, 2004

Lech M. Dolata
New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C
625 Broadway, 12th Floor
Albany, New York 12233-7013

Re: Remedial Action Report
For Operable Unit No. 1
Former Brooklyn Borough Gas Works Site
Coney Island, Brooklyn, New York
Site 2-24-026

Dear Mr. Dolata:

Attached for your review is the Remedial Action Report for Operable Unit No. 1 (OU-1) at the former Brooklyn Borough Gas Works Site, Coney Island, Brooklyn, New York. This report, prepared in the format of DER-10, documents the completion of the designated remedy for OU-1.

If there are questions or if additional information is required, please contact me.

Sincerely,

KEYSPAN CORPORATION

John T Bolan

FOR Tracey L. Bell
Project Manager

cc: A. Prophete, KeySpan
B. McClellan, PS&S/KBS
J. Bolan, PS&S/KBS

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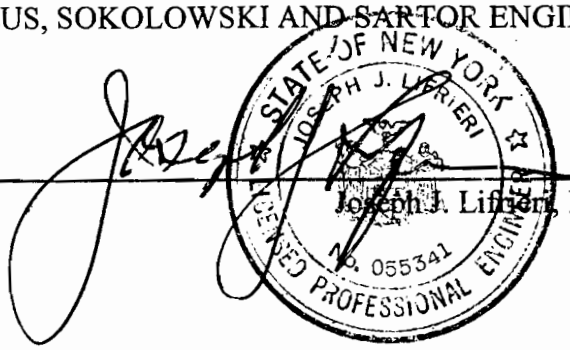
Remedial Action Report
For
Operable Unit No. 1
Former Brooklyn Borough Gas Works Site
Brooklyn, New York
Site Number 2-24-026

PROFESSIONAL ENGINEER'S CERTIFICATION

The remedial measures implemented for the initial phase of the OU-1 remediation effort were completed in substantial conformance with the NYSDEC approved plans and specifications. Also, I have personally examined and am familiar with the attached Remedial Action Report. To the best of my knowledge, the contents of the report are accurate, complete and sufficient in documenting the remedial work completed for OU-1 that is required by the NYSDEC.

PAULUS, SOKOLOWSKI AND SARTOR ENGINEERING, PC



Joseph J. Lifrieri, P.E., P.G., P.P.
President

GLOSSARY

The glossary of terms provided below has been reproduced from Draft DER-10, Technical Guidance for Site Investigation and Remediation, dated December 2002 and prepared by the New York State Department of Environmental Remediation (DER). Some of the definitions given below refer the reader to specific sections within this document for additional information. This document may be viewed in its entirety on the NYSDEP website at www.dec.state.ny.us/website/der.

"Active groundwater remediation" means any form of groundwater remediation which requires physical action to alter the condition of the impacted aquifer for the purposes of achieving applicable standards, criteria or guidance (SCGs). Active groundwater remediation includes, but is not limited to, pumping that consistently depresses the water table over an areal extent, air sparging, bailing, skimming, in-well air stripping and bioremediation involving the addition of nutrients and/or organisms below the water table.

"Area of concern" means any existing or former location where contaminants are or were known or suspected to have been discharged, generated, manufactured, refined, transported, stored, handled, treated, disposed, or where hazardous substances, hazardous wastes, or petroleum products have or may have migrated.

"Background groundwater contamination" means concentrations of contaminants in groundwater that originated from either natural sources (that is, non-man-made) or upgradient, off-site discharges (that is, man-made, non-site-related discharges). Background groundwater contamination may include, but is not limited to, the same contaminants present both on the site and off the site at upgradient locations, or parent contaminants detected off the site at upgradient locations and daughter products of these parent contaminants detected on the site.

"Background soil level" means the chemical concentration of a contaminant which is found in soil which is not attributable to present or prior activities at the site in question.

"Biota" means the plant and animal life associated with the site or impacted by the site.

"CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601 et seq.).

"Commissioner" means the Commissioner of the Department of Environmental Conservation or his/her authorized representative.

"Contaminants of ecological concern" means site contaminants that meet any of the following:

a) exceed the NYSDEC Technical Guidance for Screening Contaminated Sediments;
b) exceed the NYSDEC surface water criteria in the NYSDEC Division of Water Technical and Operational Guidance Series (TOGS) 1.1.1 for type A(A), A(C), H(FC) or W waters;

c) are known to bioaccumulate or biomagnify in the aquatic, marine or terrestrial food chain;
d) exist at levels which result in toxic effects in biota;
e) may contribute to the need for a health advisory for the consumption of fish or wildlife.

"Contamination" or "contaminant" means any discharged hazardous substance as defined pursuant to ECL §37-0103, hazardous waste as defined pursuant to 6 NYCRR Part 371, or petroleum as defined pursuant to ECL §17-1003.

"Department" or "NYSDEC" means the New York State Department of Environmental Conservation.

"DER" means the Division of Environmental Remediation.

"Diligent inquiry" means:

1. Conducting a diligent search of all documents which are reasonably likely to contain information related to the object of the inquiry, which documents are in such person's possession, custody or control, or in the possession, custody or control of any other person from whom the person conducting the search has a legal right or ability to obtain such documents. The minimum third parties that are to be contacted for records in a due diligence search, include State, county and local government offices, including fire departments, ambulance and hospital records offices, police records offices, and the governmental departments of sanitation and health; and

2. Making reasonable inquiries of current and former employees and agents whose duties include or included any responsibility for hazardous substances, hazardous wastes or petroleum, and any other current and former employees or agents who may have knowledge or documents relevant to the inquiry.

"Discharge" means any intentional or unintentional action or omission resulting in the releasing, spilling, leaking, pumping, pouring, emitting, emptying or dumping of a contaminant into the waters or groundwater of the State or onto the lands from which it might flow or drain into said waters, into the waters outside the jurisdiction of the State when damage may result to the lands, waters, or natural resources within the jurisdiction of the State, except discharges pursuant to and in compliance with the conditions of a valid State or Federal permit, or a discharge exempted from a permit in accordance with section 7.10 of DER-10.

"Disposal" means the abandonment, discharge, deposit, injection, dumping, spilling, leaking or placing of any substance so that such substance or any related constituent thereof may enter the environment.

"DNAPL" or a "Dense Non-Aqueous Phase Liquid" means a non-aqueous phase or immiscible liquid which remains as a separate phase or layer and has a specific gravity greater than water. A DNAPL has the potential to sink through a formation until it pools on a confining

unit or is immobilized as a residual. Unlike LNAPLS, DNAPLS may flow down the slope of the aquifer bottom independent of the direction of the hydraulic gradient.

"ECL" means the New York State Environmental Conservation Law, Chapter 43-B of the Consolidated Laws of New York.

"Emergency response action" or "Emergency IRM" means an action taken in response to a situation which requires immediate containment and/or remedial actions to ensure that a release or potential release does not threaten the immediate health and safety of humans and/or the environment.

"Endangered species, threatened species and species of special concern" means those species listed by the Department as provided in 6NYCRR Part 182.

"Engineering controls" means any physical barrier or passive mechanism to contain or stabilize contamination, ensure the effectiveness of a remedial action or eliminate potential exposure pathways from any contaminated medium. Engineering controls may include, without limitation, caps, covers, vapor barriers, fences, slurry walls, access controls and demarcation barriers (e.g. geonets or other fabric). Engineering controls are used in conjunction with institutional controls, to ensure that the engineering controls remain effective.

"Environment" means any water including surface or subsurface, water vapor, any land including land surface or subsurface, air, fish, wildlife, biota including humans, and all other natural resources.

"Exposure assessment" involves specifying the population that might be exposed to the agent of concern, identifying the routes through which exposure can occur and estimating the magnitude, duration and timing of the exposure that people or biota might receive from a source.

"Exposure pathway" means the route through which a human or biota may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

"Fish and wildlife resources" means biota and the habitats (natural or man-made) which support them.

"Free product" means an immiscible or non-aqueous phase liquid (NAPL) existing at the surface or in the subsurface in a potentially mobile state.

"Grossly contaminated soil" means soil which contains visibly identifiable free or otherwise readily detectable free or residual product.

"Groundwater" means water below the land surface in a saturated zone of soil or rock. This includes perched water separated from the main body of groundwater by an unsaturated zone.

"Hazardous substance" means any substance listed as a hazardous or acutely hazardous substance in 6 NYCRR Part 597, or a mixture thereof.

"Hazardous waste" means a waste which appears on the list or satisfies the characteristics in 6 NYCRR Part 371.

"Historic fill material" means non-indigenous material, deposited or disposed of to raise the topographic elevation of the site, which was contaminated prior to emplacement, and is in no way connected with the subsequent operations at the location of emplacement and which includes, without limitation, construction debris, dredge spoils, incinerator residue, demolition debris, fly ash, and non-hazardous solid waste. Historic fill material does not include any material which is chemical production waste or waste from processing of metal or mineral ores, residues, slag or tailings. In addition, historic fill material does not include a municipal solid waste disposal site.

"Injury" means an observable (i.e., qualitative) or measurable (i.e., quantitative) adverse change in a natural resource or any impairment of a human or ecological service provided by that resource relative to baseline, reference, or control conditions.

"Interim Remedial Measure" or "IRM" means a discrete set of activities to address both emergency and non-emergency site conditions, which can be undertaken without extensive investigation and evaluation, to prevent, mitigate, or remedy human exposure and/or environmental damage or the consequences of human exposure and/or environmental damage attributable to a site.

"Institutional controls" means non-physical mechanisms which restrict the use of a site, limit human exposure, prevent any actions which would threaten the effectiveness or operation and maintenance of a remedy at or pertaining to the site. Institutional controls apply when contaminants remain at a site at levels above the SCGs which would allow unrestricted human use of the property. Institutional controls may include, without limitation, restrictions on the use of structures, land and groundwater as well as deed notices and covenants.

"LNAPL" or "Light Non-Aqueous Phase Liquid" means a non-aqueous phase or immiscible liquid which remains as a separate phase or layer and has a specific gravity less than water. Because LNAPLs are less dense than water, they tend to float on top of the water table and are also commonly referred to as a floating product.

"Long term spill remediation" means those oil spill remediations where off-site impacts have, or will, represent an immediate threat of contamination to public water supply systems.

"Monitored natural attenuation" or "MNA" is the process by which a natural system's ability to attenuate contaminant(s) at a specific site is confirmed, monitored and quantified.

Contaminant concentrations may attenuate in natural systems through biodegradation; sorption; volatilization; radioactive decay; chemical or biological stabilization; transformation; dispersion; dilution; or the destruction of contaminants.

"NAPL" or "Non-Aqueous Phase Liquid" means an immiscible liquid which remains as a separate phase or layer in the environment.

"Natural resource damages" means the amount of money calculated to compensate for injury to, destruction of, loss of or loss of use of natural resources, including the reasonable costs of assessing or determining the damage, which shall be recoverable to New York state, where natural resources are land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the State.

"Non-emergency IRM" means an IRM which is not in response to an immediate threat to human health and/or the environment undertaken at a site being addressed under the superfund, Brownfields or voluntary cleanup programs.

"NYSDOH" means the New York State Department of Health.

"Oversight document" means any document the NYSDEC issues pursuant to section 1.2(b) of DER-10 to define the role of a person participating in the investigation and/or remediation of a site or area(s) of concern.

"Person responsible for conducting the investigation and/or remediation" or "Person responsible for conducting the investigation" or "Person responsible for conducting the remediation" means any person who executes or is otherwise subject to an oversight document, and any person who is performing the investigation and/or remediation or has control over the person (for example, contractor or consultant) who is performing the investigation and/or remediation, including, without limitation, an owner or operator. This also includes the DER for state funded investigation and remediation activities.

"Petroleum" or "Oil" is defined by Article 12, Section 172 of the NYS Navigation Law as oil or petroleum of any kind and in any form including but not limited to, oil, petroleum, fuel oil, oil sludge, oil refuse, oil mixed with other wastes and crude oils, gasoline and kerosene. For purposes of this guidance, oil include mineral oils or any other oil for which an investigation and/or remediation is determined necessary by the DER, to address a spill discharge or any disposal impacting public health or the environment.

"Plume management monitoring" is the process by which a dissolved plume, which has yet to reach equilibrium with the processes of natural attenuation, is monitored to ensure that it does not cause an unacceptable impact.

"Presumptive remedy" means technologies appropriate for the remediation of common categories of sites, based on historical patterns of remedy selection and EPA/NYSDEC's

scientific and engineering evaluation of performance data. Presumptive remedies can be used to accelerate the remedial selection process.

"Project Manager" means the NYSDEC staff member with primary responsibility for ensuring that an investigation or remediation was complete in accordance with this guidance.

"RCRA" means the Resource, Conservation and Recovery Act of 1976.

"Receptor" means any humans or biota which are, or may be expected to be, or have been, exposed to or affected by a contaminant from a site.

"Regulated wetland" means any tidal or freshwater wetland regulated by New York State under ECL Articles 15, 24 and 25 and as defined in 6 NYCRR Part 608.5, 661.4 hh and 663.2(p).

"Remedial action" means those actions taken at or near a site as may be required by the DER, including, without limitation, removal, treatment, containment, transportation, securing, or other engineering or institutional controls, whether of a permanent nature or otherwise, designed to ensure that any discharged contaminant is remediated in compliance with the applicable SCGs pursuant to Section 5 of DER-10.

"Remedial action costs" means all costs associated with the development and implementation of a remedial action including all direct and indirect capital costs, engineering costs, and annual operation, maintenance and monitoring costs. Such costs, when applicable, should include, without limitation, costs for construction of all facilities and process equipment, labor, materials, construction equipment and services, land purchase, land preparation/development, relocation expenses, systems start up and testing, facility operation, maintenance and repair, continuous effectiveness monitoring, periodic site condition reviews and legal, administrative and capital costs associated with the placement of institutional controls on a property. Remedial action costs should be expressed as net present worth of all such costs over time by discounting all future costs to the current calendar year. The discount rate to be used for all present worth analyses should be current rate as specified by the DER at the time of remedial action selection and should be applied before taxes and after inflation. The period of performance for present worth costing analyses should not exceed 30 years. The 30-year period is intended to allow consistent evaluation of costs only, and does not imply that the operation, maintenance and monitoring of a remedy will end after 30 years.

"Remedial investigation" means actions to investigate contamination and determine the nature and extent of the contamination presented by a discharge or disposal at a site. The requirements of a remedial investigation are set forth at section 3 of DER-10.

"Remediation" or "remediate" means all necessary actions to clean up any known, suspected or threatened discharge or disposal of contaminants, including, as necessary, the remedial selection, remedial design, remedial action and operation, maintenance and monitoring of the remedy.

"Residual product" means an immiscible liquid (NAPL) existing in the subsurface at concentrations below the residual saturation point, which is held in place by capillary forces and will therefore not drain from the formation.

"Risk assessment" is the characterization of the potential adverse health effects of human exposure to environmental hazards. It include several steps: describing the potential adverse health effects based on an evaluation of epidemiological, clinical toxicological and environmental research; extrapolating from those results to predict the type and estimate the extent of health effects in humans under given conditions of exposure; making judgment as to the number and characteristics of the persons exposed at various intensities and durations and ultimately judging whether there is a risk to public health and what the overall magnitude of the risk is.

"Sediment" means soils or organic material in water, as found in lakes, rivers, streams and other water bodies and in, or in close proximity to, wetland areas. Material found in enclosed sumps, sewers or piping systems not accessible to fish and wildlife and not forming any benthic or aquatic habitat are not considered sediments for the purpose of comparison to the NYSDEC Technical Guidance for Screening Contaminated Sediment.

"Significant coastal fish and wildlife habitat" means such habitat designated by New York State under Article 42 of the Executive Law and regulated under 19 NYCRR Part 602.5(a).

"Significant habitat" means any significant habitat or ecological communities designated by the New York State Natural Heritage Program.

"Site" means a confirmed or suspected inactive hazardous waste disposal site, a chemical or petroleum spill site, a hazardous substance disposal site, a site being addressed under the NYS Brownfields program, or a property being investigated under the NYS voluntary cleanup program. The site may be a specific area of a parcel or may extend beyond a parcel's boundaries.

"Site characterization" means the first phase in the process of identifying areas of concern at a site, which is conducted pursuant to section 3 of DER-10.

"Standards, Criteria and Guidance" or "SCGs" means promulgated requirements ("standards" and "criteria") and non-promulgated guidance ("guidance") which govern activities that may affect the environment and are used by the DER at various stages in the investigation and remediation of a site. SCGs incorporate both the CERCLA concept of "applicable or relevant and appropriate requirements" (ARARs) and EPA's "to be considered" (TBCs) category of non-enforceable criteria or guidance. The most common SCGs, which are applicable to the actions described in this document, are identified in section 7 of DER-10.

"Substantive technical permit requirements" means those requirements that have a direct bearing on the action to be taken, and relate to the technical (scientific) aspects of the action rather than the administrative procedures of obtaining a permit. Also see section 7.3 of DER-10.

"Surface soil sample" means a representative sample of the unconsolidated mineral and organic matter collected from a site: to a depth of two inches below ground surface excluding vegetative cover, for evaluating public health exposure; or, to a depth of six inches below ground surface for garden soils or a fish and wildlife resources impact analysis.

"Toxicity assessment" is a field study, laboratory study and/or literature review conducted to determine the concentration at which a contaminant becomes toxic to an individual or an organism. A contaminant is considered toxic if it causes death, morbidity or sub-lethal effects on growth, reproduction, behavior or physiology of an organism, whether through direct or indirect toxicity or through bioaccumulation.

"Underground storage tank" means any tank or other vessel which is completely covered with earth or other backfill substance. Tanks in subeterranean vaults accessible for inspections are not considered underground storage tanks.

"Unrestricted use SCG" means a contaminant level which, when achieved, restores the contaminated media to a condition or quality suitable for any human use.

"Waters" means all lakes, bays, sounds, ponds, impounding reservoirs, groundwater, springs, wells, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic Ocean within the territorial limits of the State of New York, and all other bodies of water, natural or artificial, inland or coastal, fresh or salt, public or private, which are wholly or partially within or bordering the State or within its jurisdiction.

"Wetland" means any freshwater or tidal wetland including Federal jurisdictional wetlands, NYS regulated wetlands and unregulated wetlands.

"Wild, scenic or recreational river" means any river designated under ECL Article 15 and regulated under 6 NYCRR Part 666.4.

EXECUTIVE SUMMARY

Paulus, Sokolowski and Sartor Engineering, PC (PS&SPC), on behalf of KeySpan Corporation (KeySpan), has prepared this Remedial Action Report (RAR), which documents the completion of the initial phase of the site remediation conducted for Operable Unit Number 1 (OU-1), Former Brooklyn Borough Gas Works Site located in Brooklyn, New York. The remedial measures selected for OU-1 have been authorized for implementation by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health within the Record of Decision (ROD) issued by the NYSDEC dated March 2001 and the subsequent remedial design submissions. Preparation of this report was performed in response and in accordance with the requirements set forth in the NYSDEC's Administrative Order on Consent Index Number D2-001-94-12.

The remedial measures implemented under the OU-1 site remediation effort consisted of the installation of a steel sheet pile barrier wall around the perimeter of the site and the installation of a series of piezometers (monitoring wells) to assess the long-term performance of the barrier wall and future remedial activities. The design document for the proposed remedial measures was submitted for approval to the NYSDEC within the Revised Draft Final Remedial Design Report for OU-1 dated July 2003. The NYSDEC has permitted a phased approach to addressing the remaining remedial elements authorized within the March 2001 ROD. As such, the balance of the remedial measures is to be implemented during the subsequent OU-2 and OU-3 phases of the overall site remediation.

Construction of the barrier wall system was performed by Sevenson Environmental Services Inc. (SES) of Niagara Falls, New York. SES was retained by KeySpan through request for qualifications and request for bid processes. SES mobilized to the site during the week of November 17, 2003 and commenced site clearing operations, survey layout and installation of erosion control measures. Construction and installation of the sheet pile barrier wall commenced on December 4, 2003 and proceeded with only minor delays to completion on March 31, 2004 including the installation of the piezometers. A total of approximately 3718 linear feet of sheet piling was installed around the site perimeter to depths coinciding with Elevation –17 in the upland areas of the site and to Elevation –26 along Coney Island Creek. A total of five pairs of piezometers, one interior and one exterior of the wall, were installed along the upland segments of the sheet pile wall system. An additional five single piezometers were installed along the interior of the creek side segment of the wall. Site restoration and equipment demobilization activities were completed by April 1, 2004.

1.0 INTRODUCTION

This Remedial Action Report documents the remedial activities completed for the initial phase of the site remediation conducted for Operable Unit No. 1 (OU-1), former Brooklyn Borough Gas Works, located in Brooklyn, New York. The objective of the OU-1 remedial action was to minimize the migration of Non-Aqueous Phase Liquid (NAPL) from the site to Coney Island Creek and to divert the upgradient groundwater around the site. To accomplish this objective, the construction of a vertical barrier cut-off wall around the perimeter of the site was authorized by the ROD and the subsequent design submittals to NYSDEC. A series of piezometers were also required at regularly spaced intervals along the barrier wall alignment to monitor both the long-term performance of the barrier wall and the effectiveness of the future remedial work to be performed under OU-2 and OU-3.

1.1 March 2001 OU-1 Record of Decision

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), issued the Record of Decision of OU-1 in March 2001 selecting the remedial measures to be implemented at the site. The components of the remedial measures are as follows:

- Excavation of soils from coal tar source areas down to the groundwater table. Coal tar source areas are areas of the site where soils are grossly impacted by by-products of Manufactured Gas Plant (MGP) processes including coal tar and NAPL as determined by visual observation.

- Off-site transport and recycling and/or disposal of source area impacted soil materials.

- Installation of a subsurface steel sheet pile barrier wall around the site.

- Removal of the existing wooden bulkhead and contaminated materials with subsequent construction of a stabilized and restored creek bank.

- Installation of a NAPL collection trench along the interior of the creek barrier wall.

- Treatment of collected aqueous waste and groundwater.

- Installation of a multi-component cover system to act as a low permeability barrier. The site will be graded to a common elevation prior to installation of the cover system.

- Venting and control of vapors, which may form under the cover system.

- Restoration of the Coney Island Creek bank to provide a 50-foot wide ecological buffer zone. Monitoring wells will be installed immediately outside of the barrier within the buffer zone to assess the long-term performance of the barrier wall.

- Institutional controls including deed restrictions to ensure continued adherence to the site's health and safety plan; continued treatment of collected groundwater, maintenance of the multi-component cover system; and to prohibit the use of the site for other than commercial and industrial purposes.

1.2 Implementation of OU-1 ROD

As previously indicated, the NYSDEC has permitted a phased approach in the implementation of the remedial measures selected in the ROD. The design engineer for OU-1, TetraTech FW, Inc., prepared a series of submittals to NYSDEC for the design of OU-1. These submittals included draft and final remedial design (RD) work plans and draft, revised draft and final RD documents and bid specifications. NYSDEC granted final approval of the design submittals in October 2003.

2.0 SITE INFORMATION

2.1 Site Description and Surrounding Areas

The former Brooklyn Borough Gas Works Site, NYSDEC Site # 2-24-026 (Site) is located on 873 Neptune Avenue, Coney Island in the Borough of Brooklyn, Kings County, New York. The site is bordered by the right of way of the Belt Parkway and the New York Metropolitan Transit Authority (MTA) rail yard and rail lines to the north and west, and Coney Island Creek to the south and east. The site is approximately 16.4 acres in size and currently unoccupied with the exception of site security personnel.

Most of the property is currently owned by KeySpan. Two small parcels, not owned by KeySpan, are also located on the Site. One parcel, owned by the MTA, is located near the middle of the northerly property boundary and contains a soil pile of unknown origin. A second parcel, located in the far northeast corner of the site, contains a small service building and is also reported to be owned by the MTA. The Site is covered by vegetation, except for several concrete foundations of former gasholders, process vessels, tanks and buildings and various construction debris. The area surrounding the property is a relatively flat, densely populated commercial/residential zone.

Coney Island Creek flows into Gravesend Bay, which empties into Lower Bay and, ultimately, the Atlantic Ocean. The creek is a brackish tidal creek and the existing site shoreline is made up of fill materials, riprap, concrete rubble, and failing wooden or concrete bulkheads. The shoreline is generally steep-sloped with only sparse vegetative cover. Decaying wooden piles are present within the creek, including a former pier or bridge structure along the southeastern portion of the Site.

2.2 Site Geology

Site investigations revealed site geology consisting of unconsolidated Pleistocene deposits from 10 to 172 feet below ground surface (bgs) that consist mainly of fine to coarse grained sands with a clay/silt layer from 59 to 60 feet bgs and clay from 170 to 172 feet bgs. The sand, which at some depths contained a minor amount of gravel, varied with depth in grain size and color. Above the Pleistocene deposits is a thin (5 to 10 feet) layer of near shore and estuary type deposits. A surficial layer of site fill soils is present throughout varying from several to more than 10 feet in thickness. The glacial aquifer encountered at the site is composed almost entirely of the sands of the till and outwash deposits and extends from just below the surface to 170 feet bgs.

2.3 Site History

The Brooklyn Borough Gas Company began construction of the first generator at the site in 1908. Over the next four years, additional parcels of land were added, the facility was enlarged, and its gas production capability increased.

In the 1930s, two (2) large-capacity gas holders, a station meeting house, two (2) underground gas oil tanks, tar conditioners, tar seal pumps, and a tar separator were located in the western portion of the site. The main gas manufacturing operations were located in the central portion of the site and contained the main processes equipment as well as the coal storage yard and coal off loading equipment. Various storage and work buildings were also located in the central area of the property. Further to the east was the gas oil pump house and five gas oil tanks.

The physical facility and property changed little from the 1930s through 1960. Brooklyn Borough Gas transformed its gas delivery operations to a natural gas-based system, and production of manufactured gas at the Coney Island facility ceased in November 1951. According to Brooklyn Borough Gas documents, gas deliveries to customers in 1952 were natural gas. Between 1952 and 1959, the site's MGP capability may have been maintained and operated for the purpose of peak shaving. The Brooklyn Union Gas Company (which ultimately became KeySpan) acquired the Brooklyn Borough Gas Company in 1959.

From 1960 to 1966, the facility was almost completely decommissioned and demolished. In 1974, a few buildings associated with a gate station, which included an axial compressor, a small gasholder, and the largest gasholder, remained operational providing natural gas service. KeySpan believes the gate station and gasholders were taken off line at the end of the 1970s and were subsequently decommissioned and demolished in the early 1980s.

In the early 1970s, the easternmost portion of the property was topped with fill and two (2) baseball fields were constructed on top of the fill in the late 1980s. These fields were decommissioned in 1996 and are no longer in use.

3.0 OVERVIEW OF THE APPROVED OU-1 REMEDIAL DESIGN

The remedial design for OU-1 included the following task items that were implemented during construction.

1. Installation of soil erosion and sediment control measures including a turbidity barrier within the creek.

2. Limited clearing and grubbing along the sheet pile wall alignment at the site perimeter and the construction of several material lay-down areas.

3. Removal of selected sections of existing chain link fencing.

4. Installation of steel sheet pile cut-off wall with bentonite sealed joints.

5. Installation of piezometers.

6. Installation of new replacement chain link fencing.

7. Restoration of disturbed areas.

Further detail regarding the implementation of the above tasks is provided in Section 4, Implementation of the Remedial Action. General design objectives and construction material information is provided below for the primary components of the OU-1 remedial design, the sheet pile cut-off wall and the piezometers.

3.1 Sheet Pile Cut-Off Wall

Based on the final results of the site groundwater modeling performed by others during prior field investigation activities, a continuous barrier wall was designed to fully encircle the perimeter of the site. The short-term (less than five years) use of this cut-off wall is to mitigate NAPL seepage into Coney Island Creek and to serve as shoring during future creek and uplands remedial activities (i.e., excavation of uplands soil and creek dredging). Once the remediation is complete (OU-3), the cut-off wall will be cut to facilitate the implementation of an ecological buffer.

The approved barrier wall system for OU-1 consisted of two types of sheet pile cut-off walls; standard AZ-13 sheet piling for the upland sections of the site and Waterloo Barrier Sheet piling for the Coney Island Creek side of the site. The standard AZ-13 steel sheet piling was to be installed along the western and northern sides of the site (upland areas). The interlock joint between sheet sections was to be sealed with Adeka Ultraseal P-201 that would provide an approximate permeability of 1×10^{-7} cm/sec or less. Based on the existing site topography, it was expected that some of the top sections of the standard sheeting would extend above existing grades and remain exposed until completion of the future OU-3 remedial construction. A coal tar epoxy coating was to be applied to the top 10 feet of the sheet piling for corrosion protection.

The Waterloo Barrier sheet piling was to consist of WEZ95, grade 50, steel sheet pile sections with permanently sealed interlock joints installed along Coney Island Creek. The interlock joint for these specialized sheet piling is oversized to allow for injection of a joint sealant consisting of a silica fume modified cementitious based grout. The sealant is designed for high compressive strength, groundwater washout resistance, reduced permeability and approximately 4-8% volumetric expansion. Corrosion protection for the Waterloo Barrier was not deemed to be necessary based upon a study completed by C3 Environmental. This study, conducted with water from Coney Island Creek and groundwater from on-site monitoring wells, showed that the grade 50 steel used in the Waterloo Barrier would not require corrosion protection for a service life of 50 years.

3.2 Piezometers

Two-inch diameter piezometers were to be installed approximately every 400 feet along the sheet pile cut-off wall for the purpose of monitoring groundwater levels and evaluating the performance of the barrier system. The piezometer installation depths were designed to be approximately one foot above the tip elevations of the adjacent sheet pile wall section. For the upland segment of the barrier wall system, the piezometers were to be installed as pairs with one inside and one outside the wall. Along Coney Island Creek, individual piezometers were to be installed inside the barrier wall.

4.0 IMPLEMENTATION OF THE REMEDIAL ACTION

4.1 Overview

Construction activities for implementation of the OU-1 site remediation commenced in November 2003 with site mobilization. The remediation contractor awarded the contract for the OU-1 remedial activity was Sevenson Environmental Services, Incorporated (SES). On-site personnel included a representative of KeySpan (Construction Oversight), a representative of Paulus, Sokolowski and Sartor Engineering, PC (Construction Quality Assurance), and a representative of Glynn Geotechnical Engineering (GGE) who provided Resident Engineering and Construction Quality Control on behalf of SES. Also, during the initial phases of construction and as necessary during construction, an on-site PS&SPC representative provided oversight of the implementation of the SES Health and Safety Plan (HASP). Weekly progress meetings were held with SES and included NYSDEC and representatives of the MTA, as needed. Minutes of the weekly progress meetings were prepared and are attached as Appendix A. The OU-1 remedial activities generally consisting of the installation of the sheet pile cut-off wall, piezometers, site restoration and demobilization were completed in April 2004.

Remedial activities proceeded in general accordance with the approved NYSDEC Final Remedial Design Report with exceptions noted under the subsequent sections that follow. A total of approximately 3718 LF of sheeting was installed around the site perimeter. To facilitate installation of the sheeting, most of the wall alignment was pre-excavated to depths of typically 8 to 12 feet below the ground surface to remove building rubble, remnant piling or other obstructions. Large rubble (i.e., typically 18" in diameter or larger) was segregated and staged within stockpiles to be addressed in the subsequent phases of site remediation. The balance of the pre-excavated materials were reused to backfill the pre-excavation trench. Where needed, additional imported clean fill was placed within the upper portion of the pre-excavation trenches to restore site grades along the wall alignment. No waste materials or soils were removed from the site for disposal. Following completion of the sheeting installation, SES subcontracted with Warren George, Inc. to install the required piezometers. The wells were installed to depths coinciding with one foot above the design tip elevation of the adjacent section of sheet pile wall. Detailed descriptions of the tasks performed for the implementation of the remedial action are presented in the following subsections.

4.2 Contracting

To identify an appropriate contractor for performing the OU-1 construction, KeySpan first issued a Request for Qualifications to appropriate remedial contractors. Statements of Qualifications were reviewed for eight potential contractors and six contractors were requested to submit bids, including Shaw Environmental, Inc., Holbrook, NY, Creamer Environmental, Inc., Hackensack, NJ, Maxymillian Technologies, Boston, MA, SES, Niagara Falls, NY, Williams Environmental Services, Vorhees, NJ and Conti Enterprises, South Plainfield, NJ.

Requests for Bids were sent to each of the six contractors, deemed qualified by KeySpan. The Bid Documents were prepared by TetraTech FW, with input from PS&SPC and included a copy of the final design approved by NYSDEC, engineering drawings, construction specifications and a generic Health and Safety Plan. A bid walk with representatives of the six contractors was held on August 28, 2003. Subsequent to the bid walk, three addenda were issued. One of the contractors, SES, requested the ability to bid an alternate type of steel sheeting and one of the addenda identified that an alternate could be bid in addition to the required steel sheeting. Bids were received by KeySpan from Shaw, Creamer, Conti and Sevenson on September 11, 2003.

Bids were reviewed by PS&SPC and KeySpan. A scoring system was used to evaluate the contractor proposals, in addition to the bid cost. Based upon the scoring and the bid cost, SES was the highest rated firm. SES also submitted a cost proposal for an alternate to the required Waterloo steel sheeting along the Coney Island Creek area and the upland steel sheeting. This sheeting, known as the Sevenson Seal System, uses AZ-13, grade 50 steel sheeting with a patented interlock system and sealant.

KeySpan awarded the OU-1 contract to SES. As the seal system had a favorable cost and would provide improved stability along Coney Creek during excavation and dredging for OU-2/OU-3, KeySpan sought the approval of NYSDEC for the use of the seal system throughout the Site. NYSDEC provided a conditional approval: an enhanced quality assurance plan for the sealing of the joints was required, along with the completion of a compatibility test to support the selection of an appropriate sealant. With the conditional approval of NYSDEC, KeySpan awarded the OU-1 contract to SES.

4.3 Submittals

The KeySpan bid documents for OU-1 required the submission of a total of 26 documents and items for review during the course of the OU-1 contract. In response to the conditional approval of NYSDEC on the seal system, a sealant compatibility test and an enhanced quality assurance plan for the joint sealant installation were also included.

There were three primary submittals provided by SES: a Construction Plan, a Construction Quality Assurance Project Plan and a Site-Specific Health and Safety Plan. Copies of these three documents were provided to NYSDEC, who in turn provided copies to the New York State Department of Health.

4.4 Mobilization

Implementation of the remedial action began with the mobilization of equipment and personnel by SES to the site commencing on November 17, 2003. Mobilization of equipment and construction materials continued generally over the following two weeks concurrent with site clearing activities and the installation of the specified soil erosion and sediment control measures.

4.5 Site Clearing and Work Preparation Areas

Site clearing commenced on November 19, 2003 to facilitate the survey and field stakeout of the wall alignment and appropriate offsets. Silt fencing was installed as specified around the perimeter of the upland areas of the project concurrent with the clearing operations. Construction materials staging and preparation areas were created at several locations around the site. In general, these areas were located in the northwest corner of the site, roughly midway along the northern end of the site, in the northeast corner of the site, west of the guardhouse along the creek side section of the site and also on the former tank pads in the southwest corner of the site. To provide a stable working surface where needed, a non-woven Geotextile was placed over the existing subgrade soils and overlain with approximately 8 to 12 inches of well-graded crushed stone. Stabilized working surfaces were constructed in the northeast corner and creek side staging/preparation areas and left in place at the completion of the project. It is intended that these staging areas may be reused during the OU-3 phase of the site remediation and would be removed at that time.

4.6 Health and Safety Plan

A site specific Health and Safety Plan (HASP) was prepared by SES pursuant to the requirement of KeySpan's bid documents for OU-1 and implemented throughout the duration of the project. On behalf of KeySpan, PS&SPC provided continuous site monitoring of the SES HASP. The site monitoring consisted of an on-site presence during OU-1 and continuous auditing and review of SES efforts. SES's site Health and Safety Officer (HSO) enforced the requirements of the HASP and conducted daily safety meetings with the site personnel to review more specific safety requirements within the work area. Air monitoring was performed using a photoionization detector (PID) located within work area breathing zone throughout the work day. In addition, a Community Air Monitoring Plan (CAMP) was implemented at the start of each work day during intrusive work operations. The CAMP consisted of an upwind and downwind monitoring station equipped with a PGM-50 PID and a Dust Trak dust meter. Daily air monitoring results taken within the work area breathing zone and for the CAMP indicated contaminant levels below detection limits and/or well below the action levels established by the HASP. A tabulation and summary sheets of the daily CAMP monitoring results are provided within Appendix C.

4.7 Installation of the Sheet Pile Wall

Installation of the sheet pile barrier wall commenced on December 4, 2003 in the northwest corner of the site and progressed eastward (clockwise) around the perimeter of the site. Sheeting installation was generally contiguous except for three areas, the MTA parcel at Sta. 2+80 to sta. 4+50, the abandoned gas line at Sta. 6+15, and the obstruction at Sta. 20+90. To maintain the project schedule, sheeting installation continued beyond these sections while the issues associated with them were resolved. These sections were completed toward the end of the project while the pile installation equipment moved

about the perimeter of the site to address and complete problem areas. Installation of the sheet pile wall was completed on March 26, 2004.

4.7.1 Sheeting Materials

The sheeting materials used to construct the barrier wall for OU-1 consisted of AZ-13 steel sheet piles (A572 Grade 50 steel) throughout the entire wall system. The sheets were delivered to the site as factory welded pairs. The interlock joint between each pair had a steel angle section (L 5 x 5 x 5/16") welded over the interlock to be sealed in the field with bentonite. The sheet pile system installed for the OU-1 barrier wall was reviewed by NYSDEC and determined to be an approved equivalent to the Waterloo Barrier cut-off wall proposed in the Final Remedial Design Report.

4.7.2 Sheet Pile Interlock Seal Preparation

Preparation of the seal for the interlock angle between sheet pairs was performed prior to the sheet pair being driven into the ground. All sheet pairs were staged parallel to the ground with the open side of the angle facing upward. SES assigned a crew, essentially full time, to the preparation of the angle interlock seal. The open angle of each sheet pair was filled with 3/8" diameter high-swelling pure sodium bentonite pellets (see attached manufacturers cut-sheet for detailed product information). The bentonite was then immediately hydrated by applying water over the surface of pellets with a ¾" hose. A ¼" thick steel slide plate was then inserted within the opening at the top of the angle and extending along the full length of the sheet. The slide plate held the activated sealant in place while the sheet was lifted by the driving equipment, set into vertical alignment and driven into the ground. The vertical alignment and plumbness of each sheet pair was periodically checked using a hand level during driving to ensure installation within the specified tolerances.

Once the sheet pile installation had progressed a minimum of 50 feet past a given sealed interlock angle, the steel slide plate was removed from the angle. As the bentonite continued to hydrate and swell from further activation upon exposure to the groundwater, the annulus from the slide plate was eventually closed by the swelling bentonite. Laboratory analysis performed by SES's Construction Quality Control firm (Glynn Geotechnical Engineering, Inc.) confirmed the bentonite's swell index. A swell index of 6.2 time the initial dry (unhydrated) volume was determined by laboratory analysis.

After the slide plates were removed from the interlock angle, additional bentonite was added if the initial quantity of sealant within the angle had settled during sheet installation. Complete interlocks were monitored by SES's CQC Resident Engineer on a bi-weekly basis and additional bentonite added where needed.

For several sheets located near Sta. 34+00 along the western end of the site, it was observed that the upper one to three feet of the bentonite seal had adhered to the slide plate and was displaced during removal of the slide plate. The seals for these sheets were repaired by using a closed end 2" diameter pipe to rod or pack down the bentonite within the joint and close any voids/gaps that may have occurred as the slide plate was removed. A slam bar type hammer was placed over the pipe and used to drive the pipe and pack additional bentonite down into the interlock angle. The sheets repaired using this procedure were noted on the CQC reports.

4.7.3 Sheeting Installation and Equipment

Sheeting installation began in the northwest corner of the site and proceeded clockwise around the perimeter. The initial equipment used to install the sheet pairs consisted of a Movax SP-50 vibratory hammer mounted on the arm of a Komatzu PC220 tracked excavator. To drive each sheet pair, the excavator picked up the sheeting with the Movax hammer's hydraulic claws, set the sheet vertically in place, and drove the sheet pair to the design elevation.

During the first few days of sheeting installation, it was observed that considerable obstructions were being encountered within the upper fill materials that impeded sheeting installation. To facilitate sheeting installation, a tracked excavator was used to pre-excavate a trench ahead of the sheeting operations to remove obstructions (concrete/brick building rubble, wood timbers, general construction debris). After several weeks, a second larger pile installation rig was mobilized to the site to expedite sheeting installation and maintain the construction schedule. The larger rig consisted of a Movax SP-100 vibratory hammer mounted on a Komatsu PC 330 tracked excavator. The larger driving rig was subsequently used to drive the balance of the upland sheeting along the northern side of the site and the creek side piling up to within 75 feet of the MTA rail line located parallel to the west side of the site.

Pursuant to the Access Agreement between KeySpan and MTA, the MTA restricted the use of vibratory pile installation equipment within 75 feet of their rail lines. As such, sheeting located within this zone along the western side of the site were installed using a compressed air driven impact hammer. The driving equipment consisted of a McKernian-Terry 9B3 double acting impact hammer that was suspended from a Lomma HC238H truck mounted crane. The pile hammer was powered by compressed air supplied by a separate Ingersol-Rand 1300 compressor. At the MTA's request, vibration monitoring was performed for sheeting installation performed within 75 feet of the rail road bridge abutment closest to the southwest corner of the site. In addition, five survey points were established on railroad ties closest to the sheeting installation to monitor the tracks for vertical and horizontal movement. Both the vibration monitoring and survey points indicated that ground vibrations and/or movement generated by the sheet

pile installation work were well below the trigger levels established by the MTA (i.e., vibrations: 0.5 in/sec., survey: 0.25 inch).

4.7.4 Pre-Excavation Trenching

Pre-excavation trenching was performed essentially throughout the full length of the barrier wall alignment with the exception of the section located within Coney Island Creek (Sta. 27+00 through 31+50). The depth of the trenching was adjusted as needed to remove large rubble debris and remnant foundations. Trenching for the upland piles was typically on the order of 5 to 8 feet in depth, trenching depths along the creek side increased to 10 to 15 feet with several locations exceeding 25 feet where remnant piling and bulkhead timbers/tie-backs were partially removed or cut. Typically, debris larger than 12" in diameter was segregated from the material removed from the trench and stockpiled. The remaining soil and small diameter rubble/debris were placed loosely within the trench as backfill. Production sheeting installation subsequently progressed along the backfilled pre-excavation trench.

Remains of a reinforced concrete foundation were encountered in the northeast corner of the site between approximately Sta. 11+75 and 13+00. A hydraulically powered hoe-ram mounted on a tracked excavator was used to break up and remove sections of the remnant foundation. Once adequately cleared, sheeting installation resumed along the design alignment.

4.7.5 Deviations in the Wall Alignment

As previously indicated, remnant foundations were encountered during the pre-excavation trenching for the sheet pile installation. At two locations, remnant foundations could not readily be removed due to the considerable depth and extent of excavation work required to remove them. In addition, of particular concern was the close proximity of Coney Island Creek with respect to the remnant foundations which presented stability problems for extensive deep excavations immediately adjacent to the creek. At these locations, SES coordinated with KeySpan and PS&SPC in shifting the wall alignment to pass around the remnant foundations and back onto the original design alignment. The two deviations in the wall alignment occur at Sta. 21+00 where several sheets were shifted approximately five feet around remnant piling and between Sta. 23+77 and Sta. 26+00 where the alignment was shifted up to approximately 30 feet toward the creek to pass around the corners of two adjacent remnant building foundations. The as-built drawing in Appendix A illustrates the deviation in the wall alignment at the aforementioned locations.

4.7.6 Subsurface Utilities

Several utility lines were encountered during the course of the trenching and sheeting installation work. Specifically, this included an abandoned gas line at

Sta. 6+15 and an active storm drain line encountered first at Sta. 11+20 and a second time downgradient at Sta. 12+70.

The gas line was a steel pipe approximately 12 inches in diameter located about nine feet below the ground surface. KeySpan arranged to have their utility service subcontractor, Hallen Construction, Inc., cut and remove an approximately 3-foot section of the pipe to permit sheeting installation to continue along the design alignment. Both ends of the pipe sections abandoned in place were packed with absorbent material and capped. KeySpan also arranged for Miller Environmental Group, Inc. to remove and dispose of groundwater accumulated within the trench excavation (refer to Section 8.3 for disposal details and documentation). No visible evidence of product or other contaminants was observed within the cut pipe sections. The approximate location of the above utility lines is indicated on the as-built drawing in Appendix B.

The storm pipe was determined to be an 18-inch diameter corrugated plastic/PVC pipe serving as a storm drain line for the adjacent MTA service yard north of the site. The terminus of the pipe was observed along the shoreline of Coney Island Creek near wall Sta. 12+80. The storm pipe was severed by the sheeting installation at both locations indicated above. KeySpan has determined that the pipe's previous installation through the site was unauthorized. As such, the severed sections were not repaired and are presently abandoned in place.

4.7.7 Contaminated Soil and Remnant Product Piping

Coal tar impacted soils were encountered during the excavation of approximately five shallow (5 to 8 feet deep) test pits between approximately Sta. 5+00 and 7+00. At the request of the NYSDEC, the excavated soils were stockpiled on a polyethylene plastic liner and subsequently covered with a 20 mil. UV resistant liner fully anchored around the perimeter. The stockpiled soils are located about 50 feet back from the wall alignment near Sta. 6+50. The NYSDEC project manager for OU-1 has permitted these soils to remain on-site (provided the cover is maintained) for subsequent handling and disposal during the upcoming OU-3 phase of site remediation.

Remnant steel piping, approximately 8 inch diameter, containing coal tar was encountered during the pre-excavation trenching work at Sta. 20+00 to 20+50. At the request of the NYSDEC, an approximately 20 Linear Feet (LF) section was removed, the ends plugged and the pipe was wrapped in polyethylene plastic secured in place with duct tape. The pipe was staged on a remnant concrete tank foundation and will be properly disposed of during the OU-3 remediation work. The NYSDEC project manager for OU-1 permitted the wrapped piping to remain on-site for disposal during OU-3 remedial activities provided it is staged as indicated and the polyethylene wrap maintained.

4.7.8 Non-Conforming Sheet Piles Installations

During the course of the production sheet pile installation, approximately 38 sheet pairs encountered refusal above the design tip elevation due to obstructions or dense soil conditions. This number was based on the daily records of the sheeting installation maintained by SES's CQC engineer and the CQA engineer from PS&S. The following measures were undertaken to redrive these piles to the design tip elevations.

- For sheets located within 75 feet of the MTA rail line, steel stiffeners were bolted to the tops of the sheet pairs and the majority of the sheets were successfully redriven to the design tip elevations. Sheet piles within six inches or less of the design tip elevation were determined to be acceptable by PS&S and redriven no further.

- For all other sheets above the design tip elevation, a second attempt was made to redrive the sheets to the design tip elevation using the larger Movax SP-100 vibratory hammer and larger excavator. This method was successful on approximately 50 percent of the non-conforming sheets. For the remaining sheets, redriving was attempted until no further movement of the sheet was observed after a period of several minutes of continuous driving or until the top of the sheet sheared from the excessive driving stress.

- For the third attempt to redrive non-conforming sheets, SES mobilized a third larger vibratory hammer manufactured by American Pile Equipment (APE). The APE hammer was used both suspended from the Lomma crane and mounted on the excavator. This method was again only partially successful in advancing the remaining piles to the design tip elevation. For sheets still encountering refusal above design tip elevation, driving was stopped after no further movement was observed for several minutes of continuous driving. Shearing of the top of the sheet often occurred beyond this point and was thus terminated. Sheet piles within six inches or less of the design tip elevation were determined to be acceptable and redriven no further.

- A fourth and final attempt was made to redrive non-conforming sheets using the air powered impact hammer suspended from the crane. For those sheets accessible by the crane this method was successful in achieving the design tip elevation. However, the balance of the non-conforming sheets was inaccessible to the truck mounted crane and could be redriven no further.

At the conclusion of the redriving efforts, a total of 13 sheet pairs remain above the design tip elevation excluding those pairs that are within six inches of the design tip elevation. The Sheet Pile Elevation Summary included in Appendix B provides a summary of the design elevations vs. as-built elevations for all sheet piling installed for the project. All sheets above the design tip elevation (i.e., non-conforming sheet piles) are flagged on the Sheet Pile As-Built Drawing by

indicating the location and number of the non-conforming sheet pile. It should be noted that the flagged sheets include those that are one hundredth of a foot to more than several feet above design tip elevations. As indicated above, redriving efforts were focused on sheet piles more than six inches above the design tip elevations, all others were determined acceptable by PS&S.

4.7.9 Non-Conforming Interlock Seal Preparation

At the start of the sheet pile installation work, the bentonite pellets within the interlock channel were initially hydrated by applying water over the surface of the steel slide plate after it was installed within the channel. Under this method, an unknown amount of water appeared to seep around the edges of the slide plate to activate the hydration process of the bentonite. After the sheet pair was installed to the design elevation, the slide plate was removed and the existing groundwater completed the hydration process for the bentonite seal. Sheet pairs SP-1 through SP-65 located along the northern edge of the site were prepared in this manner.

At the request of PS&SPC and the NYSDEC, SES conducted a field test on a typical sheet pile interlock hydrated as described above to demonstrate the effectiveness of the initial hydration process. The test was conducted on December 17, 2003 under the observation of representatives of SES, KeySpan, PS&SPC and NYSDEC. After hydrating a typical sheet interlock by applying water over the surface of the slide plate, the plate was withdrawn and the degree of hydration experienced by the bentonite was observed to be inadequate. This hydration method was determined to be unacceptable and revised by SES to include hydration of the bentonite seal prior to installation of the slide plates. All subsequent sheet pile interlocks were hydrated by applying water directly over the bentonite pellets within the open channel prior to inserting the slide plate.

The 65 sheet pairs that were installed prior to the revision of the initial hydration process were monitored for settlement of the seal material as specified within SES's Construction Quality Control Plan. The seals were topped off with additional bentonite, as needed, following installation. No visible evidence of seal settlement was observed after any topping with bentonite. The long-term performance of this section of the barrier wall will be monitored through the paired piezometers installed along the upland portion of the barrier wall system.

4.8 Piezometers

The piezometers installation was performed by Warren George, Inc., a licensed New York State Well Driller subcontracted by SES for this task. Five pairs of piezometers, one inside and one outside the sheet pile barrier wall, were installed along the upland portion of the wall alignment. In addition, five single piezometers were installed on the inside of the sheet pile wall along the creek side of the wall system. The piezometers generally consisted of a 2" diameter PVC casing with a sand pack around the lower screened portion and a cement/bentonite grout seal at the surface. A protective steel

outer casing was provided at the ground surface with a locking cap. Upon completion of the piezometer installation, the as-built location and elevation (ground surface, top of casing and top of steel protective casing) were surveyed. The as-built survey data for the piezometers is provided on the Sheet Pile As-Built Drawing included in Appendix B. Well Construction Logs are included in Appendix E, which indicates the lengths of screen and solid rise pipe installed along with the thickness of sand pack, bentonite and concrete seals.

The piezometers were installed using a track mounted all terrain drilling rig. Construction of the piezometers was generally in accordance with the design details and specifications with the exception of the drilling methods. The first several piezometers were installed using hollow stem augers, as specified. However, the shallow groundwater level and sandy texture of the underlying soils created a hydrostatic imbalance within the inside of the augers when drilling to the specified depths. Rapid inflow of groundwater and soil through the base of the augers inhibited proper installation of the well screen and sand pack. Use of mud-rotary drilling techniques with bio-degradable drilling fluid (Revert) and a cased borehole was approved for the installation of the remaining piezometers.

4.9 Equipment Decontamination and Demobilization

The various pieces of construction equipment utilized to complete the OU-1 remedial action encountered only relatively limited areas of site contaminants. As such, the NYSDEC permitted a change to the decontamination procedures proposed within the construction work plan and did not require containment of the removed materials as these would be addressed during the OU-3 phase of site remediation. Equipment decontamination was accomplished by removing all loose soil within the equipment staging area located northeast of the trailer compound. All removed soil materials were left on the ground surface in this staging area for subsequent removal during the OU-3 phase of site remediation.

Once the equipment was cleaned of loose soil, it was then staged on the paved entrance driveway located at the northeast end of the site near the entrance gate and guardhouse. The equipment was steam cleaned in this area prior to final demobilization from the site. Rinse water from the steam cleaning operation was permitted to drain into the existing ground. The HSO from SES documented the decontamination of each piece of construction equipment demobilized from the site.

5.0 SITE RESTORATION

At the completion of the sheeting installation and piezometer construction, SES restored the site areas impacted by their construction operations generally through regarding disturbed areas and hydroseeding to reestablish vegetative cover. Silt fencing installed at the start of the site work for soil erosion and sediment control was secured and left in place at the conclusion of the site restoration efforts. The silt fencing would be maintained until vegetative cover is restored on site.

At the request of the NYSDEC, the turbidity barrier installed within Coney Island Creek for the sheeting installation work adjacent to this area was left in place and to be maintained until the next phase of site remediation. The barrier was secured to the shore line and/or anchored as needed and will be maintained under the OU-1 Post Construction Operation and Maintenance Plan.

5.1 Backfill of Pre-Excavation Trenches

The sheet piling pre-excavation trenches were typically backfilled with the excavated soils and smaller construction rubble after the larger obstructions were removed and segregated. Between approximately Sta. 12+50 and Sta. 20+50, two to four feet of additional fill was required to backfill the pre-excavation trench to roughly the former site grades after using the available excavated soils. To backfill this section of the wall alignment, approximately 1,500 tons of imported crushed stone, obtained from virgin sources, were trucked to the site and placed to backfill the balance of the pre-excavation trench. The backfill was placed loosely and graded to create a slight drainage swale along the inside face of the sheet pile wall. The imported crushed stone consisted of a quarry processed blend of natural crushed stone aggregate graded for use as subbase material. Analytical testing of the imported crushed stone was not required by the NYSDEC provided the material consisted solely of a blend of naturally occurring crushed stone.

5.2 Site Regrading and Hydroseeding

Areas cleared and/or disturbed during the installation of the barrier wall sheeting and the piezometers were regraded to a uniform surface roughly coinciding with the original grades in that area. Vegetation and existing site debris that were initially cleared at the start of the site work were placed in small stockpiles staged about the site perimeter. Upon completion of the grade restoration, the exposed subgrade soils were hydroseeded using a one-step application mix of wood fiber mulch, fertilizer, tackifier, seed and plant stimulant. Hydroseeding of the regraded areas of the project site was performed during the last week of March 2004. The individual components of the hydroseed mix and the corresponding application rates are summarized below:

1. Wood fiber mulch: 1,500 lbs/acre
2. Fertilizer (18-24-12): 300 lbs/acre
3. Tackifier: 32 lbs/acre
4. Seed
   - Perennial Ryegrass: 65 lbs/acre
   - Tall Fescue: 35 lbs/acre
   - Annual Ryegrass: 100 lbs/acre

5.3 Chain Link Fencing

The installation of sheet pile wall along the Coney Island Creek side of the project site required the removal of approximately 1,300 LF of existing chain link fencing to permit equipment access. In addition, approximately 120 LF of fencing was also removed along the northern side of the project site to enable access to the MTA parcel. At the completion of the sheeting installation for these areas, the new chain link fencing and posts were installed in accordance with the design details and specifications. A modification to the fencing installation was approved for the section of fencing (about 650 LF) between Sta. 14+00 and Sta. 20+50. Fence post mounting brackets were welded directly to the inside face of the sheet piles along this section and the posts subsequently installed within the brackets. This method of fence construction enabled the fence to be installed at a uniform elevation along this section of the site. The sections of new fencing installed on site are shown on the Sheet Pile As-Built Drawing in Appendix B.

6.0 CONSTRUCTION COSTS

Construction costs for the OU-1 remedial activities are the sole responsibility of the KeySpan Corporation. There was no funding by the City or State of New York for this remedial action. The actual construction costs, based upon invoices submitted to date from SES, is approximately $4.4 million, inclusive of several change order requests not yet approved by KeySpan. The actual construction cost is below the engineer's estimate of $5.4 million, previously provided to NYSDEC with the approved final RD report.

7.0 CONSTRUCTION AS-BUILTS

Construction as-built information for the OU-1 remedial work is provided within Appendix B on the Sheet Pile As-Built Drawing, Sheet 1 of 3, and Sheet Pile Elevation Summary, Sheets 2 of 3 and 3 of 3. In general, the as-built data includes the sheet pile, the design and as-built wall alignments, piezometer locations and elevations, location of new fencing and the location and number of sheet piles above design tip elevations. Also included is a tabulated summary of all sheet piles driven with corresponding design and as-built tip elevations and top of sheet elevations. Additional data regarding the sheet pile location, length and top of interlock angle elevations are also given.

8.0 WASTE MATERIAL HANDLING AND DISPOSAL

The initial phase of the OU-1 remedial action did not include the removal and disposal of waste materials. However, several types of waste were encountered during the sheeting installation and these materials generally include construction rubble/debris, coal tar impacted soils, contaminated groundwater and remnant process piping containing coal tar. Detailed below is a description of how these materials were managed and staged for future disposal or further handling during the OU-3 phase of site remediation.

8.1 Construction Rubble/Debris

During the pre-excavation trenching operation, large reinforced concrete rubble, boulders, timbers and other demolition debris removed from the trenches as obstructions were segregated from the materials reused as backfill and placed within stockpiles. During the excavation and stockpiling of this debris, no visible evidence of coal tar or other obvious contaminants was observed. To manage these materials, two stockpiles were created in the northeast corner of the site and an additional two were created just southeast of the existing guard house. Hydroseed was applied to the base of the stockpiles to establish vegetation around the perimeter as an added measure of dust control. Provided vegetation is maintained around the perimeter of these stockpiles, the NYSDEC has permitted them to remain on site to be addressed during the OU-3 remedial activities.

8.2 Contaminated Soil and Process Piping

As discussed in the preceeding sections, a small stockpile of coal tar impacted soil (approximately 20 cubic yards) was staged on a polyethylene liner and cover with a 20 mil. UV resistant liner near wall sta. 7+00. These soils will be sampled, characterized and addressed during OU-3. The NYSDEC has permitted these soils to remain on site provided the cover is maintained.

Remnant process piping containing coal tar was removed from the pre-excavation trench at sta. 20+50. The piping was fully wrapped in polyethylene plastic and secured with duct tape. The wrapped pipe was staged on an existing concrete tank foundation located adjacent to the site access drive in the southern portion of the site. Given the small quantity of piping encountered in this phase of remedial work, the NYSDEC has permitted this limited amount of piping to remain on site provided it is appropriately wrapped and staged as indicated above. This piping will be placed within an appropriate container with other materials removed during OU-3 remediation and properly disposed of.

8.3 Contaminated Groundwater

During the cutting, capping and removal of a section of the abandoned gas line encountered near sta. 6+10, approximately 7,950 gallons of contaminated groundwater were pumped from the excavation to enable access to the gas line. The groundwater was removed and properly disposed of by Miller Environmental Group, Inc. using a vacuum truck. Copies of the Uniform Hazardous Waste Manifests are included within Appendix D.

9.0 ENGINEERING AND INSTITUTIONAL CONTROLS

The remedial action documented by this report is the initial phase of a more comprehensive remedial effort designated for implementation at this site under the March 2001 ROD. As such, engineering and institutional controls have not yet been established in light of the future phases of remedial work that need to be completed. It is anticipated that the appropriate engineering and institutional controls will be addressed and implemented during the OU-2/OU-3 phase of the site remediation.

10.0 OPERATION, MAINTENANCE AND MONITORING PLAN

An Operation, Maintenance and Monitoring Plan (OM&M) was prepared for the OU-1 remedial work, reviewed by the NYSDEC and returned to KeySpan with comments. The OM&M Plan provides for the inspection and maintenance of the components constructed during OU1, along with the monitoring of water levels in the piezometer in order to determine if further actions are necessary. The OM&M for OU-1 has been revised to address the NYSDEC's comments and a final version was submitted to NYSDEC. A final version of the revised OM&M is included within Appendix E.

11.0 CONCLUSIONS AND RECOMMENDATIONS

The steel sheet pile barrier wall and accompanying piezometers have been installed in general accordance with the design drawings and specifications with the exception of the approved change in sheeting materials and wall alignment revisions noted in Section 4.7. The short term function of this barrier wall is to mitigate NAPL seepage into Coney Island Creek and to serve as shoring during future creek dredging operations and upland area source excavation. Accordingly, it is the opinion of PS&SPC that the installed sheet pile barrier wall will satisfy this function in conformance with the initial phase of the remedial measures selected in the March 2001 Record of Decision for OU-1 issued by the NYSDEC. The piezometers will provide a method for monitoring the performance of the barrier wall system and future remedial activities. It is recommended that the barrier wall system and the piezometers continue to be regularly monitored for proper performance under OU-1 OM&M Plan.

APPENDIX A

Minutes of Progress Meetings

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #1
December 10, 2003

Meeting Minutes

Attendance:

Name	Company	Phone No.
Tracey Bell	Keyspan	718-403-3053
John Bolan	KBS	732-560-9700
Charles Bigelow	SES	716-284-0431
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	Keyspan	917-567-0241
Jason Farina	SES	516-859-7311
Michael Mahar	SES	716-284-0431
Mike Crystal	SES	716-284-0431
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Jack H. Van Sciver	PS&S/KBS	732-560-9700
Russ Harris	SES	716-570-2312
Stephen Sellinger	NYSDEC	917-579-0441
Lech Dolata	NYSDEC	518-402-9669

I. Review/Approve Previous Minutes

A. With this being the first weekly progress meeting, there are no previous meeting minutes to review.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 464 man hours occurred with no accidents, incidents or lost time.

B. Air Monitoring: Have not exceeded any action levels at the perimeter of the jobsite or breathing zone of workers.

- NYSDEC stated that all equipment must be decontaminated before leaving the site.
- SES informed group that all visitors must report to Sevenson's main office trailer before proceeding to work zones.

- KeySpan stated that Community Board 13 would like to visit the job site.
- Joseph Burke (SES) will be acting as site H&S Officer in the absence of Harold Ohnmeiss.
- KeySpan asked SES what indicators are being used to determine if an Exclusion Zone needs to be set up at the site. SES stated that in accordance with the HASP, if action levels are reached based on air monitoring being performed during sheet pile installation operations that would warrant an upgrade to Level C PPE then an exclusion zone would need to be established.

III. Work Progress

A. Sevenson (SES) has performed the following work at the site since the project started:

- SES performed site mobilization activities. Mobilized and set tool trailers and office trailers in place. Installed electrical and phone service to the office trailers (phone company to finalize phone service in December).
- Mobilized one loader, one forklift, one PC220 backhoe with a Movax attachment, one PC220 backhoe with a bucket, and one welding machine to the site.
- Installed silt fence at the perimeter of the site (425' along the north side and 200' along the west site).
- Performed limited clearing along the sheet pile wall installation alignment.
- SES surveyors performed sheet pile wall alignment layout around the entire site.
- Delivered 500 LF of turbidity curtain to the site.
- Delivered and spread two loads of crushed stone to the site for temporary access roads.
- Off loaded 31 loads of steel sheet piling delivered to the site.
- Performed a sheet pile-driving test at the northwest corner of the site and on the south side of the site adjacent to Coney Island Creek.
- Installed ten pairs of 25' sheets along the upland portion of the site.

- KeySpan stated that they would like to inspect the turbidity curtain before it is installed. SES stated that the turbidity curtain is available for inspection at any time.

- KeySpan informed SES that a turbidity curtain is required wherever sheet piling is driven along Coney Island Creek, not just in front of the bulkhead as shown on the drawings. KeySpan stated that this is an additional requirement imposed by the NYSDEC. SES stated that they will review the impact of this requirement to cost and schedule and get back to KeySpan.

IV. Submittals

A. SES has received no formal action (i.e., return of submittals with an action stamp on them) from KeySpan for submittals #1-#7. SES has responded to e-mailed comments from KeySpan on some of those submittals. SES continues with all work associated with those submittals.

   - KeySpan stated that they will give SES some formal action on submittals #1-#7.

B. SES submitted submittal #8, mill test certificates for all steel, on November 28, 2003 and has received no action on it by KeySpan as of Tuesday, December 9, 2003. Glynn Geotechnical Engineering (GGE) reviewed and approved the submittal and SES has been installing sheet piling.

C. SES stated that they will be submitting the Schedule of Values as submittal #9 later this week.

V. Schedule

A. SES handed out an updated schedule and stated that the only change to schedule is the lengthening of the compatibility/permeability program due to lower permeabilities being experienced than originally expected. SES also stated that the compatibility/permeability program may have to be discontinued before "final" results can be achieved because of the length of time that may be required to do so.

   - SES stated that sometime after the holiday break they would start installing sheet piling along Coney Island Creek. KeySpan stated that before doing so the results of the compatibility/permeability program received thus far would have to be submitted to KeySpan in a report form and approved by KeySpan before that work could begin. SES stated that KeySpan would receive a report by early next week.

- KeySpan asked about the upcoming schedule for the holidays. SES stated that work at the site would continue thru Thursday, December 18, 2003 and there would be a break for the holidays until January 5, 2003 when work would resume at the site.

VI. New Business

A. SES:

- SES stated that they had received a letter from KeySpan stating the requirements for work adjacent to the MTA tracks on the west side of the site. SES stated that they will respond to the letter in the near future.
- SES stated that all Daily Reports through December 5, 2003, including Contractor Quality Control Reports and SES' Health & Safety Reports, would be turned into KeySpan by the end of the week.

B. KeySpan:

- KeySpan's on-site representative stated that he needs an updated set of Contract Drawings at the site.

C. NYSDEC:

- NYSDEC stated that the methodology currently being used by SES to explore for underground obstructions ahead of the sheet pile wall installation operations is acceptable.
- NYSDEC inquired about the final destination for the material piled on the MTA property at the north end of the site that will need to be moved to install the sheet pile wall? KeySpan stated that it is MTA material and it will stay on MTA property for the purposes of this project.
- NYSDEC requested a copy of SES HASP for review. KeySpan stated that they will provide it to NYSDEC.

VII. Review Old Action Items

A. Soil/Debris Pile on MTA Property

- SES asked about the status of moving the soil/debris pile currently on MTA property at the north end of the site? KeySpan stated that they are continuing to

try to secure permission to move the pile. SES stated that the pile will impact sheet pile installation operations by the end of the week.

B. Phone list

- SES passed around a contact phone number sign up list at the meeting for all personnel involved in the project.

C. U.S. Army Corps of Engineers authorization letter for installing sheet piling in front of the bulkhead.

- KeySpan stated that they will give SES a copy of the letter.

D. Certificate of Capital Improvement and Exempt Use Certificate from KeySpan

- KeySpan is still in the process of obtaining these Certificates and when they do they will provide them to SE

VIII. New Action Items

1) SES to provide interim compatibility/permeability test report to KeySpan for review.

2) KeySpan to provide a copy of SES' HASP to NYSDEC for review.

3) KeySpan to provide a copy of the Contract Drawings issued for construction to their field representative.

IX. Other Business

- DEC fact sheets are to be handed out to persons asking questions about site activities. All questions to be handled by Stephen Sellinger.

- NYSDEC requested that the phone line servicing its trailer be split so it can be shared with on-site KeySpan representatives occupying the other half of the trailer.

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

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Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #2
December 17, 2003

Meeting Minutes

Attendance:

Name	Company	Phone No.
Tracey Bell	KeySpan	718-403-3053
John Bolan	KBS	732-560-9700
Frank Fracassi	SES	716-284-0431
Paul Hitcho	SES	716-284-0431
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jesse Grossman	SES/GGE	716-625-6933
Michael Mahar	SES	716-284-0431
Mike Crystal	SES	716-284-0431
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Jack Van Sciver	PS&S/KBS	732-560-9700
Russ Harris	SES	716-570-2312
Stephen Sellinger	NYSDEC	917-579-0441
Lech Dolata	NYSDEC	518-402-9669

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- No comments on last week's progress meeting minutes as of the time of the meeting. Any comments are to be sent to SES in writing prior to the next meeting.

- NYSDEC requested that KeySpan e-mail a draft of the minutes to them prior to the meeting so they can be reviewed.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 964.5 man hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) and dust have not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers. When SES is performing sheet pile installation and pre-excavation activities, the community air monitoring program (CAMP) shall be in operation.

- SES stated that the NYSDEC's statement at last week's meeting that all equipment had to be decontaminated prior to leaving the site was not in accordance with the specifications. SES clarified that all equipment that has entered an Exclusion Zone would need to be decontaminated prior to leaving the site. NYSDEC concurred.

- KeySpan requested that SES provide a methodology to provide continuous perimeter air monitoring at all times, even during rain events. SES stated that they will submit the methodology to KeySpan later today. For example, SES proposes to provide a multi-gas meter and a photoionization detector (PID) in the cab of earthwork moving equipment (e.g., trackhoe excavator and trackhoe mounted pile driving rig).

- NYSDEC requested that KeySpan contact NYSDEC and NYSDOH of any known air monitoring exceedences as soon as they occur. NYSDEC and NYSDOH want to hear of exceedences from KeySpan prior to the surrounding community calling the NYSDOH with complaints.

III. Work Progress

A. Sevenson (SES) has performed the following work between December 10 – December 16, 2003:

- Installed 37 pairs of 25' sheets and 5 pairs of 30' sheets in the upland area along the north side of the site. A total of 47 pairs of 25' sheets and 5 pairs of 30' sheets have been installed to date. Total linear feet installed to date is approximately 229'.

- Performed excavation operations ahead of the sheet piling installation operations to remove subsurface construction debris that would adversely affect sheet piling installation operations.

- Pulled temporary knives (slide plates) from sheet piles SP-2 thru SP-19 and SP-49 thru SP-54. Drove sheet piles SP-2 thru SP-34 to design elevation or refusal, whichever came first.

- Off loaded 5 truckloads of sheet piling delivered to the site.

- Off loaded delivered poly water holding tank and hoe ram.

IV. Submittals

A. SES continues to await formal action (i.e., return of submittals with an action stamp on them) from KeySpan for submittals #1-#9. KeySpan has stated that they will send SES a formal response on all the submittals. SES has responded to e-mailed comments from KeySpan on some of those submittals. SES continues with all work associated with those submittals with no objection from KeySpan.

➢ KeySpan acknowledged receipt of submittal #9 last week (the Schedule of Values) and will provide comment on it by this Friday, December 19, 2003.

V. Schedule

A. SES stated that they are not in a position at this time to update the schedule handed out at the meeting last week. SES is currently encountering subsurface debris during installation operations that cannot be driven through with the steel sheet piling. This has caused SES difficulty in consistently reaching anticipated production rates. SES is working through these difficulties and will provide an updated schedule to KeySpan at the next project meeting on January 8, 2004.

➢ KeySpan asked if work will be conducted on Martin Luther King, Jr. day (January 19, 2004) and on Presidents day (February 16, 2004)? SES stated that at this point they anticipated working on both of those days, but would keep KeySpan updated as both days get closer.

VI. New Business

A. SES:

– SES requested a status update on the preliminary compatibility/permeability study submitted to KeySpan on December 12, 2003?

➢ KeySpan stated that they had reviewed the report and requested that SES provide a revised preliminary report that included a conclusion in the text of the report for the results received to date. SES stated that they will provide this to KeySpan early next week. In addition, KeySpan requested that SES provide cut sheets on all sealants tested.

– SES requested a status update on the CQCPP revision submitted on December 15, 2003 involving adding water to the bentonite in the angle after the slide plate has been inserted?

- KeySpan stated that they had reviewed it and their response would be based on the demonstration to be performed by SES after the meeting.

– SES stated that in the location where the sheet piling is currently being installed, the existing ground surface is approximately 1' to 3' higher than shown on the Contract Drawings. SES asked for direction on how to proceed?

- KeySpan stated that they will investigate the situation and get back to SES next week.

– SES stated that they have not received a letter from KeySpan detailing the additional requirements for erosion and sediment controls requested by the NYSDEC but need to order the turbidity curtain later this week in order to not delay the project. SES also asked if the curtain should be the same as the curtain that was originally purchased?

- KeySpan informed SES that they could either use the 500 liner feet of curtain already on-site and just move it along Coney Island Creek or purchase enough curtain to install it all along the Creek. SES stated that they were going to purchase additional curtain to install it all along the Creek. KeySpan stated that the curtain could either be the same as what had already been purchased and delivered, or what was originally specified.

– SES asked if the maximum horizontal alignment deviation from the contract drawing location of the sheet pile wall could be increased from 3" to 12"?

- KeySpan and NYSDEC agreed that the centerline deviation for horizontal alignment could be increased up to 12".

– SES asked that KeySpan provided any additional drawings that they have that would show the location of previous utilities, foundations, etc. at the site. This will help SES anticipate areas that could contain potential subsurface debris that would impede sheet piling installation activities.

- KeySpan stated that they will provide any additional drawings they have within the next week or two.

B. KeySpan:

– None.

C. NYSDEC:

- NYSDEC stated that if the temporary decontamination pad was going to be located in an area that did not require future excavation as part of the next phase of work, then a 10 mil liner would need to be used instead of a 6 mil liner as stated in SES' Construction Plan.

➢ KeySpan stated that they had drawings on-site showing where future excavation operations were going to be performed. SES stated that they will work with KeySpan and NYSDEC to coordinate the location of the decontamination pad in future excavation areas.

VII. Review Old Action Items

A. Soil/Debris Pile on MTA Property: SES requested an update on the status of moving the existing soil/debris pile on MTA property at the north end of the site?

➢ KeySpan stated that they continue to await a response from the MTA.

B. Phone List: SES stated that the contact phone number list has been completed and is ready for distribution. Copies were distributed at the meeting.

C. U.S. Army Corps. of Engineers Authorization Letter: SES requested an update on the status of receiving a copy of that letter?

➢ KeySpan stated that they continue to await the letter from the U.S. Army Corps. of Engineers

D. Certificate of Capital Improvement and Exempt Use Certificate from KeySpan: SES asked about the status of receiving these Certificates from KeySpan?

➢ KeySpan stated that a final determination has been made as to the status of the project and that Christine Stockhausen would be contacting SES in this regard.

E. KeySpan to provide a copy of SES' HASP to NYSDEC for review.

➢ NYSDEC acknowledged receipt of SES' HASP from KeySpan.

F. KeySpan to provide a copy of the Contract Drawings issued for construction to their field representative.

➢ KeySpan stated they will get the Contract Drawings to its field representative.

VIII. New Action Items

1) SES will provide KeySpan with a procedure to perform air monitoring during rain events.

2) KeySpan will e-mail a draft of the meeting minutes to NYSDEC for review prior to each weekly meeting.

3) SES to provide a revised preliminary report for the compatibility/permeability test program to KeySpan early next week.

4) KeySpan to investigate grade differential at the north end of the site and advise SES as to how to proceed.

5) KeySpan to provide SES with any record drawings that they may have showing the locations of previous utilities, foundations, etc..

IX. Other Business

A. None.

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jesse Grossman, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #3
January 8, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
Tracey Bell	KeySpan	718-403-3053
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	516-859-7311
Michael Mahar	SES	716-284-0431
Mike Crystal	SES	716-284-0431
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Joe Burke	SES	718-996-9777
Russ Harris	SES	716-570-2312
Michael C. Elia	SES	716-284-0431
Lech Dolata	NYSDEC	518-402-9669

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- NYSDEC stated that they want to be the only one contacted when known air monitoring exceedences occur. NYSDEC will then notify the NYSDOH.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 1,477 man hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) and dust have not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

- KeySpan stated that they inspected the enclosure for the PIDs that are currently being used on site and they are acceptable. KeySpan requested that SES provide a catalog sheet for the enclosures that are being used.

- SES stated that the dock builders used on the site prior to January 5, 2004 did not have 40 hour training due to miscommunication with the union hall. The situation has been rectified and all personnel used on site will have 40 hour training. KeySpan requested that SES provide 40 hour training certificates for the dock builders when they arrive on site.

III. Work Progress

A. Sevenson (SES) has performed the following work between December 17, 2003 – January 7, 2004:

- Installed 25 pairs of 30' sheets in the upland area along the north side of the site. A total of 46 pairs of 25' sheets and 30 pairs of 30' sheets have been installed to date. Total linear feet installed to date is approximately 334'.
- Performed excavation operations ahead of the sheet piling installation operations to remove subsurface construction debris that would adversely affect sheet piling installation operations.
- Pulled knives from sheet piles SP-49 thru SP-54. Drove sheet piles SP-48 thru SP-51 to design elevation or refusal, whichever came first.
- Off loaded 2 truckloads of sheet piling delivered to the site.
- Off loaded 2 truckloads of SES equipment delivered to the site.
- Off loaded 1 truckload (23 skids) of bentonite delivered to the site.
- Initiated installation of the new lay down area on the east side of the site and south of the main entrance gate.

- KeySpan asked that SES provide a brief description of the new sheet piling lay down area being constructed on site, i.e, where it is being constructed, how it is being constructed, and what will be stored there?

IV. Submittals

A. SES continues to await approval action (i.e., return of submittals with an approval stamp on them) from KeySpan for submittals #1-#8.

- KeySpan stated that they will provide SES with an approval letter for submittals #1-#8. KeySpan stated that they don't have any problems with any of the work being performed in the field that is associated with those submittals.

V. Schedule

A. SES handed out a new schedule showing sheet piling installation being completed April 2, 2004 instead of March 3, 2004.

➢ KeySpan asked how confident SES was in the schedule handed out at the meeting. SES stated that they are 100% confident in the schedule based on what they know right now. SES stated that with the pre-excavation being performed they believe that subsurface debris should not be as much a problem as it has been during the first two weeks of sheet piling installation operations. However, SES stated that if an excessive amount is encountered then it still may be a problem later on during the project. SES also stated that the issues with driving sheet piling within 75' of the operating MTA tracks and the movement of the soil/debris pile on the MTA property at the north side of the site had to be resolved by KeySpan in a relatively expeditious manner in order to not delay the schedule. SES stated that its schedule assumes that MTA issues will not hold up the project.

VI. New Business

A. SES:

– SES requested a status update on the CQCPP revisions regarding 1) adding water to the bentonite in the angle channel after the slide plate has been inserted and 2) pulling the slide plate out without vibrating it?

➢ KeySpan and NYSDEC stated that SES is to hydrate the bentonite prior to placing the slide plate over the open angle. SES can continue hydration of the bentonite after the slide plate has been installed.

➢ SES stated that prior to this project they had never vibrated the slide plate as it was being removed. So far on this project SES has had trouble with the slide plates being bent while they are being removed. SES stated that the presence of a wiper plate at the top of the angle channel makes vibrating the plates while removing them unnecessary. KeySpan asked that SES send an e-mail to them explaining this for approval to pull the slide plates without vibrating them.

– SES requested an update regarding KeySpan's review of SES' price submitted on January 5, 2003 for the additional erosion and sediment control requirements requested by the NYSDEC?

➢ KeySpan requested that SES provide the cost for the 1,500' of turbidity curtain that was ordered. SES will provide this to KeySpan by early next week.

- SES initiated a discussion regarding SES' pricing e-mailed on January 6, 2004 for using an air hammer to drive the sheet piling along the MTA tracks?

➢ KeySpan asked for a breakdown of the equipment and manpower used in SES' estimate for the sheet piling to be driven along the MTA tracks. KeySpan also requested that SES provide a work plan for that work. SES will provide this by early next week.

➢ SES requested permission to install an access road along the MTA tracks that the crane will use during installation of the sheet piling. SES stated that the cost for this road was included in its pricing e-mailed on January 6, 2004. KeySpan stated that SES could construct the access road as requested.

B. KeySpan:

➢ KeySpan requested that SES penetrate the sheet piling with the water line that crosses the sheet piling installation line at the north end of the site. The penetration will be sealed with the same bentonite used as the sealant in the rest of the sheet pile wall. Other utilities, i.e., electrical and sewer, will either go up and over or penetrate the sheet piling wall, depending on what makes the most sense with a particular utility.

➢ KeySpan stated that on January 14, 2004 some local community leaders and politicians will visit the site. The visitors will observe operations from a distance.

C. NYSDEC:

➢ NYSDEC requested that KeySpan determine the extent of the "tar" material discovered at the north end of the site near the east entrance gate. It was determined that SES will dig to determine the extent on Monday, January 12, 2004 under the direction of KeySpan.

VII. Review Old Action Items

A. Soil/Debris Pile on MTA Property: SES requested an update on the status of moving the existing soil/debris pile on MTA property at the north end of the site?

➢ KeySpan stated that they had received a letter from the MTA requesting further information regarding the MTA property at the north end of the site, but did not need any information from SES.

B. U.S. Army Corps. of Engineers Authorization Letter: SES requested an update on the status of receiving a copy of the letter?

- KeySpan stated that they did received authorization from the U.S. Army Corps. of Engineers to installed the sheet piling along the bulkhead at the southwest corner of the site. SES asked if anything further was required before sheeting could be installed in this area and KeySpan stated that nothing further was required.

C. Tax Status: SES has received a Direct Pay Permit from KeySpan.

- SES stated that they would need a letter from KeySpan changing the tax status of the project from that stated in the Contract to the new status. SES stated that they have contacted Christine Stockhausen regarding this matter.

D. KeySpan to provide a copy of the Contract Drawings issued for construction to their field representative.

- KeySpan's field representative has received a copy of the Contract Drawings.

E. SES has provided an Addendum to its HASP to KeySpan for air monitoring during rain events.

- KeySpan stated that they have received the addendum to the HASP for air monitoring during rain events (see minutes for section II, paragraph B of these meeting minutes).

F. KeySpan to e-mail draft minutes to NYSDEC prior to the meeting.

- KeySpan has begun e-mailing draft minutes to NYSDEC prior to the weekly meetings.

G. SES provided a revised preliminary report for the compatibility/permeability test program to KeySpan on December 29, 2003. SES requested an update on the status of KeySpan's review of the report?

- NYSDEC stated that they wanted a value for the percentage of swell of the bentonite to ensure the field application is coinciding with the permability study, and that it is sufficient to the completion of the study. SES stated that they will contact GGE regarding obtaining a value for the percentage of swell for the bentonite as well as preparing a final report.

- SES requested that the permeability testing currently being performed be able to be discontinued due to the length of time (more than one year) required to complete the testing. SES stated that permeability test results thus far prove that the required permeability can be achieved and costs budgeted for the permeability

testing would not cover continuing the permeability testing beyond this point. KeySpan and the NYSDEC agreed that the permeability testing could be discontinued.

H. KeySpan to provided direction on how to proceed regarding the grade differential.

- SES and KeySpan discussed this matter prior to the meeting. KeySpan instructed SES that the toe of the sheet piling had to be driven to the design grade elevation. The only remaining matter is Contractually how SES will be paid for the extra sheet piling and to move the extra soil required to do this. KeySpan will give SES an answer relatively quickly on this issue.

I. KeySpan to provide any drawings they may have showing locations of previous utilities, foundations, etc..

- KeySpan provided a drawing to SES for review.

VIII. New Action Items

1) SES to provide a specification sheet for the air monitoring enclosures to KeySpan.

2) SES to provide 40 hour certificates to KeySpan for the dock builders when they arrive on site.

3) SES to request GGE to determine the swell factor for the bentonite used as the sealant for the sheet piling interlocks and initiate preparing a final report.

4) SES to provide information regarding the newly proposed lay down area and a work plan for the sheet piling installation along the operating MTA tracks.

IX. Other Business

A. None.

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #4
January 15, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	516-859-7311
Mike Crystal	SES	716-284-0431
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Joe Burke	SES	718-996-9777
Russ Harris	SES	716-570-2312
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	917-579-0441

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- No comments on last week's progress meeting minutes (Weekly Progress Meeting #3 is approved).

II. Health & Safety Report

A. SES Safety Officer reported that to date: 1726 man-hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) and dust have not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

C. Exclusion Zones: SES was directed by KeySpan earlier this week to implement exclusion zones at all work areas.

- NYSDEC & SES requested from J. Bolan information on what is driving KeySpan's request for setting up the exclusion zone? SES informed KeySpan

that setting up an exclusion zone would have serious ramifications; including cost, and worker protection procedures. SES will have a letter from for the proposed upgrade to Level "B" this afternnon after the meeting. SES stated that it understood that the air-monitoring program would be the driving factor in determining the need to implement an exclusion zone. SES informed KeySpan that the subcontractor working on-site in the trench to repair the gas line is not covered by SES' Site Specific HASP, and is not SES' responsibility. SES informed KeySpan that a letter from our CIH would be transmitted after the meeting stating SES' reasoning behind its position on this matter. It was agreed that there would be a designated work zone to warn others of the pre-installation excavation and sheet piling installations operations. SES stated that if KeySpan directs SES to implement exclusion zones at a later date, all onsite KeySpan, KBS, and NYSDEC personnel will be required to have 40 hour training and physicals.

III. Work Progress

A. Sevenson (SES) has performed the following work between January 8, 2004 – January 14, 2004:

- Installed 25 pairs of 30' sheets in the upland area along the north side of the site. A total of 46 pairs of 25' sheets and 54 pairs of 30' sheets have been installed to date. Total linear feet installed to date is approximately 440'.
- Performed excavation operations ahead of the sheet piling installation operations to remove subsurface construction debris that would adversely affect sheet piling installation operations.
- Pulled slide plates from sheet piles SP-55 thru SP-95. Drove sheet piles SP-52 thru SP-64 to design elevation or refusal, whichever came first.
- Installed approximately 300 linear feet of silt fence along Southeastern fence bordering the creek from Sta. 12+50 to 15+50.
- At the request of NYSDEC and under the direction of KeySpan, performed exploratory excavation to determine the extent of the "coal tar" material along the North fence line. Two test pits were dug on 1/12/04 in the presence of NYSDEC, KBS and SES representatives.
- Offloaded 30 sections of turbidity curtain delivered to site.
- Performed clearing and grubbing along southeastern fence line.
- Completed construction of laydown area on east side of site and south of the main

entrance gate.

- Improved site access roads.

IV. Submittals

A. SES continues to await approval action (i.e., return of submittals with an approval stamp on them) from KeySpan for submittals #1-#8.

- KeySpan stated that submittals #1-#8 are satisfactory and that KeySpan will provide SES an e-mail approving submittals #1-#8.

V. Schedule

A. SES did not prepare a new schedule. Subsurface debris being encountered is continuing to adversely affect schedule.

- SES informed KeySpan that they plan to work on Saturday 1-24-04 at this time, but all parties agreed that notification will be given no later than Thursday for work on that particular Saturday.

- KeySpan inquired about when SES would put a second crew on sheet piling installation operations? SES stated that a second crew would not be put onto the sheet piling installation operations until work begins along the MTA tracks (the west fence line of the site) with the air hammer. SES stated that this cannot be done until KeySpan approves the work plan that was submitted and issues a Change Order for the work.

VI. Old/New Business

A. SES:

- SES requested a status update on the final approval of the CQCPP revisions regarding 1) adding water to the bentonite in the angle channel after the slide plate has been inserted and 2) pulling the slide plate out without vibrating it. SES requests KeySpan approval by January 16, 2004 to provide order and delivery of additional bentonite.

SES asked if KeySpan has any problems with how the sheet piling is being installed? KeySpan stated that sheet piling installation activities meet the requirements of the CQCCP and the NYSDEC Record of Decision (ROD Following receipt of additional information (bentonite swell versus time measurements), KeySpan will provide a written approval of the CQCPP.

- SES requested an update regarding approval to install the extra 1,500' of turbidity curtain along Coney Island Creek?

➢ KeySpan stated that the additional cost for installation submitted by SES is still under review.

- SES requested an update regarding KeySpan's review of pricing submitted by SES on January 6, 2004 for using an air hammer to drive the sheet piling along the MTA tracks? SES inquired if KeySpan had submitted the proposed air hammer data to MTA yet?

➢ KeySpan stated that they are reviewing the pricing submitted by SES and waiting for a response from MTA regarding the air hammer.

➢ SES asked if there is any additional information required from SES regarding this matter at this time? KeySpan stated that they require no additional information from SES at this time.

- SES stated that they reviewed the as-built drawing of the site provided by KeySpan at last week's meeting. The drawing does not show what existed along the northern edge of the site and along about the eastern 1/3 of the site.

➢ SES requested all of the information from the site investigation performed by Foster Wheeler. KeySpan will provide SES with a copy of the RIFS prepared by Foster Wheeler, as well as a copy of perimeter boring logs and the perimeter boring location plan.

- Grade Differential: KeySpan was to inform SES as to the compensation for driving extra steel at the north end of the site where the grade differential is different than that shown on the Contract Drawings.

➢ KeySpan stated that the extra steel driven will be paid at the contract unit rate.

- SES requested that a "Chain of Command" be used on-site in order to prevent any confusion with site personnel.

➢ It was agreed that SES's Superintendent will be the point of contact for KeySpan and NYSDEC.

- SES submitted final Invoice No.1 for period ending December 31, 2003 for payment.

B. KeySpan:

- Requested Medical Surveillance information on all site personnel.

➢ SES stated that they will supply a list of all personnel on site.

➢ SES stated that Medical Surveillance information (i.e., physicals) is not required for work outside of an Exclusion Zone.

- KeySpan requested a field sketch from SES documenting the depth and orientation of the underground obstruction as well as a possible sheet pile wall realignment at the northeast corner of the site, in the vicinity of the small concrete block building.. SES and KeySpan field representatives anticipate a 15-foot offset from the NYSDEC ROD alignment in order to drive the sheet piles around the underground obstructions (reinforced concrete foundations).

➢ SES stated that they will provide a possible wall realignment but will not be responsible if similar construction debris is encountered along the proposed realignment. SES also stated that they would be compensated for any costs involved with the wall realignment.

C. NYSDEC:

- Inquired as to what type of restoration would be done for the areas that have been disturbed by construction activities?

➢ KeySpan stated that no formal plan has been made up to this point in time, but will address these areas in the future with the NYSDEC.

- NYSDEC discussed the issue of how the stockpiled material (debris removed during the pre-installation excavation) will be handled.

➢ NYSDEC stated that there are only two options, either remove the debris from the site or provide a secure and stable cover material.

- NYSDEC inquired if any of the monitoring wells would have to be removed as a result of being in the path of the sheet pile wall to be installed?

➢ NYSDEC requested that if there were any in the way that SES decommission the wells properly. SES stated that based on the current wall alignment, none of the monitoring wells will have to be removed.

VII. Review Old Action Items

A. Soil/Debris Pile on MTA Property: SES requested an update on the status of moving the existing soil/debris pile on MTA property at the north end of the site?

- KeySpan had no new information regarding the movement of the pile.

B. Tax Status: SES has received a Direct Pay Permit from KeySpan.

- KeySpan had no new information regarding the tax status on the project.

C. SES to provide a specification sheet for the PID enclosures to KeySpan.

- SES has provided the specification sheet to KeySpan.

D. SES to provided 40 hour certificates for all dock builders on the site to KeySpan.

- SES has provided all 40 hour certificates required.

E. SES to have GGE perform a % swell test on bentonite.

- GGE is currently in the process of running the % swell test on the bentonite.

F. SES to provide details for new laydown area to KeySpan.

- SES has provided details to KeySpan.

G. SES to provide a work plan for sheeting along MTA property to KeySpan.

- SES has provided a work plan to KeySpan

VIII. New Action Items

A. SES requested the Remedial Investigation Feasibility Study (RIFS) conducted by Foster Wheeler for the site. This information to include the perimeter boring logs the full boring report, and all survey data and reports relating to any previous site investigation.

B. KeySpan requested a sketch from SES of a possible sheet pile wall realignment at the northeast corner of the site.

C. SES requested all chemical data for the site from KeySpan.

D. KeySpan requested a list of all personnel on-site from SES.

E. SES to provide a written response to KeySpan "exclusion zone" determination request.

IX. Other Business

A. None.

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #5
January 22, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	718-996-9777
Mike Crystal	SES	716-284-0431
Harold Ohnmeiss	SES	716-440-2837
Tracey Bell	KeySpan	718-403-3053
Joe Burke	SES	718-996-9777
Russ Harris	SES	716-570-2312
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	917-579-0441
Michael Mahar	SES	716-284-0431
Dan Dragonette	SES	716-609-0571

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- No comments on last week's progress meeting minutes (Weekly Progress Meeting #4 is approved).

II. Health & Safety Report

A. SES Safety Officer reported that to date: 2349 man-hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) and dust have not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

- KeySpan requested an update regarding "Exclusion Zone" implementation? After some discussion, it was agreed that a "work safety zone" will be set up around the sheet piling and pre-installation excavation operations to keep unauthorized personnel outside of those locations. SES stated that "Exclusion Zones" will not

be set up unless the air monitoring program warrants these zones.

- SES provided KeySpan with an informal "order of magnitude" estimate to upgrade to Exclusion Zones at the site if it becomes necessary.

III. Work Progress

A. Sevenson (SES) has performed the following work between January 15, 2004 – January 21, 2004:

- Installed 88 pairs of 30' sheets in the upland area along the north side of the site. A total of 46 pairs of 25' sheets and 142 pairs of 30' sheets have been installed to date. Total linear feet installed to date is approximately 826.
- Pulled slide plates from sheet piles SP-96 thru SP-178.
- Performed excavation operations ahead of sheet piling installation to remove subsurface construction debris along the sheet pile wall line.
- Offloaded 18 loads of sheet piling delivered to the site.

IV. Submittals

A. SES continues to await the approval letter (or e-mail) from KeySpan for submittals #1-#8.

- KeySpan stated that an e-mail had been sent to SES earlier that day approving submittals #1-#8.

V. Schedule

A. SES did not prepare a new schedule. A new schedule will be prepared for the next meeting based on SES' increased production over the last week.

- SES stated that based on its original schedule 1,500 linear feet of sheet piling should have been installed to date, compared to the 826 linear feet actually installed.

VI. Old/New Business

A. SES:

- SES requested an update regarding the approval of the compatibility/permeability test program.

- KeySpan and NYSDEC stated that the %swell information provided earlier in the week was acceptable. SES provided a handout showing a graph of %swell vs. time as had been requested by NYSDEC earlier in the week. KeySpan informed SES that the permeability testing could be stopped. SES stated that GGE will generate a final report for submittal to KeySpan.

– SES requested an update regarding KeySpan's review of pricing submitted by SES on January 6, 2004 for using an air hammer to drive the sheet piling along the MTA tracks. Also, has KeySpan obtained the monitoring requirements for this work. SES inquired if KeySpan had submitted the proposed air hammer data to MTA yet.

- KeySpan is still reviewing the cost estimate submitted by SES and does not require any additional information from SES at this time. MTA has not given KeySpan any more detailed information regarding the monitoring procedures, however, they have approved the use of surveyed steel rods in lieu of a seismograph. KeySpan stated that they have submitted the air hammer data to MTA.

B. KeySpan:

– No new business.

C. NYSDEC:

– No new business.

VII. Review Old Action Items

A. Soil/Debris Pile on MTA Property: SES requested an update on the status of moving the existing soil/debris pile on MTA property at the north end of the site?

- KeySpan stated that they are currently arranging for payment to MTA to gain access to the area to move the pile. Other than that, KeySpan has no new information regarding the movement of the pile.

B. Tax Status: SES has received a Direct Pay Permit from KeySpan.

- SES stated that they have received an Addendum to the Contract that addresses the tax issue. Any further issues regarding the tax status of the project will be

handled with Christine Stockhausen.

C. KeySpan to provide SES with a copy of the RI/FS study for the site.

- KeySpan provided SES with a copy of the RI/FS at the meeting. SES make a copy and to return it to KeySpan by early next week.

D. KeySpan to provide any chemical data regarding the site to SES

- KeySpan stated that RIFS should provide all required information regarding chemical data.

E. SES to have GGE perform a percent (%) swell test on bentonite.

- SES provided KeySpan & NYSDEC results of swell test on Wednesday, Janaury 21, 2004. KeySpan & NYSDEC accept the results of the swell testing and accept the use of bentonite as the interlock sealant for the Coney Island Creek side portion of the site.

F. SES to provide a list of all personnel on-site to KeySpan.

- SES provided KeySpan with a list of all on-site personnel.

VIII. New Action Items

A. KeySpan to provide NYSDEC with a copy of the Army Corps of Engineers permit.

B. SES will provide new schedule for next weeks meeting.

C. SES will return RIFS to KeySpan on Monday, January 26, 2004.

IX. Other Business

A. None.

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #6
January 29, 2003

Meeting Minutes

Attendance:

Name	Company	Phone No.
Tracey Bell	KeySpan	718-403-3053
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	718-996-9777
Michael Mahar	SES	716-284-0431
Mike Crystal	SES	716-284-0431
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Bruce McClellan	PS&S/KBS	732-560-9700
Russ Harris	SES	716-570-2312
Dan Dragonette	SES	716-609-0571
Lech Dolata	NYSDEC	518-402-9669

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- No comments on last week's progress meeting minutes (Weekly Progress Meeting #5 is approved)
- NYSDEC had a comment on the meeting minutes for Weekly Progress Meeting #4. NYSDEC requested that KeySpan personnel (not SES' Site Superintendent) be the point of contact for proper "Chain of Command" procedures for the NYSDEC.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 3325.5 man hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) and dust (particulates) have not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

- KeySpan asked if entrance into the "work safety zones" is being restricted to those individuals with 40 hour training and who are under medical surveillance? SES stated that this is true.

III. Work Progress

A. Sevenson (SES) has performed the following work between January 22, 2004 – January 28, 2004:

- Installed 24 pairs of 30' sheets in the upland area along the north side of the site. Installed 59 pairs of 40' sheets along the southeastern fence line. A total of 46 pairs of 25' sheets, 166 pairs of 30' sheets, and 59 pairs of 40' sheets have been installed to date. Total linear feet installed to date is approximately 1192.
- Pulled slide plates from sheet piles SP-179 thru SP-219.
- Performed excavation operations ahead of sheet piling installation to remove subsurface construction debris along the sheet pile wall line.
- Offloaded 10 loads of sheet piling delivered to the site.
- Installed 2000 linear feet of turbidity curtain in Coney Island creek
- Performed 3 test pits along the southern sheet pile wall alignment to determine extent of underground construction debris.
- Inspected interlocks on previously installed sheets SP-71 thru SP-219 for settlement of sealant. If needed, bentonite was added to the interlocks and hydrated.

IV. Submittals

A. SES received an approval e-mail from KeySpan on January 22, 2004 for submittals #1-#8. SES responded to KeySpan's comments made on submittal #9 this past week.

- KeySpan is reviewing SES' responses to comments on submittal #9 and will provide comments to SES regarding information submitted for Joe Burke in reference to him acting as the Site Safety Officer in Harold Ohnmeiss' absence.

V. Schedule

A. SES handed out a new schedule showing sheet piling installation being completed March 13, 2004.

- KeySpan asked what progress should have been made to date based on SES' original schedule? SES stated that 1,860 LF should have been installed to date based on the original schedule.

- KeySpan asked if SES will continue to work on Saturdays? SES stated that as of right now they will continue to work on Saturdays but that it is subject to change. KeySpan and NYSDEC will be notified by SES the Thursday of each week regarding the status of working the Saturday of that week.

- KeySpan stated that they will review the schedule for approval.

VI. Old/New Business

A. SES:

- SES requested an update regarding KeySpan's review of pricing submitted by SES on January 6, 2004 for using an air hammer to drive the sheet piling along the MTA tracks. Also, has KeySpan obtained the monitoring requirements for this work?

- KeySpan stated that they are still reviewing the cost estimate submitted by SES and do not require any additional information from SES at this time. KeySpan stated that they will set up an on-site meeting with an MTA inspector to discuss the monitoring requirements for this work as well as any additional special requirements.

- SES would like to realign the sheet pile wall between corner points B and C to avoid a concrete footer in the area not shown on the drawings. SES showed KeySpan and NYSDEC a sketch of the proposed realignment.

- Neither KeySpan nor NYSDEC were opposed to the realignment. SES will prepare a sketch of the proposed realignment and send it to KeySpan for review.

- SES would like to drive the 32.5' sheets down an extra 6" to avoid cutting off the tops of these sheets.

- KeySpan approved driving the 32.5' sheets an extra 6" as long as SES did not expect to be paid for the extra 6". SES stated that they did not expect to be paid

for the extra 6".

- SES inquired about proper procedures when an obstruction that cannot be removed is encountered during driving of the sheets? SES wanted to know if the wall alignment could be altered to avoid these obstructions and if so, how far?

➢ KeySpan stated that SES should notify on-site KeySpan personnel regarding any obstructions encountered that cannot be removed. KeySpan stated that the current 12" horizontal control tolerance may be modified up to 4 to 5 feet outward to avoid these obstructions if necessary.

B. KeySpan:

- KeySpan discussed the MTA drainage pipe located in the northeast corner of the site (approximate Sta. 12+75) that was discovered last week. KeySpan stated that they are not satisfied with the drawing of the drainage pipe provided by MTA. KeySpan has been taking pictures of the pipe and will provide a sketch of the pipe along with a proposed design for penetrating the sheet pile wall to NYSDEC for approval.

C. NYSDEC

- NYSDEC stated that they will provide comments to KeySpan on SES' Quality Control Document. NYSDEC stated that they do not have a problem with any of the work that is being performed at the site from a Quality Control standpoint. NYSDEC's comments will be in regards to KeySpan's Quality Assurance and will be directed at the next phase of the project more so than at what is being done on this project.

- NYSDEC stated that the fact that the material placed back into the pre-installation trench is not being compacted will have to be considered when designing the final cap for the site on the next phase of the project. KeySpan stated that they are aware of this.

VII. Review Old Action Items

A. Soil/Debris Pile on MTA Property: SES requested an update on the status of moving the existing soil/debris pile on MTA property at the north end of the site?

➢ KeySpan stated that this issue will be taken up with the MTA inspector when they visit the site for the meeting (to be scheduled by KeySpan).

B. KeySpan to provide NYSDEC with a copy of the U.S. Army Corps. of Engineers Authorization Permit.

- KeySpan provided NYSDEC with a copy of the permit.

C. SES will provide a new schedule for this meeting.

- SES provided KeySpan with a new schedule.

D. SES to return the RI/FS to KeySpan on Monday, January 26, 2004.

- SES returned the RI/FS to KeySpan.

VIII. New Action Items

A. SES will revise the minutes for Weekly Progress Meeting #4 to reflect NYSDEC's comment that KeySpan personnel be the point of contact in the "Chain of Command" for the NYSDEC.

B. KeySpan will set up an on-site meeting with an MTA inspector to discuss the monitoring requirements needed during sheet pile installation using the air hammer along MTA property and to discuss the soil/debris pile on the MTA property at the north end of the site.

C. KeySpan will provide MTA specification drawings to SES, NYSDEC and on-site KeySpan personnel.

D. SES will provide KeySpan with a sketch of the proposed realignment of the sheet pile wall between corner points B and C.

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #7
February 5, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	718-996-9777
Joseph Burke	SES	718-996-9777
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Frank Fracassi	SES	716-284-0431
Dan Dragonette	SES	716-609-0571
Stephen Sellinger	NYSDEC	917-579-0441

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- Comments for Weekly Progress Meeting #6 will be incorporated and the revised minutes will be reissued at the next progress meeting.
- SES to update and reissue Weekly Progress Meeting #4 minutes based on NYSDEC comments.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 4336 man hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) has not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

III. Work Progress

A. Sevenson (SES) has performed the following work between January 29, 2004 – February 4, 2004:

- Installed 136 pairs (approx. 598 lf) of 40' sheets along the southeastern fence line. A total of 46 pairs of 25' sheets and 166 pairs of 30' sheets and 195 pairs of 40' sheets have been installed to date. Total linear feet installed to date is approximately 1790.
- Pulled slide plates from sheet piles SP-220 thru SP-379.
- Performed excavation operations ahead of sheet piling installation to remove subsurface construction debris along the sheet pile wall line.
- Installed approximately 200 linear feet of silt fence.
- Performed weekly inspection of angle iron interlocks for sheets SP-71 thru SP-219 for sealant settlement. No settlement was observed in any of the sheets.
- Performed excavations along north sheet pile wall at every fifth sheet where existing grade is higher than design grade of sheet pile interlock for weekly sealant inspections.

IV. Submittals

A. SES responded to KeySpan's comments made on submittal #9 and is waiting for approval.

➢ Submittal #9 is still under review by KeySpan and a response should come soon.

V. Schedule

A. SES stated that work will continue on Saturdays. SES will also be working on Presidents Day, February 16, 2004.

VI. Old/New Business

A. SES:

- SES requested an update regarding KeySpan's review of pricing submitted by SES on January 6, 2004 for using an air hammer to drive the sheet piling along the MTA tracks.

- KeySpan sent an e-mail approving the cost estimate submitted by SES and does not require any additional information from SES at this time.

– SES discussed the monitoring requirements along MTA property.

- A meeting was held with an MTA inspector on Tuesday, February 3. SES and KeySpan personnel were present. The monitoring requirements were discussed and KeySpan will issue formal meeting minutes outlining the requirements. KeySpan requested that SES will be responsible for all of the monitoring, including surveying and seismographic monitoring. KeySpan Business Solutions (KBS) wants a cost proposal from SES to perform the surveying and seismographic monitoring work.

– SES inquired about the status of the MTA debris pile

- KeySpan stated that MTA has granted approval for the relocation of the debris in order to perform the sheeting operations along the north wall alignment. KeySpan wants to sample the debris pile prior to SES performing any debris relocation. SES will coordinate with KeySpan to perform the sampling.

– SES stated that the realignment of the sheet pile wall between corner points "B" and "C" is no longer necessary.

– SES inquired about the chain link fence installation. SES had concerns regarding the placement of the fence along the southeastern portion of the site (stations 12+25 to 20+50). Trenches were created behind the sheet pile wall (creek side) due to the pre-installation excavation operations. SES stated that it will be very difficult to install the fence at the top of the creek bank without backfilling the trench behind the sheeting. SES also mentioned that the trench may present a safety hazard.

- KeySpan will review several options for the fencing installation and will direct SES as how to proceed.

– SES would like to relocate the sheet pile wall alignment at corners "G" and "H" to avoid going through the existing bulkhead.

- KeySpan will review SES' request to relocate the alignment.

– SES would like to relocate the sheet pile wall to avoid a large concrete foundation in the vicinity of station 24+50

➢ KeySpan will review SES' request to relocate the alignment.

B. KeySpan:

- KeySpan will prepare a sketch of the MTA drainage pipe located in the northeast corner of the site (approximate Sta. 12+75) and forward to NYSDEC & SES.

- KeySpan stated that the sheeting operations are entering the MGP portion of the site and that SES should notify the workers of the increased risk of encountering contaminants. KeySpan also stated that safety precautions should be taken during driving of the sheets in the area of the bulkhead because of possible movement of the bulkhead.

- KeySpan inquired whether SES would be performing any more pre-installation excavation.

➢ SES stated that unless an obstruction is encountered, no more pre-installation excavation would be performed past approximate station 21+00.

- KeySpan inquired whether the previously installed sheets that were left high would be driven any further.

➢ SES stated that an attempt to drive the sheets further would be made with the air impact hammer.

C. NYSDEC

- NYSDEC inquired about the status of the pump system located near station 26+75.

➢ KeySpan that the system will be decommissioned before the sheet pile wall reaches this area. SES will coordinate with Miller Environmental for the removal of the Interim Remedial Measures (IRM) along the Coney Island Creek between corners "G" and "H". Miller Environmental will cut and remove IRM process piping back to the aboveground storage tank and well cluster in-board of the proposed sheet pile wall alignment.

- NYSDEC stated that contaminants will more likely be found in the MGP portion of the site and restated the importance of the soil erosion and sediment control activities in this area.

- NYSDEC was concerned about soil erosion after the top of the sheets are cut off and driven down to final grade. NYSDEC stated that leaving the top of the sheets higher than the existing ground may provide added erosion control protection. NYSDEC also mentioned that leaving the silt fence and turbidity curtain in place after construction is complete will provide added protection.

➢ KeySpan will review NYSDEC's concerns and direct SES as needed.

VII. Review Old Action Items

A. Soil/Debris Pile on MTA Property: SES requested an update on the status of moving the existing soil/debris pile on MTA property at the north end of the site?

➢ MTA has granted approval to move the debris pile. KeySpan wants to sample the debris before SES proceeds with moving the pile.

B. SES will revise the minutes for Weekly Progress Meeting #4 to reflect NYSDEC's comment that KeySpan personnel be the point of contact in the "Chain of Command".

➢ SES has revised the minutes.

VIII. New Action Items

A. SES will provide KeySpan with a cost proposal for the survey and seismographic monitoring for sheet pile operations along the MTA property.

B. KeySpan will review SES' request to realign the sheet pile wall at corners ""G" and "H" to avoid going through the bulkhead.

C. KeySpan will review SES' request to realign the sheet pile wall at the large concrete building foundation at approximate station 24+50.

D. KeySpan will review SES' concerns regarding the fence installation along the southeastern portion of the site.

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #8
February 12, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	718-996-9777
Joseph Burke	SES	718-996-9777
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Michael Mahar	SES	716-284-0431
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	917-579-0441
Russ Harris	SES	716-570-2312

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- SES stated that they needed to clarify the comment in the Meeting Minutes for Meeting #7 regarding performing the pre-installation excavation past approximate station 21+00. SES stated that based on the test pits that had been dug in that area they did not anticipate having to perform any pre-installation excavation in this area. However, past station 24+00 SES would need to resume the pre-installation excavation operations because it was unkown what might be encountered past that point.

- With the above clarification being said, the Minutes for Weekly Progress Meeting #7 were approved by all in attendance.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 5,214.5 man-hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) has not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

III. Work Progress

A. Sevenson (SES) has performed the following work between February 5, 2004 – February 11, 2004:

- Installed 6 pairs of 40' sheets and 64 pairs of 32.5' sheets (total of 308 ft). A total of 46 pairs of 25' sheets, 166 pairs of 30' sheets, 201 pairs of 40' sheets and 64 pairs of 32.5' sheets have been installed to date. Total linear feet installed to date is approximately 2,099.
- Pulled slide plates from sheet piles SP-380 thru SP-398 and SP-428 thru SP-475.
- Drove sheets SP-130 thru SP-271 to final grade.
- Constructed sheet pile preparation area on south side of site.
- Constructed temporary access road for the air hammer crane along the west fence line (MTA property).
- Performed electrical work at the 480 volt service line (disconnected and locked out) and hooked up generator for temporary office trailer power.
- Performed excavation operations ahead of sheet piling installation to remove subsurface construction debris along the west fence line and the northwest corner of the site.
- Installed approximately 300 lf of silt fence.
- Performed weekly inspection of angle iron interlocks for sheets SP-71 thru SP-219 for sealant settlement. No settlement was observed in any of the sheets.

IV. Submittals

A. SES responded to KeySpan's comments made on submittal #9 and is waiting for approval.

- Submittal #9 is still under review by KeySpan and a response should come soon.
- SES stated that they planned on providing the submittals for the piezometer and fence installation to KeySpan within the next week.

V. Schedule

A. SES stated that work would continue on Saturdays. SES will also be working on Presidents Day, February 16, 2004.

- KeySpan asked what the linear footage should have been at this point in the project based on the original schedule? SES stated that 2,580' should have been installed to date.

B. SES is scheduled to commence MTA property sheet pile driving activities the week of February 23, 2004.

VI. Old/New Business

A. SES:

- SES required clarification from KeySpan regarding the seismographic and survey monitoring requirements along MTA property.

- Ten survey monitoring points ("PK" nails) will be installed (8 along the tracks and 2 roughly 30 feet beyond the limits of the wall). The duration of the survey monitoring requires further clarification and KeySpan will contact the MTA inspector to determine the final requirements. The PK nail survey monitoring points are scheduled to be set on Tuesday, February 17, 2004 and a baseline (pre-conditions) survey is scheduled for Wednesday, February 18, 2004. The MTA requires that PK nail survey monitoring at a minimum be performed during the first two (2) days of sheet pile driving activities along the MTA property line. Further, following completion of sheet pile driving activities, post-condition survey of the PK nail survey points is scheduled for March 3, 2004 and March 4, 2004.

➢ Full time vibration monitoring will be performed on the bridge crossing Coney Island Creek during sheet pile installation operations within 75' of the bridge. The full time vibration monitoring will continue for two days after the sheet piling installation has progressed beyond the area of 75' MTA offset limit of the bridge. If no exceedances of the trigger level (0.5 in/sec^2) occur then the vibration monitoring may be discontinued, following approval from the MTA inspector. In addition to the monitoring to be performed during the sheet piling installation operations, pre-installation vibration monitoring will be performed on February 17th and 18th, 2004.

– SES stated that they are considering using Coastal Environmental to install the piezometers and inquired if KeySpan had a problem with this?

➢ KeySpan accepts Coastal Environmental as long as are licensed driller in the state of New York and they possess the proper experience. SES will forward a copy of Coastal Environmental's license as well as a statement of their experience to KeySpan for review.

– SES stated that they believe there is a high likelihood of encountering subsurface debris in Coney Island Creek during driving operations. SES inquired about the proper procedures when debris is encountered?

➢ KeySpan stated that they have an Army Corps Permit that allows them to install the sheet piling in the river. If that requires some excavation in the creek to install the sheet piling then it can be done as far as they are concerned. NYSDEC was concerned that removal of debris in the creek would be considered dredging, which is not covered by the Corps permit. SES stated that debris would most likely be encountered within the first 2'-4' and rather than removing the debris, it would be pushed out of the way of the sheet pile wall alignment. NYSDEC agreed that pushing the debris out of the way was acceptable.

– SES inquired about the need to cut the top of the sheets to design grade

➢ KeySpan stated that the sheets may be left as is and the tops will not have to be cut to design grade

– SES inquired about the need to cut windows in the sheets to allow surface water to drain off of the site.

➢ NYSDEC will determine which sheets will require windows within the next week.

- SES inquired about the possibility of running overhead electrical lines instead of mounting them on the fence to restore power to the temporary office trailer area?

➢ KeySpan requested that SES prepare a sketch of the proposed overhead electrical layout for KeySpan to review.

B. KeySpan:

- KeySpan handed out a sketch of the repair of the MTA drainage pipe located in the northeast corner of the site (approximate Sta. 12+75).

➢ SES had some concerns regarding the constructability of the detail. Also SES questioned the need for the boot on both sides of the sheet. KeySpan will contact the MTA and discuss possible revisions to the detail.

- KeySpan requested that any angle irons that have the wiper plates removed and are at grade (in the vicinity of stations 20+75 to 24+00) be topped off with bentonite as soon as possible. KeySpan was concerned that mud could enter the angle irons during a rainfall.

➢ SES will fill the angle irons with bentonite as soon as possible.

C. NYSDEC

- NYSDEC stated that there is an exposed pipe located near station 20+50 that has visible contaminants within the pipe. NYSDEC wants the pipe to be cut, capped, wrapped and properly disposed of.

➢ KeySpan stated that they would take care of the work at this pipe.

- NYSDEC was concerned about proper installation of the soil erosion/sediment control measures. Specifically, NYSDEC stated that the silt fence should be installed with the toe buried in the ground in all locations where possible. NYSDEC also stated that SES should review the installation details for the turbidity curtain in Coney Island Creek.

➢ SES stated that they had re-installed some of the silt fence along Coney Island Creek in the vicinity of the sheet piling installation operations where the toe had been removed from the ground. SES also stated that they would review the security of the turbidity curtain in the Creek and discuss it with KeySpan and the NYSDEC.

- NYSDEC was concerned about the suspected coal tar material that was discovered in the northwest corner of the site.

➢ SES stated that filter fabric and stone would be used to cover the affected area.

VII. Review Old Action Items

A. SES to provide KeySpan with a cost proposal for the survey and seismographic monitoring for the sheet pile installation operations along the MTA property.

➢ SES will provide a cost proposal to KeySpan by noon on Friday, February 13, 2004.

B. KeySpan will review SES' request to realign the sheet pile wall at corners "G" and "H" to avoid going through the bulkhead.

➢ KeySpan has approved the realignment and will issue a formal approval memo to SES.

C. KeySpan will review SES' request to realign the sheet pile wall at the large concrete building foundation at approximate station 24+50.

➢ KeySpan has reviewed the request and issued an approval for the realignment.

D. KeySpan will review SES' concerns regarding the fence installation along the southeastern portion of the site.

➢ KeySpan is still reviewing the different fence installation alternates.

VIII. New Action Items

A. SES will provide KeySpan with a cost proposal for the survey and seismographic monitoring of the sheet pile operations along the MTA property by noon on Friday, February 13, 2004.

B. SES will submit a copy of Coastal Environmental's drilling license to KeySpan.

C. KeySpan will put together a meeting with the MTA inspector to discuss revisions to the drainage pipe repair detail.

D. SES will submit a sketch of the proposed overhead electrical layout to KeySpan for review

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #9
February 19, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	718-996-9777
Joseph Burke	SES	718-996-9777
Harold Ohnmeiss	SES	716-440-2837
Janos M. Szeman	PS&S/KBS	732-560-9700
Michael Mahar	SES	716-284-0431
Lech Dolata	NYSDEC	518-402-9669
Dan Dragonette	SES	716-609-0571
Russ Harris	SES	716-570-2312

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- The Minutes for Weekly Progress Meeting #8 were approved by all in attendance.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 6,360 man-hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) have not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

III. Work Progress

A. Sevenson (SES) has performed the following work between February 12, 2004 – February 18, 2004:

- Installed 139 pairs of 32.5' sheets (total of 612 ft). A total of 46 pairs of 25' sheets, 166 pairs of 30' sheets, 201 pairs of 40' sheets and 203 pairs of 32.5' sheets have been installed to date. Total installed to date is approximately 2,711 linear feet.
- Pulled slide plates from sheet piles SP-476 thru SP-620.
- Removed portions of existing chain link fence for equipment access along sheet pile wall alignment.
- Performed excavation operations at the MTA debris pile to lower grade six inches below proposed top of sheeting elevation (approximately elevation of 10.5').
- Performed pre-installation excavation at the MTA debris pile to a depth of 15' (after lowering grade).
- Installed approximately 250 lf of silt fence.
- Performed baseline seismographic survey monitoring at MTA railroad bridge.
- Performed baseline survey monitoring at MTA railroad bridge and tracks.
- Performed survey monitoring at bulkhead wall.
- Set up 150 ton crane.
- Performed weekly inspection of angle iron interlocks for sheets SP-71 thru SP-219 for sealant settlement. No settlement was observed in any of the sheets.

➢ KeySpan asked if the bulkhead had been moving during sheet pile wall installation operations. SES stated that it had moved up to 6"-8" mainly in the area where the timber tiebacks have rotted out and are not providing support (at the east end of the bulkhead wall). KeySpan requested that SES go back monitor the bulkhead in this area to make sure it is not still moving.

IV.Submittals

A. SES has submitted submittals #10 and #11 regarding the fence and piezometer installation.

- KeySpan requested clarification on who SES had proposed to do the fence work. SES stated that they were proposing to use Bracci fence who had installed all the existing fence at the site. KeySpan had no problem with Bracci performing the work.

- SES stated that they would provide KeySpan with the piezometer materials submittal in the next few days.

V. Schedule

A. SES was unsure at the time of the meeting whether or not they would work on Saturday February 21, 2004. SES would notify KeySpan by Friday morning of their intentions for Saturday.

- KeySpan asked what the linear footage should have been installed at this point in the project based on the original schedule? SES stated that 2,940' should have been installed to date.

- KeySpan asked if SES is still on schedule (based on revised schedule handed out at Progress Meeting #6). SES responded yes. SES further clarified that they wanted to begin the fence work as early as next week and the piezometer work as early as March 1, 2004.

VI. Old/New Business

A. SES:

– SES wanted to confirm that issues regarding the locations of 2" x 2" windows in sheeting had been resolved.

- KeySpan and NYSDEC personnel marked the sheets with paint that they wanted to have the windows cut into.

– SES inquired whether KeySpan would like to backfill the areas (in front and back of sheets) along the 40' sheets where pre-installation excavation had created a valley.

- KeySpan stated that they want to backfill this area. SES will provide KeySpan with a cost and quantity estimate for this work.

- SES provided KeySpan with a new detail for the MTA pipe replacement.

➢ Earlier in the week, KeySpan personnel discussed the use of boots only on the inside of the wall with the MTA inspector. The MTA inspector agreed that this would be OK. SES intends to replace the entire length (approx. 75') of pipe with HDPE pipe so that a watertight seal is created. SES will provide KeySpan with a cost estimate for this work.

- SES discussed the chain link fence issues.

➢ SES is proposing to attach the chain link fence to the 40' sheets along the southeastern portion of the site. SES will provide an attachment detail and cost estimate to KeySpan for this work. SES will also provide a cost estimate for replacement of the fence knocked down by an outside contractor along the north side of the site.

- SES pointed out that in their opinion the tidal influence may cause stability problems with the sheets installed along the bulkhead in Coney Island Creek. SES suggested that weep holes be put in some sheets to relieve some of the pressure.

➢ NYSDEC would not allow holes to be put in the sheets because of concerns that groundwater would escape the site. KeySpan asked SES for any additional ideas and SES suggested the use of a tie back system. KeySpan would review the possible alternates and direct SES on how to proceed.

B. KeySpan:

- KeySpan stated that the estimated cost provided by SES for the MTA monitoring work looked in line with what they expected. However, KeySpan was concerned with the cost (submitted by SES) associated with the excavation activities at the MTA debris pile and asked for additional backup information.

➢ SES provided KeySpan with copies of the Extra Work Reports for the work.

C. NYSDEC

- NYSDEC inquired about exposed pipe located near station 20+50 that has visible contaminants within the pipe.

➢ SES will remove the pipe, wrap it in poly, and leave it on site. KeySpan authorized SES to do this.

VII. Review Old Action Items

A. SES to provide KeySpan with a cost proposal for the survey and seismographic monitoring for the sheet pile installation operations along the MTA property.

- KeySpan approved SES' cost proposal for the seismographic monitoring.

B. KeySpan reviewed and approved SES' request to realign the sheet pile wall at corners "G" and "H" to avoid going through the bulkhead.

C. KeySpan reviewed and approved SES' request to realign the sheet pile wall at the large concrete building foundation at approximate station 24+50.

VIII. New Action Items

A. SES will provide KeySpan with a quantity estimate and cost proposal for backfilling the area along the 40' sheets.

B. SES will provide KeySpan with a cost proposal for the new MTA pipe repair detail.

C. SES will provide KeySpan with an attachment detail and cost proposal for the chain link fence installation along the 40' sheets.

D. KeySpan will review SES' concerns with the sheet piling stability installed in Coney Island Creek.

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #10
February 26, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jack Rodak	KeySpan	917-567-0241
Jason Farina	SES/GGE	718-996-9777
Joseph Burke	SES	718-996-9777
Frank Fracassi	SES	716-284-0431
Harold Ohnmeiss	SES	716-440-2837
Tracey Bell	KeySpan	718-403-3053
Norman McClymont	MTA	646-235-8006
Andrew Prophete	KeySpan	718-403-1048
Michael Mahar	SES	716-284-0431
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	917-579-0441
Jim Damon	SES	716-284-0431
Russ Harris	SES	716-570-2312

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- NYSDEC stated that they needed to clarify the Meeting Minutes for Meeting #9 regarding the stability issue for the sheets installed along the bulkhead in Coney Island Creek. NYSDEC would like KBS to review this issue as soon as possible to get resolution to it before SES demobilizes. KeySpan stated that an answer would be provided at next week's meeting regarding this issue.

- With the above clarification being said, all in attendance approved the Minutes for Weekly Progress Meeting #10.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 7,322.5 man-hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) have not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

C. SES continues daily toolbox meetings with workers.

III. Work Progress

A. Sevenson (SES) has performed the following work between February 19, 2004 – February 25, 2004:

- Installed 15 pairs of 30' sheets & 45 pairs of 32.5' sheets (total of 264 ft). A total of 46 pairs of 25' sheets, 181 pairs of 30' sheets, 201 pairs of 40' sheets and 248 pairs of 32.5' sheets have been installed to date. Total linear feet installed to date is approximately 2,975.
- Pulled slide plates from sheet piles SP-620 thru SP-655.
- Removed existing chain link fence in southwest corner of site for equipment access to sheet pile wall alignment.
- Performed excavation operations in the vicinity of sheet SP-478 to SP-483 to locate and remove obstructions.
- Extended turbidity curtain to the southwest corner of the site.
- Performed seismographic monitoring at MTA rail line.
- Performed survey monitoring at MTA railroad bridge and tracks.
- Performed survey monitoring at bulkhead wall.
- Completed set up and mobilization of 50 ton crane and air impact hammer.
- Performed weekly inspection of angle iron interlocks for sheets SP-52 thru SP-279 and SP-326 thru 374 for sealant settlement. No settlement was observed in any of the sheets.

- KeySpan asked if the existing timber bulkhead had any additional movement during and after the sheet pile wall installation operations. SES stated that it was moving slightly in areas where sheet piling was being installed but in areas where the sheeting had already been installed they did not believe it was still moving, but would continue to monitor it.

- KeySpan asked if any obstructions were found in the vicinity of sheet SP-483 where SES had been performing excavation operations. SES stated that some timber piles and tiebacks were located and removed.

IV.Submittals

A. SES has submitted submittals #10, #12 & #13 regarding the fence and piezometer installation.

- KeySpan stated that Submittal #10 was satisfactory and Bracci Fence is approved to install the chain link fence.

- Additional information (material specifications and drilling license for WGI) for Submittals #12 & #13 will be provided by SES to KeySpan.

V. Schedule

A. SES stated that they will not be working on Saturday, February 28.

- KeySpan asked if SES is still on schedule (based on revised schedule handed out at Progress Meeting #6). SES responded yes. SES stated that fence and piezometer work would begin next week.

- KeySpan stated that some of the existing monitoring wells were damaged during construction activities and in need of repair. KeySpan will give SES a list of the damaged wells to be repaired. The wells are to be repaired by SES' piezometer subcontractor.

- KeySpan inquired if driving sheets with the air impact hammer was slower than anticipated. SES stated that it is slow because the air impact hammer is consolidating the soil as the sheet is being advanced into the ground making the driving a very slow process. SES stated that the AZ 13 sheet pile is not a "heavy" enough sheet to handle the required impact to drive it the required depth into the ground. SES hoped that the installation process would have better results as the installation operations progressed away from the bulkhead.

The MTA representative at the meeting stated in his opinion SES could begin using the vibratory hammer (after sheet SP-685) to install sheets along the MTA property. He further stated that his opinion would need to be confirmed by discussions on Friday with his superiors at the MTA. SES indicated that it would continue to perform seismographic monitoring during the installation with vibratory hammer. As long as the trigger limit of 0.5 in/sec is not reached, the MTA representative was of the opinion that SES might be able to continue use of the vibratory hammer.

VI. Old/New Business

A. SES:

- SES inquired if KeySpan had reviewed the estimate for the backfill along the 40' sheets.

➢ KeySpan will review the estimate and direct SES as necessary.

B. KeySpan:

- KeySpan stated some of the existing site monitoring wells require repair.

➢ KeySpan will provide SES with a list of wells in need of repair. SES' piezometer subcontractor will repair the wells.

C. NYSDEC

- NYSDEC inquired whether or not the exposed pipe with contaminants located near station 20+50 had been removed and wrapped.

➢ SES stated that it had not been removed as of yet. NYSDEC requested that it stay on the agenda into it is removed and wrapped.

- NYSDEC discussed the vegetative restoration of the site and suggested that a pro-active attack for fugitive dust be taken. NYSDEC suggested that the areas disturbed by construction activities should be seeded and mulched to encourage growth and to control dust.

➢ KeySpan and SES will review the project specifications regarding site restoration.

VII. Review Old Action Items

A. SES to provide KeySpan with a cost proposal and quantity estimate for

backfilling along the 40' sheets.

- KeySpan is currently reviewing the estimate.

B. SES to provide KeySpan with a cost proposal for the new MTA pipe repair detail.

- KeySpan reviewed and approved SES' MTA pipe repair estimate with the condition that the pipe not be replaced on the interior side of the sheeting.

C. SES to provide KeySpan with a cost proposal for the chain link fence attachment detail to the 40' sheets.

- SES will provide cost proposal to KeySpan by Friday, February 27.

D. KeySpan to review the concerns regarding the stability of the sheets installed along the bulkhead in Coney Island Creek.

- KeySpan will review concerns and provide direction by the next Weekly Progress Meeting.

VIII. New Action Items

A. KeySpan and SES will review the site restoration requirements.

B. SES will provide KeySpan with the drilling license for SES' piezometer subcontractor, WGI.

C. KeySpan will provide SES with a list of damaged monitoring wells. SES' piezometer subcontractor will make the necessary repairs.

D. KeySpan will review the issue with the sheet piling stability in Coney Island Creek.

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #11
March 4, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	PS&S/KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jason Farina	SES/GGE	718-996-9777
Joseph Burke	SES	718-996-9777
Harold Ohnmeiss	SES	716-690-2902
Michael Mahar	SES	716-284-0431
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	518-402-9669
Russ Harris	SES	716-570-2312

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- The Minutes for Progress Meeting #10 will be considered draft until comments are received next week.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 8,429 man-hours worked to date with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) has not exceeded any action levels at the perimeter of the excavation or the breathing zone of the workers.

C. SES continues daily toolbox meetings with workers.

III. Work Progress

A. Sevenson (SES) has performed the following work between February 26, 2004 – March 3, 2004:

- Installed 18 pairs of 30' sheets & 43 pairs of 25 sheets (total of 269 ft). A total of 93 pairs of 25' sheets, 199 pairs of 30' sheets, 244 pairs of 32.5' and 201 pairs of 40' sheets have been installed to date. The total linear footage installed to date is approximately 3,243.
- Pulled slide plates from sheet piles SP-694 thru SP-715.
- Removed wiper plates and topped off angle iron interlocks of previously installed sheets.
- Drove sheets SP-2 thru SP-46 and SP-54 thru SP-82 to final grade or refusal.
- Performed seismographic monitoring at the MTA railroad bridge.
- Performed survey monitoring at MTA railroad tracks.
- Performed weekly inspection of angle iron interlocks for sheets SP-52 thru SP-279 and SP-326 thru SP-374 for sealant settlement. No settlement was observed in any of the sheets.

IV.Submittals

A. Discussion of Submittals #10 & #12

- KeySpan stated that Submittal #10 was satisfactory and Bracci Fence is approved to install the chain link fence.
- Submittal #12: KeySpan requested that SES provide proof of cleanliness for the sand used in the piezometer installations. Also, KeySpan stated that SES' piezometer subcontractor (WGI) is to follow the specification and install 8" caps rather than the 4" suggested by WGI.

V. Schedule

A. SES stated that they will not be working on Saturday, March 6, 2004.

- KeySpan asked if SES is still on schedule (based on the revised schedule handed out at Progress Meeting #6)? SES responded that with any luck they could meet that schedule for sheet pile wall installation, but if not then the wall installation work

should definitely be completed within a week of that schedule. SES stated that this did not include the sheet piling work at corner "M" where the sheet piling cannot currently be driven to grade with the air impact hammer without the sheet piles bending. SES stated that they don't know if and when these sheets would be able to be driven to grade given the restriction of using the air impact hammer exclusively in this area. KeySpan and SES will revisit the situation at corner "M" in the future.

VI. Old/New Business

A. SES:

- SES gave KeySpan the bulkhead monitoring survey data.

➢ The data shows that the bulkhead moved during sheet pile installation operations and continued to move at one location after sheet piling installation operations moved from the face of the bulkhead. SES stated that they will forward the data to KeySpan for review.

- SES informed KeySpan that the first wing wall sheet at corner "M" was locked up and couldn't be removed. SES informed KeySpan that the sheet is not to grade and it cannot be driven to grade with the air impact hammer. SES asked if the wing wall sheeting was really necessary? KeySpan stated that it was required by NYSDEC. SES asked for direction on how to proceed?

➢ KeySpan directed SES to proceed with the next wing wall sheet and attempt to install it with the air impact hammer. SES stated that they would do that but stressed to KeySpan that once SES attempts to install the next sheet it cannot be removed because the vibratory hammer cannot be used to remove sheets. KeySpan stated that they are aware of this but wanted SES to proceed to see what happens.

B. KeySpan:

- KeySpan stated that piezometer 8A should have been on the Contract Drawings issued for Construction and should be installed (for some reason it was removed from the Drawings). Also, piezometer 9A should be installed on the inside of the sheet pile cut off wall (instead of outside as shown on the Contract Drawings). KeySpan field representatives will show SES where to locate piezometers 8A and 9A in the field.

- KeySpan asked SES what their plans were for driving sheet piles to grade that are high at the east end of the site along Coney Island Creek (SP-302, SP-303, and SP-305 @ stations 15+69 to 15+82)?

➢ SES stated that they will attempt to drive those sheets to grade with the Movax 100 unit. If that doesn't work, SES stated that they are considering bringing in a bigger vibratory hammer to drive those sheets to grade. SES stated that they are not considering using the air impact hammer for this work because of its poor performance on the west side of the site.

➢ SES stated that not all the sheet piling at the site would be able to be driven to grade (i.e., the required tip elevation) due to encountering refusal conditions prior to reaching grade. KeySpan stated that they realized that some of the sheet piling may not be able to be driven to grade. SES stated they would be compiling a list of the sheet piling that has hit refusal prior to being driven to grade for review by KeySpan.

C. NYSDEC

- NYSDEC inquired whether or not the exposed pipe with contaminants located near station 20+50 had been removed and wrapped.

➢ SES stated that it had not been removed as of yet, but that they would do it before the completion of the project. NYSDEC requested that it stay on the agenda until it is removed and wrapped.

VII. Review Old Action Items

A. Review site restoration requirements.

➢ KeySpan stated that the Contract Specifications do not address site restoration but that SES' Construction Plan called for seeding of areas disturbed by construction activities. SES stated that they were prepared to broadcast a rye seed mix to germinate quickly but that no mulching would be done. NYSDEC stated that site restoration includes the establishment of the seed.

B. SES will provide KeySpan with the drilling license for SES' piezometer subcontractor, WGI.

- SES provided KeySpan with the drilling license.

C. KeySpan will provide SES with a list of damaged monitoring wells. SES' piezometer subcontractor will make the necessary repairs.

- KeySpan has not provided the list to SES yet but will do so in the near future.

D. KeySpan to review the concerns regarding the stability of the sheets installed along the bulkhead in Coney Island Creek.

- KeySpan stated that another analysis was performed on the stability of the sheet pile wall in Coney Island Creek and there are no concerns regarding the stability of the sheets. NYSDEC stated that this issue still needs to be considered in construction of the next phase.

VIII. New Action Items

A. SES subcontractor (WGI) will perform two (2) soil borings and take samples in the vicinity of the southwest corner of the sheet pile cut off wall (corner "M"). KeySpan will inform SES of the locations where the samples should be taken. The soil samples will be analyzed by GGE to determine soil characteristics in this area.

B. KeySpan will provide SES with a list of damaged monitoring wells. SES' piezometer subcontractor (WGI) will make the necessary repairs.

C. KeySpan will locate piezometers 8A and 9A in the field for SES.

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #12
March 11, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
John Bolan	PS&S/KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Jason Farina	SES/GGE	718-996-9777
Joseph Burke	SES	718-996-9777
Harold Ohnmeiss	SES	716-690-2902
Michael Mahar	SES	716-284-0431
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	518-402-9669
Russ Harris	SES	716-570-2312
Norman McClymont	MTA	
Frank Fracassi	SES	716-284-0431

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- The Minutes for Progress Meeting #11 will be considered draft until comments are received by early next week.
- The Minutes for Progress Meeting #10 were approved by all in attendance.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 9,462.5 man-hours worked with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) has not exceeded any action levels at the perimeter of the jobsite or the breathing zone of the workers.

C. SES continues daily toolbox meetings with workers.

III. Work Progress

A. Sevenson (SES) has performed the following work between March 4, 2004 – March 10, 2004:

- Installed 11 pairs of 30' sheets & 71 pairs of 25' sheets (total of 361 ft). A total of 164 pairs of 25' sheets, 210 pairs of 30' sheets, 244 pairs of 32.5' and 201 pairs of 40' sheets have been installed to date. The total linear footage installed to date is approximately 3,604.
- Pulled slide plates from sheet piles at various locations.
- Removed wiper plates and topped off angle iron interlocks of previously installed sheets.
- Drove various sheets that were left high to final grade or refusal.
- SES subcontractor began fencing work along northern and southern portion of site.
- Began backfilling along sheets at the eastern portion of site (along 40' sheets @ Coney Island Creek).
- SES subcontractor performed 2 soil borings and began piezometer installations.
- Backfilled behind sheets at MTA debris pile in order to install fence.
- Performed weekly inspection of angle iron interlocks. No settlement was observed in any of the sheets.

IV.Submittals

A. Discussion of Submittals #12 & #13

- Submittal #12: KeySpan asked if SES had provided a cleanliness certification for the morie sand being used in the piezometer installation? SES stated it was a manufactured material delivered to the site in 50 pound bags and SES did not believe that a cleanliness certification was required for this material by the specifications. KeySpan stated that they believed it was a requirement of the specifications and asked SES to provide something. SES stated that they would attempt to get something from the manufacturer and also check the requirement in the specifications.

- Submittal #13: KeySpan stated that the drilling license for WGI was satisfactory. KBS stated that an e-mail would be sent to SES approving the license.

V. Schedule

A. SES stated that they will not be working on Saturday, March 13, 2004.

- KeySpan asked if SES is still on schedule (based on the revised schedule handed out at Progress Meeting #6)? SES responded that fencing work, electrical work, site grading, piezometer installations and driving sheets to final grade will continue next week. Demobilization and piezometer installations will take place the week after next. The status of the sheet piling not yet to grade at corner M still needs to be discussed between SES and KeySpan, and the timing of the completion of that work is yet to be determined. A punch list inspection between representatives of KeySpan and SES will also be scheduled for sometime next week.

- KeySpan inquired about when the final as-built drawings and photographs for the project would be submitted? SES will provide a schedule for the submission of these items to KeySpan by the next meeting.

VI. Old/New Business

A. SES:

- SES inquired about whether KeySpan wanted to sheet piling driven below existing grade at the existing western site access gate located at the northern portion of the site?

  - KeySpan stated that it is a security issue that needs to be discussed internally before rendering a final decision on the matter.

- SES inquired about the status of the previously installed erosion control measures at the end of the job.

- ➢ KeySpan and NYSDEC responded they want the erosion control measures, including the turbidity curtain in Coney Island Creek, to remain in place after the job is complete.

- SES asked for clarification regarding the approval process for sheet piling that cannot be driven to the design toe grade? SES stated that they had already received verbal approval from KeySpan field representatives to leave approximately 10 pairs of sheet piling (one foot or less above the design toe elevation) that could not be driven to grade after multiple attempts to do so.

- ➢ KeySpan directed SES to compile a list of sheet piling not yet to design toe grade for review by KeySpan and NYSDEC. KeySpan also requested that SES provide a schedule and plan for attempting to drive those sheet piles to the design toe elevation.

B. KeySpan:

- KeySpan stated that they will reevaluate the need for and/or the location of the 2" x 2" holes to be cut in the sheet piling along Coney Island Creek with NYSDEC.

- KeySpan confirmed that the MTA drainage pipe that crosses the eastern portion of the site will not be repaired.

C. NYSDEC

- NYSDEC inquired whether or not the exposed pipe with contaminants located near station 20+50 had been removed and wrapped?

- ➢ SES stated that they had removed and wrapped the pipe in poly and left it on the concrete pad near the access roadway.

- NYSDEC expressed concerned about sealant escaping the angle irons when removing the slide plates from SP-726, SP-731, SP-733, SP-735, SP-736, and SP-739 along the MTA property

- ➢ SES stated that they will rod the bentonite in the angles of those sheet pile pairs to remove any voids from the sealant and top off the angle irons with additional sealant material as necessary.

- NYSDEC was concerned about the methodology being used to install the piezometers. They were concerned about the quality of the filter pack installation around the screens. They suggested the drillers use a protective casing to insure that the filter material is not mixed with the native soil. KeySpan also noted that

any piezometers not completed in accordance with the project specifications would not be accepted for payment.

- SES will discuss the installation procedures with the drillers and rectify the situation.

VII. Review Old Action Items

A. WGI to do two soil borings at Corner 'M' and take samples from each.

- SES stated that the borings were completed and the samples were sent to GGE for testing.

B. KeySpan will provide SES with a list of damaged monitoring wells. SES' piezometer subcontractor will make the necessary repairs.

- KeySpan has provided SES with a list of the three wells that were damaged.

C. KeySpan to locate additional piezometer #8A and relocated piezometer #9A in the field.

- KeySpan has not yet located these two piezometers but will do so prior to them being installed.

VIII. New Action Items

A. SES will discuss the proper piezometer installation procedures with WGI and rectify any problems.

B. SES will provide KeySpan with a list of the sheets not at grade and a brief description of the proposed method and schedule for attempting to drive them to the design toe grade. This list will also be reviewed with NYSDEC.

C. SES will provide KeySpan, by the next meeting, a schedule for the submission of the required as-built drawings and photographs to KeySpan.

D. KeySpan will get back to SES as to when a punch list meeting will take place.

E. KeySpan will make a final determination as to whether or not access is required at the western entrance gate on the north side of the site.

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #13
March 18, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
Tracy Bell	KeySpan	718-403-3053
John Bolan	PS&S/KBS	732-560-9700
Rob Swabsin	PS&S/KBS	732-221-3175
Andrew Prophete	KeySpan	516-790-1654
Joseph Burke	SES	718-996-9777
Harold Ohnmeiss	SES	716-690-2902
Michael Mahar	SES	716-284-0431
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	518-402-9669
Russ Harris	SES	716-570-2312
Janos Szeman	PS&S/KeySpan	732-221-3175
Frank Fracassi	SES	716-284-0431

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- The Minutes for Progress Meeting #12 will be considered draft until comments are received by early next week.
- The Minutes for Progress Meeting #11 were approved by all in attendance.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 10,435 man-hours worked with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) has not exceeded any action levels at the perimeter of the jobsite or in the breathing zone of the workers.

C. SES continues daily toolbox meetings with workers.

D. On March 17, 2004, a safety audit was performed by Paul Hitcho of SES with some minor safety issues being raised.

III. Work Progress

A. Sevenson (SES) has performed the following work between March 11, 2004 – March 17, 2004:

- Installed 3 pairs of 35' sheets (instead of the 40' sheets as approved by KBS). Installed 6 pairs of 40' sheets. All of these sheets were installed in the area of Sta. 20+50 and 21+00 (SP-419 thru SP-426a) that tied into the 32.5' sheets. Installed 13 pairs of 25' sheets (total 97 ft.). There is now a total of 177 pairs of 25' sheets; 210 pairs of 30' sheets; 244 pairs of 32.5' sheets; 207 pairs of 40' sheets; and 3 pairs of 35' sheets. The total linear footage to date is 3,700. This completes the sheet pile wall perimeter installation.
- Cut 2 sheets to grade near western access gate
- Pulled slide plates from various locations
- Removed wiper plates and topped off angle iron interlocks of previously installed sheets
- SES surveyor continued shooting elevations of installed sheet piles
- Drove various sheets that were left high to final grade or refusal
- SES fence subcontractor installed the perimeter fence between Sta. 2+80 to 4+50 (MTA debris pile)
- Welded on additional steel to sheet M-21 to prevent slope erosion
- SES drilling subcontractor installed piezometers 4A, 4B, 5A, 5B, 6A, and is installing 7A right now. (No concrete collars have been installed yet and they have not been developed)

- Welded pipe sleeves on 40' sheets between Sta. 12+50 to 21+75. This activity has been completed.

- SES electrical subcontractor (ADCO) restored 480V 3 Phase power to trailers.

- Performed weekly inspection of angle iron interlocks. No settlement was observed in any of the sheets.

IV.Submittals

A. Discussion of Submittals #12 & #13

- Submittal #12: KeySpan stated that piezometers material submitted was satisfactory and an e-mail would be sent to SES for confirmation

- Submittal #13: KeySpan stated that the drilling license for WGI was satisfactory. KBS stated that an e-mail would be sent to SES approving the license.

V. Schedule

A. SES stated that they would not be working on Saturday, March 20, 2004.

B. KeySpan inquired as to how long it would take the drillers to complete installation of the piezometers

- Stated that the drillers should be finished by March 31st, assuming there are no delays

VI. Old/New Business

A. SES

- SES has forwarded the permeability test results for the two samples taken at corner M to KeySpan for their review.

- KeySpan stated that they had received the results.

- SES stated that they would like to use Joe Burke as the Resident Engineer for the site after sheet pile wall installation has been completed. SES stated that they would forward a letter from GGE to KeySpan regarding the matter.

- KeySpan stated that they would review the letter upon receipt and get back to SES.

B. KeySpan

- KeySpan asked as to when SES would be completing the bulkhead survey?

➢ SES stated that the survey will be ongoing today and continue into next week

C. NYSDEC

- NYSDEC requested that all sheets left high be identified on as-built drawings

➢ SES stated that they would provide this information in a table on the as-builts.

VII. Review Old Action Items

A. SES to discuss the installation of piezometers with WGI

➢ SES stated that they had reviewed the installation procedures with WGI and that there were no more issues with how the piezometers were being installed.

➢ KeySpan and NYSDEC concurred.

B. SES to provide KBS with Morie Sand certification and supplier information

➢ SES provided this information during the meeting

C. SES to provide KeySpan with a list of the sheets not at grade, along with the methodology and schedule for attempting to drive them further.

➢ SES provided the list of sheets to KeySpan along with the methodology and schedule for attempting to drive them further.

D. SES to provide KeySpan with a date for submittal of as-built drawings and photographs.

➢ SES will provide submittal and photos within 2 weeks of the last sheet pile installed.

E. KeySpan will schedule a punch list meeting.

- KeySpan supplied SES with a pinch list yesterday (3/17)

F. KeySpan to determine if sheet piling should be driven down @ western entrance gate on the north side of the site to allow access to the site there.

- KeySpan instructed SES to drive sheets to grade. SES drove sheets to grade or refusal and any sheets left high were cut down to allow access to the site.

VIII. New Action Items

A. KeySpan/KBS to provide an updated Punch List

B. SES will provide KeySpan with seeding information

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

Former Brooklyn Borough Gas Works Site

Weekly Progress Meeting #14
March 25, 2004

Meeting Minutes

Attendance:

Name	Company	Phone No.
Rob Swabsin	PS&S/KBS	732-221-3175
Jason Farina	SES/GGE	718-996-9777
Joseph Burke	SES	718-996-9777
Harold Ohnmeiss	SES	716-690-2902
Dan Dragonette	SES	716-609-0571
Lech Dolata	NYSDEC	518-402-9669
Stephen Sellinger	NYSDEC	518-402-9669
Andrew Prophete	KeySpan	718-403-1048
Frank Fracassi	SES	716-284-0431

I. Review/Approve Previous Minutes

A. Comments on the previous weekly progress meeting minutes.

- The Minutes for Progress Meeting #12 were approved by all in attendance.
- The Minutes for Progress Meeting #13 will be distributed for comments on Friday, March 26, 2004.

II. Health & Safety Report

A. SES Safety Officer reported that to date: 11,353 man-hours worked with no accidents, incidents or lost time.

B. Air Monitoring: Volatile organic compounds (VOCs) have not been reported above background levels and dust (particulates) has not exceeded any action levels at the perimeter of the jobsite, or the breathing zone of the workers.

C. SES continues daily toolbox meetings with workers.

D. SES is providing exit physicals for workers as they are laid off.

III. Work Progress

A. Sevenson (SES) has performed the following work between March 18, 2004 – March 24, 2004:

- Installed 3 pairs of 32.5' sheets & 1 pair of 30' sheets (total of 17.6' ft) at the wingwall. A total of 177 pairs of 25' sheets, 211 pairs of 30' sheets, 247 pairs of 32.5', 3 pairs of 35' sheets & 207 pairs of 40' sheets have been installed to date. The total linear footage installed to date is approximately 3,718. This completes the sheet pile wall installation.
- Pulled slide plates from sheet piles at various locations. All slide plates have been removed from the sheets.
- Removed wiper plates and topped off angle iron interlocks of previously installed sheets.
- Drove various sheets that were left high to final grade or refusal.
- SES subcontractor (Bracci Fencing) began fencing work along southeastern portion of the site. Fence is being installed in pipe sleeves welded to the sheets.
- SES surveyor completed MTA track monitoring, bulkhead monitoring and surveying of line and grade of sheet pile wall.
- SES drilling subcontractor (WGI) installed piezometers 7A, 8A, 9A, 10A and 1B.
- SES electrical subcontractor (ADCO) restored power to front gate.
- SES seismograph subcontractor (Vibra Tech) performed monitoring of MTA bridge during sheeting installation.
- Performed general cleaning and grading of site.
- Repaired bentonite seal in sheets #726, 734, 735 and 739.

- Performed weekly inspection of angle iron interlocks. No settlement was observed in any of the sheets.

IV.Submittals

A. As-built plan submission:

➢ SES stated that the as-built plans for the sheet pile wall will be completed by April 2, 2004. The piezometers will be surveyed at a later date (piezometer installation is not complete) and will be added to the as-builts.

B. KeySpan requested that SES provide the final seismographic monitoring data when it becomes available.

➢ SES will provide the data to KeySpan.

C. KeySpan requested that a hard copy of the CAMP monitoring data collected throughout the job be submitted. A summary stating that no action levels were reached should be included.

➢ SES will provide the data to KeySpan.

V. Schedule

A. SES stated that all work should be completed by the end of next week.

➢ Final grading, site cleanup, piezometer installation and demobilization is ongoing. The piezometer installation and development will be completed next week. Hydroseeding will begin next Tuesday and should only require two days of work. Final demobilization will be complete next Friday.

VI. Old/New Business

A. SES:

- SES discussed the Punch List items:

➢ All items on the list were completed except for rough grading (ongoing), covering the stockpiled soil with liner, repair of the damaged monitoring wells and locking up the electrical service building.

B. KeySpan:

- KeySpan requested that the holes dug every fifth sheet along the northern portion of the site for angle iron sealant inspection be filled in.

➢ SES will fill in the holes.

C. NYSDEC

- NYSDEC stated their concerns regarding some discharge through some of the pairs of sheets installed in Coney Island Creek. SES stated that the bentonite within the angle iron in those pairs is being pushed down to ensure a good seal.

VII. Review Old Action Items

A. Punch List items:

➢ KeySpan will do a final walk through and present any outstanding issues to SES. The walk through will be done after the meeting.

B. SES to provide KeySpan with the hydroseeding information.

➢ SES has not yet given KeySpan the information yet.

VIII. New Action Items

A. SES will provide as-built drawings of the sheet pile wall to KeySpan by April 2nd.

B. KeySpan to inform SES of any outstanding issues based on a final walk through.

C. SES will provide KeySpan a copy of the CAMP monitoring data and the seismograph data.

IX. Other Business

A. None

The above minutes represent the undersigned's interpretation of what took place at the meeting. Any misunderstandings or misinterpretations of these minutes should be forwarded to the undersigned, in writing, for incorporation into the minutes.

Jason Farina, P.E.
Resident Engineer

APPENDIX B

As-Built Drawings and Pile Elevation Summary

APPENDIX C

Community Air Monitoring Plan

SUMMARY OF DAILY AIR MONITORING RESULTS FOR COMMUNITY AIR MONITORING PLAN (CAMP)

	UPWIND STATION (BACKGROUND)				DOWNWIND STATION			
	DUST TRAK (mg/M^3)			PGM-50 (ppm)	DUST TRAK (mg/M^3)			PGM-50 (ppm)
DATE	MAXIMUM	MINIMUM	AVERAGE	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	AVERAGE
12/2/2003	0.015	0.009	0.012	0	0.164	0.006	0.025	0
12/3/2003	0.038	0.011	0.018	0	0.076	0.013	0.045	0
12/4/2003	NA	NA	0.042	0	0.054	0.039	0.047	0
12/5/2003	0.038	0.038	0.038	NA	0.037	0.037	0.037	0
12/8/2003	NA	NA	NA	NA	0.074	0.011	0.018	0.1 to 0.3
12/9/2003	NA	NA	NA	NA	0.055	0.023	0.034	0
12/10/2003	0.044	0.044	0.044	0	0.082	0.051	0.067	0
12/12/2003	0.025	0.018	0.02	0	0.023	0.017	0.018	0
12/13/2003	0.015	0.015	0.015	0	0.029	0.006	0.013	0
12/15/2003	0.044	0.044	0.044	0	0.02	0.008	0.014	0
12/16/2003	0.052	0.052	0.052	0	0.095	0.029	0.047	0
12/17/2003	0.034	0.034	0.034	0	0.072	0	0.03	0
12/18/2003	0.023	0.023	0.023	0	0.033	0.017	0.021	0
1/6/2004	0.014	0.014	0.014	0	0.021	0.007	0.011	0
1/7/2004	0.072	0.01	0.021	0	0.022	0.01	0.016	0
1/8/2004	0.03	0.015	0.019	0	0.033	0.016	0.021	0
1/9/2004	0.017	0.005	0.01	0	0.016	0.008	0.012	0
1/12/2004	0.182	0.053	0.091	0	0.091	0.038	0.064	0
1/13/2004	0.108	0.013	0.046	0	0.054	0.01	0.036	0
1/14/2004	0.105	0.005	0.013	0	0.022	0.011	0.016	0
1/15/2004	0.022	0.007	0.013	0	0.016	0.003	0.005	0
1/16/2004	0.015	0.011	0.013	0	0.002	0	0	0
1/19/2004	0.021	0.007	0.011	0	0.004	0	0	0
1/20/2004	0.02	0.008	0.01	0	0.012	0.003	0.007	0
1/21/2004	0.023	0.009	0.014	0	0.023	0.009	0.014	0
1/22/2004	0.113	0.03	0.05	0	0.119	0.034	0.056	0
1/23/2004	0.014	0.009	0.011	0	0.015	0.006	0.009	0
1/24/2004	0.025	0.012	0.019	0	0.023	0.007	0.015	0
1/26/2004	0.044	0.014	0.032	0	0.015	0.007	0.012	0
1/27/2004	0.033	0.02	0.025	0	0.025	0.013	0.018	0
1/28/2004	0.051	0.017	0.028	0	0.039	0.011	0.026	0
1/29/2004	0.036	0.018	0.024	0	0.039	0.016	0.023	0
1/30/2004	0.036	0.013	0.016	0	0.027	0.01	0.015	0
1/31/2004	0.022	0.015	0.018	0	0.034	0.013	0.018	0

NA: Instrument Data Sheet Not Available

SUMMARY OF DAILY AIR MONITORING RESULTS FOR COMMUNITY AIR MONITORING PLAN (CAMP)

	UPWIND STATION (BACKGROUND)				DOWNWIND STATION			
	DUST TRAK (mg/M^3)			PGM-50 (ppm)	DUST TRAK (mg/M^3)			
DATE	MAXIMUM	MINIMUM	AVERAGE	AVERAGE	MAXIMUM	MINIMUM	AVERAGE	AVERAGE
2/2/2004	0.05	0.027	0.04	0	0.041	0.019	0.03	0
2/3/2004	0.04	0.016	0.032	0	0.031	0.01	0.019	0
2/4/2004	0.048	0.021	0.027	0	0.038	0.017	0.023	0
2/5/2004	0.033	0.023	0.027	0	0.029	0.021	0.024	0
2/6/2004	0.038	0.023	0.029	0	0.057	0.026	0.034	0
2/9/2004	0.027	0.01	0.017	0	0.041	0.012	0.02	0
2/11/2004	0.03	0.011	0.014	0	0.038	0.012	0.019	0
2/12/2004	0.058	0.026	0.039	0	0.044	0.016	0.025	0
2/13/2004	0.079	0.038	0.053	0	0.054	0.027	0.036	0
2/14/2004	0.043	0.036	0.038	0	0.034	0.022	0.026	0
2/16/2004	0.031	0.016	0.023	0	0.037	0.01	0.021	0
2/17/2004	0.041	0.008	0.018	0	0.049	0.008	0.017	0
2/18/2004	0.035	0.025	0.03	0	0.225	0.023	0.053	0
2/19/2004	0.123	0.06	0.079	0	0.173	0.044	0.065	0
2/20/2004	0.077	0.049	0.061	0	0.047	0.031	0.036	0
2/23/2004	0.052	0.019	0.029	0	0.056	0.008	0.016	0
2/24/2004	0.118	0.023	0.066	0	0.087	0.017	0.055	0
2/25/2004	0.063	0.013	0.023	0	0.014	0.008	0.011	0
2/26/2004	0.034	0.014	0.02	0	0.018	0.01	0.014	0
2/27/2004	0.038	0.013	0.019	0	0.03	0.01	0.015	0
3/2/2004	0.066	0.033	0.048	0	0.071	0.028	0.048	0
3/3/2004	0.263	0.024	0.048	0	0.153	0.022	0.038	0
3/4/2004	0.11	0.044	0.056	0	0.067	0.035	0.045	0
3/5/2004	0.09	0.048	0.067	0	0.064	0.039	0.054	0
3/8/2004	0.04	0.021	0.029	0	0.032	0.019	0.024	0
3/9/2004	0.049	0.014	0.024	0	0.029	0.006	0.016	0
3/10/2004	0.058	0.022	0.037	0	0.026	0.015	0.021	0
3/11/2004	0.065	0.024	0.031	0	0.039	0.021	0.026	0
3/12/2004	0.037	0.011	0.02	0	0.068	0.011	0.026	0
3/15/2004	0.071	0.017	0.03	0	0.059	0.018	0.03	0
3/16/2004	0.039	0.018	0.03	0	0.038	0.019	0.028	0
3/17/2004	0.043	0.018	0.026	0	0.033	0.015	0.023	0
3/18/2004	0.043	0.027	0.033	0	0.058	0.026	0.039	0
3/19/2004	0.043	0.028	0.035	0	0.03	0.021	0.026	0
3/22/2004	0.025	0.007	0.012	0	0.026	0.012	0.015	0
3/23/2004	0.032	0.015	0.023	0	0.039	0.01	0.02	0
3/24/2004	NA	NA	0.023	0	0.107	0.022	0.039	0

NA: Instrument Data Sheet Not Available

APPENDIX D

Waste Disposal Manifests

State of Connecticut

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Hazardous Waste MANIFEST PROGRAM
79 Elm St., Hartford CT 06106-5127

FOR STATE USE ONLY

Please type (or print) (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. C-H-W- . . . . . Manifest Document No. 8-5-3-4-3

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law, but may be required by State law

A. State Manifest Document Number: CT F 1165343

3. Generator's Name and Mailing Address
Keyspan Energy
Neptune Blvd., Coney Island, NY 11224

4. Generator's Phone (718) 403-3006

B. State Generator's ID

5. Transporter 1 Company Name: Miller Environmental Group Inc.
6. US EPA ID Number: N Y D 9 8 6 9 0 8 0 8 5

C. State Transporter's ID

7. Transporter 2 Company Name
8. US EPA ID Number

D. Transporter's Phone

9. Designated Facility Name and Site Address
Bridgeport United Recycling
50 Cross Street
Bridgeport, CT 06610
10. US EPA ID Number: C T D 0 0 2 5 9 3 6 8 7

E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID
H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	State Waste No.
a. Connecticut Regulated Waste, none, none	001	XT	XX250	G	
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above — K. Handling Codes for Wastes Listed Above

a. Oil/Water — a. [illegible]
b. — b.

15. Special Handling Instructions and Additional Information
United # LEL46236 B04-0813
Emergency Contact # 800-394-8606 Point of Departure:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and all applicable State laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
X John J. Rodell Jr.	X	0.1	1.5	0.4

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Hector M Santos		0.1	1.5	0.4

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
Jose Rodriguez		0.1	2.1	0.4

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19

Printed/Typed Name	Signature	Month	Day	Year
[illegible]				

Form approved (Rev. 9/91) Form Approved OMB No. 2050-0039.

TOTAL P.03

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802.
OR SPILLS WITHIN CONNECTICUT, CONTACT DEP OIL AND CHEMICAL SPILL RESPONSE AT (860) 424-3338.

GENERATOR — TRANSPORTER — FACILITY

CT F 1165343

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Hazardous Waste MANIFEST PROGRAM
79 Elm St., Hartford, CT 06106-5127

Please type (or print) *(Form designed for use on elite (12-pitch) typewriter.)*

FOR STATE USE ONLY

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CEP . . . . Manifest Document No. 0 5 3 5 9

2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but may be required by State law.

[illegible]

3. Generator's Name and Mailing Address
Keyspan Energy
287 Maspeth Ave, Brooklyn NY

4. Generator's Phone (718) 403-3006

5. Transporter 1 Company Name: **Miller Environmental Group**

6. US EPA ID Number: NYD 9 8 6 9 0 8 0 8 [illegible]

7. Transporter 2 Company Name

8. US EPA ID Number

9. Designated Facility Name and Site Address
Bridgeport United Recycling
50 Cross Street
Bridgeport, CT 06610

10. US EPA ID Number: CTD 0 0 2 5 9 3 8 8 [illegible]

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Connecticut Regulated Waste, none, none	001	TT	X3000	G
b.				
c.				
d.				

[illegible]

15. Special Handling Instructions and Additional Information
United # [illegible]6136
Emergency Contact# 800-394-8606

B04-0013

Point of Departure:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and all applicable State laws and regulations.

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Printed/Typed Name	Signature	Month	Day	Year
John J. Renick	[signature]	01	19	04

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
HECTOR M SANTOS	[signature]	01	19	04

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
HECTOR M SANTOS	[signature]	01	20	04

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
[illegible]	[signature]	[illegible]		

Form 8/00-22 (Rev. 9/91) Form Approved OMB No. 2050-0039.

COPY 5: TRANSPORTER 1 RETAINS

IN THE EVENT OF A SPILL, CONTACT THE NATIONAL RESPONSE CENTER, U.S. COAST GUARD 1-800-424-8802. FOR SPILLS WITHIN CONNECTICUT, CONTACT CT DEP OIL AND CHEMICAL SPILL RESPONSE AT (860) 424-3338

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Hazardous Waste MANIFEST PROGRAM
79 Elm St., Hartford, CT 06106-5127

Please type (or print) *(Form designed for use on elite (12-pitch) typewriter)*

FOR STATE USE ONLY

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. CRV	Manifest Document No. 85354	2. Page 1 of 1	Information in the shaded areas is not required by Federal law, but may be required by State law.

3. Generator's Name and Mailing Address
Keyspan Energy
Neptune Avenue, Coney Island, NY

4. Generator's Phone (718) 603-3006

5. Transporter 1 Company Name: Miller Environmental group Inc.
6. US EPA ID Number: NYD982690808

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Bridgeport United Recycling
50 Cross Street
Bridgeport, CT 06610

10. US EPA ID Number: CTD002593887

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Connecticut Regulated Waste, none, none	001	TT	X4700	G
b.				
c.				
d.				

15. Special Handling Instructions and Additional Information
United # 1RL86136
B04-0013
Emergency Contact # 800-394-8606
Point of Departure:

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations, and all applicable State laws and regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: X HECTOR M SANTOS as Per Agent of Contr. — Signature: X Hector M. Santos — Month/Day/Year: 01 19 04

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: HECTOR M SANTOS — Signature: Hector M Santos — Month/Day/Year: 01 19 04

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: HECTOR M SANTOS — Signature: Hector M Santos — Month/Day/Year: 1 21 04

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: [illegible] — Signature: [illegible] — Month/Day/Year: [illegible]

FOR SPILLS WITHIN CONNECTICUT, CONTACT CT DEP OIL AND CHEMICAL SPILL RESPONSE AT (860) 424-3338

IN THE EVENT OF A SPILL CONTACT THE NATIONAL RESPONSE CENTER U.S. COAST GUARD 1-800-424-8802

EPA Form 8700-22 (Rev. 9/91) Form Approved OMB No. 2050-0039

COPY 5: TRANSPORTER 1 RETAINS

OPERATION, MAINTENANCE AND MONITORING PLAN

For:

The Completed OU-1 Contract
At the Former Brooklyn Borough Gas Work Site

Prepared For:

KEYSPAN CORPORATION
One Metro Tech Center
Brooklyn, NY 11201

Revised July 2004

Prepared by:

engineering

Paulus, Sokolowski and Sartor Engineering, PC
67A Mountain Boulevard Extension
P.O. Box 4039
Warren (Somerset County), New Jersey 07059

TABLE OF CONTENTS

OPERATION, MONITORING, AND MAINTENANCE PLAN

1.0 INTRODUCTION

KeySpan Corporation (KeySpan) has prepared this Operation, Monitoring and Maintenance (OM&M) Plan to document the methodologies to be performed at the former Brooklyn Borough Gas Works Site (Site).

2.0 BACKGROUND

The Site is located between Neptune Avenue and the Shore Parkway, within the Coney Island Section of Brooklyn, New York. The Site is bordered to the north and west by Shore Parkway and a New York City Metropolitan Transit Authority (MTA) rail yard and to the south and east by Coney Island Creek. The property encompasses an area of approximately 16 acres.

KeySpan has retained a contractor who is currently completing remedial actions associated with Operable Unit No. 1 of the Site (OU1 Contract). In general, the remedial actions being conducted as part of Operable Unit No. 1 (OU1) consist of the installation of a steel sheet pile barrier wall along the entire perimeter of the Site to mitigate the seepage of non-aqueous phase liquid (NAPL) from the Site into the adjacent Coney Island Creek. The remedial actions are being performed in accordance with the Record of Decision (ROD) for *Operable Unit No. 1: Plant Site, Former Brooklyn Borough Gas Works Site, Coney Island, Kings County, New York (Site Number 2-24-026)* and the *Final Remedial Design Report for Operable Unit No. 1* dated October 2003.

3.0 SCOPE OF WORK

The operation, maintenance, and monitoring tasks for work completed under the OU-1 contract shall be performed until the final elements of the remedial action are performed under the OU-2/OU-3 contract. The following maintenance and monitoring requirements shall be implemented for OU-1:

1. Monitor and maintain the soil erosion sediment control measures until they are removed.
2. Monitor the water level inside and outside the vertical barrier cut-off wall by measuring groundwater levels from piezometers.
3. Maintain the design (or as-built) conditions.
4. Monitor the site for the presence of discharges.

The monitoring and maintenance will be performed by KeySpan personnel or personnel contracted by KeySpan. Personnel familiar with OU-1 remediation activities will perform the inspections.

4.0 MONITORING, INSPECTION, AND MAINTENANCE

4.1 Soil Erosion and Sediment Control Measures

Soil erosion and sediment control (SESC) measures installed during OU1, including silt fencing and the turbidity barrier will be inspected monthly until they are removed. A visual inspection will be completed to identify erosion, and to ensure that the SESC measures remained intact.

The SESC measures may require maintenance due to erosion resulting from rain, snow, wind, and other natural factors. Eroded areas will be repaired, as required, with similar materials installed as part of in the OU1 contract.

4.2 Groundwater Level Monitoring

A pair of piezometers (one inside and one outside of the steel sheet pile barrier wall) will be installed every 400 feet along the vertical barrier cut-off wall with the exception of along the Coney Island Creek. Along the Creek, piezometers will only be installed inside of the cut-off wall. The piezometers are to be installed for the purpose of monitoring the depth to groundwater and the effects on these levels due to the construction of the cut-off wall. Depth to groundwater or groundwater elevation will be measured using an oil/water interface probe and readings will be recorded to the nearest one hundredth of a foot. If a product layer is detected, the thickness will be recorded and the monitoring frequency may have to be re-evaluated.

The initial water levels in each piezometer will be measured on a weekly basis for a period of two months after completion of the construction of the steel sheet pile barrier. Each piezometer will then be measured on a monthly basis from June 2004 to November 2004 with quarterly piezometer measurements taken thereafter. The initial measurements will be utilized to establish a baseline for groundwater levels at the Site and the subsequent measurements will be utilized to characterize seasonal changes in the groundwater table elevation. After the initial measurement, groundwater levels will be monitored on a monthly basis. If for a period of three months, groundwater levels in the piezometer are within 0.5 feet of the previous measurements, accounting for tidal impacts, the water levels at the Site will be considered to have reached equilibrium. At this point, groundwater levels will be conducted on a quarterly basis. If equilibrium is not reached in three months, then the monitoring will continue.

Results on the piezometer depth measurements will be compiled in a computer database and will be provided to the NYSDEC Site Manager. The database will be updated as new measurements are completed.

However, if the groundwater levels do not reach equilibrium and continue to rise due to mounding onsite of the vertical barrier cut-off wall, the Contingency Plan will be implemented.

4.3 Discharge Surveillance

During the period between the completion of the OU1 contract and the implementation of OU2/OU3, a weekly surveillance of the site will be initially performed. After a period of two months with no observed discharges, then weekly monitoring will transition into bi-weekly monitoring. Visual observations of the entire site will be conducted to identify if there have been tar/contaminant releases to the surface or surface waters. Additionally, the area of the permanent boom will be visually inspected for tears, rips and leaks. Further, during the piezometer depth measurements, visual observation of the groundwater in the piezometers along Coney Island Creek will be performed to identify the presence of floating contaminants and/or free product. An interface probe will also be used to identify the thickness of a free product layer.

5.0 CONTINGENCY PLAN

5.1 Groundwater

The construction of the vertical barrier cut-off wall around the perimeter of the Site is not expected to have an adverse effect on groundwater levels inside or outside of the wall. Groundwater modeling performed as part of the design of the wall indicated that the remedial activities to be performed at Operable Unit No. 1 will have minimal effects of groundwater levels after construction is complete. As noted in the *Final Remedial Design Report for Operable Unit No. 1* dated October 2003, groundwater levels within the limits of the cutoff wall are expected to drop by approximately 0.25 feet across the northeastern portion of the Site and groundwater levels in the southwestern portion of the Site are expected to remain essentially the same. Groundwater mounding along the outside of the upgradient portion of the wall is expected to rise approximately 0.25 feet resulting in a difference in head within and outside of the wall of approximately 0.5 feet.

However, in the event that a sustained rise in the groundwater level (over a 3 month period and as detected through the monitoring of piezometer levels) is observed to be greater than or equal to 0.75 feet, a series of short term (daily or weekly) monitoring events will be performed to assure that the observed rise is a sustained event and not an anomaly. Further analyses of the monitoring data may also be performed using statistical and/or modeling methods to identify if an anomalous condition is present. This rise in the groundwater level will need to be adjusted to account for seasonal recharge events and tidal effects when compared to the groundwater level recorded during the previous monitoring event or to the baseline condition, groundwater level measurements. This scenario (i.e. groundwater rise is observed to be equal to or greater than 0.75 feet) will be considered as an "early response condition."

In the event that a sustained rise in the groundwater level (over a period of three months and as detected through the monitoring of piezometer levels) is observed to be greater than or equal to one (1) foot, groundwater will be pumped from the upgradient portion of the cutoff wall. This rise in the groundwater level will need to be adjusted for seasonal recharge events and tidal effects when compared to the groundwater level recorded during the previous monitoring event or to the baseline condition, groundwater level measurements. This scenario (i.e. groundwater rise is observed to be equal to or greater than 1.0 feet) will be considered as a "response action condition."

Upon confirmation that a "response action condition" has occurred, KeySpan will authorize PS&SPC to immediately prepare a design plan for the modification of existing piezometers into relief wells that would be used for pumping of groundwater. This design plan would be e-mailed to NYSDEC for review, with a hard copy to be provided by overnight mail. Simultaneously with the issuance of the plan to NYSDEC, KeySpan would advise its on-call contractor for work at Coney Island to mobilize for the necessary construction. KeySpan would anticipate a rapid review of the design plan by NYSDEC and request that its on-call contractor begin to order and obtain the necessary equipment and components. Construction would be initiated after receipt of NYSDEC approval.

The actual number of wells to be modified and subject to pumping as well as the rate of groundwater removal will be determined based on the rate that the groundwater levels are increasing. To ensure that the proper pumping rate is being utilized to alleviate a rise in groundwater levels, variable speed pumps will be utilized. The use of these pumps will ensure that an unnecessary drawdown of groundwater levels will not occur. All groundwater removed from the relief system will be piped to a frac tank(s), characterized and disposed of at an off-site properly permitted disposal facility.

It should be noted, remedial activities currently proposed as part of Operable Unit No.2 (OU2) include the installation of a groundwater recovery trench and the construction of a treatment plant to treat recovered LNAPL and groundwater and discharge the effluent to the Coney Island Creek. The construction of the OU2's remedial activities is expected to begin during the first quarter of 2005 and be completed in approximately one year. At this time, this recovery and treatment system could be utilized to stabilize rising groundwater levels, if necessary. Until the time that the recovery and treatment system is constructed, groundwater removed to stabilize increases in groundwater levels, if any, will be pumped to a frac tank, characterized and disposed of off-site.

5.2 Discharges

Should tars or other contaminants be observed penetrating the ground surface or discharging to surface waters of Coney Island Creek or if free product is found in piezometers, the NYSDEC site manager will be immediately notified by telephone,

followed with a description of the discharge(s) by e-mail. KeySpan will consult with the NYSDEC site manager to develop an appropriate response. As required by the specific situation, KeySpan will authorize and direct its on-call contractors to provide an appropriate means to contain, detoxify, and/or remove the observed discharges, as needed to prevent exposures.

6.0 RECORDKEEPING

Monitoring, maintenance, and repair records will be kept by KeySpan. An inspection report, maintenance/repair report or discharge report will be completed depending on the activity. Forms for these reports are attached as OM&M-1, OM&M-2, and OM&M-3. The individual performing these activities will complete and sign the report. Copies of the reports will be distributed to the NYSDEC site manager on a monthly basis until November 2004 and on a quarterly basis thereafter.

7.0 REPORTING

The Record keeping section discusses the record keeping requirements for the operation, maintenance, and monitoring following OU-1 remediation. Since the remedial activities in OU-1 represent an intermediate measure to prevent LNAPL from migrating offsite, these requirements will be carried out until completion of remedial activities associated with OU-3. At that time the Operation, Maintenance, and Monitoring Plan developed for the entire site will be operative. These records are available for review by the NYSDEC upon request.

OM&M-1
INSPECTION REPORT FORM
KEYSPAN CORPORATION
FORMER BROOKLYN BOROUGH GAS WORKS SITE

ITEMS INSPECTED: **(check items that were inspected)**

___ Perimeter Fencing
___ Perimeter Fencing Locks
___ Silt Fencing
___ Piezometer/Monitoring Well Locks
___ Turbidity Curtain
___ Absorption Boom

INSPECTION DATE:

NAME OF INSPECTOR/COMPANY:

DESCRIBE CONDITION OF ITEM INSPECTED:

- **PERIMETER FENCING**
- **PERIMETER FENCING LOCKS**
- **SILT FENCING**
- **PIEZOMETER/MONITORING WELL LOCKS**
- **TURBIDITY CURTAIN**
- **ABSORPTION BOOM**

OM&M-1
INSPECTION REPORT FORM
KEYSPAN CORPORATION
FORMER BROOKLYN BOROUGH GAS WORKS SITE

DESCRIBE LOCATION/TYPE OF PROBLEM:

- **PERIMETER FENCING**
- **PERIMETER FENCING LOCKS**
- **SILT FENCING**
- **PIEZOMETER/MONITORING WELL LOCKS**
- **TURBIDITY CURTAIN**
- **ABSORPTION BOOM**

OM&M-1
INSPECTION REPORT FORM
KEYSPAN CORPORATION
FORMER BROOKLYN BOROUGH GAS WORKS SITE

DESCRIBE ACTIONS TO BE TAKEN:

- **PERIMETER FENCING**
- **PERIMETER FENCING LOCKS**
- **SILT FENCING**
- **PIEZOMETER/MONITORING WELL LOCKS**
- **TURBIDITY CURTAIN**
- **ABSORPTION BOOM**

_____

(PRINT/SIGN)
INSPECTOR NAME

OM&M-2
MAINTENANCE REPAIR FORM
KEYSPAN CORPORATION
FORMER BROOKLYN BOROUGH GAS WORKS SITE

AREA MAINTAINED/REPAIRED: _____

MAINTENANCE/REPAIR DATE: _____

NAME OF RESPONSIBLE PARTY/COMPANY _____

GENERAL DESCRIPTION OF MAINTENANCE/REPAIR ACTIVITIES:

_____

_____

_____

LOCATION/TYPE/MATERIALS USED FOR MAINTENANCE/REPAIR:

_____

_____

_____

DESCRIBE FOLLOW-UP, IF ANY, TO VERIFY THE MAINTENANCE/REPAIR ACTIVITY: _____

_____

_____

_____

(PRINT/SIGN)
INSPECTOR NAME

OM&M-3
DISCHARGE SURVEILLANCE REPORT FORM
KEYSPAN CORPORATION
FORMER BROOKLYN BOROUGH GAS WORKS SITE

AREA INSPECTED: _____

INSPECTION DATE: _____

NAME OF INSPECTOR/COMPANY: _____

IDENTIFY DISCHARGES: _____

_____

_____

_____

DESCRIBE LOCATION/TYPE OF DISCHARGE: _____

_____

_____

_____

DESCRIBE ACTIONS TO BE TAKEN: _____

_____

_____

_____

_____

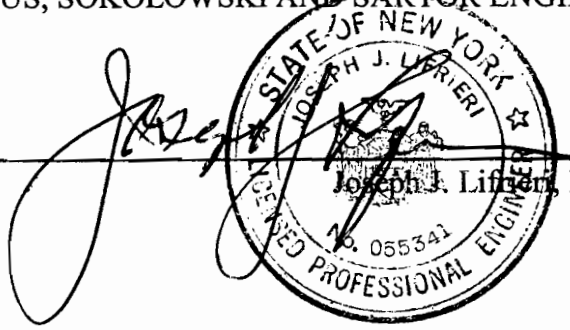
(PRINT/SIGN)
INSPECTOR NAME

Remedial Action Report
For
Operable Unit No. 1
Former Brooklyn Borough Gas Works Site
Brooklyn, New York
Site Number 2-24-026

PROFESSIONAL ENGINEER'S CERTIFICATION

The remedial measures implemented for the initial phase of the OU-1 remediation effort were completed in substantial conformance with the NYSDEC approved plans and specifications. Also, I have personally examined and am familiar with the attached Remedial Action Report. To the best of my knowledge, the contents of the report are accurate, complete and sufficient in documenting the remedial work completed for OU-1 that is required by the NYSDEC.

PAULUS, SOKOLOWSKI AND SARTOR ENGINEERING, PC

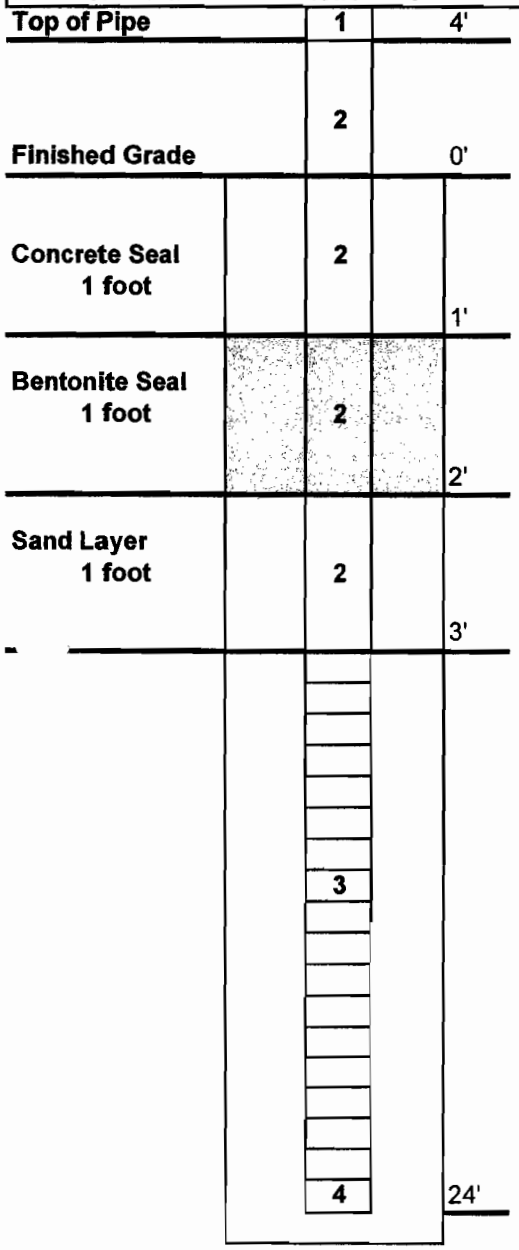


Joseph J. Lifrieri, P.E., P.G., P.P.
President

APPENDIX E

Piezometer Construction Logs

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**1A**
Contractor:	Sevenson Environmental	Date Start	**3/25/2004**
Subcontractor:	WGI	Date Finish	**3/25/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**21'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

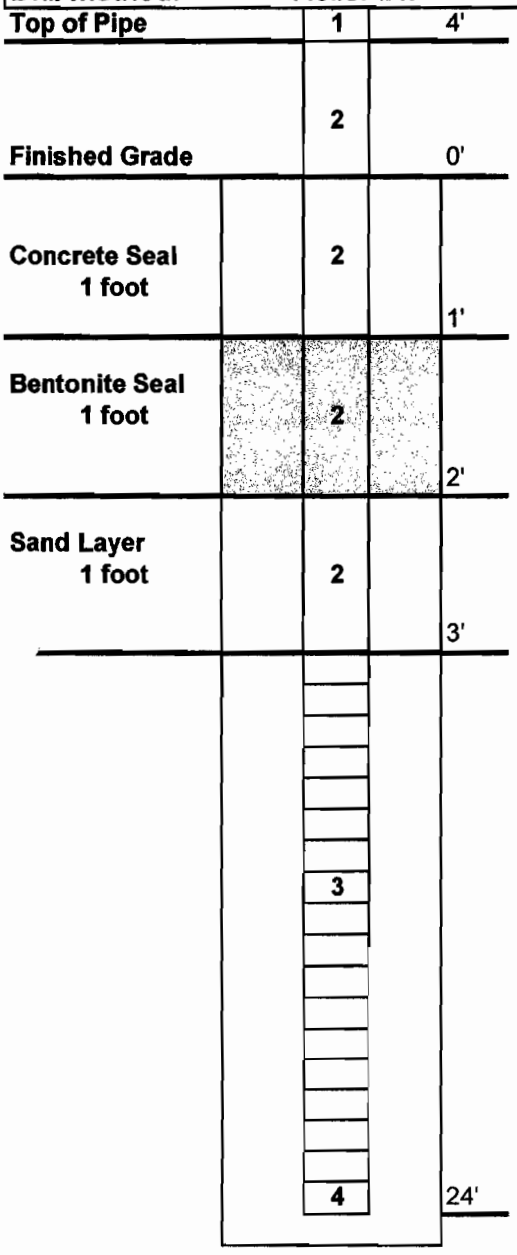
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**23'**
D - Boring Depth from Finished Grade	**25'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**1B**
Contractor:	Sevenson Environmental	Date Start	**3/24/2004**
Subcontractor:	WGI	Date Finish	**3/24/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**21'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

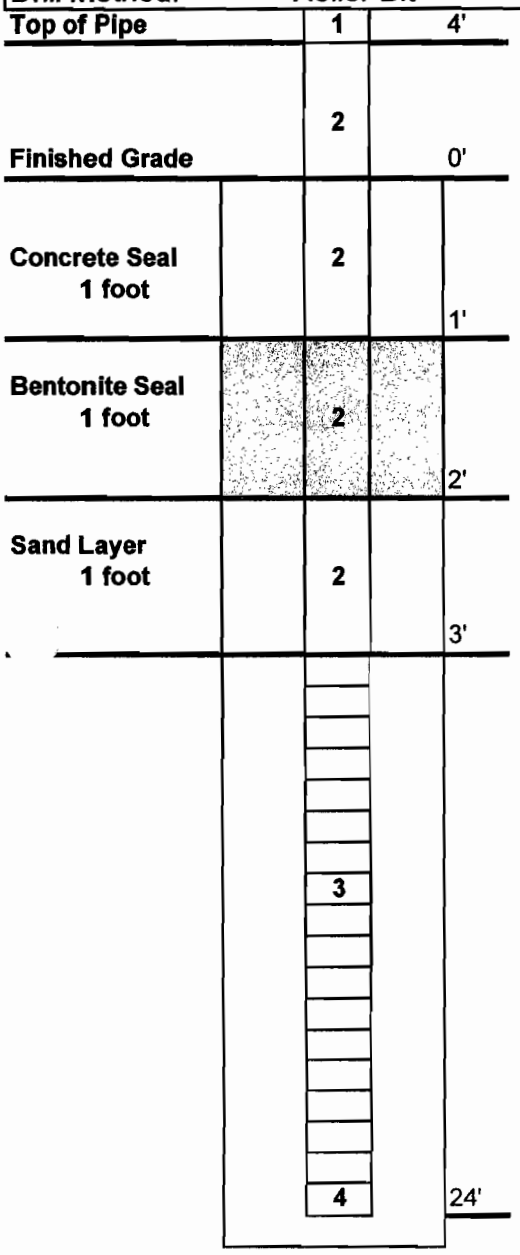
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**23'**
D - Boring Depth from Finished Grade	**25'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**2A**
Contractor:	Sevenson Environmental	Date Start	**3/25/2004**
Subcontractor:	WGI	Date Finish	**3/25/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**21'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

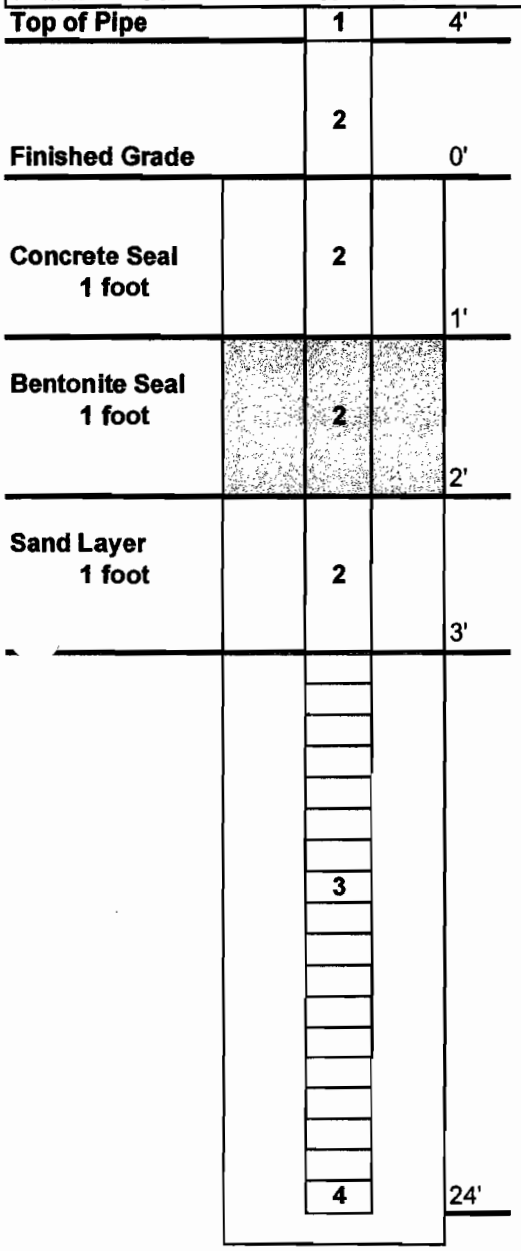
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**23'**
D - Boring Depth from Finished Grade	**25'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**2B**
Contractor:	Sevenson Environmental	Date Start	**3/25/2004**
Subcontractor:	WGI	Date Finish	**3/25/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**21'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

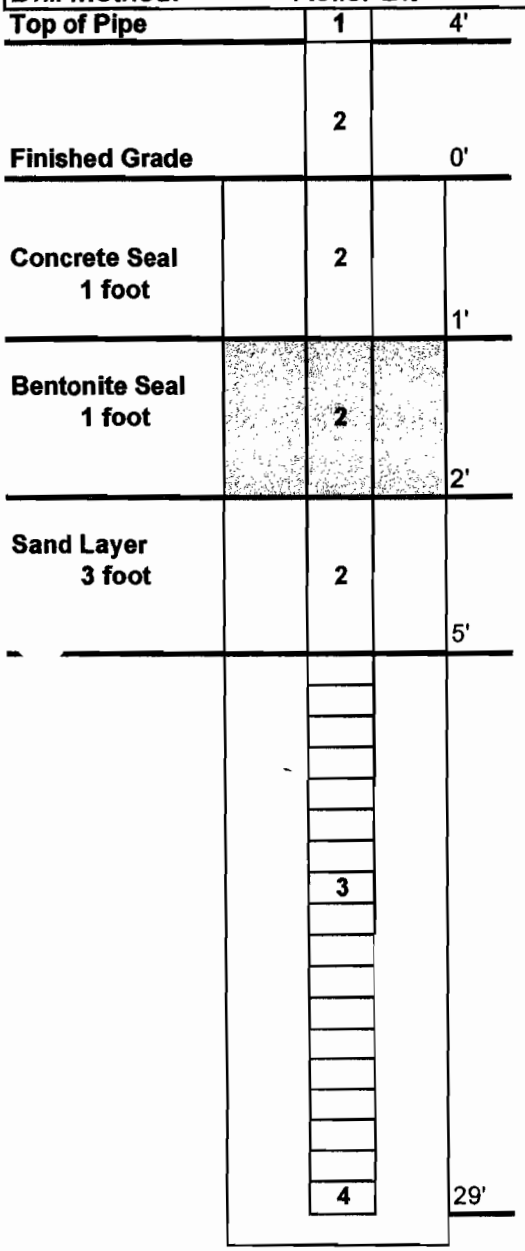
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**23'**
D - Boring Depth from Finished Grade	**25'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**3A**
Contractor:	Sevenson Environmental	Date Start	**3/29/2004**
Subcontractor:	WGI	Date Finish	**3/29/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**9'**
3	0.10 slot Screen - 2" sch 40 PVC	**24'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

Note:
Well was constructed approximately 2' above angle iron interlocks.

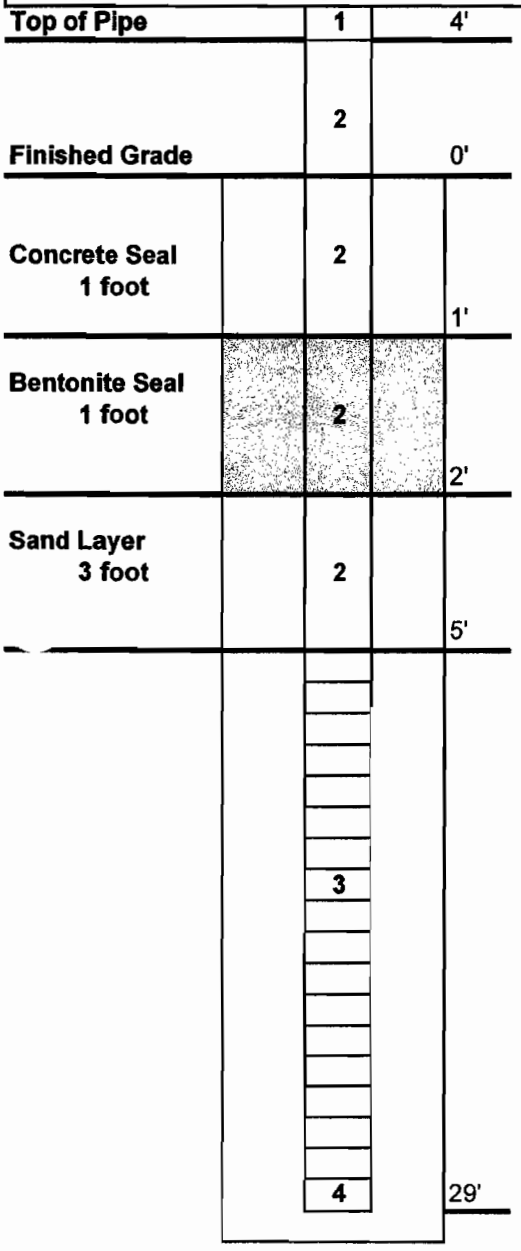
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**28'**
D - Boring Depth from Finished Grade	**30'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

ect:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**3B**
Contractor:	Sevenson Environmental	Date Start	**3/26/2004**
Subcontractor:	WGI	Date Finish	**3/26/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**9'**
3	0.10 slot Screen - 2" sch 40 PVC	**24'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

Note:
Well was constructed approximately 2' above angle iron interlocks.

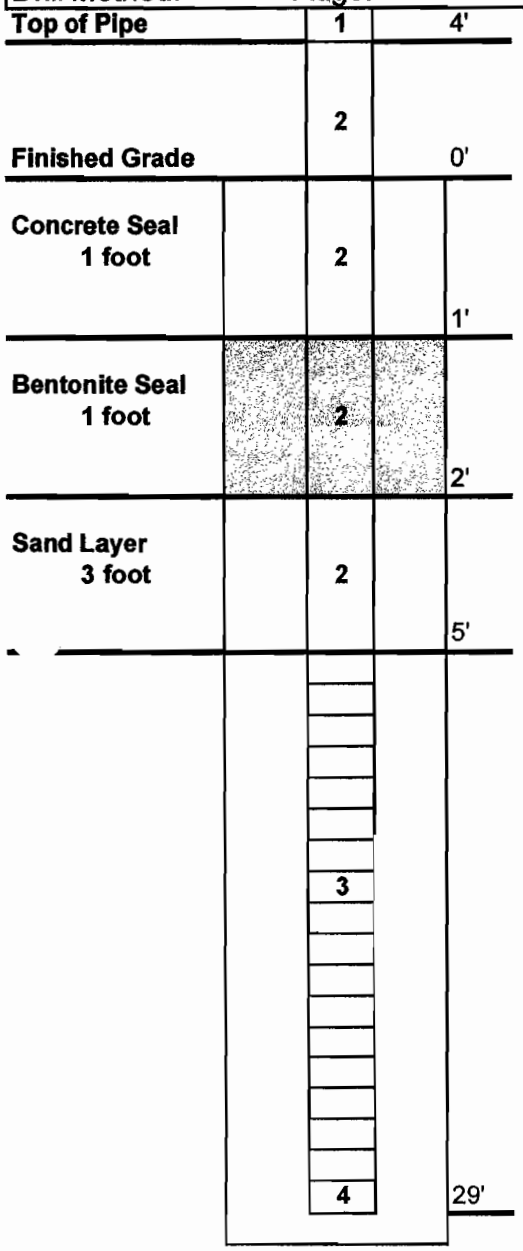
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**28'**
D - Boring Depth from Finished Grade	**30'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**4-A**
Contractor:	Sevenson Environmental	Date Start	**3/11/2004**
Subcontractor:	WGI	Date Finish	**3/11/2004**
Drill Method:	Auger		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**9'**
3	0.10 slot Screen - 2" sch 40 PVC	**24'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

Note:
Well was constructed approximately 2' above angle iron interlocks.

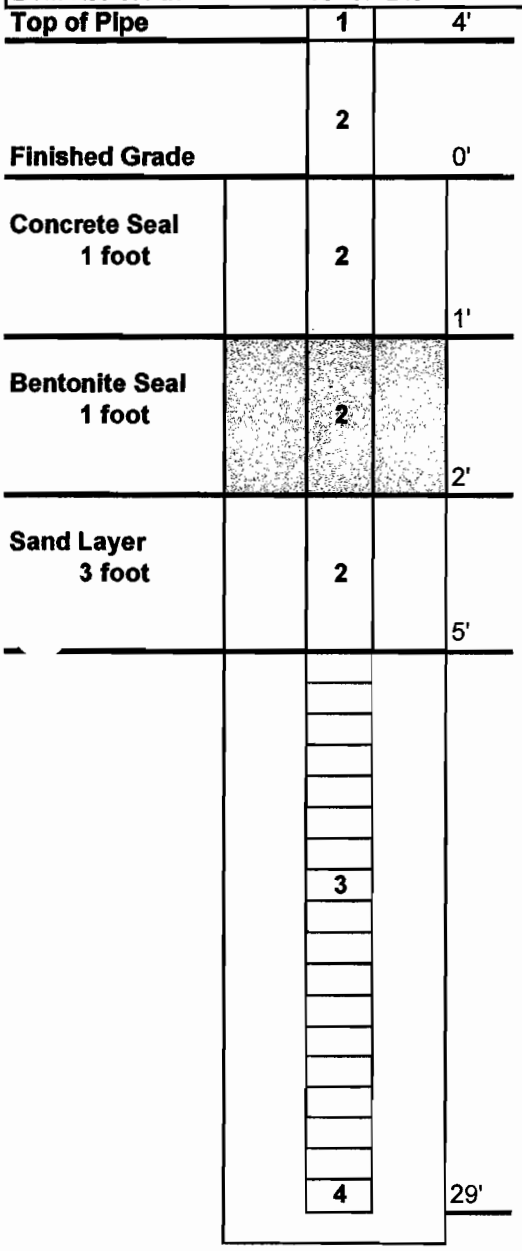
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**28'**
D - Boring Depth from Finished Grade	**30'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**4-B**
Contractor:	Sevenson Environmental	Date Start	**3/9/2004**
Subcontractor:	WGI	Date Finish	**3/10/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**9'**
3	0.10 slot Screen - 2" sch 40 PVC	**24'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

Note:
Well was constructed approximately 2' above angle iron interlocks.

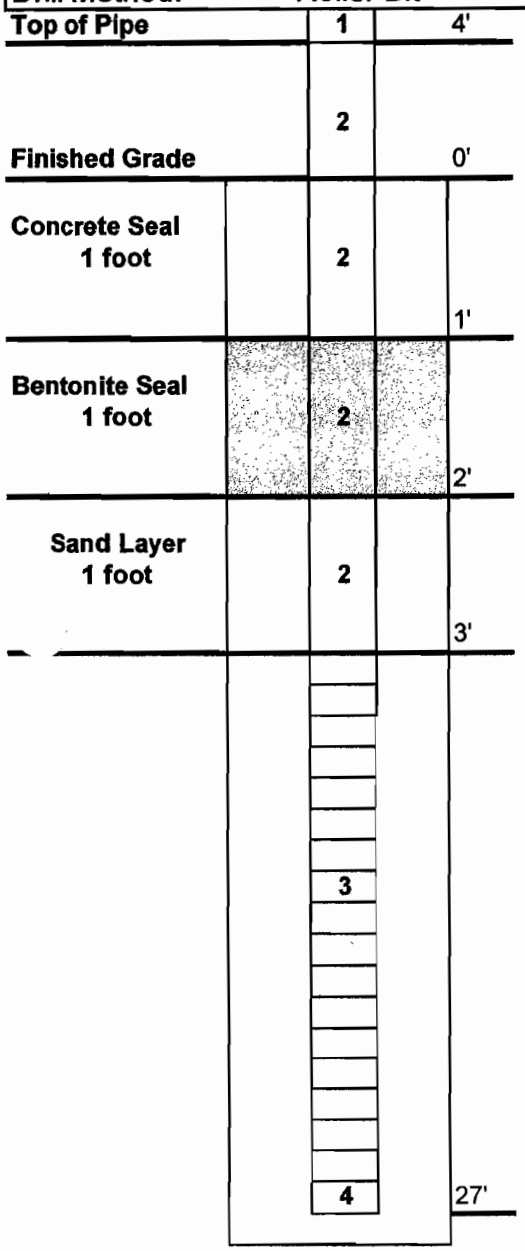
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**28'**
D - Boring Depth from Finished Grade	**30'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**5A**
Contractor:	Sevenson Environmental	Date Start	**3/16/2004**
Subcontractor:	WGI	Date Finish	**3/16/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**24'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

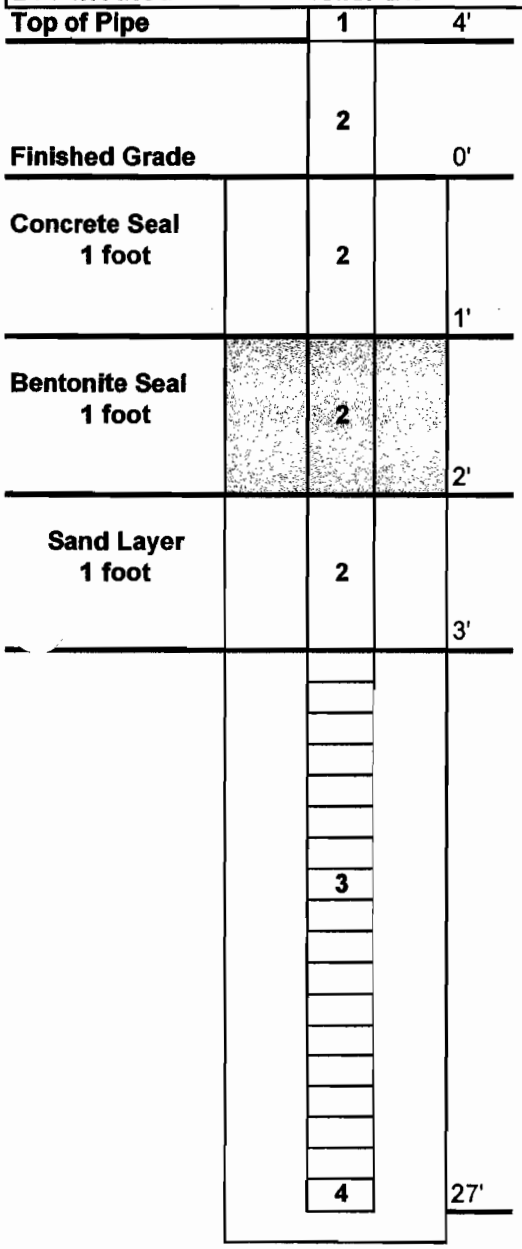
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**26'**
D - Boring Depth from Finished Grade	**28'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

ect:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**5B**
Contractor:	Sevenson Environmental	Date Start	**3/15/2004**
Subcontractor:	WGI	Date Finish	**3/16/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**24'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

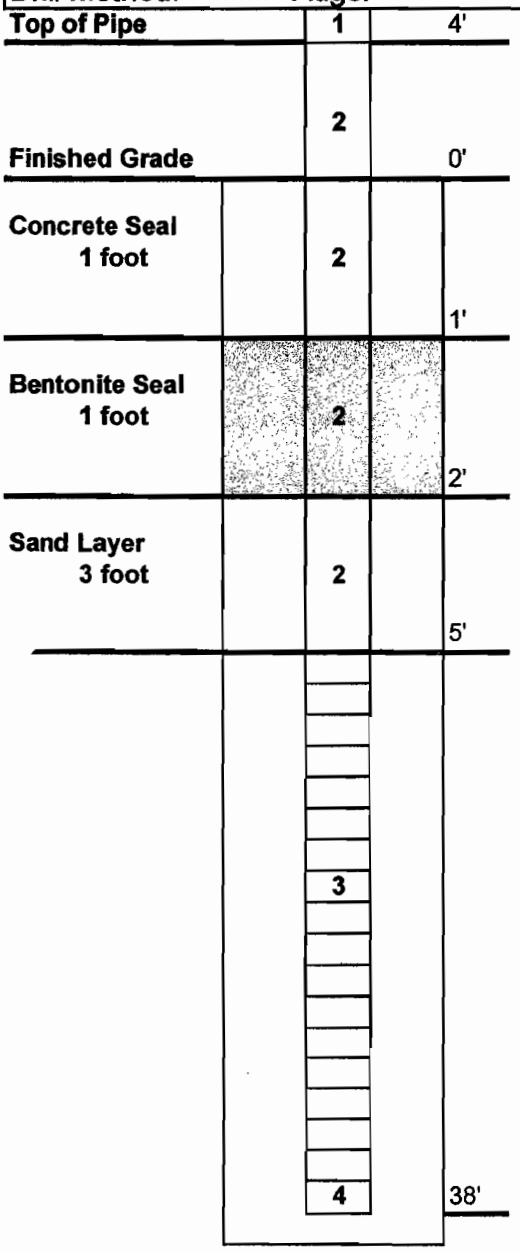
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**26'**
D - Boring Depth from Finished Grade	**28'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Layer
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	Piezometer
Project Location:	Brooklyn, NY	Well Number	6A
Contractor:	Sevenson Environmental	Date Start	3/12/2004
Subcontractor:	WGI	Date Finish	3/15/2004
Drill Method:	Auger		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	N/A
2	Solid Pipe - 2" sch 40 PVC	9'
3	0.10 slot Screen - 2" sch 40 PVC	33'
4	Bottom Cap - 2" sch 40 PVC	N/A

Note:
Well was constructed approximately 2' above angle iron interlocks.

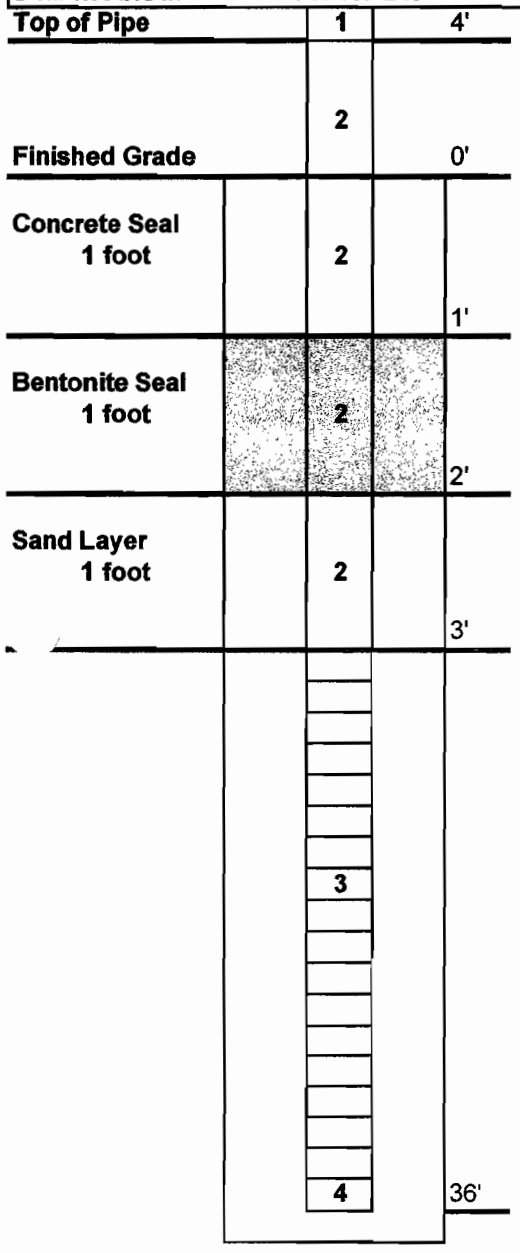
Specifications

A - Bore Size	6"
B - Pipe Size	2"
C - Morie #1 Sand Layer	37'
D - Boring Depth from Finished Grade	39'

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**7A**
Contractor:	Sevenson Environmental	Date Start	**3/17/2004**
Subcontractor:	WGI	Date Finish	**3/22/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**33'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

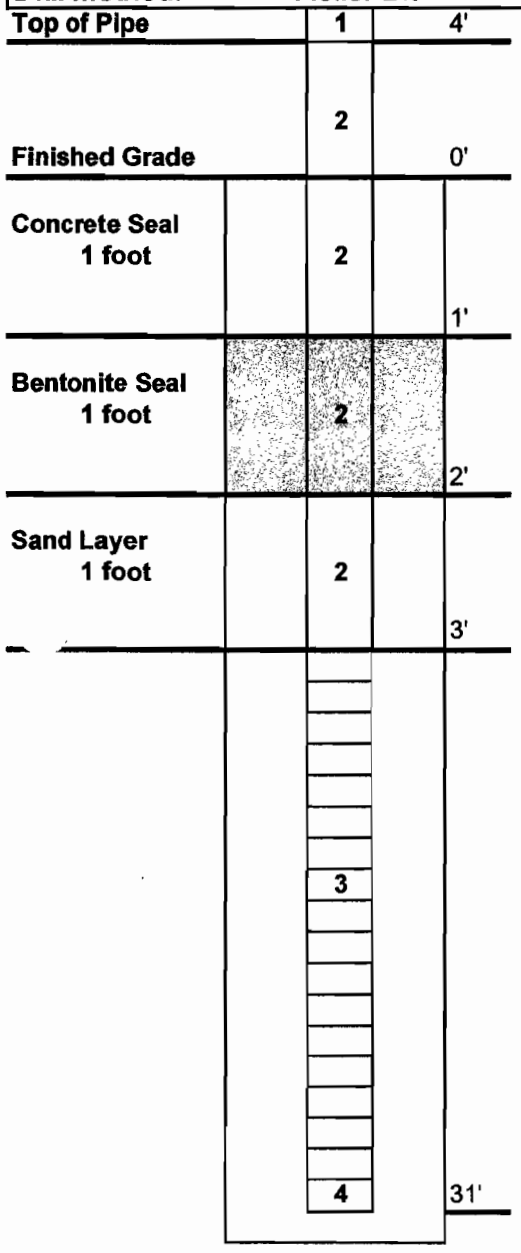
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**35'**
D - Boring Depth from Finished Grade	**37'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**8A**
Contractor:	Sevenson Environmental	Date Start	**3/22/2004**
Subcontractor:	WGI	Date Finish	**3/23/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**28'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

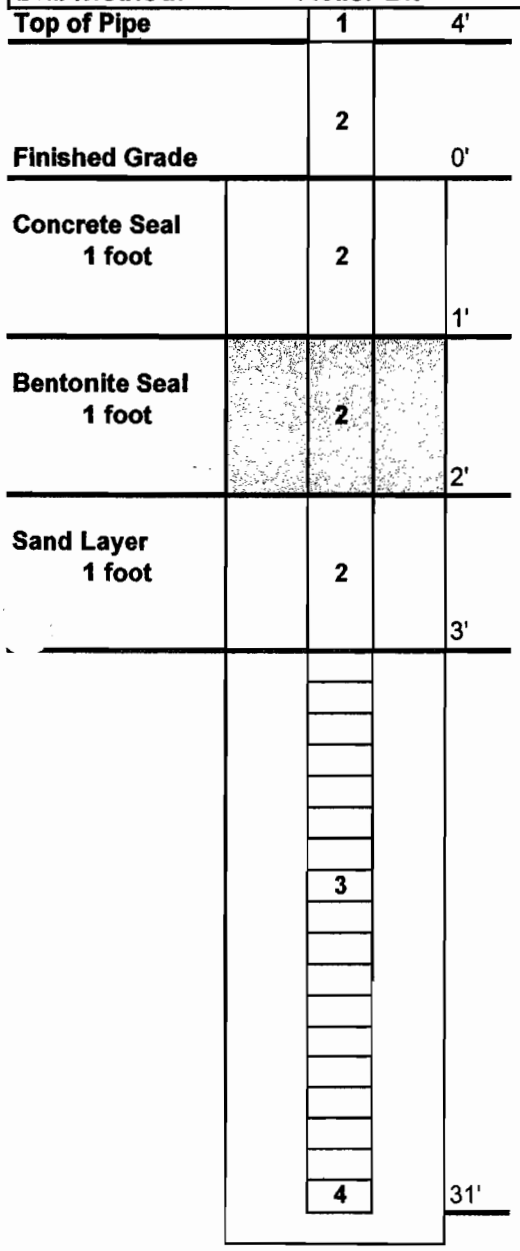
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**30'**
D - Boring Depth from Finished Grade	**32'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**9A**
Contractor:	Sevenson Environmental	Date Start	**3/23/2004**
Subcontractor:	WGI	Date Finish	**3/23/2004**
Drill Method:	Roller Bit		



	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**28'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

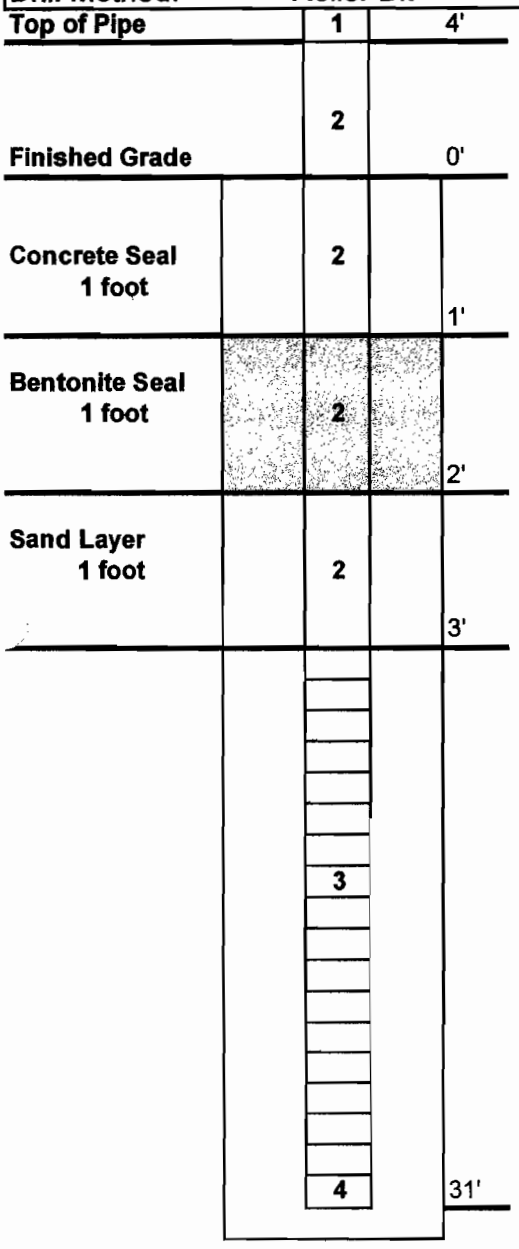
Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**30'**
D - Boring Depth from Finished Grade	**32'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries

Project:	E819	Well Type	**Piezometer**
Project Location:	Brooklyn, NY	Well Number	**10A**
Contractor:	Sevenson Environmental	Date Start	**3/24/2004**
Subcontractor:	WGI	Date Finish	**3/24/2004**
Drill Method:	Roller Bit		



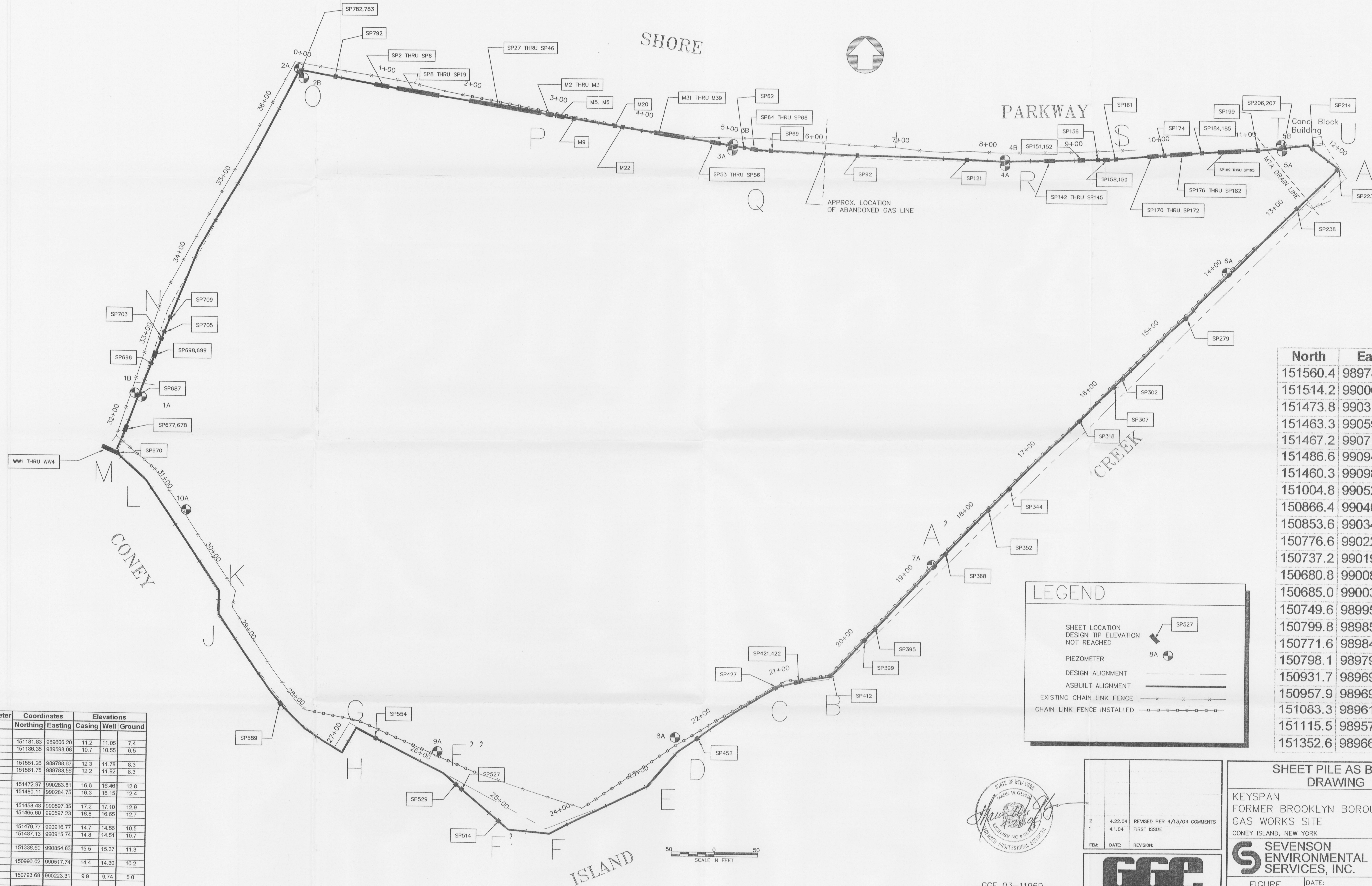
	List of Materials	Lengths
1	Top Cap - 2" Expansion Plug	**N/A**
2	Solid Pipe - 2" sch 40 PVC	**7'**
3	0.10 slot Screen - 2" sch 40 PVC	**28'**
4	Bottom Cap - 2" sch 40 PVC	**N/A**

Specifications

A - Bore Size	**6"**
B - Pipe Size	**2"**
C - Morie #1 Sand Layer	**30'**
D - Boring Depth from Finished Grade	**32'**

Materials

*	Concrete
*	Bentonite Seal Constructed of 3/8" chips manufactured by CETCO
*	Morie #1 Sand Pack
*	Pipe manufactured by Elson Industries



North	East	Desc.
151560.4	989784.0	O
151514.2	990061.7	P
151473.8	990313.5	Q
151463.3	990594.5	R
151467.2	990719.2	S
151486.6	990946.2	T
151460.3	990981.8	A
151004.8	990529.6	A'
150866.4	990402.4	B
150853.6	990341.1	C
150776.6	990225.5	D
150737.2	990191.4	E
150680.8	990080.2	F
150685.0	990033.1	F'
150749.6	989957.4	F"
150799.8	989857.0	G
150771.6	989840.6	H
150798.1	989796.6	I
150931.7	989696.5	J
150957.9	989696.5	K
151083.3	989612.4	L
151115.5	989577.3	M
151352.6	989669.9	N

LEGEND

- SHEET LOCATION DESIGN TIP ELEVATION NOT REACHED — SP527
- PIEZOMETER — 8A
- DESIGN ALIGNMENT
- ASBUILT ALIGNMENT
- EXISTING CHAIN LINK FENCE
- CHAIN LINK FENCE INSTALLED

Piezometer	Coordinates		Elevations		
No.	Northing	Easting	Casing	Well	Ground
1A	151181.83	989606.20	11.2	11.05	7.4
1B	151186.35	989598.08	10.7	10.55	6.5
2A	151551.26	989788.67	12.3	11.78	8.3
2B	151561.75	989783.56	12.2	11.92	8.3
3A	151472.97	990283.81	16.6	16.46	12.8
3B	151480.11	990284.75	16.3	16.15	12.4
4A	151458.48	990597.35	17.2	17.10	12.9
4B	151465.60	990597.23	16.8	16.65	12.7
5A	151479.77	990916.77	14.7	14.56	10.5
5B	151487.13	990915.74	14.8	14.51	10.7
6A	151336.60	990854.83	15.5	15.37	11.3
7A	150996.02	990517.74	14.4	14.30	10.2
8A	150793.68	990223.31	9.9	9.74	5.0
9A	150774.29	989950.52	10.8	10.22	6.3
10A	151049.60	989658.43	10.4	10.19	6.2

STATE OF NEW YORK — MARK W. GLYNN — LICENSE NO.# 057491 — LICENSED PROFESSIONAL ENGINEER

4-28-04

ITEM:	DATE:	REVISION:
2	4.22.04	REVISED PER 4/13/04 COMMENTS
1	4.1.04	FIRST ISSUE

GGE 03–1196D

GGE
GLYNN GEOTECHNICAL ENGINEERING
415 S. TRANSIT STREET
LOCKPORT, NEW YORK 14094
www.glynngroup.com
VOICE (716) 625 - 6933 / FAX (716) 625 - 6983

SHEET PILE AS BUILT DRAWING

KEYSPAN
FORMER BROOKLYN BOROUGH GAS WORKS SITE
CONEY ISLAND, NEW YORK

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE 1 of 3

DATE:	3/29/04
DRAWN BY:	C. BIGELOW
CHECKED BY:	J. Farina/M. Glynn
CAD FILE:	asbuilt–sheet
SCALE:	AS SHOWN

Station (in feet)	Sheet pile Number	Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
83.8	SP-1	25	25	7.97	8.00	7.97	-17	-17.03	3/18/2004
88.2	SP-2	25	25	8.09	8.00	8.09	-17	-16.91	3/18/2004
92.6	SP-3	25	25	8.05	8.00	8.05	-17	-16.95	3/18/2004
97.0	SP-4	25	25	8.10	8.00	8.10	-17	-16.90	3/18/2004
101.4	SP-5	25	25	8.15	8.00	8.15	-17	-16.85	3/18/2004
105.8	SP-6	25	25	8.25	8.00	8.25	-17	-16.75	3/18/2004
110.2	SP-7	25	25	7.97	8.00	7.97	-17	-17.03	3/18/2004
114.6	SP-8	25	25	8.01	8.00	8.01	-17	-16.99	3/18/2004
119.0	SP-9	25	25	8.05	8.00	8.05	-17	-16.95	3/18/2004
123.4	SP-10	25	25	8.07	8.00	8.07	-17	-16.93	3/18/2004
127.8	SP-11	25	25	10.09	8.00	10.09	-17	-14.91	3/18/2004
133.3	SP-12	25	25	9.76	8.00	9.76	-17	-15.24	3/18/2004
137.7	SP-13	25	25	9.83	8.00	9.83	-17	-15.17	3/18/2004
142.1	SP-14	25	25	9.62	8.00	9.62	-17	-15.38	3/18/2004
146.5	SP-15	25	25	8.07	8.00	8.07	-17	-16.93	3/18/2004
150.9	SP-16	25	25	9.45	8.00	9.45	-17	-15.55	3/18/2004
155.3	SP-17	25	25	8.06	8.00	8.06	-17	-16.94	3/18/2004
159.7	SP-18	25	25	8.20	8.00	8.20	-17	-16.80	3/18/2004
164.1	SP-19	25	25	8.19	8.00	8.19	-17	-16.81	3/18/2004
168.5	SP-20	25	25	6.86	8.00	6.86	-17	-18.14	3/18/2004
172.9	SP-21	25	25	6.90	8.00	6.90	-17	-18.10	3/18/2004
177.3	SP-22	25	25	7.01	8.00	7.01	-17	-17.99	3/18/2004
181.7	SP-23	25	25	7.17	8.00	7.17	-17	-17.83	3/18/2004
186.1	SP-24	25	25	7.20	8.00	7.20	-17	-17.80	3/18/2004
190.5	SP-25	25	25	7.20	8.00	7.20	-17	-17.80	3/18/2004
194.9	SP-26	25	25	7.20	8.00	7.20	-17	-17.80	3/18/2004
199.3	SP-27	25	25	8.13	8.00	8.13	-17	-16.87	3/18/2004
203.7	SP-28	25	25	8.23	8.00	8.23	-17	-16.77	3/18/2004
208.1	SP-29	25	25	8.30	8.00	8.30	-17	-16.70	3/18/2004
212.4	SP-30	25	25	8.17	8.00	8.17	-17	-16.83	3/18/2004
216.8	SP-31	25	25	8.15	8.00	8.15	-17	-16.85	3/18/2004
221.2	SP-32	25	25	8.18	8.00	8.18	-17	-16.82	3/18/2004
225.6	SP-33	25	25	8.17	8.00	8.17	-17	-16.83	3/18/2004
230.0	SP-34	25	25	8.19	8.00	8.19	-17	-16.81	3/18/2004
234.4	SP-35	25	25	8.19	8.00	8.19	-17	-16.81	3/18/2004
238.8	SP-36	25	25	8.23	8.00	8.23	-17	-16.77	3/18/2004
243.2	SP-37	25	25	8.23	8.00	8.23	-17	-16.77	3/18/2004
247.6	SP-38	25	25	8.28	8.00	8.28	-17	-16.72	3/18/2004
252.0	SP-39	25	25	8.33	8.00	8.33	-17	-16.67	3/18/2004
256.4	SP-40	25	25	8.40	8.00	8.40	-17	-16.60	3/18/2004
260.8	SP-41	25	25	8.43	8.00	8.43	-17	-16.57	3/18/2004
265.2	SP-42	25	25	8.45	8.00	8.45	-17	-16.55	3/18/2004
269.6	SP-43	25	25	8.37	8.00	8.37	-17	-16.63	3/18/2004
274.0	SP-44	25	25	10.93	8.00	10.93	-17	-14.07	3/18/2004
278.4	SP-45	25	25	8.42	8.00	8.42	-17	-16.58	3/18/2004
282.8	SP-46	25	25	8.46	8.00	8.46	-17	-16.54	3/18/2004
284.0	M-1	30	28	12.37	11.00	10.37	-17	-17.63	3/18/2004
288.4	M-2	30	28	13.08	11.00	11.08	-17	-16.92	3/18/2004
292.7	M-3	30	28	13.05	11.00	11.05	-17	-16.95	3/18/2004
297.1	M-4	30	28	12.86	11.00	10.86	-17	-17.14	3/18/2004
301.4	M-5	30	28	13.05	11.00	11.05	-17	-16.95	3/18/2004
305.8	M-6	30	28	13.02	11.00	11.02	-17	-16.98	3/18/2004
310.1	M-7	30	28	12.97	11.00	10.97	-17	-17.03	3/18/2004
314.5	M-8	30	28	12.89	11.00	10.89	-17	-17.11	3/18/2004
318.8	M-9	30	28	13.02	11.00	11.02	-17	-16.98	3/18/2004
323.2	M-10	30	28	12.93	11.00	10.93	-17	-17.07	3/18/2004
327.5	M-11	30	28	12.82	11.00	10.82	-17	-17.18	3/18/2004
331.9	M-12	30	28	12.79	11.00	10.79	-17	-17.21	3/18/2004
336.2	M-13	30	28	12.90	11.00	10.90	-17	-17.10	3/18/2004
340.6	M-14	30	28	12.72	11.00	10.72	-17	-17.28	3/18/2004
344.9	M-15	30	28	12.98	11.00	10.98	-17	-17.02	3/18/2004
349.3	M-16	30	28	12.99	11.00	10.99	-17	-17.01	3/18/2004
353.6	M-17	30	28	12.86	11.00	10.86	-17	-17.14	3/18/2004
358.0	M-18	30	28	12.93	11.00	10.93	-17	-17.07	3/18/2004
362.3	M-19	30	28	12.75	11.00	10.75	-17	-17.25	3/18/2004
366.7	M-20	30	28	13.90	11.00	11.90	-17	-16.10	3/18/2004
371.0	M-21	34.17	28	14.25	11.00	8.08	-17	-19.92	3/18/2004
375.4	M-22	25.83	28	12.93	11.00	12.93	-17	-12.90	3/18/2004
379.7	M-23	30	28	12.84	11.00	10.84	-17	-17.16	3/18/2004
384.1	M-24	30	28	12.90	11.00	10.90	-17	-17.10	3/18/2004
388.4	M-25	30	28	12.90	11.00	10.90	-17	-17.10	3/18/2004
392.8	M-26	30	28	12.85	11.00	10.85	-17	-17.15	3/18/2004
397.1	M-27	30	28	12.92	11.00	10.92	-17	-17.08	3/18/2004
401.5	M-28	30	28	12.85	11.00	10.85	-17	-17.15	3/18/2004
405.8	M-29	30	28	12.85	11.00	10.85	-17	-17.15	3/18/2004
410.2	M-30	30	28	12.88	11.00	10.88	-17	-17.12	3/18/2004
414.5	M-31	30	28	13.04	11.00	11.04	-17	-16.96	3/18/2004
418.9	M-32	30	28	13.78	11.00	11.78	-17	-16.22	3/18/2004
423.2	M-33	30	28	13.53	11.00	11.53	-17	-16.47	3/18/2004
427.6	M-34	30	28	13.45	11.00	11.45	-17	-16.55	3/18/2004
431.9	M-35	32.5	28	15.53	11.00	15.53	-17	-16.97	3/18/2004
436.3	M-36	30	28	13.67	11.00	11.67	-17	-16.33	3/18/2004
440.6	M-37	30	28	13.84	11.00	11.84	-17	-16.16	3/18/2004
445.0	M-38	30	28	13.10	11.00	11.10	-17	-16.90	3/18/2004
449.3	M-39	30	28	13.02	11.00	11.02	-17	-16.98	3/18/2004
453.7	SP-47	30	28	12.88	11.00	10.88	-17	-17.12	3/18/2004
458.0	SP-48	30	28	12.87	11.00	10.87	-17	-17.13	3/18/2004
462.4	SP-49	30	28	12.90	11.00	10.90	-17	-17.10	3/18/2004
466.7	SP-50	30	28	12.79	11.00	10.79	-17	-17.21	3/18/2004
471.1	SP-51	30	28	12.84	11.00	10.84	-17	-17.16	3/18/2004
475.4	SP-52	30	28	12.99	11.00	10.99	-17	-17.01	3/18/2004
479.8	SP-53	30	28	13.03	11.00	11.03	-17	-16.97	3/18/2004
484.1	SP-54	30	28	13.03	11.00	11.03	-17	-16.97	3/18/2004
488.5	SP-55	30	28	13.11	11.00	11.11	-17	-16.89	3/18/2004
492.8	SP-56	30	28	13.02	11.00	11.02	-17	-16.98	3/18/2004
497.2	SP-57	30	28	12.94	11.00	10.94	-17	-17.06	3/18/2004
501.5	SP-58	30	28	12.94	11.00	10.94	-17	-17.06	3/18/2004
505.9	SP-59	30	28	12.95	11.00	10.95	-17	-17.05	3/18/2004
510.2	SP-60	30	28	13.00	11.00	11.00	-17	-17.00	3/18/2004
514.6	SP-61	30	28	12.97	11.00	10.97	-17	-17.03	3/18/2004
518.9	SP-62	30	28	13.07	11.00	11.07	-17	-16.93	3/18/2004
523.3	SP-63	30	28	12.99	11.00	10.99	-17	-17.01	3/18/2004
527.6	SP-64	30	28	13.01	11.00	11.01	-17	-16.99	3/18/2004
532.0	SP-65	30	28	13.61	11.00	11.61	-17	-16.39	3/18/2004
536.3	SP-66	30	28	13.05	11.00	11.05	-17	-16.95	3/18/2004
540.6	SP-67	30	28	12.87	11.00	10.87	-17	-17.13	3/18/2004
545.0	SP-68	30	28	12.92	11.00	10.92	-17	-17.08	3/18/2004
549.3	SP-69	30	28	13.01	11.00	11.01	-17	-16.99	3/18/2004
553.6	SP-70	30	28	12.83	11.00	10.83	-17	-17.17	3/18/2004
558.0	SP-71	30	28	12.63	11.00	10.63	-17	-17.37	3/18/2004
562.3	SP-72	30	28	12.64	11.00	10.64	-17	-17.36	3/18/2004
566.6	SP-73	30	28	12.73	11.00	10.73	-17	-17.27	3/18/2004
570.9	SP-74	30	28	12.75	11.00	10.75	-17	-17.25	3/18/2004
575.3	SP-75	30	28	12.79	11.00	10.79	-17	-17.21	3/18/2004
579.6	SP-76	30	28	12.79	11.00	10.79	-17	-17.21	3/18/2004
583.9	SP-77	30	28	12.75	11.00	10.75	-17	-17.25	3/18/2004
588.3	SP-78	30	28	12.63	11.00	10.63	-17	-17.37	3/18/2004
592.6	SP-79	30	28	12.80	11.00	10.80	-17	-17.20	3/18/2004
596.9	SP-80	30	28	12.91	11.00	10.91	-17	-17.09	3/18/2004

Station (in feet)	Sheet pile Number	Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
601.3	SP-81	30	28	12.87	11.00	10.87	-17	-17.13	3/18/2004
605.6	SP-82	30	28	12.87	11.00	10.87	-17	-17.13	3/18/2004
609.9	SP-83	30	28	12.93	11.00	10.93	-17	-17.07	3/18/2004
614.2	SP-84	30	28	12.90	11.00	10.90	-17	-17.10	3/18/2004
618.6	SP-85	30	28	12.83	11.00	10.83	-17	-17.17	3/18/2004
622.9	SP-86	30	28	12.61	11.00	10.61	-17	-17.39	3/18/2004
627.2	SP-87	30	28	12.84	11.00	10.84	-17	-17.16	3/18/2004
631.6	SP-88	30	28	12.88	11.00	10.88	-17	-17.12	3/18/2004
635.9	SP-89	30	28	12.87	11.00	10.87	-17	-17.13	3/18/2004
640.2	SP-90	30	28	12.97	11.00	10.97	-17	-17.03	3/18/2004
644.6	SP-91	30	28	12.99	11.00	10.99	-17	-17.01	3/18/2004
648.9	SP-92	30	28	13.01	11.00	11.01	-17	-16.99	3/18/2004
653.2	SP-93	30	28	12.96	11.00	10.96	-17	-17.04	3/18/2004
657.5	SP-94	30	28	12.97	11.00	10.97	-17	-17.03	3/18/2004
661.9	SP-95	30	28	12.91	11.00	10.91	-17	-17.09	3/18/2004
666.2	SP-96	30	28	12.95	11.00	10.95	-17	-17.05	3/18/2004
670.5	SP-97	30	28	12.88	11.00	10.88	-17	-17.12	3/18/2004
674.9	SP-98	30	28	12.86	11.00	10.86	-17	-17.14	3/18/2004
679.2	SP-99	30	28	12.74	11.00	10.74	-17	-17.26	3/18/2004
683.5	SP-100	30	28	12.90	11.00	10.90	-17	-17.10	3/18/2004
687.9	SP-101	30	28	12.93	11.00	10.93	-17	-17.07	3/18/2004
692.2	SP-102	30	28	12.89	11.00	10.89	-17	-17.11	3/18/2004
696.5	SP-103	30	28	12.72	11.00	10.72	-17	-17.28	3/18/2004
700.8	SP-104	30	28	12.75	11.00	10.75	-17	-17.25	3/18/2004
705.2	SP-105	30	28	12.40	11.00	10.40	-17	-17.60	3/18/2004
709.5	SP-106	30	28	12.80	11.00	10.80	-17	-17.20	3/18/2004
713.8	SP-107	30	28	12.77	11.00	10.77	-17	-17.23	3/18/2004
718.2	SP-108	30	28	12.77	11.00	10.77	-17	-17.23	3/18/2004
722.5	SP-109	30	28	12.75	11.00	10.75	-17	-17.25	3/18/2004
726.8	SP-110	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
731.2	SP-111	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
735.5	SP-112	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
739.8	SP-113	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
744.1	SP-114	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
748.5	SP-115	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
752.8	SP-116	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
757.1	SP-117	30	28	12.79	11.00	10.79	-17	-17.21	3/18/2004
761.5	SP-118	30	28	12.80	11.00	10.80	-17	-17.20	3/18/2004
765.8	SP-119	30	28	12.80	11.00	10.80	-17	-17.20	3/18/2004
770.1	SP-120	30	28	12.90	11.00	10.90	-17	-17.10	3/18/2004
774.5	SP-121	30	28	13.02	11.00	11.02	-17	-16.98	3/18/2004
778.8	SP-122	30	28	12.92	11.00	10.92	-17	-17.08	3/18/2004
783.1	SP-123	30	28	12.88	11.00	10.88	-17	-17.12	3/18/2004
787.4	SP-124	30	28	12.89	11.00	10.89	-17	-17.11	3/18/2004
791.8	SP-125	30	28	12.63	11.00	10.63	-17	-17.37	3/18/2004
796.1	SP-126	30	28	12.72	11.00	10.72	-17	-17.28	3/18/2004
800.4	SP-127	30	28	12.72	11.00	10.72	-17	-17.28	3/18/2004
804.8	SP-128	30	28	12.79	11.00	10.79	-17	-17.21	3/18/2004
809.1	SP-129	30	28	< 13	11.00	< 11	-17	< -17	2/16/2004
813.4	SP-130	30	28	12.94	11.00	10.94	-17	-17.06	2/16/2004
817.8	SP-131	30	28	12.97	11.00	10.97	-17	-17.03	2/16/2004
822.1	SP-132	30	28	12.92	11.00	10.92	-17	-17.08	2/16/2004
826.4	SP-133	30	28	12.96	11.00	10.96	-17	-17.04	2/16/2004
830.7	SP-134	30	28	12.98	11.00	10.98	-17	-17.02	2/16/2004
835.0	SP-135	30	28	12.96	11.00	10.96	-17	-17.04	2/16/2004
839.3	SP-136	30	28	12.94	11.00	10.94	-17	-17.06	2/16/2004
843.6	SP-137	30	28	12.94	11.00	10.94	-17	-17.06	2/16/2004
847.9	SP-138	30	28	12.99	11.00	10.99	-17	-17.01	2/16/2004
852.2	SP-139	30	28	12.97	11.00	10.97	-17	-17.03	2/16/2004
856.5	SP-140	30	28	12.97	11.00	10.97	-17	-17.03	2/16/2004
860.8	SP-141	30	28	12.98	11.00	10.98	-17	-17.02	2/16/2004
865.1	SP-142	30	28	13.02	11.00	11.02	-17	-16.98	2/16/2004
869.4	SP-143	30	28	13.05	11.00	11.05	-17	-16.95	2/16/2004
873.7	SP-144	30	28	13.03	11.00	11.03	-17	-16.97	2/16/2004
878.0	SP-145	30	28	13.14	11.00	11.14	-17	-16.86	2/16/2004
882.3	SP-146	30	28	12.96	11.00	10.96	-17	-17.04	2/16/2004
886.6	SP-147	30	28	12.96	11.00	10.96	-17	-17.04	2/16/2004
890.9	SP-148	30	28	12.98	11.00	10.98	-17	-17.02	2/16/2004
895.2	SP-149	30	28	12.98	11.00	10.98	-17	-17.02	2/16/2004
899.5	SP-150	30	28	12.98	11.00	10.98	-17	-17.02	2/16/2004
903.8	SP-151	30	28	13.05	11.00	11.05	-17	-16.95	2/16/2004
908.1	SP-152	30	28	13.14	11.00	11.14	-17	-16.86	2/16/2004
912.4	SP-153	30	28	13.00	11.00	11.00	-17	-17.00	2/16/2004
916.7	SP-154	30	28	12.99	11.00	10.99	-17	-17.01	2/16/2004
921.0	SP-155	30	28	12.95	11.00	10.95	-17	-17.05	2/16/2004
925.3	SP-156	30	28	13.09	11.00	11.09	-17	-16.91	2/16/2004
929.6	SP-157	30	28	13.00	11.00	11.00	-17	-17.00	2/16/2004
933.9	SP-158	30	28	13.04	11.00	11.04	-17	-16.96	2/16/2004
938.2	SP-159	30	28	13.10	11.00	11.10	-17	-16.90	2/16/2004
942.5	SP-160	30	28	12.98	11.00	10.98	-17	-17.02	2/16/2004
946.8	SP-161	30	28	13.03	11.00	11.03	-17	-16.97	2/16/2004
951.1	SP-162	30	28	13.00	11.00	11.00	-17	-17.00	2/16/2004
955.4	SP-163	30	28	12.98	11.00	10.98	-17	-17.02	2/16/2004
959.7	SP-164	30	28	12.96	11.00	10.96	-17	-17.04	2/16/2004
964.0	SP-165	30	28	12.91	11.00	10.91	-17	-17.09	2/16/2004
968.3	SP-166	30	28	12.94	11.00	10.94	-17	-17.06	2/16/2004
972.6	SP-167	30	28	12.91	11.00	10.91	-17	-17.09	2/16/2004
976.9	SP-168	30	28	12.88	11.00	10.88	-17	-17.12	2/16/2004
981.2	SP-169	30	28	13.00	11.00	11.00	-17	-17.00	2/16/2004
985.5	SP-170	30	28	13.06	11.00	11.06	-17	-16.94	2/16/2004
989.8	SP-171	30	28	13.10	11.00	11.10	-17	-16.90	2/16/2004
994.1	SP-172	30	28	13.04	11.00	11.04	-17	-16.96	2/16/2004
998.4	SP-173	30	28	12.96	11.00	10.96	-17	-17.04	2/16/2004
1002.7	SP-174	30	28	13.18	11.00	11.18	-17	-16.82	2/16/2004
1007.0	SP-175	30	28	12.95	11.00	10.95	-17	-17.05	2/16/2004
1011.3	SP-176	30	28	13.01	11.00	11.01	-17	-16.99	2/16/2004
1015.6	SP-177	30	28	13.08	11.00	11.08	-17	-16.92	2/16/2004
1019.9	SP-178	30	28	13.06	11.00	11.06	-17	-16.94	2/16/2004
1024.2	SP-179	30	28	13.07	11.00	11.07	-17	-16.93	2/16/2004
1028.5	SP-180	30	28	13.04	11.00	11.04	-17	-16.96	2/16/2004
1032.8	SP-181	30	28	13.05	11.00	11.05	-17	-16.95	2/16/2004
1037.1	SP-182	30	28	13.05	11.00	11.05	-17	-16.95	2/16/2004
1041.4	SP-183	30	28	12.90	11.00	10.90	-17	-17.10	2/16/2004
1045.7	SP-184	30	28	13.04	11.00	11.04	-17	-16.96	2/16/2004
1050.0	SP-185	30	28	13.22	11.00	11.22	-17	-16.78	2/16/2004
1054.3	SP-186	30	28	12.45	11.00	10.45	-17	-17.55	2/16/2004
1058.6	SP-187	30	28	12.90	11.00	10.90	-17	-17.10	2/16/2004
1062.9	SP-188	30	28	12.97	11.00	10.97	-17	-17.03	2/16/2004
1067.2	SP-189	30	28	13.08	11.00	11.08	-17	-16.92	2/16/2004
1071.5	SP-190	30	28	13.08	11.00	11.08	-17	-16.92	2/16/2004
1075.8	SP-191	30	28	13.16	11.00	11.16	-17	-16.84	2/16/2004
1080.1	SP-192	30	28	13.06	11.00	11.06	-17	-16.94	2/16/2004
1084.4	SP-193	30	28	13.12	11.00	11.12	-17	-16.88	2/16/2004
1088.7	SP-194	30	28	13.08	11.00	11.08	-17	-16.92	2/16/2004
1093.0	SP-195	30	28	13.43	11.00	11.43	-17	-16.57	2/16/2004
1097.3	SP-196	30	28	12.85	11.00	10.85	-17	-17.15	2/16/2004
1101.6	SP-197	30	28	12.81	11.00	10.81	-17	-17.19	2/16/2004
1105.9	SP-198	30	28	12.93	11.00	10.93	-17	-17.07	2/16/2004
1110.2	SP-199	30	28	13.07	11.00	11.07	-17	-16.93	2/16/2004

Station (in feet)	Sheet pile Number	Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
1114.5	SP-200	30	28	12.93	11.00	10.93	-17	-17.07	2/16/2004
1118.8	SP-201	30	28	12.94	11.00	10.94	-17	-17.06	2/16/2004
1123.1	SP-202	30	28	12.94	11.00	10.94	-17	-17.06	2/16/2004
1127.4	SP-203	30	28	13.00	11.00	11.00	-17	-17.00	2/16/2004
1131.8	SP-204	30	28	12.73	11.00	10.73	-17	-17.27	2/16/2004
1136.1	SP-205	30	28	13.00	11.00	10.91	-17	-17.09	3/17/2004
1140.4	SP-206	30	28	13.01	11.00	11.01	-17	-16.99	3/17/2004
1144.8	SP-207	30	28	12.78	11.00	11.04	-17	-16.96	3/17/2004
1149.1	SP-208	30	28	13.00	11.00	10.87	-17	-17.13	3/17/2004
1153.4	SP-209	30	28	12.51	11.00	10.55	-17	-17.45	3/17/2004
1157.8	SP-210	30	28	12.75	11.00	10.81	-17	-17.19	3/17/2004
1162.1	SP-211	30	28	12.93	11.00	10.84	-17	-17.16	3/17/2004
1166.4	SP-212	30	28	12.81	11.00	10.65	-17	-17.35	3/17/2004
1170.7	SP-213	30	28	12.93	11.00	10.99	-17	-17.01	3/17/2004
1175.1	SP-214	30	28	13.10	11.00	11.04	-17	-16.96	3/17/2004
1179.4	SP-215	30	28	12.90	11.00	10.90	-17	-17.10	3/17/2004
1183.7	SP-216	30	28	12.78	11.00	10.89	-17	-17.11	3/17/2004
1188.1	SP-217	30	28	12.82	11.00	10.63	-17	-17.37	3/17/2004
1192.4	SP-218	40	37	13.89	11.00	10.89	-26	-26.11	3/17/2004
1196.8	SP-219	40	37	13.81	11.00	10.81	-26	-26.19	3/17/2004
1201.2	SP-220	40	37	13.81	11.00	10.81	-26	-26.19	3/17/2004
1205.6	SP-221	40	37	13.94	11.00	10.94	-26	-26.06	3/17/2004
1210.0	SP-222	40	37	13.95	11.00	10.95	-26	-26.05	3/17/2004
1214.4	SP-223	40	37	19.04	11.00	16.04	-26	-20.96	3/17/2004
1218.8	SP-224	40	37	13.76	11.00	10.76	-26	-26.24	3/17/2004
1223.2	SP-225	40	37	13.89	11.00	10.89	-26	-26.11	3/17/2004
1227.6	SP-226	40	37	13.84	11.00	10.84	-26	-26.16	3/17/2004
1232.0	SP-227	40	37	13.91	11.00	10.91	-26	-26.09	3/17/2004
1236.4	SP-228	40	37	13.78	11.00	10.78	-26	-26.22	3/17/2004
1240.7	SP-229	40	37	13.84	11.00	10.84	-26	-26.16	3/17/2004
1245.1	SP-230	40	37	13.66	11.00	10.66	-26	-26.34	3/17/2004
1249.5	SP-231	40	37	13.96	11.00	10.96	-26	-26.04	3/17/2004
1253.9	SP-232	40	37	13.63	11.00	10.63	-26	-26.37	3/17/2004
1258.3	SP-233	40	37	13.67	11.00	10.67	-26	-26.33	3/17/2004
1262.7	SP-234	40	37	13.83	11.00	10.83	-26	-26.17	3/17/2004
1267.1	SP-235	40	37	13.87	11.00	10.87	-26	-26.13	3/17/2004
1271.5	SP-236	40	37	13.64	11.00	10.64	-26	-26.36	3/17/2004
1275.9	SP-237	40	37	11.58	11.00	8.58	-26	-28.42	3/17/2004
1280.3	SP-238	40	37	15.33	11.00	12.33	-26	-24.67	3/17/2004
1284.7	SP-239	40	37	13.89	11.00	10.89	-26	-26.11	3/17/2004
1289.1	SP-240	40	37	13.87	11.00	10.87	-26	-26.13	3/17/2004
1293.5	SP-241	40	37	13.87	11.00	10.87	-26	-26.13	3/17/2004
1297.9	SP-242	40	37	13.90	11.00	10.90	-26	-26.10	3/17/2004
1302.3	SP-243	40	37	13.90	11.00	10.90	-26	-26.10	3/17/2004
1306.7	SP-244	40	37	13.87	11.00	10.87	-26	-26.13	3/17/2004
1311.1	SP-245	40	37	13.87	11.00	10.87	-26	-26.13	3/17/2004
1315.5	SP-246	40	37	13.94	11.00	10.94	-26	-26.06	3/17/2004
1319.9	SP-247	40	37	13.97	11.00	10.97	-26	-26.03	3/17/2004
1324.3	SP-248	40	37	13.91	11.00	10.91	-26	-26.09	3/17/2004
1328.7	SP-249	40	37	13.67	11.00	10.67	-26	-26.33	3/17/2004
1333.1	SP-250	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
1337.5	SP-251	40	37	13.73	11.00	10.73	-26	-26.27	3/17/2004
1341.9	SP-252	40	37	13.74	11.00	10.74	-26	-26.26	3/17/2004
1346.3	SP-253	40	37	13.85	11.00	10.85	-26	-26.15	3/17/2004
1350.7	SP-254	40	37	13.85	11.00	10.85	-26	-26.15	3/17/2004
1355.1	SP-255	40	37	13.86	11.00	10.86	-26	-26.14	3/17/2004
1359.5	SP-256	40	37	13.81	11.00	10.81	-26	-26.19	3/17/2004
1363.9	SP-257	40	37	13.97	11.00	10.97	-26	-26.03	3/17/2004
1368.3	SP-258	40	37	13.88	11.00	10.88	-26	-26.12	3/17/2004
1372.7	SP-259	40	37	13.90	11.00	10.90	-26	-26.10	3/17/2004
1377.1	SP-260	40	37	13.96	11.00	10.96	-26	-26.04	3/17/2004
1381.5	SP-261	40	37	13.82	11.00	10.82	-26	-26.18	3/17/2004
1385.8	SP-262	40	37	13.84	11.00	10.84	-26	-26.16	3/17/2004
1390.2	SP-263	40	37	14.00	11.00	11.00	-26	-26.00	3/17/2004
1394.6	SP-264	40	37	13.86	11.00	10.86	-26	-26.14	3/17/2004
1399.0	SP-265	40	37	13.85	11.00	10.85	-26	-26.15	3/17/2004
1403.4	SP-266	40	37	13.89	11.00	10.89	-26	-26.11	3/17/2004
1407.7	SP-267	40	37	13.89	11.00	10.89	-26	-26.11	3/17/2004
1412.1	SP-268	40	37	13.83	11.00	10.83	-26	-26.17	3/17/2004
1416.5	SP-269	40	37	13.87	11.00	10.87	-26	-26.13	3/17/2004
1420.9	SP-270	40	37	13.96	11.00	10.96	-26	-26.04	3/17/2004
1425.3	SP-271	40	37	13.78	11.00	10.78	-26	-26.22	3/17/2004
1429.6	SP-272	40	37	13.56	11.00	10.56	-26	-26.44	3/17/2004
1434.0	SP-273	40	37	13.79	11.00	10.79	-26	-26.21	3/17/2004
1438.4	SP-274	40	37	13.73	11.00	10.73	-26	-26.27	3/17/2004
1442.8	SP-275	40	37	13.91	11.00	10.91	-26	-26.09	3/17/2004
1447.2	SP-276	40	37	13.56	11.00	10.56	-26	-26.44	3/17/2004
1451.5	SP-277	40	37	13.92	11.00	10.92	-26	-26.08	3/17/2004
1455.9	SP-278	40	37	13.67	11.00	10.67	-26	-26.33	3/17/2004
1460.3	SP-279	40	37	14.09	11.00	11.09	-26	-25.91	3/17/2004
1464.7	SP-280	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
1469.1	SP-281	40	37	13.53	11.00	10.53	-26	-26.47	3/17/2004
1473.4	SP-282	40	37	13.56	11.00	10.56	-26	-26.44	3/17/2004
1477.8	SP-283	40	37	13.78	11.00	10.78	-26	-26.22	3/17/2004
1482.2	SP-284	40	37	13.87	11.00	10.87	-26	-26.13	3/17/2004
1486.6	SP-285	40	37	13.93	11.00	10.93	-26	-26.07	3/17/2004
1491.0	SP-286	40	37	13.64	11.00	10.64	-26	-26.36	3/17/2004
1495.3	SP-287	40	37	13.66	11.00	10.66	-26	-26.34	3/17/2004
1499.7	SP-288	40	37	13.76	11.00	10.76	-26	-26.24	3/17/2004
1504.1	SP-289	40	37	13.62	11.00	10.62	-26	-26.38	3/17/2004
1508.5	SP-290	40	37	13.45	11.00	10.45	-26	-26.55	3/17/2004
1512.9	SP-291	40	37	13.50	11.00	10.50	-26	-26.50	3/17/2004
1517.2	SP-292	40	37	13.57	11.00	10.57	-26	-26.43	3/17/2004
1521.6	SP-293	40	37	13.36	11.00	10.36	-26	-26.64	3/17/2004
1526.0	SP-294	40	37	13.58	11.00	10.58	-26	-26.42	3/17/2004
1530.4	SP-295	40	37	13.74	11.00	10.74	-26	-26.26	3/17/2004
1534.8	SP-296	40	37	13.46	11.00	10.46	-26	-26.54	3/17/2004
1539.1	SP-297	40	37	13.28	11.00	10.28	-26	-26.72	3/17/2004
1543.5	SP-298	40	37	13.17	11.00	10.17	-26	-26.83	3/17/2004
1547.9	SP-299	40	37	13.63	11.00	10.63	-26	-26.37	3/17/2004
1552.3	SP-300	40	37	13.67	11.00	10.67	-26	-26.33	3/17/2004
1556.6	SP-301	40	37	13.66	11.00	10.66	-26	-26.34	3/17/2004
1561.0	SP-302	40	37	14.02	11.00	11.02	-26	-25.98	3/17/2004
1565.4	SP-303	40	37	13.99	11.00	10.99	-26	-26.01	3/17/2004
1569.7	SP-304	40	37	13.83	11.00	10.83	-26	-26.17	3/17/2004
1574.1	SP-305	40	37	14.51	11.00	11.51	-26	-25.49	3/17/2004
1578.5	SP-306	40	37	13.73	11.00	10.73	-26	-26.27	3/17/2004
1582.8	SP-307	40	37	14.05	11.00	11.05	-26	-25.95	3/17/2004
1587.2	SP-308	40	37	13.84	11.00	10.84	-26	-26.16	3/17/2004

Station (in feet)	Sheet pile Number	Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
1591.6	SP-309	40	37	13.78	11.00	10.78	-26	-26.22	3/17/2004
1595.9	SP-310	40	37	13.79	11.00	10.79	-26	-26.21	3/17/2004
1600.3	SP-311	40	37	13.58	11.00	10.58	-26	-26.42	3/17/2004
1604.7	SP-312	40	37	13.66	11.00	10.66	-26	-26.34	3/17/2004
1609.0	SP-313	40	37	13.50	11.00	10.50	-26	-26.50	3/17/2004
1613.4	SP-314	40	37	13.84	11.00	10.84	-26	-26.16	3/17/2004
1617.8	SP-315	40	37	13.80	11.00	10.80	-26	-26.20	3/17/2004
1622.1	SP-316	40	37	13.88	11.00	10.88	-26	-26.12	3/17/2004
1626.5	SP-317	40	37	13.07	11.00	10.07	-26	-26.93	3/17/2004
1630.9	SP-318	40	37	14.07	11.00	11.07	-26	-25.93	3/17/2004
1635.2	SP-319	40	37	13.79	11.00	10.79	-26	-26.21	3/17/2004
1639.6	SP-320	40	37	13.94	11.00	10.94	-26	-26.06	3/17/2004
1644.0	SP-321	40	37	13.91	11.00	10.91	-26	-26.09	3/17/2004
1648.3	SP-322	40	37	13.82	11.00	10.82	-26	-26.18	3/17/2004
1652.7	SP-323	40	37	13.90	11.00	10.90	-26	-26.10	3/17/2004
1657.1	SP-324	40	37	13.93	11.00	10.93	-26	-26.07	3/17/2004
1661.4	SP-325	40	37	13.93	11.00	10.93	-26	-26.07	3/17/2004
1665.8	SP-326	40	37	13.83	11.00	10.83	-26	-26.17	3/17/2004
1670.2	SP-327	40	37	13.96	11.00	10.96	-26	-26.04	3/17/2004
1674.5	SP-328	40	37	13.73	11.00	10.73	-26	-26.27	3/17/2004
1678.9	SP-329	40	37	13.81	11.00	10.81	-26	-26.19	3/17/2004
1683.2	SP-330	40	37	12.87	11.00	9.87	-26	-27.13	3/17/2004
1687.6	SP-331	40	37	13.92	11.00	10.92	-26	-26.08	3/17/2004
1692.0	SP-332	40	37	13.91	11.00	10.91	-26	-26.09	3/17/2004
1696.3	SP-333	40	37	13.93	11.00	10.93	-26	-26.07	3/17/2004
1700.7	SP-334	40	37	13.86	11.00	10.86	-26	-26.14	3/17/2004
1705.1	SP-335	40	37	12.59	11.00	9.59	-26	-27.41	3/17/2004
1709.4	SP-336	40	37	13.62	11.00	10.62	-26	-26.38	3/17/2004
1713.8	SP-337	40	37	13.05	11.00	10.05	-26	-26.95	3/17/2004
1718.2	SP-338	40	37	13.96	11.00	10.96	-26	-26.04	3/17/2004
1722.5	SP-339	40	37	13.82	11.00	10.82	-26	-26.18	3/17/2004
1726.9	SP-340	40	37	13.91	11.00	10.91	-26	-26.09	3/17/2004
1731.3	SP-341	40	37	13.88	11.00	10.88	-26	-26.12	3/17/2004
1735.6	SP-342	40	37	13.30	11.00	10.30	-26	-26.70	3/17/2004
1740.0	SP-343	40	37	13.42	11.00	10.42	-26	-26.58	3/17/2004
1744.4	SP-344	40	37	14.17	11.00	11.17	-26	-25.83	3/17/2004
1748.7	SP-345	40	37	13.88	11.00	10.88	-26	-26.12	3/17/2004
1753.1	SP-346	40	37	11.51	11.00	8.51	-26	-28.49	3/17/2004
1757.5	SP-347	40	37	13.96	11.00	10.96	-26	-26.04	3/17/2004
1761.8	SP-348	40	37	13.78	11.00	10.78	-26	-26.22	3/17/2004
1766.2	SP-349	40	37	13.96	11.00	10.96	-26	-26.04	3/17/2004
1770.6	SP-350	40	37	13.89	11.00	10.89	-26	-26.11	3/17/2004
1774.9	SP-351	40	37	13.46	11.00	10.46	-26	-26.54	3/17/2004
1779.3	SP-352	40	37	15.32	11.00	12.32	-26	-24.68	3/17/2004
1783.7	SP-353	40	37	13.37	11.00	10.37	-26	-26.63	3/17/2004
1788.0	SP-354	40	37	13.62	11.00	10.62	-26	-26.38	3/17/2004
1792.4	SP-355	40	37	13.79	11.00	10.79	-26	-26.21	3/17/2004
1796.8	SP-356	40	37	13.74	11.00	10.74	-26	-26.26	3/17/2004
1801.1	SP-357	40	37	13.83	11.00	10.83	-26	-26.17	3/17/2004
1805.5	SP-358	40	37	13.88	11.00	10.88	-26	-26.12	3/17/2004
1809.9	SP-359	40	37	13.79	11.00	10.79	-26	-26.21	3/17/2004
1814.2	SP-360	40	37	13.76	11.00	10.76	-26	-26.24	3/17/2004
1818.6	SP-361	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
1823.0	SP-362	40	37	13.70	11.00	10.70	-26	-26.30	3/17/2004
1827.3	SP-363	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
1831.7	SP-364	40	37	13.65	11.00	10.65	-26	-26.35	3/17/2004
1836.1	SP-365	40	37	13.42	11.00	10.42	-26	-26.58	3/17/2004
1840.4	SP-366	40	37	13.12	11.00	10.12	-26	-26.88	3/17/2004
1844.8	SP-367	40	37	11.97	11.00	8.97	-26	-28.03	3/17/2004
1849.2	SP-368	40	37	14.73	11.00	11.73	-26	-25.27	3/17/2004
1853.5	SP-369	40	37	13.58	11.00	10.58	-26	-26.42	3/17/2004
1857.9	SP-370	40	37	12.97	11.00	9.97	-26	-27.03	3/17/2004
1862.3	SP-371	40	37	13.78	11.00	10.78	-26	-26.22	3/17/2004
1866.6	SP-372	40	37	13.65	11.00	10.65	-26	-26.35	3/17/2004
1871.0	SP-373	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
1875.3	SP-374	40	37	13.75	11.00	10.75	-26	-26.25	3/17/2004
1879.7	SP-375	40	37	13.55	11.00	10.55	-26	-26.45	3/17/2004
1884.1	SP-376	40	37	12.95	11.00	9.95	-26	-27.05	3/17/2004
1888.4	SP-377	40	37	13.51	11.00	10.51	-26	-26.49	3/17/2004
1892.8	SP-378	40	37	13.50	11.00	10.50	-26	-26.50	3/17/2004
1897.2	SP-379	40	37	13.23	11.00	10.23	-26	-26.77	3/17/2004
1901.5	SP-380	40	37	13.27	11.00	10.27	-26	-26.73	3/17/2004
1905.9	SP-381	40	37	13.15	11.00	10.15	-26	-26.85	3/17/2004
1910.3	SP-382	40	37	13.48	11.00	10.48	-26	-26.52	3/17/2004
1914.6	SP-383	40	37	13.56	11.00	10.56	-26	-26.44	3/17/2004
1919.0	SP-384	40	37	13.48	11.00	10.48	-26	-26.52	3/17/2004
1923.4	SP-385	40	37	13.18	11.00	10.18	-26	-26.82	3/17/2004
1927.7	SP-386	40	37	13.35	11.00	10.35	-26	-26.65	3/17/2004
1932.1	SP-387	40	37	13.38	11.00	10.38	-26	-26.62	3/17/2004
1936.5	SP-388	40	37	13.71	11.00	10.71	-26	-26.29	3/17/2004
1940.8	SP-389	40	37	13.44	11.00	10.44	-26	-26.56	3/17/2004
1945.2	SP-390	40	37	12.77	11.00	9.77	-26	-27.23	3/17/2004
1949.6	SP-391	40	37	13.69	11.00	10.69	-26	-26.31	3/17/2004
1953.9	SP-392	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
1958.3	SP-393	40	37	13.74	11.00	10.74	-26	-26.26	3/17/2004
1962.6	SP-394	40	37	13.85	11.00	10.85	-26	-26.15	3/17/2004
1967.0	SP-395	40	37	14.02	11.00	11.02	-26	-25.98	3/17/2004
1971.4	SP-396	40	37	13.72	11.00	10.72	-26	-26.28	3/17/2004
1975.7	SP-397	40	37	13.92	11.00	10.92	-26	-26.08	3/17/2004
1980.1	SP-398	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
1984.5	SP-399	40	37	14.02	11.00	11.02	-26	-25.98	3/17/2004
1988.8	SP-400	40	37	13.71	11.00	10.71	-26	-26.29	3/17/2004

GGE 03-1196D

ITEM:	DATE:	REVISION:
2	4.22.04	REVISED PER 4/13/04 COMMENTS
1	4.1.04	FIRST ISSUE

STATE OF NEW YORK · MARK W. GLYNN · LICENSE NO # 057491 · LICENSED PROFESSIONAL ENGINEER

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GLYNN GEOTECHNICAL ENGINEERING
415 S. TRANSIT STREET
LOCKPORT, NEW YORK 14094
www.glynngroup.com
VOICE (716) 625-6933 / FAX (716) 625-6983

SHEET PILE ELEVATION SUMMARY

KEYSPAN
FORMER BROOKLYN BOROUGH
GAS WORKS SITE
CONEY ISLAND, NEW YORK

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE 2 of 3

DATE:	3/29/04
DRAWN BY:	C. BIGELOW
CHECKED BY:	
CAD FILE:	asbuilt-sheet
SCALE:	AS SHOWN

Station (in feet)	Sheet pile Number		Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
1993.2	SP-	401	40	37	13.71	11.00	10.71	-26	-26.29	3/17/2004
1997.6	SP-	402	40	37	14.00	11.00	11.00	-26	-26.00	3/17/2004
2001.9	SP-	403	40	37	13.95	11.00	10.95	-26	-26.05	3/17/2004
2006.3	SP-	404	40	37	13.90	11.00	10.90	-26	-26.10	3/17/2004
2010.7	SP-	405	40	37	13.89	11.00	10.89	-26	-26.11	3/17/2004
2015.0	SP-	406	40	37	13.71	11.00	10.71	-26	-26.29	3/17/2004
2019.4	SP-	407	40	37	13.66	11.00	10.66	-26	-26.34	3/17/2004
2023.8	SP-	408	40	37	13.81	11.00	10.81	-26	-26.19	3/17/2004
2028.1	SP-	409	40	37	13.78	11.00	10.78	-26	-26.22	3/17/2004
2032.5	SP-	410	40	37	13.65	11.00	10.65	-26	-26.35	3/17/2004
2036.9	SP-	411	40	37	13.71	11.00	10.71	-26	-26.29	3/17/2004
2041.2	SP-	412	40	37	14.06	11.00	11.06	-26	-25.94	3/17/2004
2045.6	SP-	413	40	37	13.71	11.00	10.71	-26	-26.29	3/17/2004
2049.7	SP-	414	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
2053.8	SP-	415	40	37	13.68	11.00	10.68	-26	-26.32	3/17/2004
2057.9	SP-	416	40	37	13.69	11.00	10.69	-26	-26.31	3/17/2004
2062.1	SP-	417	40	37	13.57	11.00	10.57	-26	-26.43	3/17/2004
2066.2	SP-	418	40	37	13.07	11.00	10.07	-26	-26.93	3/17/2004
2070.3	SP-	419	40	37	13.01	11.00	13.01	-26	-26.99	3/17/2004
2074.4	SP-	420	40	37	12.74	11.00	9.74	-26	-27.26	3/17/2004
2078.5	SP-	421	40	37	12.70	11.00	11.12	-26	-25.88	3/17/2004
2082.7	SP-	422	40	37	12.09	11.00	11.17	-26	-25.83	3/17/2004
2086.8	SP-	423	40	37	11.31	11.00	8.31	-26	-28.69	3/17/2004
2090.9	SP-	424	40	37	8.67	11.00	5.73	-26	-31.27	3/17/2004
2095.0	SP-	425	35	37	7.65	11.00	7.65	-26	-27.35	3/17/2004
2099.1	SP-	426	35	37	7.50	11.00	7.50	-26	-27.50	3/17/2004
2103.3	SP-	426A	35	37	7.33	11.00	7.33	-26	-27.67	3/17/2004
2107.4	SP-	427	32.5	37	6.90	11.00	6.90	-26	-25.60	3/17/2004
2111.7	SP-	428	32.5	32	6.30	6.00	6.30	-26	-26.20	2/17/2004
2116.1	SP-	429	32.5	32	6.32	6.00	6.32	-26	-26.18	2/17/2004
2120.4	SP-	430	32.5	32	6.22	6.00	6.22	-26	-26.28	2/17/2004
2124.8	SP-	431	32.5	32	6.18	6.00	6.18	-26	-26.32	2/17/2004
2129.1	SP-	432	32.5	32	6.23	6.00	6.23	-26	-26.27	2/17/2004
2133.5	SP-	433	32.5	32	6.21	6.00	6.21	-26	-26.29	2/17/2004
2137.8	SP-	434	32.5	32	6.17	6.00	6.17	-26	-26.33	2/17/2004
2142.2	SP-	435	32.5	32	6.23	6.00	6.23	-26	-26.27	2/17/2004
2146.5	SP-	436	32.5	32	6.13	6.00	6.13	-26	-26.37	2/17/2004
2150.9	SP-	437	32.5	32	6.12	6.00	6.12	-26	-26.38	2/17/2004
2155.2	SP-	438	32.5	32	6.21	6.00	6.21	-26	-26.29	2/17/2004
2159.6	SP-	439	32.5	32	6.13	6.00	6.13	-26	-26.37	2/17/2004
2163.9	SP-	440	32.5	32	6.16	6.00	6.16	-26	-26.34	2/17/2004
2168.3	SP-	441	32.5	32	6.18	6.00	6.18	-26	-26.32	2/17/2004
2172.6	SP-	442	32.5	32	6.20	6.00	6.20	-26	-26.30	2/17/2004
2177.0	SP-	443	32.5	32	6.25	6.00	6.25	-26	-26.25	2/17/2004
2181.3	SP-	444	32.5	32	6.23	6.00	6.23	-26	-26.27	2/17/2004
2185.7	SP-	445	32.5	32	6.25	6.00	6.25	-26	-26.25	2/17/2004
2190.0	SP-	446	32.5	32	6.17	6.00	6.17	-26	-26.33	2/17/2004
2194.4	SP-	447	32.5	32	6.17	6.00	6.17	-26	-26.33	2/17/2004
2198.7	SP-	448	32.5	32	6.21	6.00	6.21	-26	-26.29	2/17/2004
2203.1	SP-	449	32.5	32	6.18	6.00	6.18	-26	-26.32	2/17/2004
2207.4	SP-	450	32.5	32	6.05	6.00	6.05	-26	-26.45	2/17/2004
2211.8	SP-	451	32.5	32	6.14	6.00	6.14	-26	-26.36	2/17/2004
2216.1	SP-	452	32.5	32	6.79	6.00	6.79	-26	-25.71	3/17/2002
2220.4	SP-	453	32.5	32	6.12	6.00	6.12	-26	-26.38	2/17/2004
2224.8	SP-	454	32.5	32	6.08	6.00	6.08	-26	-26.42	2/17/2004
2229.1	SP-	455	32.5	32	6.05	6.00	6.05	-26	-26.45	2/17/2004
2233.4	SP-	456	32.5	32	6.29	6.00	6.29	-26	-26.21	2/17/2004
2237.7	SP-	457	32.5	32	6.27	6.00	6.27	-26	-26.23	2/17/2004
2242.1	SP-	458	32.5	32	6.27	6.00	6.27	-26	-26.23	2/17/2004
2246.4	SP-	459	32.5	32	6.29	6.00	6.29	-26	-26.21	2/17/2004
2250.7	SP-	460	32.5	32	5.80	6.00	5.80	-26	-26.70	2/17/2004
2255.1	SP-	461	32.5	32	6.23	6.00	6.23	-26	-26.27	2/17/2004
2259.4	SP-	462	32.5	32	6.25	6.00	6.25	-26	-26.25	2/17/2004
2263.7	SP-	463	32.5	32	6.28	6.00	6.28	-26	-26.22	2/17/2004
2268.1	SP-	464	32.5	32	6.25	6.00	6.25	-26	-26.25	2/17/2004
2272.4	SP-	465	32.5	32	6.24	6.00	6.24	-26	-26.26	2/17/2004
2276.7	SP-	466	32.5	32	6.26	6.00	6.26	-26	-26.24	2/17/2004
2281.0	SP-	467	32.5	32	6.27	6.00	6.27	-26	-26.23	2/17/2004
2285.4	SP-	468	32.5	32	6.26	6.00	6.26	-26	-26.24	2/17/2004
2289.7	SP-	469	32.5	32	6.32	6.00	6.32	-26	-26.18	2/17/2004
2294.0	SP-	470	32.5	32	6.29	6.00	6.29	-26	-26.21	2/17/2004
2298.4	SP-	471	32.5	32	5.55	6.00	5.55	-26	-26.95	3/17/2004
2302.7	SP-	472	32.5	32	4.54	6.00	4.54	-26	-27.96	3/17/2004
2307.0	SP-	473	32.5	32	5.55	6.00	5.55	-26	-26.95	3/17/2004
2311.3	SP-	474	32.5	32	6.26	6.00	6.26	-26	-26.24	2/17/2004
2315.6	SP-	475	32.5	32	6.20	6.00	6.20	-26	-26.30	2/17/2004
2319.9	SP-	476	32.5	32	6.25	6.00	6.25	-26	-26.25	2/17/2004
2324.2	SP-	477	32.5	32	6.30	6.00	6.30	-26	-26.20	2/17/2004
2328.5	SP-	478	32.5	32	5.96	6.00	5.96	-26	-26.54	3/17/2004
2332.8	SP-	479	32.5	32	6.19	6.00	6.19	-26	-26.31	2/17/2004
2337.2	SP-	480	32.5	32	6.23	6.00	6.23	-26	-26.27	2/17/2004
2341.5	SP-	481	32.5	32	6.27	6.00	6.27	-26	-26.23	2/17/2004
2345.8	SP-	482	32.5	32	6.13	6.00	6.13	-26	-26.37	3/17/2004
2350.1	SP-	483	32.5	32	6.08	6.00	6.08	-26	-26.42	3/17/2004
2354.4	SP-	484	32.5	32	6.13	6.00	6.13	-26	-26.37	2/17/2004
2358.7	SP-	485	32.5	32	6.35	6.00	6.35	-26	-26.15	2/17/2004
2363.0	SP-	486	32.5	32	6.33	6.00	6.33	-26	-26.17	2/17/2004
2367.3	SP-	487	32.5	32	6.14	6.00	6.14	-26	-26.36	2/17/2004
2371.6	SP-	488	32.5	32	6.37	6.00	6.37	-26	-26.13	2/17/2004
2375.9	SP-	489	32.5	32	6.34	6.00	6.34	-26	-26.16	2/17/2004
2380.3	SP-	490	32.5	32	6.40	6.00	6.40	-26	-26.10	2/17/2004
2384.6	SP-	491	32.5	32	6.37	6.00	6.37	-26	-26.13	2/17/2004
2388.9	SP-	492	32.5	32	6.32	6.00	6.32	-26	-26.18	2/17/2004
2393.2	SP-	493	32.5	32	6.36	6.00	6.36	-26	-26.14	2/17/2004
2397.5	SP-	494	32.5	32	4.83	6.00	4.83	-26	-27.67	3/24/2004
2401.8	SP-	495	32.5	32	5.71	6.00	5.71	-26	-26.79	3/24/2004
2406.1	SP-	496	32.5	32	6.36	6.00	6.36	-26	-26.14	2/17/2004
2410.4	SP-	497	32.5	32	6.35	6.00	6.35	-26	-26.15	2/17/2004
2414.7	SP-	498	32.5	32	6.33	6.00	6.33	-26	-26.17	2/17/2004
2419.0	SP-	499	32.5	32	6.31	6.00	6.31	-26	-26.19	2/17/2004
2423.4	SP-	500	32.5	32	6.22	6.00	6.22	-26	-26.28	2/17/2004
2427.7	SP-	501	32.5	32	6.25	6.00	6.25	-26	-26.25	2/17/2004
2432.0	SP-	502	32.5	32	6.20	6.00	6.20	-26	-26.30	2/17/2004
2436.3	SP-	503	32.5	32	6.45	6.00	6.45	-26	-26.05	2/17/2004
2440.6	SP-	504	32.5	32	6.38	6.00	6.38	-26	-26.12	2/17/2004
2444.9	SP-	505	32.5	32	6.32	6.00	6.32	-26	-26.18	2/17/2004
2449.2	SP-	506	32.5	32	5.25	6.00	5.25	-26	-27.25	2/17/2004
2453.5	SP-	507	32.5	32	5.68	6.00	5.68	-26	-26.82	3/24/2004
2457.8	SP-	508	32.5	32	6.25	6.00	6.25	-26	-26.25	2/17/2004
2462.1	SP-	509	32.5	32	6.07	6.00	6.07	-26	-26.43	3/17/2004
2466.5	SP-	510	32.5	32	6.16	6.00	6.16	-26	-26.34	2/17/2004
2470.8	SP-	511	32.5	32	5.37	6.00	5.37	-26	-27.13	2/17/2004
2475.1	SP-	512	32.5	32	6.03	6.00	6.03	-26	-26.47	3/17/2004
2479.4	SP-	513	32.5	32	5.23	6.00	5.23	-26	-27.27	3/17/2004
2483.7	SP-	514	32.5	32	7.03	6.00	7.03	-26	-25.47	3/17/2004
2488.0	SP-	515	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
2492.3	SP-	516	32.5	32	5.86	6.00	5.86	-26	-26.64	3/17/2004
2496.6	SP-	517	32.5	32	5.77	6.00	5.77	-26	-26.73	3/17/2004
2500.9	SP-	518	32.5	32	4.54	6.00	4.54	-26	-27.96	3/17/2004

Station (in feet)	Sheet pile Number		Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
2505.2	SP-	519	32.5	32	5.77	6.00	5.77	-26	-26.73	3/24/2004
2509.6	SP-	520	32.5	32	6.23	6.00	6.23	-26	-26.27	3/17/2004
2513.9	SP-	521	32.5	32	6.11	6.00	6.11	-26	-26.39	3/17/2004
2518.2	SP-	522	32.5	32	6.07	6.00	6.07	-26	-26.43	3/17/2004
2522.5	SP-	523	32.5	32	6.03	6.00	6.03	-26	-26.47	3/17/2004
2526.8	SP-	524	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
2531.1	SP-	525	32.5	32	6.10	6.00	6.10	-26	-26.40	3/17/2004
2535.4	SP-	526	32.5	32	5.52	6.00	5.52	-26	-26.98	3/17/2004
2539.7	SP-	527	32.5	32	6.81	6.00	6.81	-26	-25.69	3/17/2004
2544.0	SP-	528	32.5	32	6.36	6.00	6.36	-26	-26.14	3/17/2004
2548.3	SP-	529	32.5	32	6.52	6.00	6.52	-26	-25.98	3/17/2004
2552.7	SP-	530	32.5	32	6.34	6.00	6.34	-26	-26.16	3/17/2004
2557.0	SP-	531	32.5	32	6.38	6.00	6.38	-26	-26.12	3/17/2004
2561.3	SP-	532	32.5	32	6.28	6.00	6.28	-26	-26.22	3/17/2004
2565.6	SP-	533	32.5	32	6.42	6.00	6.42	-26	-26.08	3/17/2004
2569.9	SP-	534	32.5	32	6.26	6.00	6.26	-26	-26.24	3/17/2004
2574.2	SP-	535	32.5	32	6.35	6.00	6.35	-26	-26.15	3/17/2004
2578.4	SP-	536	32.5	32	6.36	6.00	6.36	-26	-26.14	3/17/2004
2582.7	SP-	537	32.5	32	6.37	6.00	6.37	-26	-26.13	3/17/2004
2586.9	SP-	538	32.5	32	6.05	6.00	6.05	-26	-26.45	3/17/2004
2591.2	SP-	539	32.5	32	6.05	6.00	5.65	-26	-26.45	3/17/2004
2595.5	SP-	540	32.5	32	6.22	6.00	6.22	-26	-26.28	3/17/2004
2599.7	SP-	541	32.5	32	5.44	6.00	5.44	-26	-27.06	3/17/2004
2604.0	SP-	542	32.5	32	6.35	6.00	5.90	-26	-26.15	3/17/2004
2608.2	SP-	543	32.5	32	6.02	6.00	6.02	-26	-26.48	3/17/2004
2612.5	SP-	544	32.5	32	6.18	6.00	6.18	-26	-26.32	3/17/2004
2616.8	SP-	545	32.5	32	6.14	6.00	6.14	-26	-26.36	3/17/2004
2621.0	SP-	546	32.5	32	6.08	6.00	6.08	-26	-26.42	3/17/2004
2625.3	SP-	547	32.5	32	6.09	6.00	6.09	-26	-26.41	3/17/2004
2629.5	SP-	548	32.5	32	6.17	6.00	6.17	-26	-26.33	3/17/2004
2633.8	SP-	549	32.5	32	6.16	6.00	6.16	-26	-26.34	3/17/2004
2638.1	SP-	550	32.5	32	6.24	6.00	6.24	-26	-26.26	3/17/2004
2642.3	SP-	551	32.5	32	6.15	6.00	6.15	-26	-26.35	3/17/2004
2646.6	SP-	552	32.5	32	6.18	6.00	6.18	-26	-26.32	3/17/2004
2650.8	SP-	553	32.5	32	6.21	6.00	6.21	-26	-26.29	3/17/2004
2655.1	SP-	554	32.5	32	6.81	6.00	6.81	-26	-25.69	3/17/2004
2659.4	SP-	555	32.5	32	6.28	6.00	6.28	-26	-26.22	3/17/2004
2663.6	SP-	556	32.5	32	6.27	6.00	6.27	-26	-26.23	3/17/2004
2667.9	SP-	557	32.5	32	6.24	6.00	6.24	-26	-26.26	3/17/2004
2672.1	SP-	558	32.5	32	6.16	6.00	6.16	-26	-26.34	3/17/2004
2676.4	SP-	559	32.5	32	6.06	6.00	6.06	-26	-26.44	3/17/2004
2680.7	SP-	560	32.5	32	5.60	6.00	5.60	-26	-26.90	3/17/2004
2684.9	SP-	561	32.5	32	5.15	6.00	5.15	-26	-27.35	3/24/2004
2689.2	SP-	562	32.5	32	5.96	6.00	5.96	-26	-26.54	3/17/2004
2693.4	SP-	563	32.5	32	5.85	6.00	5.85	-26	-26.65	3/17/2004
2697.7	SP-	564	32.5	32	5.95	6.00	5.95	-26	-26.55	3/17/2004
2702.0	SP-	565	32.5	32	5.76	6.00	5.20	-26	-26.74	3/17/2004
2706.2	SP-	566	32.5	32	5.83	6.00	5.83	-26	-26.67	3/17/2004
2710.5	SP-	567	32.5	32	5.87	6.00	5.87	-26	-26.63	3/17/2004
2714.7	SP-	568	32.5	32	6.28	6.00	6.28	-26	-26.22	3/17/2004
2719.0	SP-	569	32.5	32	6.22	6.00	6.22	-26	-26.28	3/17/2004
2723.3	SP-	570	32.5	32	6.21	6.00	5.80	-26	-26.29	3/17/2004
2727.5	SP-	571	32.5	32	6.03	6.00	5.42	-26	-26.47	3/17/2004
2731.8	SP-	572	32.5	32	5.95	6.00	5.95	-26	-26.55	3/17/2004
2736.0	SP-	573	32.5	32	5.94	6.00	5.94	-26	-26.56	3/17/2004
2740.3	SP-	574	32.5	32	5.91	6.00	5.91	-26	-26.59	3/17/2004
2744.6	SP-	575	32.5	32	5.95	6.00	5.95	-26	-26.55	3/17/2004
2748.8	SP-	576	32.5	32	6.02	6.00	6.02	-26	-26.48	3/17/2004
2753.1	SP-	577	32.5	32	5.95	6.00	5.95	-26	-26.55	3/17/2004
2757.3	SP-	578	32.5	32	5.93	6.00	5.93	-26	-26.57	3/17/2004
2761.6	SP-	579	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
2765.9	SP-	580	32.5	32	6.01	6.00	6.01	-26	-26.49	3/17/2004
2770.1	SP-	581	32.5	32	5.97	6.00	5.97	-26	-26.53	3/17/2004
2774.4	SP-	582	32.5	32	5.86	6.00	5.86	-26	-26.64	3/17/2004
2778.7	SP-	583	32.5	32	5.74	6.00	5.74	-26	-26.76	3/17/2004
2782.9	SP-	584	32.5	32	5.85	6.00	5.85	-26	-26.65	3/17/2004
2787.2	SP-	585	32.5	32	5.97	6.00	5.97	-26	-26.53	3/17/2004
2791.4	SP-	586	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
2795.7	SP-	587	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
2800.0	SP-	588	32.5	32	6.27	6.00	6.27	-26	-26.23	3/17/2004
2804.2	SP-	589	32.5	32	6.88	6.00	6.88	-26	-25.62	3/24/2004
2808.5	SP-	590	32.5	32	6.35	6.00	6.35	-26	-26.15	3/24/2004
2812.8	SP-	591	32.5	32	5.92	6.00	5.92	-26	-26.58	3/24/2004
2817.0	SP-	592	32.5	32	5.94	6.00	5.94	-26	-26.56	3/24/2004
2821.3	SP-	593	32.5	32	6.03	6.00	6.03	-26	-26.47	3/24/2004
2825.6	SP-	594	32.5	32	6.01	6.00	6.01	-26	-26.49	3/24/2004
2829.8	SP-	595	32.5	32	5.97	6.00	5.97	-26	-26.53	3/24/2004
2834.1	SP-	596	32.5	32	6.02	6.00	6.02	-26	-26.48	3/24/2004
2838.4	SP-	597	32.5	32	5.94	6.00	5.94	-26	-26.56	3/24/2004
2842.7	SP-	598	32.5	32	6.03	6.00	6.03	-26	-26.47	3/24/2004
2847.0	SP-	599	32.5	32	5.92	6.00	5.92	-26	-26.58	3/24/2004
2851.3	SP-	600	32.5	32	5.88	6.00	5.88	-26	-26.62	3/24/2004
2855.6	SP-	601	32.5	32	5.93	6.00	5.93	-26	-26.57	3/24/2004
2859.9	SP-	602	32.5	32	6.02	6.00	6.02	-26	-26.48	3/24/2004
2864.2	SP-	603	32.5	32	6.17	6.00	6.17	-26	-26.33	3/24/2004
2868.5	SP-	604	32.5	32	6.00	6.00	6.00	-26	-26.50	3/24/2004
2872.7	SP-	605	32.5	32	6.07	6.00	6.07	-26	-26.43	3/24/2004
2877.0	SP-	606	32.5	32	6.09	6.00	6.09	-26	-26.41	3/24/2004
2881.3	SP-	607	32.5	32	6.03	6.00	6.03	-26	-26.47	3/24/2004
2885.6	SP-	608	32.5	32	6.01	6.00	6.01	-26	-26.49	3/24/2004
2889.9	SP-	609	32.5	32	5.99	6.00	5.99	-26	-26.51	3/24/2004
2894.2	SP-	610	32.5	32	6.06	6.00	6.06	-26	-26.44	3/24/2004
2898.5	SP-	611	32.5	32	6.09	6.00	6.09	-26	-26.41	3/24/2004
2902.8	SP-	612	32.5	32	6.13	6.00	6.13	-26	-26.37	3/24/2004
2907.1	SP-	613	32.5	32	5.95	6.00	5.95	-26	-26.55	3/17/2004
2911.4	SP-	614	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
2915.6	SP-	615	32.5	32	5.95	6.00	5.95	-26	-26.55	3/17/2004
2919.9	SP-	616	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
2924.2	SP-	617	32.5	32	5.98	6.00	5.98	-26	-26.52	3/17/2004
2928.5	SP-	618	32.5	32	5.90	6.00	5.90	-26	-26.60	3/17/2004
2932.8	SP-	619	32.5	32	6.20	6.00	6.20	-26	-26.30	3/17/2004
2937.1	SP-	620	32.5	32	6.05	6.00	6.05	-26	-26.45	3/17/2004
2941.4	SP-	621	32.5	32	6.05	6.00	6.05	-26	-26.45	3/17/2004
2945.8	SP-	622	32.5	32	6.05	6.00	6.05	-26	-26.45	3/17/2004
2950.1	SP-	623	32.5	32	5.58	6.00	5.58	-26	-26.92	3/17/2004
2954.4	SP-	624	32.5	32	6.05	6.00	6.05	-26	-26.45	3/17/2004
2958.7	SP-	625	32.5	32	5.85	6.00	5.85	-26	-26.65	3/17/2004
2963.0	SP-	626	32.5	32	5.92	6.00	5.14	-26	-26.58	3/17/2004
2967.4	SP-	627	32.5	32	6.09	6.00	6.09	-26	-26.41	3/17/2004
2971.7	SP-	628	32.5	32	6.05	6.00	6.05	-26	-26.45	3/17/2004
2976.0	SP-	629	32.5	32	6.09	6.00	5.17	-26	-26.41	3/17/2004
2980.3	SP-	630	32.5	32	6.08	6.00	6.08	-26	-26.42	3/17/2004
2984.6	SP-	631	32.5	32	5.30	6.00	5.30	-26	-27.20	3/17/2004
2989.0	SP-	632	32.5	32	6.23	6.00	6.23	-26	-26.27	3/24/2004
2993.3	SP-	633	32.5	32	6.16	6.00	6.16	-26	-26.34	3/17/2004
2997.6	SP-	634	32.5	32	6.18	6.00	6.18	-26	-26.32	3/17/2004
3001.9	SP-	635	32.5	32	6.16	6.00	6.16	-26	-26.34	3/17/2004
3006.2	SP-	636	32.5	32	6.16	6.00	6.16	-26	-26.34	3/17/2004
3010.6	SP-	637	32.5	32	6.01	6.00	6.01	-26	-26.49	3/17/2004

Station (in feet)	Sheet pile Number		Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
3014.9	SP-	638	32.5	32	6.19	6.00	6.19	-26	-26.31	3/17/2004
3019.2	SP-	639	32.5	32	6.16	6.00	6.16	-26	-26.34	3/17/2004
3023.5	SP-	640	32.5	32	6.17	6.00	6.17	-26	-26.33	3/17/2004
3027.8	SP-	641	32.5	32	5.70	6.00	5.70	-26	-26.80	3/17/2004
3032.2	SP-	642	32.5	32	6.43	6.00	6.43	-26	-26.07	3/17/2004
3036.5	SP-	643	32.5	32	5.99	6.00	5.99	-26	-26.51	3/17/2004
3040.8	SP-	644	32.5	32	6.06	6.00	6.06	-26	-26.44	3/17/2004
3045.1	SP-	645	32.5	32	6.15	6.00	6.15	-26	-26.35	3/17/2004
3049.4	SP-	646	32.5	32	6.25	6.00	6.25	-26	-26.25	3/17/2004
3053.8	SP-	647	32.5	32	6.32	6.00	6.32	-26	-26.18	3/17/2004
3058.1	SP-	648	32.5	32	6.41	6.00	6.41	-26	-26.09	3/17/2004
3062.4	SP-	649	32.5	32	6.01	6.00	6.01	-26	-26.49	3/17/2004
3066.7	SP-	650	32.5	32	5.92	6.00	5.92	-26	-26.58	3/17/2004
3071.1	SP-	651	32.5	32	5.98	6.00	5.98	-26	-26.52	3/17/2004
3075.5	SP-	652	32.5	32	6.02	6.00	6.02	-26	-26.48	3/17/2004
3079.9	SP-	653	32.5	32	6.06	6.00	6.06	-26	-26.44	3/17/2004
3084.3	SP-	654	32.5	32	6.00	6.00	6.00	-26	-26.50	3/17/2004
3088.7	SP-	655	32.5	32	6.30	6.00	6.30	-26	-26.20	3/24/2004
3093.1	SP-	656	32.5	32	6.37	6.00	6.37	-26	-26.13	3/24/2004
3097.5	SP-	657	32.5	32	5.98	6.00	5.98	-26	-26.52	3/24/2004
3101.9	SP-	658	32.5	32	5.98	6.00	5.98	-26	-26.52	3/24/2004
3106.3	SP-	659	32.5	32	6.02	6.00	6.02	-26	-26.48	3/24/2004
3110.7	SP-	660	32.5	32	6.06	6.00	6.06	-26	-26.44	3/24/2004
3115.1	SP-	661	32.5	32	6.17	6.00	6.17	-26	-26.33	3/24/2004
3119.5	SP-	662	32.5	32	6.05	6.00	6.05	-26	-26.45	3/24/2004
3123.9	SP-	663	32.5	32	6.07	6.00	6.07	-26	-26.43	3/24/2004
3128.3	SP-	664	32.5	32	5.98	6.00	5.98	-26	-26.52	3/24/2004
3132.7	SP-	665	32.5	32	5.85	6.00	5.85	-26	-26.65	3/24/2004
3137.1	SP-	666	32.5	32	6.01	6.00	6.01	-26	-26.49	3/24/2004
3141.5	SP-	667	32.5	32	5.2 Cut	6.00	6.12	-26	-26.38	3/24/2004
3145.9	SP-	668	32.5	32	5.19 Cut	6.00	6.11	-26	-26.39	3/24/2004
3150.3	SP-	669	32.5	32	5.38 Cut	6.00	6.21	-26	-26.29	3/24/2004
3154.7	SP-	670	32.5	32	5.57 Cut	6.00	6.99	-26	-25.51	3/24/2004
3159.1	SP-	671	25	25	6.31 Cut	8.00	6.98	-17	-18.02	3/24/2004
3163.5	SP-	672	25	25	5.79 Cut	8.00	7.62	-17	-17.38	3/24/2004
3167.9	SP-	673	25	25	6.93 Cut	8.00	7.60	-17	-17.40	3/24/2004
3172.3	SP-	674	25	25	4.98 Cut	8.00	7.65	-17	-17.35	3/24/2004
3176.7	SP-	675	25	25	4.91 Cut	8.00	7.41	-17	-17.59	3/24/2004
3181.1	SP-	676	25	25	4.08 Cut	8.00	5.75	-17	-19.25	3/24/2004
3185.5	SP-	677	25	25	9.13 Cut	8.00	10.13	-17	-14.87	3/24/2004
3189.9	SP-	678	25	25	7.09 Cut	8.00	8.01	-17	-16.99	3/18/2004
3194.3	SP-	679	25	25	7.97	8.00	7.97	-17	-17.03	3/18/2004
3198.7	SP-	680	25	25	5.95 Cut	8.00	7.95	-17	-17.05	3/18/2004
3203.1	SP-	681	25	25	6.29 Cut	8.00	7.87	-17	-17.13	3/18/2004
3207.5	SP-	682	25	25	7.11 Cut	8.00	7.78	-17	-17.22	3/18/2004
3211.9	SP-	683	25	25	7.22 Cut	8.00	7.80	-17	-17.20	3/18/2004
3216.3	SP-	684	25	25	6.29 Cut	8.00	7.37	-17	-17.63	3/18/2004
3220.7	SP-	685	25	25	7.08 Cut	8.00	7.91	-17	-17.09	3/18/2004
3225.1	SP-	686	25	25	7.70	8.00	7.70	-17	-17.30	3/18/2004
3229.5	SP-	687	25	25	8.02	8.00	8.02	-17	-16.98	3/18/2004
3233.9	SP-	688	25	25	7.93	8.00	7.93	-17	-17.07	3/18/2004
3238.3	SP-	689	25	25	6.86	8.00	7.86	-17	-17.14	3/18/2004
3242.7	SP-	690	25	25	7.67	8.00	7.67	-17	-17.33	3/18/2004
3247.1	SP-	691	25	25	7.86	8.00	7.86	-17	-17.14	3/18/2004
3251.5	SP-	692	25	25	7.81	8.00	7.81	-17	-17.19	3/18/2004
3255.8	SP-	693	25	25	7.81	8.00	7.81	-17	-17.19	3/18/2004
3260.1	SP-	694	25	25	7.97	8.00	7.97	-17	-17.03	3/18/2004
3264.5	SP-	695	25	25	7.98	8.00	7.98	-17	-17.02	3/18/2004
3268.8	SP-	696	25	25	8.01	8.00	8.01	-17	-16.99	3/18/2004
3273.2	SP-	697	25	25	7.99	8.00	7.99	-17	-17.01	3/18/2004
3277.5	SP-	698	25	25	8.01	8.00	8.01	-17	-16.99	3/18/2004
3281.8	SP-	699	25	25	6.35 Cut	8.00	8.02	-17	-16.98	3/18/2004
3286.2	SP-	700	25	25	7.94	8.00	7.94	-17	-17.06	3/18/2004
3290.5	SP-	701	25	25	6.83 Cut	8.00	7.91	-17	-17.09	3/18/2004
3294.9	SP-	702	25	25	6.80	8.00	6.80	-17	-18.20	3/18/2004
3299.2	SP-	703	25	25	8.41	8.00	8.41	-17	-16.59	3/18/2004
3303.5	SP-	704	25	25	7.99	8.00	7.99	-17	-17.01	3/18/2004
3307.9	SP-	705	25	25	8.42	8.00	8.42	-17	-16.58	3/18/2004
3312.2	SP-	706	25	25	6.92 Cut	8.00	8.00	-17	-17.00	3/18/2004
3316.6	SP-	707	25	25	5.06 Cut	8.00	6.89	-17	-18.11	3/18/2004
3320.9	SP-	708	25	25	7.85	8.00	7.85	-17	-17.15	3/18/2004
3325.2	SP-	709	25	25	8.74	8.00	8.74	-17	-16.26	3/18/2004
3329.6	SP-	710	25	25	6.40	8.00	6.40	-17	-18.60	3/18/2004
3333.9	SP-	711	25	25	6.24	8.00	6.24	-17	-18.76	3/18/2004
3338.3	SP-	712	25	25	7.87	8.00	7.87	-17	-17.13	3/18/2004
3342.6	SP-	713	25	25	7.69	8.00	7.69	-17	-17.31	3/18/2004
3346.9	SP-	714	25	25	7.71	8.00	7.71	-17	-17.29	3/18/2004
3351.3	SP-	715	25	25	7.79	8.00	7.79	-17	-17.21	3/18/2004
3355.6	SP-	716	25	25	7.83	8.00	7.83	-17	-17.17	3/18/2004
3360.0	SP-	717	25	25	7.85	8.00	7.85	-17	-17.15	3/18/2004
3364.3	SP-	718	25	25	7.91	8.00	7.91	-17	-17.09	3/18/2004
3368.6	SP-	719	25	25	7.79	8.00	7.79	-17	-17.21	3/18/2004
3373.0	SP-	720	25	25	7.81	8.00	7.81	-17	-17.19	3/18/2004
3377.3	SP-	721	25	25	7.42	8.00	7.42	-17	-17.58	3/18/2004
3381.7	SP-	722	25	25	7.56	8.00	7.56	-17	-17.44	3/18/2004
3386.0	SP-	723	25	25	7.37	8.00	7.37	-17	-17.63	3/18/2004
3390.3	SP-	724	25	25	7.34	8.00	7.34	-17	-17.66	3/18/2004
3394.7	SP-	725	25	25	7.29	8.00	7.29	-17	-17.71	3/18/2004
3399.0	SP-	726	25	25	7.30	8.00	7.30	-17	-17.70	3/18/2004
3403.4	SP-	727	25	25	7.32	8.00	7.32	-17	-17.68	3/18/2004
3407.7	SP-	728	25	25	7.38	8.00	7.38	-17	-17.62	3/18/2004
3412.0	SP-	729	25	25	7.48	8.00	7.48	-17	-17.52	3/18/2004
3416.4	SP-	730	25	25	7.60	8.00	7.60	-17	-17.40	3/18/2004
3420.8	SP-	731	25	25	7.59	8.00	7.59	-17	-17.41	3/18/2004
3425.2	SP-	732	25	25	7.53	8.00	7.53	-17	-17.47	3/18/2004
3429.6	SP-	733	25	25	7.58	8.00	7.58	-17	-17.42	3/18/2004
3434.0	SP-	734	25	25	7.61	8.00	7.61	-17	-17.39	3/18/2004
3438.4	SP-	735	25	25	7.67	8.00	7.67	-17	-17.33	3/18/2004
3442.8	SP-	736	25	25	7.75	8.00	7.75	-17	-17.25	3/18/2004
3447.2	SP-	737	25	25	7.77	8.00	7.77	-17	-17.23	3/18/2004
3451.6	SP-	738	25	25	7.61	8.00	7.61	-17	-17.39	3/18/2004
3456.0	SP-	739	25	25	7.60	8.00	7.60	-17	-17.40	3/18/2004
3460.4	SP-	740	25	25	5.53 Cut	8.00	7.61	-17	-17.39	3/18/2004
3464.8	SP-	741	25	25	7.60	8.00	7.60	-17	-17.40	3/18/2004
3469.2	SP-	742	25	25	7.70	8.00	7.70	-17	-17.30	3/18/2004
3473.6	SP-	743	25	25	7.89	8.00	7.89	-17	-17.11	3/18/2004
3478.0	SP-	744	25	25	7.60	8.00	7.60	-17	-17.40	3/18/2004
3482.4	SP-	745	25	25	6.40 Cut	8.00	7.32	-17	-17.68	3/18/2004
3486.8	SP-	746	25	25	7.14	8.00	7.14	-17	-17.86	3/18/2004
3491.2	SP-	747	25	25	7.62	8.00	7.62	-17	-17.38	3/18/2004
3495.6	SP-	748	25	25	7.84	8.00	7.84	-17	-17.16	3/18/2004
3500.0	SP-	749	25	25	7.79	8.00	7.79	-17	-17.21	3/18/2004
3504.4	SP-	750	25	25	7.70	8.00	7.70	-17	-17.30	3/18/2004
3508.8	SP-	751	25	25	7.60	8.00	7.60	-17	-17.40	3/18/2004
3513.2	SP-	752	25	25	7.59	8.00	7.59	-17	-17.41	3/18/2004
3517.6	SP-	753	25	25	7.55	8.00	7.55	-17	-17.45	3/18/2004
3522.0	SP-	754	25	25	7.54	8.00	7.54	-17	-17.46	3/18/2004
3526.4	SP-	755	25	25	7.53	8.00	7.53	-17	-17.47	3/18/2004
3530.8	SP-	756	25	25	7.59	8.00	7.59	-17	-17.41	3/18/2004

Station (in feet)	Sheet pile Number		Length of Pile	Design Length of pile	Top of Sheet	Design Top Elevation	Top of Angle Elevation	Design Tip Elevation	Actual Tip Elevation	Date Surveyed
3535.2	SP-	757	25	25	7.55	8.00	7.55	-17	-17.45	3/18/2004
3539.6	SP-	758	25	25	7.58	8.00	7.58	-17	-17.42	3/18/2004
3544.0	SP-	759	25	25	6.66 Cut	8.00	7.66	-17	-17.34	3/18/2004
3548.4	SP-	760	25	25	7.67	8.00	7.67	-17	-17.33	3/18/2004
3552.8	SP-	761	25	25	6.30 Cut	8.00	7.55	-17	-17.45	3/18/2004
3557.2	SP-	762	25	25	6.53 Cut	8.00	7.70	-17	-17.30	3/18/2004
3561.6	SP-	763	25	25	6.69 Cut	8.00	7.69	-17	-17.31	3/18/2004
3566.0	SP-	764	25	25	7.70	8.00	7.70	-17	-17.30	3/18/2004
3570.4	SP-	765	25	25	7.64	8.00	7.64	-17	-17.36	3/18/2004
3574.8	SP-	766	25	25	7.66	8.00	7.66	-17	-17.34	3/18/2004
3579.2	SP-	767	25	25	7.66	8.00	7.66	-17	-17.34	3/18/2004
3583.6	SP-	768	25	25	7.63	8.00	7.63	-17	-17.37	3/18/2004
3588.0	SP-	769	25	25	7.66	8.00	7.66	-17	-17.34	3/18/2004
3592.4	SP-	770	25	25	7.63	8.00	7.63	-17	-17.37	3/18/2004
3596.8	SP-	771	25	25	7.57	8.00	7.57	-17	-17.43	3/18/2004
3601.2	SP-	772	25	25	7.62	8.00	7.62	-17	-17.38	3/18/2004
3605.6	SP-	773	25	25	7.60	8.00	7.60	-17	-17.40	3/18/2004
3610.0	SP-	774	25	25	7.57	8.00	7.57	-17	-17.43	3/18/2004
3614.4	SP-	775	25	25	7.55	8.00	7.55	-17	-17.45	3/18/2004
3618.8	SP-	776	25	25	7.55	8.00	7.55	-17	-17.45	3/18/2004
3623.2	SP-	777	25	25	7.55	8.00	7.55	-17	-17.45	3/18/2004
3627.6	SP-	778	25	25	6.69 Cut	8.00	7.52	-17	-17.48	3/18/2004
3632.0	SP-	779	25	25	7.60	8.00	7.60	-17	-17.40	3/18/2004
3636.4	SP-	780	25	25	7.69	8.00	7.69	-17	-17.31	3/18/2004
3640.8	SP-	781	25	25	7.97	8.00	7.97	-17	-17.03	3/18/2004
3645.2	SP-	782	25	25	8.11	8.00	8.11	-17	-16.89	3/18/2004
0.3	SP-	783	25	25	7.22 Cut	8.00	8.05	-17	-16.95	3/18/2004
4.7	SP-	784	25	25	7.82	8.00	7.82	-17	-17.18	3/18/2004
9.1	SP-	785	25	25	7.97	8.00	7.97	-17	-17.03	3/18/2004
13.5	SP-	786	25	25	7.99	8.00	7.99	-17	-17.01	3/18/2004
17.9	SP-	787	25	25	8.00	8.00	8.00	-17	-17.00	3/18/2004
22.3	SP-	788	25	25	7.69	8.00	7.69	-17	-17.31	3/18/2004
26.7	SP-	789	25	25	7.91	8.00	7.91	-17	-17.09	3/18/2004
31.1	SP-	790	25	25	7.69	8.00	7.69	-17	-17.31	3/18/2004
35.5	SP-	791	25	25	7.63	8.00	7.63	-17	-17.37	3/18/2004
39.9	SP-	792	25	25	8.01	8.00	8.01	-17	-16.99	3/18/2004
44.3	SP-	793	25	25	7.61	8.00	7.61	-17	-17.39	3/18/2004
48.7	SP-	794	25	25	7.64	8.00	7.64	-17	-17.36	3/18/2004
53.1	SP-	795	25	25	7.95	8.00	7.95	-17	-17.05	3/18/2004
57.5	SP-	796	25	25	7.95	8.00	7.95	-17	-17.05	3/18/2004
61.9	SP-	797	25	25	7.48	8.00	7.48	-17	-17.52	3/18/2004
66.3	SP-	798	25	25	7.88	8.00	7.88	-17	-17.12	3/18/2004
70.6	SP-	799	25	25	7.97	8.00	7.97	-17	-17.03	3/18/2004
75.0	SP-	800	25	25	7.89	8.00	7.89	-17	-17.11	3/18/2004
79.4	SP-	801	25	25	7.85	8.00	7.85	-17	-17.15	3/18/2004
	WW-	1	32.5	32	7.61 Cut	6.00	9.25	-26	-22.75	3/24/2004
	WW-	2	32.5	32	7.51	6.00	7.51	-26	-24.49	3/24/2004
	WW-	3	32.5	32	8.19	6.00	8.19	-26	-23.81	3/24/2004
	WW-	4	30	32	6.87	6.00	6.87	-26	-25.13	3/24/2004

GGE 03–1196D

ITEM:	DATE:	REVISION:
2	4.22.04	REVISED PER 4/13/04 COMMENTS
1	4.1.04	FIRST ISSUE

STATE OF NEW YORK · MARK W. GLYNN · LICENSE NO. · LICENSED PROFESSIONAL ENGINEER

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GLYNN GEOTECHNICAL ENGINEERING
415 S. TRANSIT STREET
LOCKPORT, NEW YORK 14094
www.glynngroup.com
VOICE (716) 625 - 6933 / FAX (716) 625 - 6983

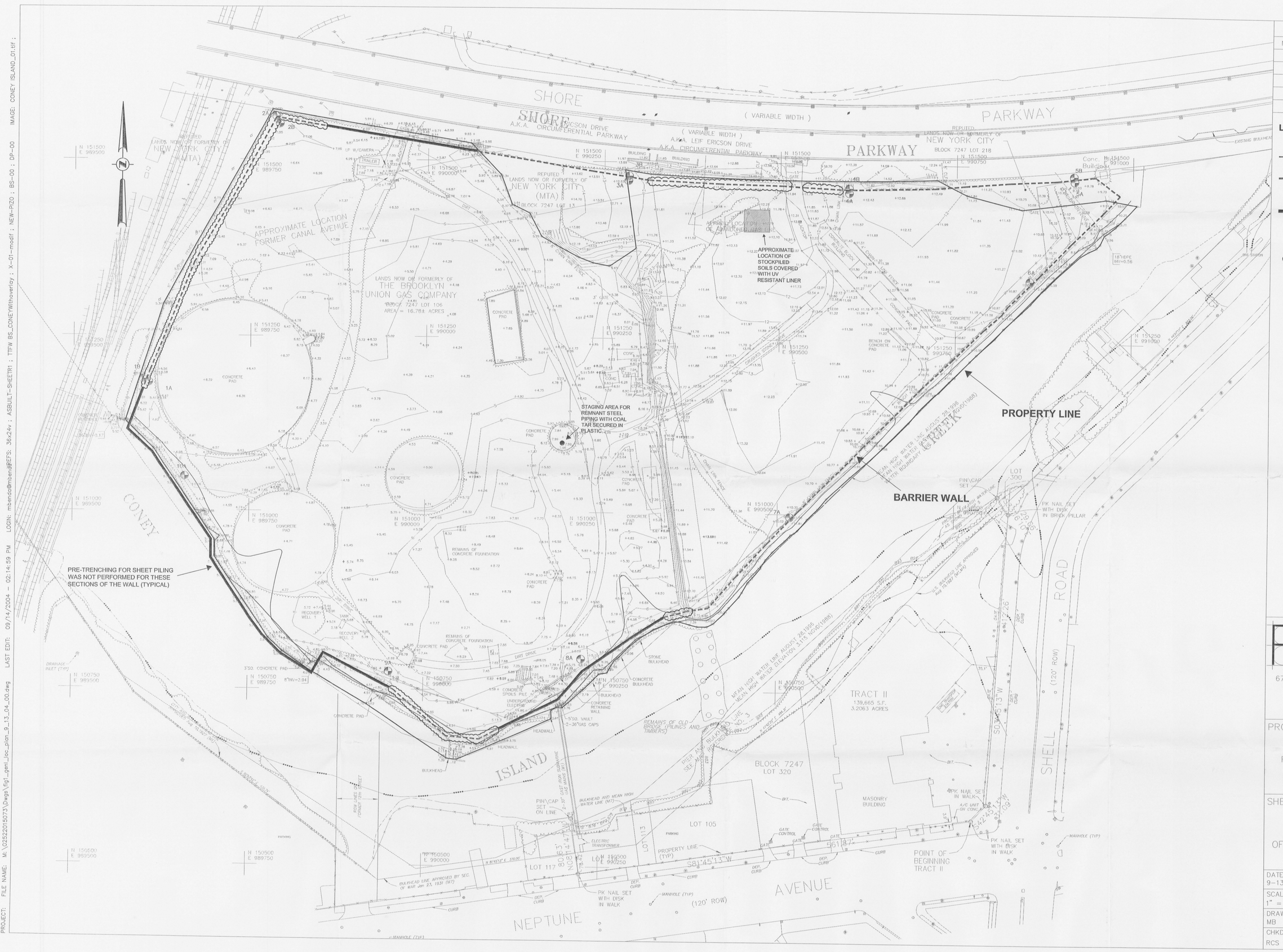
SHEET PILE ELEVATION SUMMARY

KEYSPAN
FORMER BROOKLYN BOROUGH
GAS WORKS SITE
CONEY ISLAND, NEW YORK

SEVENSON ENVIRONMENTAL SERVICES, INC.

FIGURE 3of3

DATE:	3/29/04
DRAWN BY:	C. BIGELOW
CHECKED BY:	J. Farina/M. Glynn
CAD FILE:	asbuilt–sheet
SCALE:	AS SHOWN



REVISIONS/ISSUES		
NO.	DATE	DESCRIPTION

LEGEND

- PROPERTY LINE
- BARRIER WALL
- PRE-TRENCHING FOR SHEET PILING WAS NOT PERFORMED FOR THESE SECTIONS OF THE WALL (TYPICAL)
- APPROXIMATE LOCATIONS OF COAL TAR IMPACTED SOILS OBSERVED DURING PRE-TRENCHING FOR THESE SECTIONS OF THE WALL (TYPICAL)

PAULUS SOKOLOWSKI and SARTOR Engineering, PC
Engineers • Architects
Environmental Scientists
67A MOUNTAIN BOULEVARD EXTENSION
P.O. BOX 4039
WARREN, NEW JERSEY 07059
PHONE: (732) 560-9700
FAX: (732) 560-9768

PROJECT

OPERABLE UNIT NO. 1
FORMER BROOKLYN BOROUGH
GAS WORKS SITE
BROOKLYN, NEW YORK

SHEET TITLE

GENERAL LOCATION PLAN
OF COAL TAR IMPACTED SOILS

DATE 9-13-04	JOB NO. 02522.015.073
SCALE 1" = 60'	
DRAWN MB	FIGURE NO. 4
CHKD. RCS	