SITE CHARACTERIZATION WORK PLAN FOR THE FORMER HUNTS POINT GAS WORKS HALLECK STREET SIDEWALK AREA

VCA Index No. D2-0003-02-08
Site #V00554

Bronx, New York

Prepared For:

Consolidated Edison Company of New York, Inc.
31-01 20th Avenue
Long Island City, NY 11105

Prepared By:

PARSONS
200 Cottontail Lane
Somerset, New Jersey 08873

JUNE 2011

TABLE OF CONTENTS

PAGE

SECTION 1 INTRODUCTION..... 1-1

1.1 PROJECT BACKGROUND 1-1

1.2 PROJECT OBJECTIVES..... 1-1

SECTION 2 SITE BACKGROUND 2-1

2.1 SITE DESCRIPTION..... 2-1

2.2 ADJOINING PROPERTY DESCRIPTION 2-1

2.3 SITE HISTORY..... 2-1

2.4 PREVIOUS INVESTIGATIONS..... 2-1

2.5 SITE SETTING 2-4

2.5.1 Physical Setting and Regional Hydrogeology 2-4

SECTION 3 SCOPE OF WORK..... 3-1

3.1 SITE INSPECTION AND PRELIMINARY INVESTIGATION ACTIVITIES....

..... 3-1

3.2 UNDERGROUND UTILITY CLEARANCE..... 3-1

3.3 AIR MONITORING..... 3-2

3.3.1 Worker Air Monitoring 3-2

3.3.2 Community Air Monitoring 3-3

3.4 SOIL BORINGS..... 3-4

3.5 MONITORING WELL INSTALLATION 3-5

3.6 SITE SURVEY..... 3-6

3.7 GROUNDWATER SAMPLING AND ANALYSIS 3-6

3.8 GROUNDWATER LEVEL MEASUREMENTS..... 3-7

3.9 WASTE MANAGEMENT..... 3-7

3.10 LABORATORY ANALYSIS AND DATA VALIDATION..... 3-7

3.11 SITE CHARACTERIZATION REPORT 3-8

SECTION 4 PROJECT MANAGEMENT..... 4-1

4.1 ORGANIZATION AND STAFFING 4-1

4.2 PROJECT SCHEDULE..... 4-2

SECTION 5 REFERENCES..... 5-1

LIST OF FIGURES

Figure 1 Site Vicinity Map

Figure 2 Site Location Map

Figure 3 Proposed Sample Locations

Figure 4 Project Schedule

LIST OF TABLES

Table 1 Sampling Rationale

Table 2 Summary of Samples and Analyses

LIST OF APPENDICES

APPENDIX A FIELD SAMPLING PLAN

APPENDIX B QUALITY ASSURANCE PROJECT PLAN

APPENDIX C HEALTH AND SAFETY PLAN

SECTION 1

INTRODUCTION

1.1 PROJECT BACKGROUND

The Consolidated Edison Company of New York, Inc. (Con Edison) has entered into a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC) to investigate, and if necessary, remediate potential impacts at former manufactured gas plant (MGP) properties. One of these facilities is the former Hunts Point Gas Works (VCA Index No. D2-0003-02-08; Site #V00554), located in the Bronx, New York (Figure 1). The former Hunts Point Gas Works (Gas Works) was a MGP operated by Con Edison between 1926 and 1962. Currently, the former Hunts Point Gas Works property is owned by the City of New York for use as commercial warehouse and parking space.

Historical research conducted for the former Hunts Point Gas Works is further described in Section 2.3. Results of that effort are documented in the *Hunts Point Offsite Manufactured Gas Plant Site History Report, Bronx, New York* (Parsons, 2003). Portions of the former Hunts Point Gas Works were previously investigated and/or remediated.

This Site Characterization Work Plan (SCWP) will address the sidewalk and right of way of Halleck Street (Site). Halleck Street was historically the western most property boundary to the historical Hunts Point Gas Works operations (Figure 2). A Site Characterization of the Halleck Street Sidewalk Area will be conducted to (1) assess the potential presence of MGP-related impacts; and (2) to ascertain the potential need for further investigation or remediation.

This work plan presents the scope of work and methods to be used during the Site Characterization.

1.2 PROJECT OBJECTIVES

The specific objectives of the Site Characterization are to assess whether hazardous substances have been released to the environment and may be present in the Halleck Street Sidewalk Area, if they may have migrated offsite, and whether they may have impacted human health or the environment. If no potential impacts are identified, a "no further action" conclusion may be warranted. If potential impacts are verified, additional sampling may be needed to determine the nature and extent of those impacts, or the need for remediation and interim measures to protect onsite occupants. These objectives are consistent with those of the NYSDEC's comprehensive remedial investigation process.

SECTION 2

SITE BACKGROUND

2.1 SITE DESCRIPTION

The Site is located in a commercial area of the Bronx, New York. The Site includes the street and sidewalk area of Halleck Street and is approximately 2,500 linear feet long, within the east right of way of Halleck Street (Figure 2).

2.2 ADJOINING PROPERTY DESCRIPTION

The Site is bound by Food Center Drive to the north and a Department of Corrections facility to the south. The Site is bordered to the east by the New Fulton Fish Market Cooperative and Hunts Point Cooperative Market Complex. Commercial buildings border the Site to the west. The properties east of the Site are currently owned by the City of New York and are managed by the New York City Economic Development Corporation.

At the northeastern end of the Site is the Con Edison Hunts Point Gas Compressor Station (HPGCS).

2.3 SITE HISTORY

Historical research was previously conducted and documented in the *Hunts Point Offsite Manufactured Gas Plant Site History Report, Bronx, New York* (Parsons, 2003). Based on this report, the Gas Works was owned and/or operated as an MGP and gas holder station by Con Edison between 1926 and 1962. A large gas holder on the northern portion of the Gas Works was used until 1968, after which it was removed from service and demolished.

The City of New York acquired the majority of the former Hunts Point Gas Work property in the late 1960s. The property was then transitioned into warehouse space for a wholesale food cooperative. One of the former facility roads (Hunts Point Avenue) was removed from service as part of the property redevelopment. Reviews of historical aerial photos reveal that Halleck Street was not modified as part of redevelopment. It was extended to the south sometime after 1980 for use as an access road to the current Department of Corrections facility, located at the southwest portion of the Hunts Point Peninsula.

2.4 PREVIOUS INVESTIGATIONS

Three of the previously investigated parcels A, B, and E are immediately adjacent to Halleck Street. From 1997 through 1999, Hygienetics Environmental Services Inc. (HES) performed investigations on various Parcels of the Gas Works, results of which were summarized in the following report:

- *Phase I Environmental Site Assessment Report of Hunts Point Produce Market Complex Parcels A, B, C, D, and E* (HES, 1997a)

- *Phase II Environmental Investigation Report of Hunts Point Market Complex Parcels A, B, C, D, and E* (HES, 1997b)

In addition, Lawler, Matusky, and Skelly Engineers LLP (LMS) conducted site investigations at selected parcels, results of which were summarized in the following reports:

- *Investigation Report for the Operating Unit Portion of Parcel A* (LMS, 1999a)
- *Investigation Report for the Operating Unit Portion of Parcel E* (LMS, 1999b)
- *Investigation Report for the Operating Unit Portion of Parcel C* (LMS, 1999c)
- *Investigation Report for the Operating Unit Portion of Parcel B* (LMS, 2001)
- *Hunts Point Cooperative Market Redevelopment Plan, Investigation Report for Parcel D, Bronx, New York* (LMS 2005)
- *Hunts Point Cooperative Market Redevelopment Plan, Investigation Report, Operable Unit 3 of Parcel E, Bronx, New York, Final* (HDR/LMS 2007a)
- *Hunts Point Cooperative Market Redevelopment Plan, Investigation Report for Parcel F, Bronx, New York, Final* (HDR/LMS 2007b)

Parsons conducted remedial investigation at the HPCGS, also located immediately adjacent to Halleck Street, in 2003. Results of that investigation were summarized in the following report:

- *Site Investigation Report for the Hunts Point Gas Regulator Station Site Investigation* (Parsons, 2003)

A brief description of the investigation on those Parcels follows here. For detailed sampling locations refer to the listed reports.

PARCEL A

Previous investigations on Parcel A, were divided into two operable units: Operable Unit-1 (OU-1) and Operable Unit-2 (OU-2). The OU-1 investigation was completed in 1999 and included five test pits, one soil boring and two groundwater grab samples from two of the test pits.

Test pits encountered mixed soils, sand, gravel, garbage, structural materials, coal slag, incinerator ash, and coal tar residues. Dense coal tar was detected in one test pit (Test Pit 2). No free phase oil and no purifier material was observed during this investigation. Several PAH compounds exceeded TAGM concentrations in soils collected during this investigation. Metals concentrations were reportedly consistent with urban fill materials but arsenic, barium, beryllium, cadmium, chromium, copper, iron, mercury, nickel, selenium, and zinc exceeded the TAGM Recommended Soil Cleanup Objectives in at least one soil sample. LMS concluded the constituents present should not preclude development of the site. New pavement would cap the materials below (LMS, 1999a).

The OU-2 investigation was completed in 2003 and included the installation of five test pits, three temporary piezometers, three deep soil borings, and thirteen shallow soil borings. Coal tar

was observed at OU-2 between 3 and 4 feet bgs. Tar boils were also observed in thicknesses ranging from inches to several feet. Purifier waste, consisting of wood shavings with a blue/green color, was encountered at the ground surface to a maximum depth of five feet bgs within the eastern portion of Parcel A. The recommended remedial action of Parcel A was excavation of coal tar and purifier wastes.

PARCEL B

Two investigations were completed at Parcel B, the first in 1998 and the second in 2001. The 1998 investigation included the installation of one monitoring well and nine soil borings. The 2001 investigation consisted of 11 test trenches, 14 temporary piezometers, one monitoring well, nine soil borings, five test pits, four surface soil samples, and 40 geotechnical borings. The investigations encountered wood shavings attributed to residual purifier materials, incinerator ash, coal tar, coke gravel, and slag throughout Parcel B. Tar boils were also present. Tar, where encountered, was several inches to several feet in thickness. One tar boil, located in the northwestern part of Parcel B, was 62 feet wide, by 68 feet long, by 3 feet deep. A smaller tar boil was located north of the NYDOC parking area.

Exceedances of TAGM values in soil, fill, and groundwater were generally coincident with areas where gross constituents were observed. Select SVOCs and metal were detected above the soil cleanup criteria in the surface soil samples of Parcel B. Total VOCs, BTEX, SVOCs were detected above NYSDEC Class GA Standards. One instance of LNAPL was observed and most groundwater contained either sheens and/or odors.

Since the investigations described above, Parcel B was remediated and developed as the new center of the Fulton Fish Market, a 325,000 square foot building with a concrete slab on-grade construction. The surrounding areas have been developed as a parking lot.

PARCEL E

Previous investigations of Parcel E were conducted in 1997 and 2007. Parcel E is located in the area of the former 15,000,000 cubic foot gasholder, coke filters, and substation structures. Parcel E was subdivided into three Operable Units (OU-1, OU-2 and OU-3).The 1997 investigation included the installation of five soil borings and one monitoring well. The 2007 investigation included the installation of 21 soil borings, four trenches, five test pits, five piezometers, and a GPR survey. The 2007 investigation also included the collection and analysis of and soil, soil gas and groundwater samples (one from Trench 2 and one from Trench 4B). The investigations of Parcel E encountered historical utilities, piping, and tank structures during test pit excavations and trenching. Some of the tank structures and piping contained oily product and the adjacent soils were impacted by the product, other structures and piping contained water. The test pits and trenches encountered an upper layer of fill material consisting of mixed soils, structural materials, coal slag, C&D debris, garbage, brick, and glass. Tar and oil-saturated soil with strong naphthalene odors was encountered in places. Groundwater in the trenches had sheens and small globules of product.

Benzene, total xylenes, SVOCs and metals were detected above recommended soil cleanup objectives in samples collected from the trenches (Trench 2, 3, and 4) and metals were detected above cleanup objectives in all four trenches. Only cyanide exceeded groundwater standards in

one sample. The recommended remedy for Parcel E was excavation of impacted soil and wastewater, installation of an engineered cap, and 1 foot of imported fill for landscaped areas.

HPGCS

A total of 47 soil samples were collected from soil borings drilled at the gas regulator station during the initial site investigation (SI). Four groundwater samples were collected. An additional 11 soil samples, two groundwater samples, and three tar samples were collected during supplemental sampling.

Three to eleven feet of fill was encountered across this parcel, consisting of of sand, gravel, coal ash/cinders, and debris (wood, bricks, glass, etc.). Evidence of non-aqueous phase liquid (NAPL) and tar were observed during this investigation. Metals were detected throughout the site in soil and groundwater at concentrations exceeding the NYSDEC recommended TAGM soil cleanup objectives and/or Eastern U.S. background levels. The elevated metal concentrations are consistent with the historical industrial use of the site and surrounding area.

Analytical results indicated that elevated PAH and PCB levels were present in the Site soils. As such, this parcel was remediated in 2003 to:

- Excavate soils with total PAH concentrations greater than 500 ppm.
- Remediate soils visibly impacted with MGP-related tar or free product; and
- Mitigate the potential exposure to soils remaining on site following the remedial actions

Remedial activities for this parcel are documented in the *Final Engineering Report, Hunts Point Gas Compressor Station Site, Bronx, NY*. (Parsons, 2004).

2.5 SITE SETTING

2.5.1 Physical Setting and Regional Hydrogeology

Hunts Point is a peninsula on the East River and Bronx River that is surrounded by brackish or salty tidal water. The former Hunts Point Gas Works covers an area of approximately 182 acres. Halleck Street is the western boundary of the former site operations and extends for approximately 2,500 linear feet.

The site-specific geology and subsurface site conditions can vary depending on the local site history and the specific activities conducted (construction, excavation, filling, etc.). Prior to significant construction and development, Hunts Point was drained by small creeks, which emptied into the Bronx and East rivers. Most of these creeks are now filled in and are covered by buildings and streets. However, the old channels may have some influence on the occurrence and movement of shallow groundwater as do ancient former stream deposits and area of sewer lines and former piping. Groundwater in the area has been reported to occur within the shallow subsurface, and flows in a southerly direction toward the Hunts Point promontory, and the confluence of the Bronx and East Rivers (Hygienetics, 1997b).

During the PSA at the HPGCS, shallow water was encountered within the fill materials on the eastern portion of the property at depths between two and five feet bgs. This shallow water was not encountered at drilling locations on the western half of the site and appears to be perched water within the fill and sand materials above the clay. A deeper water-bearing zone was encountered during the subsurface investigation within a deeper sand layer at approximately 12

to 15 feet bgs. Boring logs from the Hygienetics report indicate the presence of groundwater ranged from 3 to 9 feet bgs depending on the proximity to the Bronx River (Hygienetics, 1997b and LMS, 1999a and b).

SECTION 3

SCOPE OF WORK

The following sections present the scope of work to be conducted during the Site Characterization. Modifications to the work plan due to conditions encountered during the field activities will be made in consultation with, and under the approval of, the NYSDEC. The scope of the field investigation activities includes the installation of soil borings and monitoring wells. Samples of soil, groundwater, and free product (if present) will be collected for laboratory analysis. Proposed sampling locations are shown on Figure 3. Table 1 provides the rationale for soil boring and monitoring well locations. Table 2 provides a summary of the anticipated number of samples and chemical analyses.

Sampling procedures are described in detail in Appendix A, the Field Sampling Plan (FSP). Quality assurance/quality control (QA/QC) procedures are described in Appendix B, the Quality Assurance Project Plan (QAPP). A Health and Safety Plan (HASP) is provided as Appendix C.

3.1 SITE INSPECTION AND PRELIMINARY INVESTIGATION ACTIVITIES

A site inspection will be conducted to refine the locations of the proposed investigation points. The proposed scope of work will be reviewed with representatives of the current property owner, the City of New York. As-built diagrams will be reviewed for access, feasibility, occupant health and safety, worker health and safety, and crowd control. Subsurface utility locations will be reviewed. The inspection will allow the most efficient and effective methods to be employed during the Site Characterization. Proposed locations and proposed methods may be altered in the field based on site conditions, access, utilities, and public safety. Modifications, if necessary, will be made in consultation with the NYSDEC.

3.2 UNDERGROUND UTILITY CLEARANCE

Prior to beginning the field investigation work, the Dig Safely New York One-Call Center will be contacted for a Code 753 utility mark-out. No drilling will be conducted until the following minimum requirements have been met:

- The Parsons Project Manager and/or field team leader have thoroughly inspected the drilling location and surrounding area for the Code 753 mark-out and the location is clear of marked utilities
- All drilling locations have been checked by Con Edison using an electromagnetic cable locator, and/or a private utility locating contractor has conducted a geophysical survey of the proposed sampling locations to locate potential underground utilities or obstructions
- Utility plates for the Site and surrounding area have been provided to Parsons by Con Edison's Construction Management staff, and reviewed

- Potable water and sewer maps for the Site and the surrounding area have been obtained by Parsons and reviewed
- Parsons has met with and reviewed all of the drilling locations with a facility representative, a Con Edison Construction Management representative, and/or Con Edison's Project Manager, and verified that all drilling locations have been marked, and
- Each drilling location has either been hand-augered to a minimum depth of 5 feet, or a test pit has been hand-dug or vacuum excavated to a minimum depth of 5 feet, as determined by Con Edison during the site inspection

Additional utility clearance measures may be required based on the Site inspection and/or Con Edison requirements.

3.3 AIR MONITORING

The proposed investigation and sampling activities may generate fugitive dust or organic vapors. Worker breathing zone air monitoring will be conducted as described in Section 3.3.1. A community air monitoring program will also be implemented as described in Section 3.3.2. The HASP (Appendix C) provides the air monitoring action levels and corresponding response actions.

3.3.1 Worker Air Monitoring

Air monitoring of the worker breathing zone will be conducted continuously during all intrusive activities to assure proper health and safety protection for the team and any occupants of the facilities. Readings will be taken prior to start of intrusive work at the Site to establish background conditions. Initially, air monitoring will be conducted at the site of the investigation (potential source area). If air monitoring identifies the presence of VOCs in the worker breathing zone, guidelines in the HASP (Appendix C) will be followed regarding action levels, permissible exposure, engineering controls, and personal protective equipment. The following equipment will be used to conduct air monitoring:

- A PID (RaeSystems MiniRae 2000 or equivalent) will be used to monitor for organic vapors and benzene
- A MiniRAM Portable Aerosol Monitor will be used to monitor particulate dust and aerosolized vapors, and
- Cyanide color detector tubes will be used to monitor for hydrogen cyanide, if necessary; alternatively, a MultiRAE 5-Gas Meter equipped with a hydrogen cyanide sensor will be used

Air monitoring results will be recorded in the field book during investigation activities and made available for NYSDEC and New York State Department of Health (NYSDOH) review.

3.3.2 Community Air Monitoring

Community air monitoring will be conducted using the NYSDOH's Generic Community Air Monitoring Plan (NYSDOH, 2000) as a guidance document. Real-time air monitoring for volatile compounds and particulates at the perimeter of the hot zone will be performed as described below.

VOC Monitoring

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of groundwater samples. Periodic monitoring may include obtaining measurements upon arrival at a location, while opening a monitoring well cap, when bailing/purging a well, and upon leaving the location. In some instances, depending on the proximity of exposed individuals, continuous monitoring may be conducted during these activities.

Continuous monitoring for VOCs will be conducted during all ground intrusive activities (i.e., test pitting, soil boring installation, and monitoring well installation). Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations. VOCs will be monitored continuously at the downwind perimeter of the hot zone. Monitoring will be conducted with a PID equipped with a 10.6 eV lamp capable of calculating 15-minute running average concentrations. The following actions will be taken based on organic vapor levels measured:

- If total organic vapor levels exceed 5 ppm above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the hot zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions (see the last paragraph in Section 3.4 for possible corrective actions), and monitoring continued. After these steps, work activities will resume provided that the total organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less – but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average.
- If the total organic vapor level is above 25 ppm at the perimeter of the hot zone, activities will be shutdown.

All 15-minute readings will be recorded and available for NYSDEC and NYSDOH personnel to review. Instantaneous readings, if any, will also be recorded.

Particulate Monitoring

During ground intrusive activities, particulate concentrations will be monitored continuously at the downwind perimeter of the hot zone with a portable real-time particulate monitor capable of measuring particulate matter less than 10 micrometers in size and capable of integrating over a period of 15 minutes (or less). The equipment will include an audible alarm to indicate

exceedence of the action level. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations. The following actions will be taken based on particulate concentrations measured:

- If the downwind particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) above background for the 15-minute period or if dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression provided that the downwind particulate level does not exceed 150 $\mu g/m^3$ above background, and no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, the downwind particulate level is greater than 150 $\mu g/m^3$ above background, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind particulate level to within 150 $\mu g/m^3$ of the background (upwind) level and in preventing visible dust migration.

Readings will be recorded and be available for NYSDEC and NYSDOH personnel to review.

3.4 SOIL BORINGS

A total of eleven soil borings (SB-01 through SB-11) will be advanced to characterize subsurface conditions along the edge of Halleck Street sidewalk, along the former Hunts Points Gas works property. Figure 3 depicts the proposed boring locations and Table 1 summarizes the sampling rationale. All boring locations are subject to change based on accessibility, utility clearance, and conditions encountered during the site inspection and field activities. Additional soil borings may also be added during the course of the filed investigation based on subsurface conditions encountered.

Each soil boring location will be cleared for utilities as described above in Section 3.1. Accessibility of soil boring locations, as well as the subsurface conditions encountered, will govern the drilling techniques used. Soil borings will be advanced using direct push techniques, if possible. A hollow stem auger rig will be used if site conditions prevent use of a direct push rig.

Soil borings will be advanced to the meadow mat (peat) layer or a confining clay layer as determined by the field geologist. If neither meadow mat nor a confining clay layer is present, the boring will be advanced to bedrock, anticipated to be at depth of 30 feet bgs. If visually impacted materials are observed at the bottom of the boring, the boring will be continued until un-impacted soils are observed, bedrock is encountered, or the limit of the drilling equipment is reached. In the event that impacted materials are encountered at the interface of a confining layer, this layer will be cased off prior to deeper drilling, to prevent vertical migration of contamination.

Soil samples will be collected continuously to the bottom of the borings using a 5-foot long by 2-inch diameter macrocore samplers, or using 2-foot long by 2-inch diameter split spoons, depending on the type of drill rig used. Soil samples retrieved from each boring will be visually classified for soil type, grain size, texture, moisture content, and visible evidence of staining or

impacts. Each sample will also be screened for the presence of VOCs with a PID. In addition, a sample from each 2.5-foot interval will be collected in a sealed plastic bag and the sample headspace will be screened for the presence of VOCs with a PID. Each soil boring will be grouted to the surface when complete.

Two soil samples will be selected from each boring location and submitted to a laboratory for chemical analysis (see Table 2). The two samples will be collected as follows:

- One sample will be collected from the zone with the highest PID readings or visual impacts from the boring. If no visual impacts or elevated PID readings are observed, a sample will be collected from directly above the water table.
- One sample will be collected below the impacted zone or near the base of the boring to define the vertical extent of impacts at that location.

Additional soil samples may be collected based on field observations. The soil samples will be analyzed for TCL VOCs and SVOCs, cyanide, and TAL metals. In addition, if free phase NAPL is encountered, one representative sample will be submitted for forensic fingerprinting analysis to a lab that specializes in analyzing and determining the origin of NAPL samples.

Borings that are not converted into monitoring wells will be grouted to the surface following completion. Holes in asphalt or concrete will be repaired and patched with similar materials. Drilling equipment will be decontaminated between each boring in accordance with procedures specified in Appendix A, the FSP. Drill cuttings and decontamination water will be containerized in accordance with procedures also specified in the FSP. A description of the decontamination pad is also provided in Section 3.1 of Appendix A.

3.5 MONITORING WELL INSTALLATION

Three monitoring wells (MW-01 through MW-03) will be installed at the proposed locations shown on Figure 3. Table 1 summarizes the sampling rationale. Groundwater is anticipated to be less than 15 feet below ground surface (bgs); therefore, monitoring wells will be installed to depths of approximately 25 feet unless visually impacted materials are observed. If visually impacted materials are observed at the bottom of the boring, the boring will be continued until no visually impacted soils are observed, bedrock is encountered, or the limit of the drilling equipment is reached. The data collected from the monitoring wells will be used to: characterize groundwater conditions, assess groundwater flow direction, evaluate the presence of NAPL, and ascertain the potential impact of MGP residuals and other constituents on groundwater quality.

Monitoring well borings will be advanced using 4.25-inch inner diameter HSAs. Soil samples will be collected continuously to the bottom of the borings using 2-foot long discrete split-spoon samplers. Soil samples retrieved from each overburden monitoring well boring will be visually characterized for soil type, grain size, texture, moisture content, and visible evidence of staining or impacts. Each sample will also be screened for the presence of VOCs with a PID. In addition, a sample from each 2-foot interval will be collected in a sealed plastic bag and the sample headspace will be screened for the presence of VOCs with a PID.

Two soil samples will be selected from each overburden monitoring well boring location and submitted to the laboratory for chemical analysis. The two samples will be collected as follows:

- One sample will be collected from the zone with the highest PID readings or visual impacts from either the test pit (hand auger) or boring. If no visual impacts or elevated PID readings are observed, a sample will be collected from directly above the water table.
- One sample will be collected below the impacted zone or near the base of the boring to define the vertical extent of impacts at that location.

Additional soil samples may be collected based on field observations. The soil samples will be analyzed for TCL VOCs and SVOCs, cyanide, and TAL metals (see Table 2).

The monitoring wells will be constructed with 2-inch ID, threaded, flush-joint, PVC casing and approximately 10 feet of 0.02-inch slot screens. A 2-foot sump will be placed below the screens at locations where NAPL is observed during installation of the monitoring well boring. The annulus around the screens will be backfilled with silica sand having appropriate size for the subsurface conditions (e.g., Morie No. 2). The screens will be placed across the water table interface to allow for the monitoring of light non-aqueous phase liquid (LNAPL), if present.

After a minimum of 24 hours, the monitoring wells will be developed until the well is reasonably free of sediment (less than 50 NTU if possible) or until the pH, temperature and conductivity stabilize. A maximum of one to two hours of development time per well is anticipated. The level of effort, however, is dependent upon the nature of the soils at each location.

3.6 SITE SURVEY

The locations and elevations of the soil borings and monitoring wells will be surveyed by a licensed surveyor. Vertical control of elevations will be established to the nearest 0.01-foot and will be based on a USGS datum and benchmarks established on the Site. Horizontal control will be based on New York State plane coordinate system with established and referenced control points.

3.7 GROUNDWATER SAMPLING AND ANALYSIS

Groundwater sampling will commence a minimum of two weeks after well development. Groundwater samples will be collected from the three monitoring wells (MW-01 through MW-03). Prior to sampling, the headspace within each well will be measured with a PID. An oil/water level interface probe and/or a water level indicator will be used to measure the depths to the water table and thickness of any free product in the wells. The monitoring wells will be purged using low-flow purging techniques to remove a minimum of three times the volume of standing water in the well to allow for collection of a representative sample. Groundwater samples will then be collected using dedicated sampling equipment (e.g., bailer or pump tubing).

Prior to filling the sample bottles, the turbidity, pH, temperature, and conductivity of the sample will be measured and recorded. The groundwater samples will be analyzed for TCL VOCs and SVOCs, total cyanide, and TAL metals. Sampling procedures are described in detail

in the FSP (Appendix A). QA/QC procedures are described in the QAPP (Appendix B). In addition, if NAPL is encountered in a well, a representative sample will be submitted for forensic fingerprinting analysis to a lab specialized in analyzing and determining the origin of NAPL samples.

3.8 GROUNDWATER LEVEL MEASUREMENTS

Following installation of the three monitoring wells proposed herein, groundwater level measurements from each new well will be obtained to facilitate development of a groundwater contour map, showing groundwater flow direction.

3.9 WASTE MANAGEMENT

Investigation-derived wastes (IDW) generated during the site characterization will be containerized. Soils will be placed in 55-gallon Department of Transportation (DOT-) approved drums and labeled appropriately. Plastic sheeting and personal protective equipment will be consolidated in DOT-approved drum(s). Fluids will be placed in DOT-approved fluid drums with closed tops. The drums will be staged in a secure area as determined by Con Edison and facility representatives prior to proper characterization and disposal. Alternatively, materials will be transported offsite daily.

3.10 LABORATORY ANALYSIS AND DATA VALIDATION

Laboratory analyses of soil and groundwater samples will be conducted by a NYSDOH Environmental Laboratory Analysis Program (ELAP) approved laboratory certified for analyses using the most recent Analytical Services Protocol (ASP). Laboratory analyses will be conducted in accordance with USEPA SW-846 methods and standard deliverable format.

Table 2 summarizes the anticipated analytical methods and quality control samples required. QA/QC procedures required by the SW-846 methods will be followed, including initial and continuing instrument calibrations, standard compound spikes, surrogate compound spikes, and analysis of other samples (blanks, laboratory control samples, matrix spikes/matrix spike duplicates, etc.). The laboratory will provide sample bottles, which have been pre-cleaned and preserved in accordance with the SW-846 methods. Aqueous VOC samples will be preserved using hydrochloric acid. NYSDEC ASP holding times will be adhered to. Note that the SW-846 methods have are incorporated into the NYSDEC ASP. Where there are differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP shall take precedence.

Data validation will be performed in accordance with USEPA Region II standard operating procedures (SOPs) for organic and inorganic data review. These validation guidelines are regional modifications to the National Functional Guidelines for organic and inorganic data review (USEPA 1999 and 2004). Validation will include the following:

- Verification of 100% of all quality control (QC) sample results (both qualitative and quantitative)
- Verification of the identification of 100% of all sample results (both positive hits and non-detects)

- Re-calculation of 10% of all investigative sample results, and
- Preparation of a Data Usability Summary Report (DUSR)

Data reduction, validation, and reporting procedures are provided in the QAPP (Appendix B).

3.11 SITE CHARACTERIZATION REPORT

Upon completion of fieldwork and receipt of laboratory analytical results, a Site Characterization Report (SCR) will be prepared. The general outline of the SCR will be as follows:

- Section 1 (Introduction) will include a site overview and history;
- Section 2 (Site Characterization Activities) will describe the investigation activities completed and any deviations from this work plan;
- Section 3 (Site Characterization Results) will present the results of the investigation, including extent of MGP-related impacts and a human health exposure assessment; and
- Section 4 (Conclusions and Recommendations) will summarize the results of the investigation and present any conclusions and recommendations for future investigation or remediation.

SECTION 4

PROJECT MANAGEMENT

4.1 ORGANIZATION AND STAFFING

This Site Characterization will be completed for Con Edison by Parsons. Key members of the project team and their responsibilities are described below:

Key Position	Contact Name	Responsibilities
Con Edison		
Project Manager:	Ms. Yelena Skorobogatov Telephone: (718) 204-4205 Fax: (718) 932-2687 E-mail: skorobogatovy@coned.com	Con Edison's Project Manager is responsible for managing the project within Con Edison and for ensuring the consultant completes the work in accordance with the Work Plan.
Con Edison's Consultant (Parsons)		
Project Manager	Mr. Eric Gaulin Telephone: (732) 537-3570 Fax: (732) 868-3110 E-mail: Eric.Gaulin@parsons.com	The Project Manager is responsible for maintaining the project schedule, keeping the project within budget, and ensuring the technical adequacy of the work performed. The Project Manager will be the primary contact with Con Edison on all technical, scheduling, and budget issues.
Field Representative:	TBD Telephone: Fax: E-mail:	The Field Supervisor will be responsible for working with the Project Manager to coordinate, oversee and ensure that all requirements are strictly adhered to on field activities.
Technical Director	Mr. Shane Blauvelt Telephone: (315)552-9675 Fax: (315) 451-9570 E-mail: Shane.Blauvelt@parsons.com	The Technical Director will provide technical support and overall quality assurance for the project. The primary objective of the Technical Director is to ensure compliance with all regulatory guidance and regulations.
Health and Safety Officer	Mr. Gregory Beck Telephone: (732) 537-3502 Fax: (732) 868-3110 E-mail: gregory.beck@parsons.com	The Health and Safety Officer will ensure that the health and safety plan is properly implemented and that all personnel and subcontractor site personnel are trained in the site-specific project health and safety requirements, as well as those of Con Edison.

Key Position	Contact Name	Responsibilities
Anticipated Subcontractors		
Utility Clearance/GPR Survey	NAEVA Geophysics	Conduct GPR survey of Site to detect underground utilities.
Drilling	ADT	Install soil borings.
Surveyor	Chazen	Survey sampling locations.
Laboratory	Chemtech	Conduct laboratory analyses of soil and water samples in accordance with the QAPP.

4.2 PROJECT SCHEDULE

The anticipated project schedule for the Site Characterization is shown on Figure 4.

SECTION 5

REFERENCES

1. *Hygienetics. 1997a. Phase I Environmental Site Assessment Report of Hunts Point Produce Market Complex Parcels A, B, C, D, and E*.

2. Hygienetics. 1997b. *Phase II Investigation Report of Hunts Point Produce Market Complex Parcels "A, B, C, D, and E", Bronx, New York*. December 2, 1997.

3. Hygienetics. 1998. *Phase II Investigation Report of Hunts Point Produce Market Complex Parcels B, Bronx, New York*. February 9, 1998.

4. LMS, 1999a. *Investigation Report for the Operating Unit portion of Parcel A, Bronx, NY, Hunts Point Food Distribution Redevelopment Plan*, Lawler Matusky & Skelly Engineers LLP, August 1999.

5. LMS, 1999b. *Investigation Report for the Operating Unit Portion of Parcel E, Hunts Point Food Distribution Redevelopment Plan*, Lawler Matusky & Skelly Engineers LLP, August 1999.

6. LMS, 1999c. *Investigation Report for the Operating Unit portion of Parcel C, Bronx, NY, Hunts Point Food Distribution Redevelopment Plan*, Lawler Matusky & Skelly Engineers LLP, November 1999.

7. LMS, 2001. *Investigation Report for the Operating Unit Portion of Parcel B,* Lawler Matusky & Skelly Engineers LLP, May 2001.

8. Parsons, 2003. *Site Investigation Report for the Hunts Point Gas Regulator Station Site Investigation,* Parsons, January 2003.

9. Parsons, 2003. *Hunts Point Offsite Manufactured Gas Plant Site History Report, Bronx, New York*, Parsons, February 2003.

10. Parsons, 2004. *Final Engineering Report, Hunts Point Gas Compressor Station Site, Bronx, NY*, Parsons, April 2004.

11. LMS, 2005. *Hunts Point Cooperative Market Redevelopment Plan, Investigation Report for Parcel D, Bronx, New York.*

12. LMS, 2007a. *Hunts Point Cooperative Market Redevelopment Plan, Investigation Report, Operable Unit 3 of Parcel E, Bronx, New York, Final*.

13. HDR/LMS, 2007b. *Hunts Point Cooperative Market Redevelopment Plan, Investigation Report for Parcel F, Bronx, New York, Final.*

TABLES

TABLE 1

SAMPLING RATIONALE

Sample Location	Depth	Rationale
Soil Borings SB-01 and SB-02; MW-01	Meadow mat, clay confining layer, equipment refusal, or bedrock refusal (approximately 32 ft)	• Collect soil samples along the northeastern edge of Halleck Street from Food Center Drive to Viele Avenue to determine the presence, nature and extent of MGP residues, NAPL, or other constituents. Historical investigations conducted in 1999 by LMS and 2003 by Parsons, did not investigate the area of Parcel E along the Halleck Street boarder. Primary area of investigation by LMS was on the eastern portion (gas holder) of the Parcel E. • Assess groundwater conditions at this location to determine any potential MGP impact
Soil Borings SB-03 through SB-06; MW-02	Meadow mat, clay confining layer, equipment refusal, or bedrock refusal (approximately 34 ft)	• Collect soil samples along the eastern edge of Halleck Street from Viele Avenue to Food Center Drive to determine the presence, nature and extent of MGP residues, NAPL, or other constituents. Historical investigations conducted in 1999 by LMS did not investigate the area of Parcel A along the Halleck Street boarder. The primary investigation was from the center of Parcel A to the eastern parcel boundary. Coal tar on the western edge of the investigation area was never fully delineated. • Assess groundwater conditions at this location to determine any potential MGP impact
Soil Borings SB-7 through SB-11; MW-03	Meadow mat, clay confining layer, equipment refusal, or bedrock refusal	• Collect soil samples along the eastern edge of Halleck Street from Food Center Drive to the terminus of Halleck Street to determine the presence, nature and extent of MGP residues, NAPL, or other constituents. Historical investigations conducted in 2000 by LMS did not investigate the area of Parcel B along the Halleck Street boarder. Borings locations were focused towards the center and eastern portion of the site, in the vicinity of former site structures. During this investigation, coal tar and elevated photo ionization readings were detected in borings. • Assess groundwater conditions at this location to determine any potential MGP impact

TABLE 2

SUMMARY OF SAMPLES AND ANALYSES

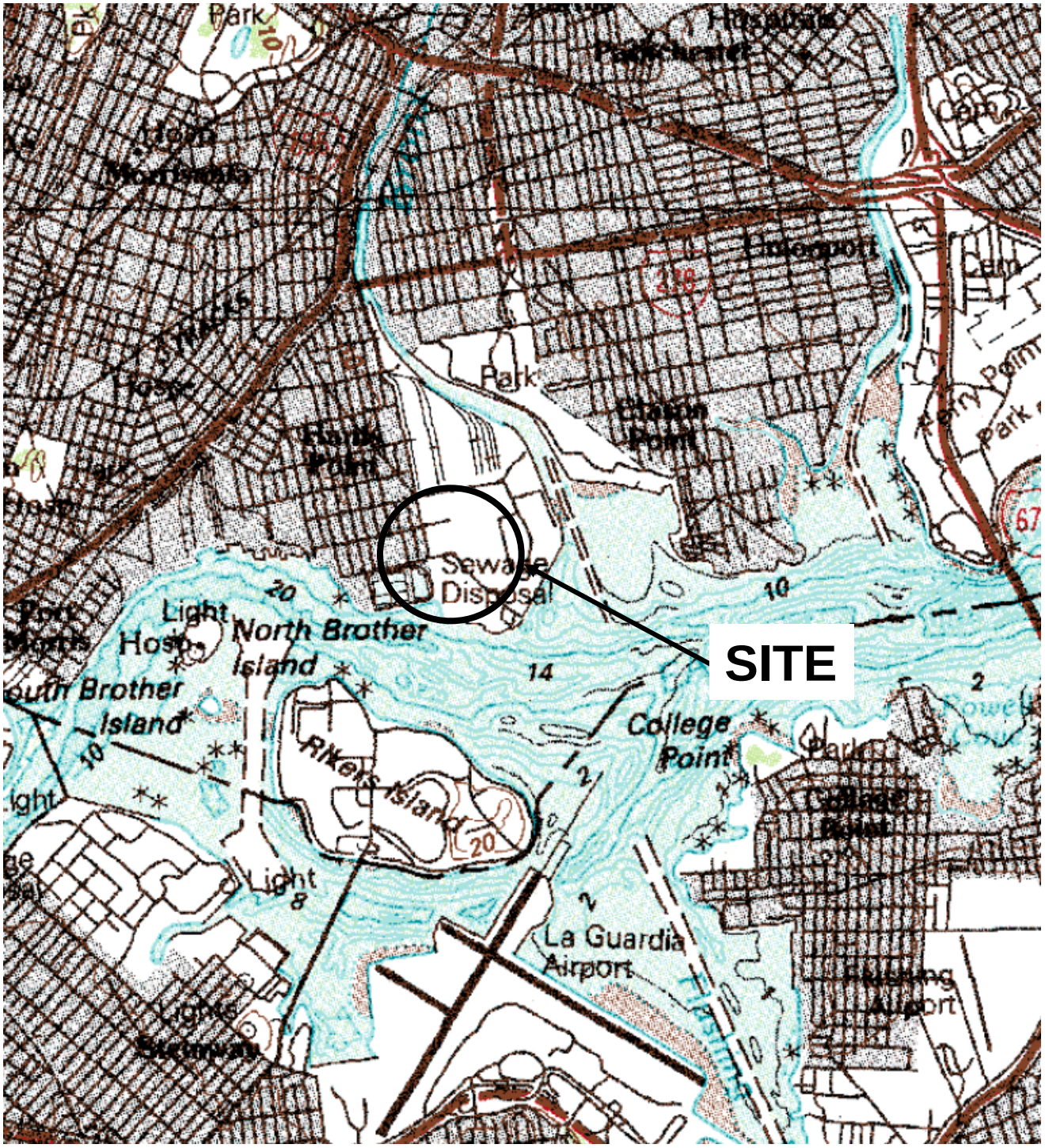
Matrix	Parameter	Analytical Method	Field Samples				QC Blanks	Total
			Field Samples	Field Duplicate	MS/MSD[(a)] (Total)	Sub-Total	Trip Blank	
Soil Samples (from soil borings and monitoring well borings)	TCL VOCs	EPA SW 8260	24	2	2/2	30	0	30
	TCL SVOCs	EPA SW 8270B	24	2	2/2	30	0	30
	Cyanide	EPA SW 335.2	24	2	2/2	30	0	30
	TAL Metals	EPA SW 6010, 7470/7471, 7841, 9010	24	2	2/2	30	0	30
Groundwater Samples	TCL VOCs	EPA SW 8260	3	1	1/1	6	1[(b)]	7
	TCL SVOCs	EPA SW 8270	3	1	1/1	6	-	6
	Cyanide (total)	EPA SW 335.2	3	1	1/1	6	-	6
	TAL Metals	EPA SW OIA-1677	3	1	1/1	6	-	6
		EPA SW 6010, 7470/7471, 7841, 9010						
Free Product Samples	Hydrocarbon Fingerprinting	Modified Method 8100	?[(c)]	-	-	-	-	?

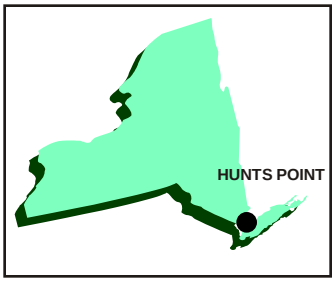
(a) Matrix spike / matrix spike duplicate for organic analyses; matrix spike and laboratory duplicate for inorganic analysis is collected for every 20 samples collected.

(b) Trip blanks will be collected for each day a groundwater VOCs sample is sent to the laboratory.

(c) Number of free product samples collected for analysis (if any) will be determined in the field.

FIGURES





New York
Quadrangle

LATITUDE: N40° 48' 33"
LONGITUDE: W73° 52' 48"

N

SOURCE: DeLORME 3-D
TOPOQUAD PROGRAM

FIGURE 1

CONSOLIDATED EDISON COMPANY OF NEW YORK
FORMER HUNTS POINT GAS WORKS
HALLECK STREET SIDEWALK AREA
BRONX, NEW YORK

SITE VICINITY MAP

PARSONS

200 COTTONTAIL ROAD, SOMERSET NJ 08873 PHONE: (732) 537-3500

Legend

- Approximate Site Boundary
- Approximate Boundary of Former Gas Works Facilities
- Approximate Boundary of Parcels
- Approximate Location of Former Gas Works Facilities

FIGURE 2

CONSOLIDATED EDISON COMPANY OF NEW YORK
FORMER HUNTS POINT GAS WORKS
HALLECK STREET SIDEWALK AREA
BRONX, NEW YORK

SITE LOCATION MAP

PARSONS
200 COTTONTAIL LANE SOUTH, SOMERSET, NJ 08873 PHONE: (732) 537-3500

Legend

- Approximate Site Boundary
- Approximate Boundary of Former Gas Works Facilities
- Approximate Boundary of Parcels
- Proposed Monitoring Well
- Proposed Soil Boring

FIGURE 3

CONSOLIDATED EDISON COMPANY OF NEW YORK
FORMER HUNTS POINT GAS WORKS
HALLECK STREET SIDEWALK AREA
BRONX, NEW YORK

PROPOSED SAMPLE LOCATION

PARSONS
200 COTTONTAIL LANE SOUTH, SOMERSET, NJ 08873 PHONE: (732) 537-3500

Figure 4
Anticipated Project Schedule
Former Hunts Point Gas Works Site, Halleck Street Sidewalk, Bronx, New York

	Duration (Working Days)	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7
Site Characterization Activities								
Utility Mark-Out/Site Inspection (All Locations)	**2**							
Vacuum or Hand Excavation of Drilling Locations (to 5' bgs) SB-01 through SB-11	**6**							
Soil Boring Installation SB-1 through SB-11	**7**							
Monitoring Well Installation and Development MW-01 through MW-03	**3**							
Groundwater Sampling MW-01 through MW-03	**1**							
Site Survey	**1**							

Anticipate submittal of Site Characterization Report to NYSDEC/NYSDOH for review within 10 weeks following completion of field investigation activities.

APPENDIX A
FIELD SAMPLING PLAN

APPENDIX A

FIELD SAMPLING PLAN FOR SITE CHARACTERIZATION OF THE FORMER HUNTS POINT GAS WORKS HALLECK STREET SIDEWALK AREA Bronx, New York

Prepared For:

Consolidated Edison Company of New York, Inc.

31-01 20th Avenue
Long Island City, NY 11105

Prepared By:

PARSONS

200 Cottontail Lane
Somerset, NJ 08873
Phone: (732) 537-3500
Fax: (732) 868-3110

JUNE 2011

TABLE OF CONTENTS

Page

SECTION 1 INTRODUCTION..... 1-1

1.1 Overview of Field Activities 1-1

SECTION 2 GENERAL FIELD GUIDELINES 2-2

2.1 Site Hazards 2-1

2.2 Underground Utilities 2-1

2.3 Field Log Books 2-1

SECTION 3 FIELD EQUIPMENT DECONTAMINATION AND MANAGEMENT OF INVESTIGATION DERIVED WASTES..... 3-1

3.1 Decontamination Area 3-1

3.2 Equipment Decontamination 3-1
3.2.1 Sampling Equipment Decontamination..... 3-1

3.3 Management of Investigation Derived Wastes..... 3-2
3.3.1 Decontamination Fluids..... 3-2
3.3.2 Drill Cuttings 3-2
3.3.3 Development and Purge Water..... 3-2
3.3.4 Personal Protective Equipment..... 3-2
3.3.5 Dedicated Sampling Equipment 3-3

SECTION 4 TEST PITTING, DRILLING, AND SOIL SAMPLING 4-1

4.1 Introduction..... 4-1

4.2 Soil Borings and Soil Sampling..... 4-1
Suggested Equipment 4-1
Drilling and Geologic Logging Method 4-1
Soil Sampling 4-2

4.4 Monitoring Well Installation and Development 4-3
Suggested Equipment 4-3
Monitoring Well Installation 4-3
Monitoring Well Development..... 4-4

SECTION 5 GROUNDWATER SAMPLING PROCEDURES..... 5-1

5.1 Introduction 5-1

5.2 Groundwater Sampling 5-1
Suggested Equipment and Supplies 5-1
Groundwater Sampling Method 5-1

SECTION 6 AIR MONITORING 6-1

6.1 Breathing Zone Air Monitoring During Excavation, Drilling and Sampling 6-1

SECTION 7 FIELD INSTRUMENTS AND CALIBRATION 7-1

7.1 Portable Photoionization Detector 7-1

7.2 MiniRAM 7-1

7.3 pH Meter 7-2

7.4 Specific Conductivity Meter and Temperature Probe 7-2

7.5 Turbidity Meter 7-2

SECTION 8 FIELD SAMPLE IDENTIFICATION AND CUSTODY 8-1

8.1 Sample Location Numbering System 8-1

8.2 Sample Identification 8-1

8.3 Chain of Custody 8-1

8.4 Sample Documentation 8-2

LIST OF FIGURES

Figure 4.1 Test Pit Record 4-6
Figure 4.2 Drilling Record 4-7
Figure 4.3 Monitoring Well Cross Section 4-8
Figure 5.1 Groundwater Sampling Record 5-3
Figure 8.1 Chain-of-Custody Form 8-4

SECTION 1

INTRODUCTION

This Field Sampling Plan (FSP) defines the methods and procedures to be used for conducting the Site Characterization at the Former Ludlow Street Works.

1.1 OVERVIEW OF FIELD ACTIVITIES

The following field activities will be performed as part of the characterization work:

- **Geophysical Survey** – Eleven soil boring locations will be scanned by geophysical methods prior to hand clearing and drilling activities.
- **Soil Borings** – Eleven soil borings will be completed to characterize the presence of MGP residues or other constituents that could impact human health and the environment. Two soil samples will be analyzed from each boring and submitted to the laboratory for TCL VOCs and SVOCs, cyanide, and TAL metals.
- **Monitoring Wells** – Monitoring wells will be installed at three locations. The objective of the monitoring wells will be to characterize groundwater quality and to determine the potential impact of MGP residuals on human health and the environment.
- **Surveying** – The locations of the sampling points will be surveyed.

SECTION 2

GENERAL FIELD GUIDELINES

2.1 SITE HAZARDS

Potential on-site surface hazards, such as sharp objects, overhead power lines, energized areas, and building hazards will be identified prior to initiation of fieldwork. Generally, such hazards will be identified during a site visit prior to the first day of fieldwork.

2.2 UNDERGROUND UTILITIES

Prior to beginning the field investigation work, Con Edison and the Dig Safely New York One-Call Center will be contacted for a Code 753 utility mark-out. No drilling will be conducted until the following minimum requirements have been met:

- The Parsons Project Manager and/or field team leader have thoroughly inspected the drilling location and surrounding area for the Code 753 mark-out and the location is clear of marked utilities;
- All drilling locations have been checked by Con Edison using an electromagnetic cable locator, or a private utility locating contractor has conducted a geophysical survey of the proposed sampling locations to locate potential underground utilities or obstructions;
- All drilling locations have been cleared with a metal detector by Parsons;
- Utility plates for the site and surrounding area have been provided to Parsons by Con Edison's Construction Management staff and reviewed;
- Parsons has met with and reviewed all of the drilling locations with a facility representative, a Con Edison Construction Management representative, and/or Con Edison's Project Manager, and verified that all drilling locations have been marked; and
- Each drilling location has either been hand-augered to a minimum depth of 5 feet, or a test pit has been hand-dug or vacuum excavated to a minimum depth of 5 feet, as determined by Con Edison during the site inspection.

Additional utility clearance measures may be required based on the site inspection and/or Con Edison requirements.

2.3 FIELD LOG BOOKS

All field activities will be carefully documented in field log books. Entries will be of sufficient detail that a complete daily record of significant events, observations, and measurements is obtained. The field log book will provide a legal record of the activities conducted at the site. Accordingly:

- Field books will be bound with consecutively numbered pages.

- Field books will be controlled by the Field Team Leader while field work is in progress.
- Entries will be written with waterproof ink.
- Entries will be signed and dated at the conclusion of each day of fieldwork.
- Erroneous entries made while fieldwork is in progress will be corrected by the person that made the entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing the correction.
- Corrections made after departing the field will be made by the person who made the original entries. Corrections will be made by drawing a line through the error, entering the correct information, and initialing and dating the time of the correction.

At a minimum, daily field book entries will include the following information:

- Location of field activity;
- Date and time of entry;
- Names and titles of field team members;
- Names and titles of any site visitors and site contacts;
- Weather information, for example: temperature, cloud coverage, wind speed and direction;
- Purpose of field activity;
- A description of the field work conducted;
- Sample media (soil, sediment, groundwater, etc.);
- Sample collection method;
- Number and volume of sample(s) taken;
- Description of sampling point(s);
- Volume of groundwater removed before sampling;
- Preservatives used;
- Analytical parameters;
- Date and time of collection;
- Sample identification number(s);
- Sample distribution (e.g., laboratory);
- Field observations;
- Any field measurements made, such as pH, temperature, conductivity, water level, etc.;
- References for all maps and photographs of the sampling site(s);
- Information pertaining to sample documentation such as:
  - Bottle lot numbers;
  - Dates and method of sample shipments; and
  - Chain-of-Custody Record and Federal Express Air Bill numbers.

SECTION 3

FIELD EQUIPMENT DECONTAMINATION AND MANAGEMENT OF INVESTIGATION DERIVED WASTES

3.1 DECONTAMINATION AREA

A temporary decontamination (de-con) area lined with polyethylene sheeting will be constructed for steam-cleaning the drilling equipment. The de-con pad will be constructed of two layers of approximately 6-mil polyethylene fitted over wood timbers. The pad will be sloped if possible, creating a sump. Sheets of plywood or pallets will be placed inside the de-con pad. Tools and equipment to be cleaned will be placed on the pallets or plywood, to prevent puncture. Also, the de-con pad will be constructed on a paved area, which minimizes the potential for puncture by tree roots or other obstacles.

The location of the decontamination area will be coordinated with Con Edison and other facility representatives. Water collected from the decontamination activities will be collected in 55-gallon drums and managed as described in Section 3.3.

3.2 EQUIPMENT DECONTAMINATION

The following procedures will be used to decontaminate equipment used during the Site Characterization activities.

- All drilling equipment including the drilling rig, augers, bits, rods, tools, split-spoon samplers and tremie pipe will be cleaned with a high-pressure steam cleaning unit before beginning work.
- The bucket of the excavator or backhoe will be cleaned with a high-pressure steam cleaning unit before beginning work, between test pit locations, and prior to leaving the site.
- Tools, drill rods, and augers will be placed on sawhorses or polyethylene plastic sheets following steam cleaning. Direct contact with the ground will be avoided.
- All augers, rods, and tools will be decontaminated between each drilling location according to the above procedures.
- The back of the drill rig and all tools, augers, and rods will be decontaminated at the completion of the work and prior to leaving the Site.

3.2.1 Sampling Equipment Decontamination

Suggested Materials:

- Potable water
- Phosphate-free detergent – ***Simple Green***
- Distilled water
- Aluminum foil
- Plastic/polyethylene sheeting

- Plastic buckets and brushes
- Personal protective equipment in accordance with the Project Safety Plan

Procedures:

- Prior to sampling, all non-dedicated sampling equipment (bowls, spoons, interface probes, etc.) will be either steam cleaned or washed with potable water and a phosphate-free detergent (***Simple Green***). Decontamination may take place at the sampling location as long as all liquids are contained in pails, buckets, etc.
- The sampling equipment will then be rinsed with potable water followed by a deionized water rinse.
- Between rinses, equipment will be placed on polyethylene sheets or aluminum foil if necessary. At no time will washed equipment be placed directly on the ground.
- Equipment will be wrapped in polyethylene plastic or aluminum foil for storage or transportation from the designated decontamination area to the sampling location.

3.3 MANAGEMENT OF INVESTIGATION DERIVED WASTES

3.3.1 Decontamination Fluids

Decontamination fluids will be collected in DOT approved 55-gallon drums. The drums will be labeled as investigation derived wastewater and temporarily stored in a secured area to be determined by Con Edison and facility representatives. The drums will be placed on wooden pallets in a plastic-lined containment area pending characterization and proper disposal.

3.3.2 Drill Cuttings

Direct push drilling techniques will be used during the investigation; this method should minimize soil waste. Drill cutting containment methods will be implemented during drilling activities which may include the use of a sheet of plywood with a hole cut in the center for the drill stem. Drill cuttings will be contained in 55-gallon drums. The soils will be segregated by drill location to the extent practical. The drums will be labeled as investigation derived waste soils from the corresponding boring or source area, and temporarily stored in a secured area to be determined by Con Edison and facility representatives. The drums will be placed on wooden pallets in a plastic-lined containment area pending characterization and proper disposal.

3.3.3 Development and Purge Water

Well installation is currently not proposed for this investigation. If well installation is determined to be necessary by field observations then all development and purge water will be contained in 55-gallon drums. The drums will be labeled as investigation derived wastewater from the corresponding well and temporarily stored in a secured area to be determined by Con Edison and facility representatives. The drums will be placed on wooden pallets in a plastic-lined containment area pending characterization and proper disposal.

3.3.4 Personal Protective Equipment

All personal protective equipment (PPE) will be placed in 55-gallon drums or roll-off containers for proper disposal by Con Edison.

3.3.5 Dedicated Sampling Equipment

All dedicated soil sampling equipment (Macrocore sampler liners and catchers) and potentially groundwater sampling equipment (dedicated disposable polyethylene bailer and dedicated polypropylene line) will be placed in 55-gallon drums for disposal by Con Edison.

SECTION 4

TEST PITTING, DRILLING, AND SOIL SAMPLING

4.1 INTRODUCTION

Investigation activities to be conducted at the Former Hunts Point Gas Works Halleck Street Sidewalk will consist of:

- Soil borings.

These procedures are described in the following sections. Equipment decontamination procedures are described in Section 3.

4.2 SOIL BORINGS AND SOIL SAMPLING

The following methods will be used for conducting the soil borings.

Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Metal detector
- Stakes and flagging
- One pint containers for lithology samples
- Tape measure
- Decontamination supplies including Simple Green
- Water level indicator
- PID
- Dust Monitor
- Camera
- Clear tape, duct tape
- Aluminum foil
- Laboratory sample bottles
- Coolers and ice
- Shipping supplies

Drilling and Geologic Logging Method

- Soil borings will be advanced using direct push or if necessary, hollow-stem auger drilling methods with split spoon sample collection.
- Soil samples will be collected continuously to the bottom of the borings using 2-foot long, 2-inch diameter discrete samplers, or Macrocore samplers advanced two feet per sampling run.

- Soil samples retrieved from the borehole will be visually described for:
  1. percent recovery,
  2. soil type,
  3. color,
  4. moisture content,
  5. texture,
  6. grain size and shape,
  7. consistency,
  8. visible evidence of staining, and
  9. any other observations.

  The descriptions will be in accordance with the Unified Soil Classification System (USCS).
- Soil samples will be immediately screened for the evolution of organic vapors with a PID.
- A representative portion of the sample will be placed in a plastic "ziplock" bag or an eight-ounce sample jar filled approximately half full. The container will be labeled with the boring number and interval sampled. The containers will be closed tightly.
- After a minimum of 10 minutes, the tip of the PID will be inserted under the cap or into the bag to measure the headspace for organic vapors.
- Remaining soil will be disposed of in accordance with methods specified in Section 3.3.
- All borings not converted to monitoring wells will be sealed with bentonite or cement/bentonite grout following completion.
- All drilling equipment will be decontaminated between each boring in accordance with methods specified in Section 3.2.
- The designated field geologist will log borehole geology and headspace measurements in the field book for later transfer to the Drilling Record shown in Figure 4.2, or similar form.

Soil Sampling

- The number and frequency of samples to be collected from each boring and the associated analytical parameters are summarized in the Site Characterization Work Plan.
- Subsurface samples for VOC analyses will be collected directly from the split-spoons or acetate liners, placed into appropriate containers, and compacted to minimize head space and pore space. Care will be taken during transfer to minimize VOC loss and disturbance of the sample. The remaining sample volume will be homogenized, and placed in appropriate containers for the other analyses.
- The sample containers will be labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of 4^{o} C). The coolers will be shipped overnight to the laboratory for analysis.

- Chain-of-custody procedures will be followed as outlined in the QAPP.
- The sampling equipment will be decontaminated between samples in accordance with procedures described in Section 3.
- Excess soil remaining after sampling will be contained in accordance with methods specified in Section 3.3.
- The sample locations, descriptions, and depths will be recorded in the field book.
-

4.4 MONITORING WELL INSTALLATION AND DEVELOPMENT

The following methods will be used for drilling, installing, and developing the monitoring wells.

Suggested Equipment

- Field book
- Project plans
- Personal protective equipment in accordance with the Project Safety Plan
- Metal detector
- One pint containers for lithology samples
- Tape measure
- Decontamination supplies
- Water level indicator
- PID
- Camera
- Clear tape, duct tape
- Aluminum foil
- Laboratory sample bottles
- Coolers and ice
- Shipping supplies
- Polyethylene disposable bailers (development)
- Polypropylene rope (development)
- Waterra pump or other purge pump (development)
- Stainless steel or glass beakers (development)
- Turbidity meter (development)
- Temperature, conductivity, pH meter (development)

Monitoring Well Installation

Figure 4.3 shows a cross-section for a typical monitoring well. The monitoring wells will be installed in accordance with the following specifications:

- The monitoring well borings will be advanced with 4.25-inch inner diameter (ID) hollow stem augers.
- As described above for soil borings, continuous soil samples will be collected from monitoring well borings for visual description and PID screening.
- Wells will be constructed with two-inch ID, threaded, flush-joint, PVC casings and screens.
- Screens will be ten feet long with 0.02-inch slot openings. A two-foot sump will be installed at the base of the screen at locations where NAPL was observed during installation of the well boring. Alternatives may be used at the discretion of the field geologist and approval of Con Edison, based on site conditions.
- The annulus around the screens will be backfilled with silica sand having appropriate size (e.g., Morie No. 1) to a minimum height of two feet above the top of the screen. Auger flights will be withdrawn as sand is poured in a manner that will minimize hole collapse and bridging.
- A bentonite pellet seal or slurry seal with a minimum thickness of two feet will be placed above the sand pack. The bentonite seal (pellets) will be allowed to hydrate before placement of grout above the seal. Auger flights will be withdrawn in a manner that will minimize hole collapse and bridging.
- The remainder of the annular space will be filled with a cement-bentonite grout to near the ground surface. The grout will be pumped from the bottom up. The grout will be allowed to set for a minimum of 24 hours before wells are developed. Auger flights will be withdrawn in a manner that will minimize hole collapse and bridging.
- Each monitoring well will have a sealed cap (J-plug) and will be contained in a flush-mounted vault. The J-plug will be used to keep surface water from infiltrating into the well during rain events, high water conditions, etc.
- The concrete seal or pad will be sloped slightly to channel water away from the well, and be deep enough to remain stable during freezing and thawing of the ground. Monitoring wells will be installed so that the vault and concrete pad do not pose a trip hazard when completed.
- The top of the PVC well casing will be marked and surveyed to 0.01 foot, and the elevation will be determined relative to a fixed benchmark or datum.
- The measuring point on all wells will be on the innermost PVC casing.
- Monitoring well construction details will be recorded in the field book and on the Drilling Record shown in Figure 4.2, or similar form.

Monitoring Well Development

- After approximately 24 hours following completion, the monitoring wells will be developed by surging/bailing, using a centrifugal or peristaltic pump and dedicated polyethylene tubing, a Waterra positive displacement pump and dedicated polyethylene tubing, or other methods at the discretion of the field geologist.
- Water levels will be measured in each well to the nearest 0.01 foot prior to development.

- The wells will be developed until the water in the well is reasonably free of visible sediment (50 NTU if possible) or until pH, temperature and specific conductivity stabilize. A maximum of one to hours of development time per well is anticipated. The level of effort, however, is dependent upon the nature of the soils at each location. NYSDEC field concurrence on the sufficiency of the development effort will be obtained, when needed.
- Development water will be contained in accordance with methods specified in Section 3.3.

Following development, wells will be allowed to recover for at least 7 days before groundwater is purged and sampled. All monitoring well development will be overseen by a field geologist and recorded in the field book.

Figure 4.1 Test Pit Record

FIGURE 4.1

PARSONS
TEST PIT RECORD

PROJECT NAME: _____	**TEST PIT ID:**
PROJECT NUMBER: _____	**LOCATION:**
WEATHER _____	Approximate L X W X D
DATE/TIME START: _____	=
DATE/TIME FINISH: _____	
CONTRACTOR: _____	
INSPECTOR: _____	

DEPTH (feet bgs)	FIELD IDENTIFICATION OF MATERIAL	COMMENTS
0		
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

_____

Figure 4.2 Drilling Record

FIGURE 4.1

Contractor:					DRILLING RECORD	BORING/ WELL NO.			
Driller:									
Inspector:					PROJECT NAME	Sheet 1 of			
Rig Type:					PROJECT NUMBER	Location Description:			
Method:									
GROUNDWATER OBSERVATIONS									
Water Level					Weather	Location Plan See Site Plan			
Date					Date/Time Start				
Time					Date/Time Finish				
Meas. From	.								
PID Reading	**Sample I.D.**	**Sample Depth**	**Percent Recovery**	**Blow Cts**	**FIELD IDENTIFICATION OF MATERIAL**	**LITHOLOGIC SCHEMATIC**	**STAIN**	**SHEEN**	**FREE PRODUCT**
		0							
		2							
		4							
		6							
		8							
		10							
		12							
		14							
		16							
		18							
		20							

STANDARD PENETRATION TEST

SS = SPLIT SPOON
A = AUGER CUTTINGS
C = CORED
WOR = Weight of Rod
WOH = Weight of Hammer
RB = Roller Bit

COMMENTS

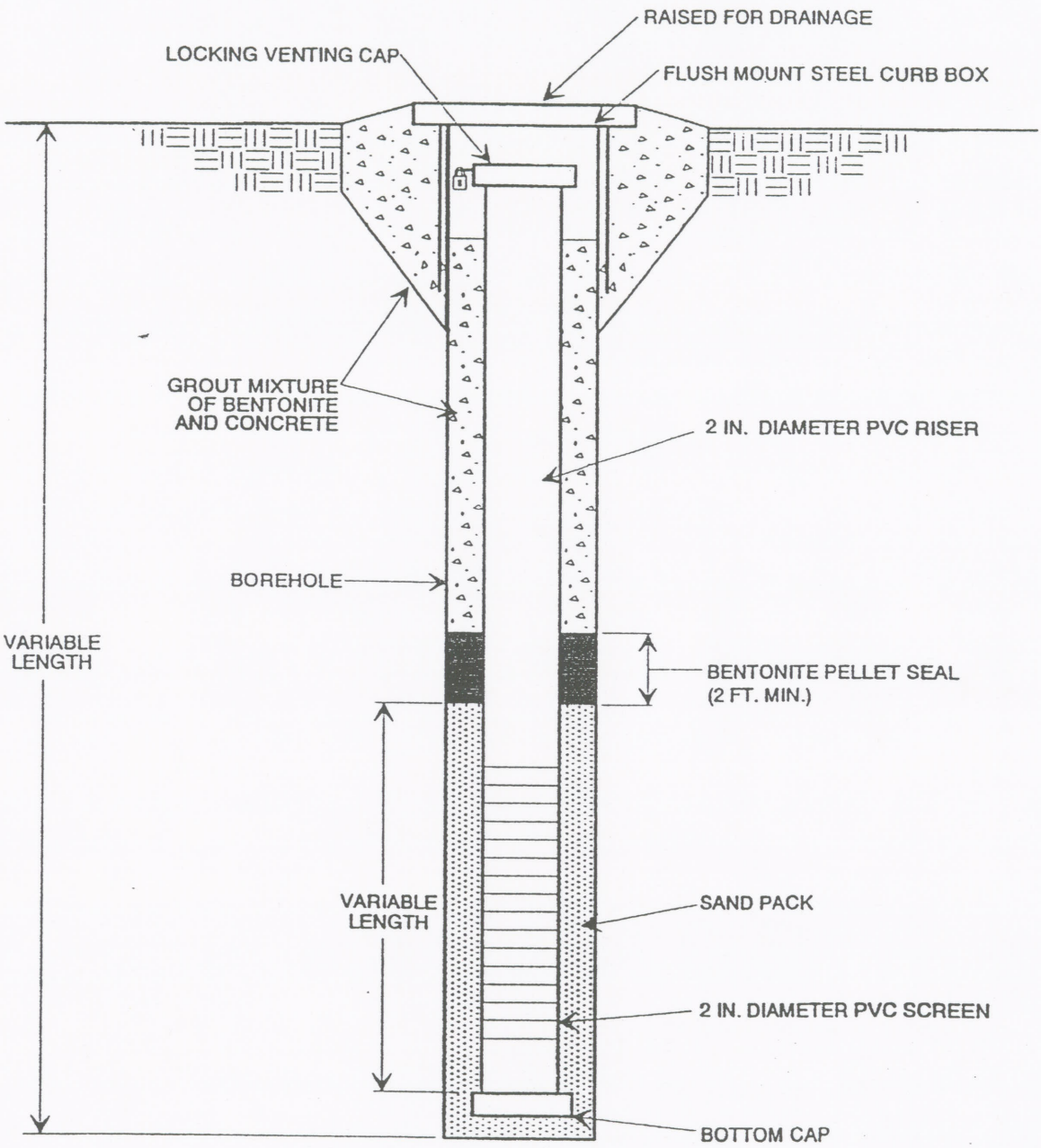
::::: sand AAAA asphalt
---- silt CCCC concrete
==== clay xxxxx fill

P:\736109\tech\drillog.xls

Figure 4.3 Monitoring Well Cross Section

FIGURE 4.2

TYPICAL MONITORING WELL CROSS SECTION



NOT TO SCALE

SECTION 5

GROUNDWATER SAMPLING PROCEDURES

5.1 INTRODUCTION

Procedures for obtaining groundwater samples are described in this section. Sample handling procedures are described in Section 8.

5.2 GROUNDWATER SAMPLING

The following method will be used to collect groundwater samples from monitoring wells.

Suggested Equipment and Supplies

- Field book
- Project plans
- Personal protective equipment in accordance with the HASP
- Oil/Water Interface Probe
- Temp, conductivity, pH meters
- Turbidity meter
- 250-mL glass beaker
- Decontamination supplies
- Peristaltic or other low-flow purge pump
- Plastic tubing
- Plastic sheeting
- PID
- Clear tape, duct tape
- Coolers and ice
- Laboratory sample bottles
- Federal Express labels

Groundwater Sampling Method

Purging

- The number and frequency of groundwater samples to be collected and the associated analytical parameters are summarized in the Site Characterization Work Plan.
- Prior to sampling, the static water level and thickness of any free product will be measured to the nearest 0.01 foot from the surveyed well elevation mark on the top of the PVC casing with a decontaminated oil/water interface probe. The measurement will be recorded in the field book.
- The probe will be decontaminated according to procedures outlined in Section 3.

- The well will be purged by removing a minimum of three well volumes of water. Purging will be conducted using low-flow sampling methods such as a peristaltic pump.
- If a well goes dry before the required volumes are removed, it will be allowed to recover, purged a second time until dry or the required volumes are removed, and sampled when it recovers sufficiently. If field conditions (based on geology observed during drilling) indicate that water level recovery may be slow, then slow purging will be conducted. If the well goes dry during slow purging, it will be allowed to recover, then sampled without a second purge.
- Purge water will be managed and disposed of in accordance with procedures described in Section 3.

Sampling

- Samples will be collected using low-flow sampling methods such as a peristaltic pump and dedicated tubing.
- Prior to filling the sample bottles, one "clean" container will be filled with water. The temperature, pH, and conductivity will be measured with a pre-calibrated probe and recorded in the field book.
- Sample containers for VOCs will be filled first. Sample containers for the other analytes will follow. If turbidity is less than 50 NTU, the sample for metals analysis will not be filtered. If turbidity is greater than 50 NTU, one filtered and one unfiltered sample for metals analysis will be collected and placed in bottles provided by the laboratory.
- The sample containers will be labeled, placed in a laboratory-supplied cooler and packed on ice (to maintain a temperature of 4^{o} C). The cooler will be shipped overnight or delivered to the laboratory for analysis.
- Chain-of-custody procedures will be followed as outlined in the QAPP.
- After all samples are collected, dedicated sampling equipment (i.e. polypropylene rope and bailer) will be disposed of in accordance with methods described in Section 3.3.
- Well sampling data will be recorded in the field log book and on the Groundwater Sampling Record shown in Figure 5.1, or similar form.

Figure 5.1 Groundwater Sampling Record

FIGURE 5.1

GROUNDWATER SAMPLING RECORD

SITE NAME: _____
PROJECT NUMBER: _____

SAMPLE NUMBER: _____ WEATHER: _____
DATE: _____ TIME: _____

SAMPLERS: _____ of _____
_____ of _____

DESCRIPTION OF SAMPLING POINT

Sample Location: Monitoring well MW- _____
Screen/Sample Depth: _____
Sampling Method: _____

GROUNDWATER PURGING

Initial Static Water Level: _____
One Well Volume: 3 Volumes

2-Inch Casing:	_____	Feet of Water x 0.16 Gallons/Foot =	_____	Gallons	_____
3-Inch Casing:	_____	Feet of Water x 0.36 Gallons/Foot =	_____	Gallons	_____
4-Inch Casing:	_____	Feet of Water x 0.65 Gallons/Foot =	_____	Gallons	_____

Volume of groundwater purged: _____ Gallons
Purging Device: _____
Purge Water Disposition (e.g., contained): _____

SAMPLE DESCRIPTION

Color: _____
Odor: _____
Other: _____
Sample Analyzed for: _____
QC Samples at this Location: _____
QC Samples Analyzed for: _____

FIELD MEASUREMENTS

Temperature (C/F): _____ Dissolved Oxygen: _____
pH: _____ Eh (Redox Potential): _____
Conductivity (µohms/cm): _____
Turbidity (NTU): _____

SAMPLE CUSTODY

Chain of Custody Number: _____ Laboratory: _____
Shipped Via: _____ Airbill Number: _____

COMMENTS _____
_____

p:\FSPfig5-1.XLS

SECTION 6

AIR MONITORING

6.1 BREATHING ZONE AIR MONITORING DURING EXCAVATION, DRILLING AND SAMPLING

Air monitoring of the breathing zone will be conducted during all intrusive activities in accordance with the Site Characterization Work Plan and Project Safety Plan to assure proper health and safety protection for the team and nearby occupants and workers.

- A RaeSystems MiniRae 2000 photoionization detector (PID) or equivalent will be used to monitor for organic vapors in the breathing zone and to screen the samples.
- A MiniRAM Portable Aerosol Monitor will be used to monitor particulate dust and aerosolized vapors in the breathing zone.
- Cyanide color detector tubes will be used to monitor for hydrogen cyanide in the breathing zone.
- Additional air monitoring may be required as specified in the Project Safety Plan.

The PID readings will be recorded in the field book during drilling activities and later transferred to the boring log form. The procedure for the PID operation and calibration is included in Section 7.

SECTION 7

FIELD INSTRUMENTS AND CALIBRATION

Field analytical equipment will be calibrated immediately prior to each day's use and more frequently if required. The calibration procedures will conform to manufacturer's standard instructions. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. All instrument calibrations will be documented in the project field book and in an instrument calibration log. Records of all instrument calibration will be maintained by the Field Team Leader and will be subject to audit by the Project Quality Assurance Manager (PQAM). Copies of all of the instrument manuals and/or instruction sheets will be maintained on-site by the Field Team Leader.

The following field instruments will be used during the investigation:

- PID;
- MiniRAM real-time aerosol monitor;
- pH Meter;
- Specific Conductivity Meter and Temperature Probe; and
- Turbidity Meter.

7.1 PORTABLE PHOTOIONIZATION DETECTOR

- The photoionization detector (PID) will be a RaeSystems MiniRae 2000 (or equivalent), equipped with a 10.6 eV lamp. The MiniRae is capable of ionizing and detecting compounds with an ionization potential of less than 10.6 eV. This accounts for up to 73% of the volatile organic compounds on the Target Compound List.
- Calibration must be performed at the beginning of each day of use with a standard calibration gas having an approximate concentration of 100 parts per million of isobutylene. If the unit experiences abnormal perturbation or erratic readings, additional calibration will be required.
- All calibration data must be recorded in the field logbook.
- A battery check must be completed at the beginning and end of each working day.

7.2 MINIRAM

- The operator shall ensure that the instruments respond properly to the substances that they are designed to monitor. Real time aerosol monitors, such as the MiniRAM, must be zeroed at the beginning of each sampling period. The specific instructions for calibration and maintenance provided for each instrument should be followed.
- All calibration data must be recorded in field notebooks or on calibration log sheets to be maintained on-site.
- A battery check must be completed at the beginning and end of each working day.

7.3 pH METER

- Calibration of the pH meter must be performed at the start of each day of use, and after very high or low readings as required by this plan, according to manufacturer's instructions.
- National Institute of Standards and Technology - traceable standard buffer solutions which bracket the expected pH range will be used. The standards will be pH of 4.0, 7.0 and 10.0 standard units.
- The pH calibration must be used to set the meter to display the value of the standard being checked.
- The calibration data must be recorded on calibration sheets maintained on-site or with the piece of equipment.

7.4 SPECIFIC CONDUCTIVITY METER AND TEMPERATURE PROBE

- Calibration checks using the conductivity standard must be performed at the start of each day of use, after five to ten readings or after very high or low readings as required by this plan, according to manufacturer's instructions.
- The portable conductivity meter must be calibrated using a reference solution of 200 uohms/cm on a daily basis. Readings must be within five percent to be acceptable.
- The thermometer of the meter must be calibrated against the field thermometer on a weekly basis.

7.5 TURBIDITY METER

- The turbidity meter must be checked at the start of each day of use and at the end of the day, according to manufacturer's instructions.

SECTION 8

FIELD SAMPLE IDENTIFICATION AND CUSTODY

8.1 SAMPLE LOCATION NUMBERING SYSTEM

- Subsurface soil borings will be numbered consecutively beginning with SB-01 (soil borings) or MW-01 (monitoring well borings). Individual samples will also be designated with a depth code (see below).
- Monitoring wells will be numbered consecutively beginning with MW-01.

8.2 SAMPLE IDENTIFICATION

Each sample will be given a unique alphanumeric identifier in accordance with the following classification system:

SAMPLE IDENTIFICATION

LL*	NN*	N-N	LL
Sample Type	Sample Number	Depth Code	QC Identifier

	Solid	Water
Sample Type:	MW - Monitoring Well Boring SB – Soil Boring TP – Test Pit	MW - Monitoring Well
Sample Number:	Number referenced to a sample location map.	
Depth Code:	Depth of sample interval (0-2", 0-2', 2-4', 10-12', etc.)	
QC Identifier:	FB - Field Blank TB - Trip Blank WB - Wash or Rinse Blank	MS - Matrix Spike MD - Matrix Spike Duplicate MB - Matrix Blank

* L = Letter
* N = Number

Field duplicate samples will be assigned identifiers that do not allow the laboratory to distinguish them as field duplicates. Each sample container will be labeled prior to packing for shipment. The sample identifier, site name, date and time of sampling, and analytical parameters will be written on the label in waterproof ink and recorded in the field book.

8.3 CHAIN OF CUSTODY

- A Chain-of-Custody (COC) record (Figure 8.1 or similar) will accompany the sample containers during selection and preparation at the laboratory, during shipment to the field, and during return shipment to the laboratory.
- The COC will identify each sample container and the analytical parameters for each, and will list the field personnel that collected the samples, the project name and

number, the name of the analytical laboratory that will receive the samples, and the method of sample shipment.

- If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample shipment.
- The COC will be completed by field personnel as samples are collected and packed for shipment.
- Erroneous markings will be crossed-out with a single line and initialed by the author.
- The REMARKS space will be used to indicate if the sample is a matrix spike, matrix spike duplicate, or matrix duplicate.
- Trip and field blanks will be listed on separate rows.
- After the samples have been collected and sample information has been listed on the COC form, the method of shipment, the shipping cooler identification number(s), and the shipper air bill number will be entered on the COC.
- A second member of the field team will review the COC for completeness and accuracy whenever possible.
- Finally, a member of the sampling team will write his/her signature, the date, and time on the first RELINQUISHED BY space. Duplicate copies of each COC must be completed.
- One copy of the COC will be retained by sampling personnel. Blind duplicate samples will be identified on the copy retained by the sampling crew. The other copy and the original will be sealed in a plastic bag and taped inside the lid of the shipping cooler without the additional identification of blind duplicate samples.
- Sample shipments will be refrigerated at 4^{o}C, typically by packing with ice, to preserve the samples during shipment.
- After the shipping cooler is closed, custody seals provided by the laboratory will be affixed to the latch and across the front and back of the cooler lid, and signed by the person relinquishing the samples to the shipper.
- The seal will be covered with clear tape, and the cooler lid will be secured by wrapping with packing tape.
- The cooler will be relinquished to the shipper, typically an overnight carrier.
- The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the samples will not be analyzed.
- The samples must be delivered to the laboratory within 48 hours of collection.

8.4 SAMPLE DOCUMENTATION

The field team leader will be retaining a copy of the COC, and, in addition, the field team leader will ensure that the following information about each sample is recorded in the field book:

- Sample identifier;
- Identification of sampled media (e.g., soil, sediment, groundwater);

- Sample location with respect to known reference point;
- Physical description of sample location;
- Field measurements, (e.g., pH, temperature, conductivity, and water levels);
- Date and time of collection;
- Sample collection method;
- Volume of groundwater purged before sampling;
- Number of sample containers;
- Analytical parameters;
- Preservatives used; and
- Shipping information:
  - Dates and method of sample shipments;
  - Chain-of-Custody Record numbers;
  - Federal Express Air Bill numbers; and
  - Sample recipient (e.g., laboratory name).

Figure 8.1 Chain-of-Custody Form

Figure 8.1 CHAIN OF CUSTODY RECORD

NO:

CLIENT:	PROJECT NO.	PROJECT MGR:	ANALYSES REQUIRED	Send results to:
				PARSONS ENGINEERING SCIENCE, INC. 290 Elwood Davis Road-Suite 312 Liverpool, NY 13088 Telephone: (315) 451-9560 Fax: (315) 451-9570
PROJECT NAME:	NOTES - (Reference QAPP and/or analytical protocols to be used):			Lab Submitted to:
SAMPLERS:				

FIELD SAMPLE ID	LOCATION DESCRIPTION	DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles	REMARKS

Relinquished by: (Signature)	Date:	Time:	Shipped via:	Airbill #:	Received by:(Signature)	Date:	Time:	Cooler Temp: ____ °C Samples Intact: ____Yes ____No
Relinquished by: (Signature)	Date:	Time:	Shipped via:	Airbill #:	Received by:(Signature)	Date:	Time:	Cooler Temp: ____ °C Samples Intact: ____Yes ____No
Relinquished by: (Signature)	Date:	Time:	Shipped via:	Airbill #:	Received by:(Signature)	Date:	Time:	Cooler Temp: ____ °C Samples Intact: ____Yes ____No

TYPE CODES: SOLID

- SD- Sediment
- SS- Surface Soil
- SB- Subsurface Soil
- MW- Monitoring Well Boring
- TP- Test Pit/Tank Pit
- DR- Drum Waste
- WA- Solid Waste
- OS- Other Solid

WATER

- MW- Monitoring Well
- LC- Leachate
- SW- Surface Water
- DW- Drill Water

- FD- Fuel Dispenser
- MH- Manhole
- OW- Oil Water Separator
- PR- Piping Run

- ST- Storm Water
- WW- Waste Water
- OL- Other Liquid (eg. Drum liquid)

MATRIX

- W - Water
- S - Soil

QUALITY CONTROL

- FB- Field Blank (with date)
- TB- Trip Blank (with date)
- WB- Wash Blank (with date)

NO:

APPENDIX B
QUALITY ASSURANCE PROJECT PLAN

APPENDIX B

QUALITY ASSURANCE PROJECT PLAN FOR THE FORMER HUNTS POINT GAS WORKS HALLECK STREET SIDEWALK AREA

Bronx, New York

Prepared For:

Consolidated Edison Company of New York, Inc.

31-01 20th Avenue
Long Island City, NY 11105

Prepared By:

PARSONS

200 Cottontail Lane
Somerset, NJ 08873
Phone: (732) 537-3500
Fax: (732) 868-3110

JUNE 2011

TABLE OF CONTENTS

PAGE

SECTION 1 PROJECT DESCRIPTION 1-1

1.1 Introduction 1-1

1.2 PROJECT Objectives 1-1

1.3 Scope of Work 1-1

1.4 Data quality objectives and processes 1-1

SECTION 2 PROJECT ORGANIZATION 2-1

SECTION 3 QUALITY ASSURANCE/QUALITY CONTROL OBJECTIVES FOR MEASUREMENT OF DATA 3-2

3.1 Introduction 3-2

3.2 Precision 3-2

3.3 Accuracy 3-4

3.4 Representativeness 3-4

3.5 Completeness 3-5

3.6 Comparability 3-5

SECTION 4 SAMPLING PROGRAM 4-1

4.1 Introduction 4-1

4.2 Sample Container Preparation and Sample Preservation 4-1

4.3 Sample Holding Times 4-1

4.4 Field QC Samples 4-1

SECTION 5 SAMPLE TRACKING AND CUSTODY 5-1

5.1 Introduction 5-1

5.2 Field Sample Custody 5-1

5.3 Laboratory Sample Custody 5-4

TABLE OF CONTENTS (CONT.)

PAGE

SECTION 6 CALIBRATION PROCEDURES 6-1

6.1 Field Instruments 6-1

6.2 Laboratory Instruments 6-1

SECTION 7 ANALYTICAL PROCEDURES 7-1

7.1 Introduction 7-1

SECTION 8 DATA REDUCTION, VALIDATION, AND REPORTING 8-1

8.1 Introduction 8-1

8.2 Data Reduction 8-1

8.3 Data Validation 8-3

SECTION 9 INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY 9-1

9.1 Quality Assurance Batching 9-1

9.2 Calibration Standards and Surrogates 9-1

9.3 Organic Blanks and Matrix Spike 9-1

9.4 Trip and Field Blanks 9-1

SECTION 10 QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS 10-1

10.1 Introduction 10-1

10.2 System Audits 10-1

10.3 Performance Audits 10-1

10.4 Formal Audits 10-1

TABLE OF CONTENTS (CONT.)

PAGE

SECTION 11 PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULES 11-1

11.1 Preventive Maintenance Procedures 11-1

11.2 Schedules 11-1

11.3 Records 11-1

SECTION 12 CORRECTIVE ACTION 12-1

12.1 Introduction 12-1

12.2 Procedure Description 12-1

SECTION 13 REFERENCES 13-I

LIST OF FIGURES

Figure 5.1 Sample Custody 5-2

Figure 5.2 Chain-of-Custody Record 5-3

Figure 12.1 Corrective Action Request 12-3

LIST OF TABLES

Table 3.1 Quality Control Limits for Water Samples ... 3-**Error! Bookmark not defined.**

Table 3.2 Quality Control Limits for Soil Samples ..... 3-**Error! Bookmark not defined.**

Table 4.1 Summary of Samples and Analyses 4-3

Table 4.2 Water Sample Containerization, Preservation, and Holding Times 4-5

Table 4.3 Soil Sample Containerization and Holding Times 4-5

Table 7.1 Project Quantitation Limits 7-2

Table 8.1 Field and Character Lengths for Disk Deliverable 8-2

SECTION 1

PROJECT DESCRIPTION

This Quality Assurance Project Plan (QAPP) specifies analytical methods to be used to ensure that data from the proposed site investigation are precise, accurate, representative, comparable, and complete.

1.1 INTRODUCTION

Con Edison is undertaking a Site Characterization to characterize and identify potential subsurface conditions, which may pose a risk to the health and safety of site workers and the public from the past operation of a manufactured gas plant at the site. The Site Characterization is also intended to identify subsurface conditions that may require special precautions or procedures to mitigate the presence of MGP-related or other constituents, if present.

1.2 PROJECT OBJECTIVES

The objectives of this project are as follows:

- To identify site conditions which could pose a risk to human health and the environment; and
- To identify subsurface conditions that require mitigative measures.

1.3 SCOPE OF WORK

The scope of work at the Former Hunts Point Gas Works Halleck Street Sidewalk is described in the Site Characterization Work Plan. Samples will be collected from test pits, soil borings, and groundwater monitoring wells. These samples will be analyzed using the USEPA SW-846 "Test Methods for Evaluating Solid Waste," November 1986, 3rd edition (and subsequent updates).

1.4 DATA QUALITY OBJECTIVES AND PROCESSES

The quality assurance and quality control objectives for all measurement data include:

- ***Precision*** - an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Field sampling precision will be determined by analyzing coded duplicate samples and analytical precision will be determined by analyzing internal QC duplicates and matrix spike duplicates.
- ***Accuracy*** - a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern. Sampling accuracy will be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy will be assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the

percent recoveries of matrix spike compounds added to selected samples and laboratory blanks.

- ***Representativeness*** - expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness will be determined by assessing a number of investigation procedures, including chain of custody, decontamination, and analysis of field blanks and trip blanks.

- ***Completeness*** - the percentage of measurements made which are judged to be valid. Completeness will be assessed through data validation. The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested.

- ***Comparability*** - expresses the degree of confidence with which one data set can be compared to another. The comparability of all data collected for this project will be ensured using several procedures, including standard methods for both sampling and analysis, instrument calibrations, using standard reporting units and reporting formats, and data validation.

Each of the above objectives is discussed in detail in Section 3.

SECTION 2

PROJECT ORGANIZATION

This Site Characterization will be com pleted for Con Edison by Parsons. Parsons will arrange for the test pitting and drilling, and provide an on-site field representative to perform the soil logging and soil sampling. Parsons will also arrange for surveying and perform groundwater sampling activities. Parsons will perform the data analysis and reporting tasks.

Key contacts for this project are as follows:

Con Edison Project Manager:	Ms. Yelena Skorobogatov Telephone: (718) 204-4205 Fax: (718) 932-2687
Project Manager:	Mr. Eric Gaulin Telephone: (732) 537-3570 Fax: (732) 868-3110
Laboratory Representative:	CHEMTECH

SECTION 3

QUALITY ASSURANCE/QUALITY CONTROL OBJECTIVES FOR MEASUREMENT OF DATA

3.1 INTRODUCTION

The quality assurance and quality control (QA/QC) objectives for all measurement data include precision, accuracy, representativeness, completeness, and comparability. These objectives are defined in the following subsections. They are formulated to meet the requirements of the USEPA SW-846. The analytical methods and their Contract Required Quantitation Limits (CRQLs) are provided in Section 7.

3.2 PRECISION

Precision is an expression of the reproducibility of measurements of the same parameter under a given set of conditions. Specifically, it is a quantitative measurement of the variability of a group of measurements compared to their average value (USEPA, 1987). Precision is usually stated in terms of standard deviation, but other estimates such as the coefficient of variation (relative standard deviation), range (maximum value minus minimum value), relative range, and relative percent difference (RPD) are common.

For this project, field sampling precision will be determined by analyzing coded duplicate samples (labeled so that the laboratory does not recognize them as duplicates) for the same parameters, and then, during data validation (Section 8), calculating the RPD for duplicate sample results.

Analytical precision will be determined by the laboratory by calculating the RPD for the results of the analysis of internal QC duplicates and matrix spike duplicates. The formula for calculating RPD is as follows:

$$RPD = \frac{|V1 - V2|}{(V1 + V2)/2} \times 100$$

where:

RPD	=	Relative Percent Difference.
V1, V2	=	The two values to be compared.
|V1 - V2|	=	The absolute value of the difference between the two values.
(V1 + V2)/2	=	The average of the two values.

The data quality objectives for analytical precision, calculated as the RPD between duplicate analyses, are presented in Tables 3.1 and 3.2.

TABLE 3.1

QUALITY CONTROL LIMITS FOR SOIL SAMPLES

		Laboratory Accuracy and Precision					
Analytical Parameter	**Analytical Method (a)**	**Matrix Spike (MS) Compounds**	**MS/MSD (b) % Recovery**	**MS/MSD RPD (c)**	**LCS (d) % Recovery**	**Surrogate Compounds**	**Surrogate % Recovery**
VOCs (e)	8260	All target volatile compounds	Laboratory determined QC limits	Laboratory determined QC limits	Laboratory determined QC limits	Toluene-d8 Bromofluorobenzene 1,2-Dichloroethane-d4	Laboratory determined QC limites
SVOCs (f)	8270	All target semivolatile compounds	Laboratory determined QC limits	Laboratory determined QC limits	Laboratory determined QC limits	Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14 Phenol-d5 2-Fluorophenol 2,4,6-Tribromophenol 2-Chlorophenol-d4 1,2-Dichlorobenzene-d4	Laboratory determined QC limites
Inorganics	6010, 7470/7471, 7841, 9010	Inorganic Analyte	75-125	20	80-120	NA	NA

(a) Analytical Methods: USEPA SW-846, 3rd edition, Revision 1, November 1990, any subsequent revisions shall supersede this information
(b) Matrix Spike/Matrix Spike Duplicate
(c) Relative Percent Difference
(d) Laboratory Control Sample
(e) Target Compound List Volatile Organic Compounds
(f) Target Compound List Semivolatile Organic Compounds
NA - Not Applicable

3.3 ACCURACY

Accuracy is a measure of the degree of agreement of a measured value with the true or expected value of the quantity of concern (Taylor, 1987), or the difference between a measured value and the true or accepted reference value. The accuracy of an analytical procedure is best determined by the analysis of a sample containing a known quantity of material, and is expressed as the percent of the known quantity which is recovered or measured. The recovery of a given analyte is dependent upon the sample matrix, method of analysis, and the specific compound or element being determined. The concentration of the analyte relative to the detection limit of the analytical method is also a major factor in determining the accuracy of the measurement. Concentrations of analytes which are close to the detection limits are less accurate because they are more affected by such factors as instrument "noise". Higher concentrations will not be as affected by instrument noise or other variables and thus will be more accurate.

Sampling accuracy may be determined through the assessment of the analytical results of field blanks and trip blanks for each sample set. Analytical accuracy is typically assessed by examining the percent recoveries of surrogate compounds that are added to each sample (organic analyses only), and the percent recoveries of matrix spike compounds added to selected samples and laboratory blanks. Additionally, initial and continuing calibrations must be performed and accomplished within the established method control limits to define the instrument accuracy before analytical accuracy can be determined for any sample set.

Accuracy is normally measured as the percent recovery (%R) of a known amount of analyte, called a spike, added to a sample (matrix spike) or to a blank (blank spike). The %R is calculated as follows:

$$\%R = \frac{SSR - SR}{SA} \times 100$$

where:

%R = Percent recovery.

SSR = Spike sample result: concentration of analyte obtained by analyzing the sample with the spike added.

SR = Sample result: the background value, i.e., the concentration of the analyte obtained by analyzing the sample.

SA = Spiked analyte: concentration of the analyte spike added to the sample.

The acceptance limits for accuracy for each parameter are presented in Tables 3.1 and 3.2.

3.4 REPRESENTATIVENESS

Representativeness expresses the degree to which sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter which is most concerned with the proper design of the sampling program (USEPA, 1987). Samples must be

representative of the environmental media being sampled. Selection of sample locations and sampling procedures will incorporate consideration of obtaining the most representative sample possible.

Field and laboratory procedures will be performed in such a manner as to ensure, to the degree that is technically possible, that the data derived represents the in-place quality of the material sampled. Every effort will be made to ensure chemical compounds will not be introduced into the sample via sample containers, handling, and analysis. Decontamination of sampling devices and digging equipment will be performed between samples as outlined in the Field Sampling Plan. Analysis of field blanks, trip blanks, and method blanks will also be performed to monitor for potential sample contamination from field and laboratory procedures.

The assessment of representativeness also must consider the degree of heterogeneity in the material from which the samples are collected. Sampling heterogeneity will be evaluated during data validation through the analysis of coded field duplicate samples. The analytical laboratory will also follow acceptable procedures to assure the samples are adequately homogenized prior to taking aliquots for analysis, so the reported results are representative of the sample received.

Chain-of-custody procedures will be followed to document that contamination of samples has not occurred during container preparation, shipment, and sampling. Details of blank, duplicate and Chain-of-custody procedures are presented in Sections 4 and 5.

3.5 COMPLETENESS

Completeness is defined as the percentage of measurements made which are judged to be valid (USEPA, 1987). The QC objective for completeness is generation of valid data for at least 90 percent of the analyses requested. Completeness is defined as follows for all sample measurements:

$$\%C = \frac{V}{T} \times 100$$

where:

%C = Percent completeness.

V = Number of measurements judged valid.

T = Total number of measurements.

3.6 COMPARABILITY

Comparability expresses the degree of confidence with which one data set can be compared to another (USEPA, 1987). The comparability of all data collected for this project will be ensured by:

- Using identified standard methods for both sampling and analysis phases of this project;

- Requiring traceability of all analytical standards and/or source materials to the U.S. Environmental Protection Agency (USEPA) or National Institute of Standards and Technology (NIST);
- Requiring that all calibrations be verified with an independently prepared standard from a source other than that used for calibration (if applicable);
- Using standard reporting units and reporting formats including the reporting of QC data;
- Performing a complete data validation on a representative fraction of the analytical results, including the use of data qualifiers in all cases where appropriate; and
- Requiring that all validation qualifiers be used any time an analytical result is used for any purpose.

These steps will ensure all future users of either the data or the conclusions drawn from them will be able to judge the comparability of these data and conclusions.

SECTION 4

SAMPLING PROGRAM

4.1 INTRODUCTION

The sampling program will provide data concer ning the presence and the nature and extent of contamination of groundwater and soil, if any. This section presents sam ple container preparation procedures, sam ple preservation pr ocedures, sample holding tim es, and field QC sample requirements. Sample locations, and the number of environmental and QC samples to be taken are given in Table 4.1. The sampling procedures are presented in the Field Sampling Plan.

4.2 SAMPLE CONTAINER PREPARATION AND SAMPLE PRESERVATION

Sample containers will be properly washed and decontaminated prior to their use by either the analytical laboratory or the container vendor to the specifications required by the USEPA. Copies of the sam ple container QC analys es will be provided by the laboratory f or each container lot used to obtain sam ples. The containers will be tagged and the appropriate preservatives will be added. The types of containers are provided in Tables 4.2 and 4.3.

Samples shall be preserved according to the pr eservation techniques given in Tables 4.2 and 4.3. Preservatives will be added to the sample bottles by the laboratory prior to their shipment in sufficient quantities to ensure that proper sam ple pH is m et. Following sam ple collection, the sample bottles should be placed on ice in the shipping cooler, cooled to 4 ^{o}C with ice, and delivered to the laboratory within 24 to 48 hours of collection. Chain-of-custody procedures are described in Section 5.

4.3 SAMPLE HOLDING TIMES

The sample holding times for organic and inorga nic parameters are given in Tables 4.2 and 4.3 and m ust be in accordance with the NYS DEC ASP requirem ents. The NYSDEC ASP holding times must be strictly adhered to by the laboratory. Any holding time exceedances must be reported to Con Edison.

4.4 FIELD QC SAMPLES

To assess field sampling and decontam ination performance, two types of "blanks" will be collected and subm itted to the laboratory for an alyses. In addition, the precision of field sampling procedures will be assessed by coll ecting coded field duplicates and m atrix spike/matrix spike duplicates (MS/MSDs). The blanks will include:

a. Trip Blanks - A Trip Blank will be prepared before the sam ple containers are sent by the laboratory. The trip blank will consis t of a 40-m l VOA vial containing distilled, deionized water, which accom panies the othe r water sam ple bottles into the field and back to the laboratory. A trip blank will be included with each shipm ent of water samples for target com pound list (TCL) vola tiles analysis. The Trip Blank will be

analyzed for TCL volatile organic compounds to assess any contamination from sampling and transport, and internal laboratory procedures.

b. Field Blanks - Field Blanks will be taken at a minimum frequency of one per 20 field samples per sample matrix. Field blanks are used to determine the effectiveness of the decontamination procedures for sampling equipment. It is a sample of deionized, distilled water provided by the laboratory that has passed through a decontaminated bailer or other sampling apparatus. It is usually collected as a last step in the decontamination procedure, prior to taking an environmental sample. The field blank may be analyzed for all or some of the parameters of interest.

The duplicates will consist of:

a. Coded Field Duplicate - To determine the representativeness of the sampling methods, coded field duplicates will be collected. The samples are termed "coded" because they will be labeled in such a manner that the laboratory will not be able to determine that they are a duplicate sample. This will eliminate any possible bias that could arise.

b. Matrix Spike/Matrix Spike Duplicate (MS/MSD) - MS/MSD samples (MS/MSD for organics; MS and laboratory duplicate for inorganics) will be taken at a frequency of one pair per 20 field samples. These samples are used to assess the effect of the sample matrix on the recovery of target compounds or target analytes. The percent recoveries and RPDs are given in Tables 3.1 and 3.2.

TABLE 4.1

SUMMARY OF SAMPLES AND ANALYSES

Matrix	Parameter	Analytical Method	Field Samples				QC Blanks	Total
			Field Samples	Field Duplicate	MS/MSD[a] (Total)	Sub-Total	Trip Blank	
Soil Samples (from soil borings and monitoring well borings)	TCL VOCs	EPA SW 8260	24	2	2/2	30	0	30
	TCL SVOCs	EPA SW 8270B	24	2	2/2	30	0	30
	Cyanide	EPA SW 335.2	24	2	2/2	30	0	30
	TAL Metals	EPA SW 6010, 7470/7471, 7841, 9010	24	2	2/2	30	0	30
Groundwater Samples	TCL VOCs	EPA SW 8260	3	1	1/1	6	1[b]	7
	TCL SVOCs	EPA SW 8270	3	1	1/1	6	-	6
	Cyanide (total)	EPA SW 335.2	3	1	1/1	6	-	6
	TAL Metals	EPA SW OIA-1677	3	1	1/1	6	-	6
		EPA SW 6010, 7470/7471, 7841, 9010						
Free Product Samples	Hydrocarbon Fingerprinting	Modified Method 8100	?[c]	-	-	-	-	?

(a) Matrix spike / matrix spike duplicate for organic analyses; matrix spike and laboratory duplicate for inorganic analysis is collected for every 20 samples collected.

(b) Trip blanks will be collected for each day a groundwater VOCs sample is sent to the laboratory.

(c) Number of free product samples collected for analysis (if any) will be determined in the field.

TABLE 4.2

WATER SAMPLE CONTAINERIZATION, PRESERVATION, AND HOLDING TIMES

Analysis	Bottle Type	Preservation [a]	Holding Time [b]
Volatile Organic Compounds (VOCs)	2-40 mL glass vial w/ Teflon septum	Cool to 4°C	12 days
Semivolatile Organics Compounds (SVOCs)	1000 mL glass w/ Teflon lined cap	Cool to 4°C	5 days for extraction, 40 days for analysis
Metals	1000 mL plastic bottle	Nitric Acid to pH < 2 Cool to 4°C	6 months, except mercury (26 days)
Cyanide	500 mL plastic bottle	NaOH to pH > 12 Cool to 4°C	12 days

(a) All samples to be preserved in ice during collection and transport.

(b) Days from validated time of sample receipt (VTSR).

TABLE 4.3

SOIL SAMPLE
CONTAINERIZATION AND HOLDING TIMES

Analysis	Bottle Type	Preservation [a]	Holding Time [b]
Volatile Organic Compounds (VOCs)	Wide-mouth glass w/ teflon lined cap	Cool to 4°C	10 days
Other Organic Compounds [c]	Wide-mouth glass w/ teflon lined cap	Cool to 4°C	10 days for extraction, 40 days for analysis
Metals	Wide-mouth plastic or glass	Cool to 4°C	6 months, except mercury (26 days)
Cyanide	Wide-mouth plastic	Cool to 4°C	14 days

(a) All samples to be preserved in ice during collection and transport.

(b) Days from validated time of sample receipt (VTSR).

(c) Semivolatile organic compounds or PCBs.

* Sohxlet or sonication procedures for extraction and concentration of soil/waste samples for SVOCs must be completed within 10 days of VTSR. Extracts of soil samples must be analyzed within 40 days of extraction.

SECTION 5

SAMPLE TRACKING AND CUSTODY

5.1 INTRODUCTION

This section presents sample custody procedures for both the field and laboratory. Implementation of proper custody procedures for samples generated in the field is the responsibility of field personnel. Both laboratory and field personnel involved in the Chain-of-custody (COC) and transfer of samples will be trained as to the purpose and procedures prior to implementation.

Evidence of sample traceability and integrity is provided by COC procedures. These procedures document the sample traceability from the selection and preparation of the sample containers by the laboratory, to sample collection, to sample shipment, to laboratory receipt and analysis. The sample custody flowchart is shown in Figure 5.1. A sample is considered to be in a person's custody if the sample is:

- In a person's possession;
- Maintained in view after possession is accepted and documented;
- Locked and tagged with Custody Seals so that no one can tamper with it after having been in physical custody; or
- In a secured area which is restricted to authorized personnel.

5.2 FIELD SAMPLE CUSTODY

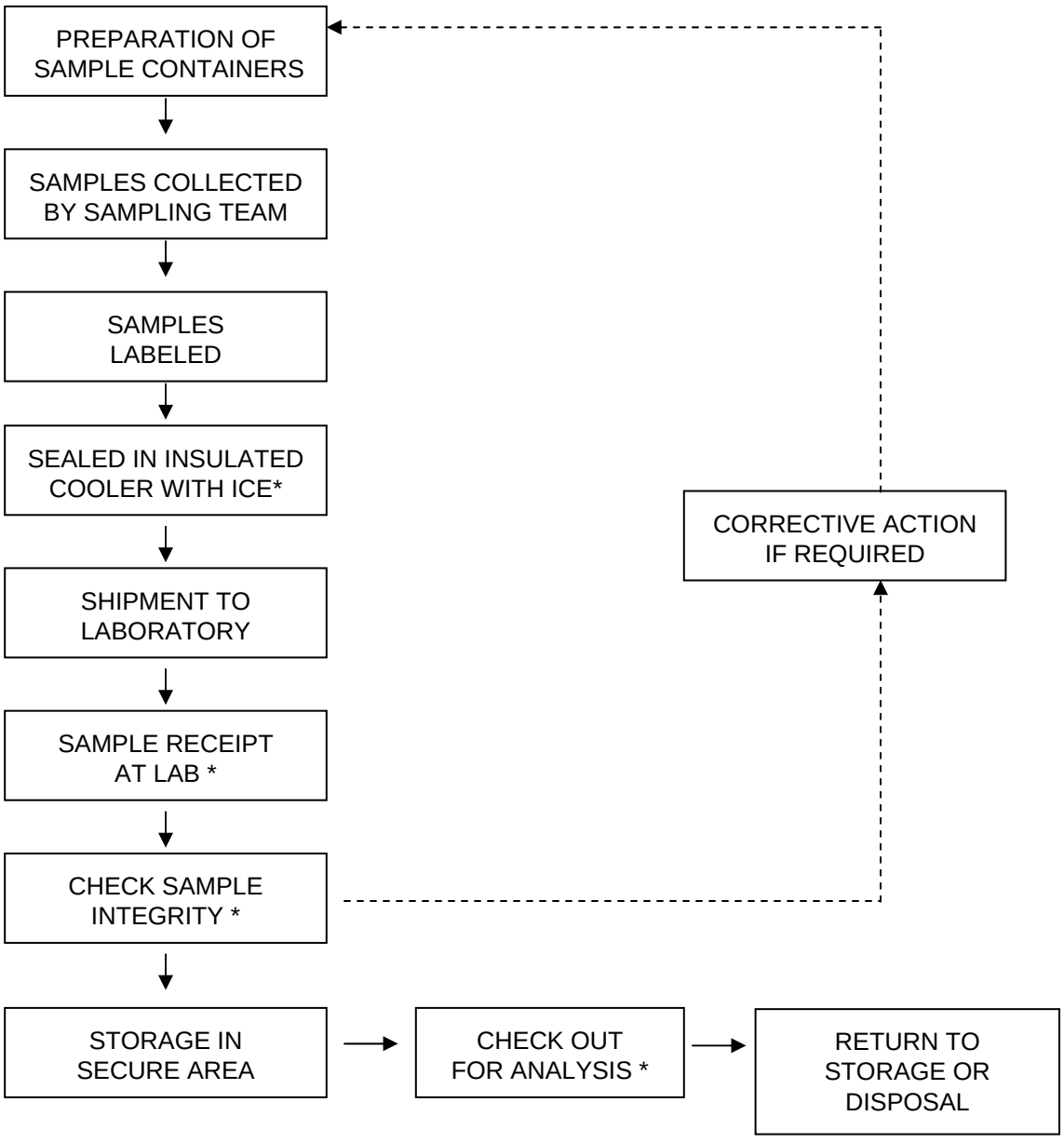
A COC record (Figure 5.2 or similar) accompanies the sample containers from selection and preparation at the laboratory, during shipment to the field for sample containment and preservation, and during return to the laboratory. Triplicate copies of the COC must be completed for each sample set collected.

The COC lists the field personnel responsible for taking samples, the project name and number, the name of the analytical laboratory to which the samples are sent, and the method of sample shipment. The COC also lists a unique description of every sample bottle in the set. If samples are split and sent to different laboratories, a copy of the COC record will be sent with each sample.

The REMARKS space on the COC is used to indicate if the sample is a matrix spike, matrix spike duplicate, or any other sample information for the laboratory. Since they are not specific to any one sample point, trip and field blanks are indicated on separate rows. Once all bottles are properly accounted for on the form, a sampler will write his or her signature and the date and time on the first RELINQUISHED BY space. The sampler will also write the method of shipment, the shipping cooler identification number, and the shipper airbill number on the top of the COC. Mistakes will be crossed out with a single line in ink and initialed by the author.

FIGURE 5.1

SAMPLE CUSTODY



* REQUIRES SIGN-OFF ON CHAIN-OF-CUSTODY FORM

Figure 5.2 Chain-of-Custody Record

Figure 8.1 CHAIN OF CUSTODY RECORD

NO:

CLIENT:	PROJECT NO.	PROJECT MGR:	ANALYSES REQUIRED	Send results to:
				PARSONS ENGINEERING SCIENCE, INC. 290 Elwood Davis Road-Suite 312 Liverpool, NY 13088 Telephone: (315) 451-9560 Fax: (315) 451-9570
PROJECT NAME:	NOTES - (Reference QAPP and/or analytical protocols to be used):			Lab Submitted to:
SAMPLERS:				

FIELD SAMPLE ID	LOCATION DESCRIPTION	DATE	TIME	GRAB	COMP	MATRIX	Number of Bottles	REMARKS

Relinquished by: (Signature)	Date:	Time:	Shipped via:	Airbill #:	Received by:(Signature)	Date:	Time:	Cooler Temp: ____ °C Samples Intact: ____Yes ____No
Relinquished by: (Signature)	Date:	Time:	Shipped via:	Airbill #:	Received by:(Signature)	Date:	Time:	Cooler Temp: ____ °C Samples Intact: ____Yes ____No
Relinquished by: (Signature)	Date:	Time:	Shipped via:	Airbill #:	Received by:(Signature)	Date:	Time:	Cooler Temp: ____ °C Samples Intact: ____Yes ____No

TYPE CODES:

SOLID
- SD- Sediment
- SS- Surface Soil
- SB- Subsurface Soil
- MW- Monitoring Well Boring
- TP- Test Pit/Tank Pit
- DR- Drum Waste
- WA- Solid Waste
- OS- Other Solid

WATER
- MW- Monitoring Well
- LC- Leachate
- SW- Surface Water
- DW- Drill Water
- FD- Fuel Dispenser
- MH- Manhole
- OW- Oil Water Separator
- PR- Piping Run
- ST- Storm Water
- WW- Waste Water
- OL- Other Liquid (eg. Drum liquid)

MATRIX
- W - Water
- S - Soil

QUALITY CONTROL
- FB- Field Blank (with date)
- TB- Trip Blank (with date)
- WB- Wash Blank (with date)

NO:

One copy of the COC is retained by sampling personnel (notations identifying blind duplicate samples will be added to this copy of the COC but not the others that will go to the laboratory) and the other two copies are put into a sealable plastic bag and taped inside the lid of the shipping cooler. The cooler lid is closed, custody seals provided by the laboratory are affixed to the latch and across the back and front lids of the cooler, and the person relinquishing the samples signs their name across the seal. The seal is taped, and the cooler is wrapped tightly with clear packing tape. It is then relinquished by field personnel to personnel responsible for shipment, typically an overnight carrier. The COC seal must be broken to open the container. Breakage of the seals before receipt at the laboratory may indicate tampering. If tampering is apparent, the laboratory will contact the Project Manager, and the sample will not be analyzed.

5.3 LABORATORY SAMPLE CUSTODY

The Project Manager or Field Team Leader will notify the laboratory of upcoming field sampling activities, and the subsequent shipment of samples to the laboratory. This notification will include information concerning the number and type of samples to be shipped as well as the anticipated date of arrival.

The following laboratory sample custody procedures will be used:

- The laboratory will designate a sample custodian who will be responsible for maintaining custody of the samples, and for maintaining all associated records documenting that custody.
- Upon receipt of the samples, the custodian will check cooler temperature, and check the original COC documents and compare them with the labeled contents of each sample container for correctness and traceability. The sample custodian will sign the COC record and record the date and time received.
- Care will be exercised to annotate any labeling or descriptive errors. In the event of discrepant documentation, the laboratory will immediately contact the Project Manager or Field Team Leader as part of the corrective action process. A qualitative assessment of each sample container will be performed to note any anomalies, such as broken or leaking bottles. This assessment will be recorded as part of the incoming chain-of-custody procedure.
- The samples will be stored in a secured area at a temperature of approximately 4 degrees Celsius until analyses commence.
- A laboratory tracking record will accompany the sample or sample fraction through final analysis for control.
- A copy of the tracking record will accompany the laboratory report and will become a permanent part of the project records.

SECTION 6

CALIBRATION PROCEDURES

6.1 FIELD INSTRUMENTS

All field analytical equipment will be calibrated immediately prior to each day's use. The calibration procedures will conform to manufacturer's standard instructions and are described in the Field Sampling Plan. This calibration will ensure that the equipment is functioning within the allowable tolerances established by the manufacturer and required by the project. Records of all instrument calibration will be maintained by the Field Team Leader. Copies of all the instrument manuals will be maintained on-site by the Field Team Leader.

Calibration procedures for instruments used for monitoring health and safety hazards (e.g., photoionization detector) are provided in the Health and Safety Plan.

6.2 LABORATORY INSTRUMENTS

The laboratory will follow all calibration procedures and schedules as specified in USEPA SW-846 and subsequent updates that apply to the instruments used for the analytical methods identified in Section 7.

SECTION 7

ANALYTICAL PROCEDURES

7.1 INTRODUCTION

Samples will be analyzed according to the USEPA SW-846 "Test Methods for Evaluating Solid Waste," November 1986, 3rd edition and subsequent updates. The methods to be used for the laboratory analysis of water and soil samples are presented in Table 7.1. These methods were selected because they attain the quantitation limits which are compiled on Table 7.1.

TABLE 7.1
PROJECT QUANTITATION LIMITS

	Analysis/Compound	Method	Quantitation Limits Water (ug/L)	Quantitation Limits Soil (ug/kg)	State of New York Standards Water (ug/L) [a]	State of New York Standards Soil (ug/kg) [b]
	Volatile Organics					
1	1,1,1-Trichloroethane	SW8260B	1	5	5	800
2	1,1,2,2-Tetrachloroethane	SW8260B	1	5	5	600
3	1,1,2-Trichloroethane	SW8260B	1	5	1	
4	1,1-Dichloroethane	SW8260B	1	5	5	200
5	1,1-Dichloroethene	SW8260B	1	5	5	400
6	1,2-Dichloroethane	SW8260B	1	5	0.6	100
7	1,2-Dichloroethene(total)	SW8260B	1	5	5	300
8	1,2-Dichloropropane	SW8260B	1	5	1	
9	2-Butanone (MEK)	SW8260B	10	20		300
10	2-Hexanone	SW8260B	10	20		
11	4-Methyl-2-pentanone(MIBK)	SW8260B	5	20		1000
12	Acetone	SW8260B	10	20		200
13	Benzene	SW8260B	1	5	1	60
14	Bromodichloromethane	SW8260B	1	5		
15	Bromoform	SW8260B	1	5		
16	Bromomethane	SW8260B	2	10	5	
17	Carbon Disulfide	SW8260B	1	5		2700
18	Carbon Tetrachloride	SW8260B	1	5	5	600
19	Chlorobenzene	SW8260B	1	5	5	1700
20	Chloroethane	SW8260B	2	10	5	1900
21	Chloroform	SW8260B	1	5	7	300
22	Chloromethane	SW8260B	2	10	5	
23	cis-1,3-Dichloropropene	SW8260B	1	5	0.4	
24	Dibromochloromethane	SW8260B	1	5	5	
25	Ethyl Benzene	SW8260B	1	5	5	5500
26	Methylene Chloride	SW8260B	1	5	5	100
27	Styrene	SW8260B	1	5	5	
28	Tetrachloroethene	SW8260B	1	5	5	1400
29	Toluene	SW8260B	1	5	5	1500
30	trans-1,3-Dichloropropene	SW8260B	1	5	0.4	
31	Trichloroethene	SW8260B	1	5	5	700
32	Vinyl Chloride	SW8260B	2	10	2	200
33	Xylenes (total)	SW8260B	1	5	5	1200

TABLE 7.1 (Continued)
PROJECT QUANTITATION LIMITS

			Quantitation Limits		State of New York Standards	
	Analysis/Compound	Method	Water (ug/L)	Soil (ug/kg)	Water (ug/L)	Soil (ug/kg)
	Semivolatile Organics					
1	1,2,4-Trichlorobenzene	SW8270C	10	330	5	3400
2	1,2-Dichlorobenzene	SW8270C	10	330	3	7900
3	1,3-Dichlorobenzene	SW8270C	10	330	3	1600
4	1,4-Dichlorobenzene	SW8270C	10	330	3	8500
5	2,2'-oxybis(1-chloropropane)*	SW8270C	10	330	5	
6	2,4,5-Trichlorophenol	SW8270C	25	330	1	100
7	2,4,6-Trichlorophenol	SW8270C	10	330	1	
8	2,4-Dichlorophenol	SW8270C	10	330	1	400
9	2,4-Dimethylphenol	SW8270C	10	330	1	
10	2,4-Dinitrophenol	SW8270C	25	330	1	200
11	2,4-Dinitrotoluene	SW8270C	10	330	5	
12	2,6-Dinitrotoluene	SW8270C	10	330	5	1000
13	2-Chloronaphthalene	SW8270C	10	330		
14	2-Chlorophenol	SW8270C	10	330	1	800
15	2-methyl-4,6-Dinitrophenol	SW8270C	25	330		
16	2-Methylnaphthalene	SW8270C	10	330		36400
17	2-Methylphenol	SW8270C	10	330	1	100
18	2-Nitrolaniline	SW8270C	25	330	5	430
19	2-Nitrophenol	SW8270C	10	330	1	330
20	3,3'-Dichlorobenzidine	SW8270C	10	330	5	
21	3-Nitroaniline	SW8270C	25	330	5	500
22	4-Bromophenyl-phenyl ether	SW8270C	10	330		
23	4-Chloro-3-methylphenol	SW8270C	10	330		240
24	4-Chloroaniline	SW8270C	10	330	5	220
25	4-Chlorophenyl-phenyl ether	SW8270C	10	330		
26	4-Methylphenol	SW8270C	10	330	1	900
27	4-Nitroaniline	SW8270C	25	330	5	
28	4-Nitrophenol	SW8270C	25	330	1	100
29	Acenaphthene	SW8270C	10	330		50000
30	Acenaphthylene	SW8270C	10	330		41000
31	Anthracene	SW8270C	10	330		50000
32	Benzo(a)anthracene	SW8270C	10	330		224
33	Benzo(a)pyrene	SW8270C	10	330		61
34	Benzo(b)fluoranthene	SW8270C	10	330		1100

TABLE 7.1 (Continued)
PROJECT QUANTITATION LIMITS

	Analysis/Compound	Method	Quantitation Limits Water (ug/L)	Quantitation Limits Soil (ug/kg)	State of New York Standards Water (ug/L)	State of New York Standards Soil (ug/kg)
	Semivolatile Organics, cont.					
35	Benzo(g,h,i)perylene	SW8270C	10	330		50000
36	Benzo(k)fluoranthene	SW8270C	10	330		1100
37	bis(2-Chloroethoxy) methane	SW8270C	10	330	5	
38	bis(2-Chloroethyl) ether	SW8270C	10	330	1	
39	bis(2-ethylhexyl)phthalate	SW8270C	10	330	5	50000
40	Butylbenzylphthalate	SW8270C	10	330		50000
41	Carbazole	SW8270C	10	330		
42	Chrysene	SW8270C	10	330		400
43	Di-n-butylphthalate	SW8270C	10	330	50	8100
44	Di-n-octylphthalate	SW8270C	10	330		50000
45	Dibenz(a,h)anthracene	SW8270C	10	330		14
46	Dibenzofuran	SW8270C	10	330		6200
47	Diethylphthalate	SW8270C	10	330		7100
48	Dimethylphthalate	SW8270C	10	330		2000
49	Fluoranthene	SW8270C	10	330		50000
50	Fluorene	SW8270C	10	330		50000
51	Hexachlorobenzene	SW8270C	NA (8081A)	330		410
52	Hexachlorobutadiene	SW8270C	10	330	0.5	
53	Hexachlorocyclopentadiene	SW8270C	10	330	5	
54	Hexachloroethane	SW8270C	10	330	5	
55	Indeno(1,2,3-cd)pyrene	SW8270C	10	330		3200
56	Isophorone	SW8270C	10	330		4400
57	N-Nitroso-di-n-propylamine	SW8270C	10	330		
58	N-nitrosodiphenylamine	SW8270C	10	330		
59	Naphthalene	SW8270C	10	330		13000
60	Nitrobenzene	SW8270C	10	330	0.4	200
61	Pentachlorophenol	SW8270C	25	330	1	1000
62	Phenanthrene	SW8270C	10	330		50000
63	Phenol	SW8270C	10	330	1	30
64	Pyrene	SW8270C	10	330		50000

TABLE 7.1 (Continued)
PROJECT QUANTITATION LIMITS

	Analysis/Compound	Method	Estimated Quantitation Limits Water (ug/L)	Estimated Quantitation Limits Soil (ug/kg)	State of New York Standards Water (ug/L)	State of New York Standards Soil (ug/kg)
	Metals		**(mg/L)**	**(mg/kg)**	**(mg/L)**	**(mg/kg)**
1	Antimony	SW6010B	0.006	5.0	0.003	
2	Arsenic	SW6010B	0.01	1	0.025	7.5
3	Barium	SW6010B	0.01	1	1	300
4	Beryllium	SW6010B	0.005	0.5	0.003	0.16
5	Cadmium	SW6010B	0.005	0.5	0.005	1
6	Chromium	SW6010B	0.01	1	0.05	10
7	Copper	SW6010B	0.03	2.5	0.2	25
8	Lead	SW6010B	0.01	0.5	0.025	400[(c)]
9	Mercury	SW7470A/7471A	0.0002	0.01	0.0007	0.1
10	Nickel	SW6010B	0.04	4	0.1	13
11	Selenium	SW6010B	0.01	1	0.01	2
12	Silver	SW6010B	0.01	1	0.05	
13	Thallium	SW7841	0.002	1	0.0005	
14	Zinc	SW6010B	0.02	2	2	20
*15	Vanadium	SW6010B	0.05	1	0.0005	150
*16	Cobalt	SW6010B	0.05	1		30
*17	Aluminum	SW6010B	0.2	20		
*18	Calcium	SW6010B	5	500		
*19	Iron	SW6010B	0.1	10	0.3	2000
*20	Magnesium	SW6010B	5	500	35	
*21	Manganese	SW6010B	0.015	1.5	0.3	
*22	Potassium	SW6010B	5	500		
*23	Sodium	SW6010B	5	500	20	
*24	Cyanide	SW9010A	0.01	0.01	200	

Notes:
N/A - Not Applicable
(a) - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, NYSDEC, October 1993
(b) - Determination of Soil Cleanup Objectives and Cleanup Levels, NYSDEC, January 24, 1994
(c) - EPA Guidance on Residential Lead-Based Paint, Lead Contaminated Dust, and Lead Contaminated Soil, July 14, 1994

SECTION 8

DATA REDUCTION, VALIDATION, AND REPORTING

8.1 INTRODUCTION

Data collected during the field investigation will be reduced and reviewed by the laboratory QA personnel, and a report on the findings will be tabulated in a standard format. The criteria used to identify and quantify the analytes will be those specified for the applicable methods in the USEPA SW-846 and subsequent updates. The data package provided by the laboratory will contain all items specified in the USEPA SW-846 appropriate for the analyses to be performed, and be reported in standard format.

The completed copies of the Chain-of-custody records (both external and internal) accompanying each sample from time of initial bottle preparation to completion of analysis shall be attached to the analytical reports.

8.2 DATA REDUCTION

Two copies of the analytical data packages and an electronic disk deliverable will be provided by the laboratory approximately 30 days after receipt of a complete sample delivery group. The Project Manager will immediately arrange for filing one package; a second copy, and the disk deliverable, will be used to generate summary tables. These tables will form the database for assessment of the site contamination condition.

The electronic deliverable format required is an ASCII comma delimited file with the fields and character lengths summarized in Table 8.1.

Each diskette deliverable must be formatted and copied using an MS-DOS operating system. To avoid transcription errors, data will be loaded directly into the ASCII format from the laboratory information management system (LIMS). If this cannot be accomplished, the consultant should be notified via letter of transmittal indicating that manual entry of data is required for a particular method of analysis. All diskette deliverables must also undergo a QC check by the laboratory before delivery. The original data, tabulations, and electronic media are stored in a secure and retrievable fashion.

The Project Manager or Task Manager will maintain close contact with the QA reviewer to ensure all non-conformance issues are acted upon prior to data manipulation and assessment routines. Once the QA review has been completed, the Project Manager may direct the Team Leaders or others to initiate and finalize the analytical data assessment.

TABLE 8.1

FIELD AND CHARACTER LENGTHS FOR DISK DELIVERABLE

Description	Length	Format
Field Sample ID (as shown on COC)	15	Character
Cas. No. (including -'s)	10	Character
Parameter Name	31	Character
Concentration	13	Numeric
Qualifier	4	Character
Units	8	Character
SDG	8	Character
Lab Sample ID	15	Character
Date Sampled (from COC)	D	Date
Matrix (soil/water/air)	5	Character
Method Detection Limit	13	Numeric
Method Code	8	Character
Lab Code	6	Character

8.3 DATA VALIDATION

Data validation will be performed in accordance with the NYSDEC ASP and most current USEPA Region 2 SOPs for organic and inorganic data review. Validation will include the following:

- Verification of 100% of all QC sample results (both qualitative and quantitative);
- Verification of the identification of 100% of all sample results (both positive hits and non-detects);
- Recalculation of 10% of all investigative sample results; and
- Preparation of a Data Usability Summary Report (DUSR).

A DUSR will be prepared and reviewed by the QAO before issuance. The DUSR will present the results of data validation, including a summary assessment of laboratory data packages, sample preservation and COC procedures, and a summary assessment of precision, accuracy, representativeness, comparability, and completeness for each analytical method. A detailed assessment of each SDG will follow. For each of the organic analytical methods, the following will be assessed:

- Holding times;
- Instrument tuning;
- Instrument calibrations;
- Blank results;
- System monitoring compounds or surrogate recovery compounds (as applicable);
- Internal standard recovery results;
- MS and MSD results;
- Target compound identification;
- Chromatogram quality;
- Pesticide cleanup (if applicable);
- Compound quantitation and reported detection limits;
- System performance; and
- Results verification.

For each of the inorganic compounds, the following will be assessed:

- Holding times;
- Calibrations;
- Blank results;
- Interference check sample;

- Laboratory check samples;
- Duplicates;
- Matrix Spike;
- Furnace atomic absorption analysis QC;
- ICP serial dilutions; and
- Results verification and reported detection limits.

Based on the results of data validation, the validated analytical results reported by the laboratory will be assigned one of the following usability flags:

- "U" - Not detected at given value;
- "UJ" - Estimated not detected at given value;
- "J" - Estimated value;
- "N" – Presumptive evidence at the value given;
- "R" - Result not useable; and
- No Flag - Result accepted without qualification.

SECTION 9

INTERNAL QUALITY CONTROL CHECKS AND FREQUENCY

9.1 QUALITY ASSURANCE BATCHING

Each set of samples will be analyzed concurrently with calibration standards, method blanks, matrix spikes (MS), matrix spike duplicates (MSD) or laboratory duplicates, and QC check samples (if required by the protocol). The MS/MSD samples will be designated by the field personnel. If no MS/MSD samples have been designated, the laboratory will contact the Con Edison Project Manager for corrective action.

9.2 CALIBRATION STANDARDS AND SURROGATES

All organic standard and surrogate compounds are checked by the method of mass spectrometry for correct identification and gas chromatography for degree of purity and concentration. All standards are traceable to a source of known quality certified by the USEPA or NIST, or other similar program. When the compounds pass the identity and purity tests, they are certified for use in standard and surrogate solutions. Concentrations of the solutions are checked for accuracy before release for laboratory use. Standard solutions are replaced monthly or more frequently, based upon data indicating deterioration.

9.3 ORGANIC BLANKS AND MATRIX SPIKE

Analysis of blank samples verifies that the analytical method does not introduce contaminants or detect "false positives". The blank water can be generated by reverse osmosis and Super-Q filtration systems, or distillation of water containing $KMnO_4$. The matrix spike is generated by addition of surrogate standard to each sample.

9.4 TRIP AND FIELD BLANKS

Trip blanks and field blanks will be utilized in accordance with the specifications in Section 4. These blanks will be analyzed to provide a check on sample bottle preparation and to evaluate the possibility of atmospheric or cross contamination of the samples.

SECTION 10

QUALITY ASSURANCE PERFORMANCE AUDITS AND SYSTEM AUDITS

10.1 INTRODUCTION

Quality assurance audits may be performed by the project quality assurance group under the direction and approval of the project QAO. These audits will be implemented to evaluate the capability and performance of project and subcontractor personnel, items, activities, and documentation of the measurement system(s). Functioning as an independent body and reporting directly to corporate quality assurance management, the QAO may plan, schedule, and approve system and performance audits based upon procedures customized to the project requirements. At times, the QAO may request additional personnel with specific expertise from company and/or project groups to assist in conducting performance audits. However, these personnel will not have responsibility for the project work associated with the performance audit.

10.2 SYSTEM AUDITS

System audits may be performed by the QAO or designated auditors, and encompass a qualitative evaluation of measurement system components to ascertain their appropriate selection and application. In addition, field and laboratory quality control procedures and associated documentation may be system audited. These audits may be performed once during the performance of the project. However, if conditions adverse to quality are detected or if the Project Manager requests, additional audits may occur.

10.3 PERFORMANCE AUDITS

The laboratory may be required to conduct an analysis of Performance Evaluation (PE) samples or provide proof that Performance Evaluation samples submitted by USEPA or a state agency have been analyzed within the past twelve months.

10.4 FORMAL AUDITS

Formal audits refer to any system or performance audit that is documented and implemented by the QA group. These audits encompass documented activities performed by qualified lead auditors to a written procedure or checklists to objectively verify that quality assurance requirements have been developed, documented, and instituted in accordance with contractual and project criteria. Formal audits may be performed on project and subcontractor work at various locations.

Audit reports will be written by auditors who have performed the site audit after gathering and evaluating all data. Items, activities, and documents determined by lead auditors to be in noncompliance shall be identified at exit interviews conducted with the involved management. Noncompliances will be logged, and documented through audit findings which are attached to

and are a part of the integral audit report. Th ese audit finding forms are directed to management to satisfactorily resolve the noncompliance in a specified and timely manner.

The Project Manager has overall responsibility to ensure that all corrective actions necessary to resolve audit findings are acted upon prom ptly and satisfactorily. Audit reports m ust be submitted to the Project Manager within f ifteen days of completion of the audit. Serious deficiencies will be reported to the Project Mana ger within 24 hours. All audit checklists, audit reports, audit findings, and acceptable resolutions are approved by the QAO prior to issue. Verification of acceptable resolutions may be determined by re-audit or documented surveillance of the item or activity. Upon verification acceptance, the QAO will close out the audit report and findings.

SECTION 11

PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULES

11.1 PREVENTIVE MAINTENANCE PROCEDURES

Equipment, instruments, tools, gauges, and other items requiring preventive maintenance will be serviced in accordance with the manufacturer's specified recommendations and written procedure developed by the operators.

A list of critical spare parts will be established by the operator. These spare parts will be available for use in order to reduce the downtime. A service contract for rapid instrument repair or backup instruments may be substituted for the spare part inventory.

11.2 SCHEDULES

Written procedures will establish the schedule for servicing critical items in order to minimize the downtime of the measurement system. The laboratory will adhere to the maintenance schedule, and arrange any necessary and prompt service. Required service will be performed by qualified personnel.

11.3 RECORDS

Logs shall be established to record and control maintenance and service procedures and schedules. All maintenance records will be documented and traceable to the specific equipment, instruments, tools, and gauges. Records produced shall be reviewed, maintained, and filed by the operators at the laboratories. The QAO may audit these records to verify complete adherence to these procedures.

SECTION 12

CORRECTIVE ACTION

12.1 INTRODUCTION

The following procedures have been established to ensure that conditions adverse to quality, such as malfunctions, deficiencies, deviations, and errors, are promptly investigated, documented, evaluated, and corrected.

12.2 PROCEDURE DESCRIPTION

When a significant condition adverse to quality is noted at site, laboratory, or subcontractor location, the cause of the condition will be determined and corrective action will be taken to preclude repetition. Condition identification, cause, reference documents, and corrective action planned to be taken will be documented and reported to the QAO, Project Manager, Field Team Leader and involved contractor management, at a minimum. Implementation of corrective action is verified by documented follow-up action.

All project personnel have the responsibility, as part of the normal work duties, to promptly identify, solicit approved correction, and report conditions adverse to quality. Corrective actions will be initiated as follows:

- When predetermined acceptance standards are not attained;
- When procedure or data compiled are determined to be deficient;
- When equipment or instrumentation is found to be faulty;
- When samples and analytical test results are not clearly traceable;
- When quality assurance requirements have been violated;
- When designated approvals have been circumvented;
- As a result of system and performance audits;
- As a result of a management assessment;
- As a result of laboratory/field comparison studies; and
- As required by USEPA SW-846, and subsequent updates, or by the NYSDEC ASP.

Project management and staff, such as field investigation teams, remedial response planning personnel, and laboratory groups monitor on-going work performance in the normal course of daily responsibilities. Work may be audited at the sites, laboratories, or contractor locations. Activities, or documents ascertained to be noncompliant with quality assurance requirements will be documented. Corrective actions will be mandated through audit finding sheets attached to the audit report. Audit findings are logged, maintained, and controlled by the Task Manager.

Personnel assigned to quality assurance functions will have the responsibility to issue and control Corrective Action Request (CAR) Forms (Figure 12.1 or similar). The CAR identifies the out-of-compliance condition, reference document(s), and recommended corrective action(s) to be administered. The CAR is issued to the personnel responsible for the affected item or activity. A copy is also submitted to the Project Manager. The individual to whom the CAR is addressed returns the requested response promptly to the QA personnel, affixing his/her signature and date to the corrective action block, after stating the cause of the conditions and corrective action to be taken. The QA personnel maintain the log for status of CARs, confirms the adequacy of the intended corrective action, and verifies its implementation. CARs will be retained in the project file for the records.

Any project personnel may identify noncompliance issues; however, the designated QA personnel are responsible for documenting, numbering, logging, and verifying the close out action. The Project Manager will be responsible for ensuring that all recommended corrective actions are implemented, documented, and approved.

FIGURE 12.1

CORRECTIVE ACTION REQUEST

Number: _____ Date: _____

TO: _____

You are hereby requested to take corrective actions indicated below and as otherwise determined by you to (a) resolve the noted condition and (b) to prevent it from recurring. Your written response is to be returned to the project quality assurance manager by _____

CONDITION:

REFERENCE DOCUMENTS:

RECOMMENDED CORRECTIVE ACTIONS:

_____	_____	_____	_____	_____	_____
Originator	Date	Approval	Date	Approval	Date

RESPONSE

CAUSE OF CONDITION

CORRECTIVE ACTION

(A) RESOLUTION

(B) PREVENTION

(C) AFFECTED DOCUMENTS

C.A. FOLLOWUP:

CORRECTIVE ACTION VERIFIED BY: _____ DATE:_____

SECTION 13

REFERENCES

USEPA, 1986. SW-846 "Test Method for Evaluating Solid Waste," dated November 1986. U.S. Environmental Protection Agency, Washington, D.C.

Taylor, J. K., 1987. Quality Assurance of Chemical Measurements. Lewis Publishers, Inc., Chelsea, Michigan

USEPA, 1987. Data Quality Objectives for Remedial Response Actions Activities: Development Process, EPA/540/G-87/003, OSWER Directive 9355.0-7- U.S. Environmental Protection Agency, Washington, D.C.

APPENDIX C
HEALTH AND SAFETY PLAN

HEALTH AND SAFETY PLAN
FOR THE SITE CHARACTERIZATION OF THE FORMER HUNTS POINT GAS WORKS HALLLECK STREET SIDEWALK
Bronx, New York

Prepared For:

Consolidated Edison Company of New York, Inc.

31-01 20th Avenue
Long Island City, NY 11105

Prepared By:

PARSONS

200 Cottontail Lane
Somerset, NJ 08873
Phone: (732) 537-3500
Fax: (732) 868-3110

MAY 2011

TABLE OF CONTENTS

Page

ATTACHMENT A PARSONS REQUIREMENTS V

LIST OF ACRONYMS VI

SECTION 1 INTRODUCTION 1

1.1 Parsons Workplace Health & Safety Policy 2

1.2 The Health and Safety Plan 6

1.3 Subcontractor Safety Plans 6

SECTION 2 SCOPE OF WORK 1

2.1 Scope of Work 1

2.2 Health and Safety Plan Application 1

SECTION 3 PROJECT SAFETY MANAGEMENT RESPONSIBILITIES AND AUTHORITY 1

3.1 Safety Responsibility Matrix 1

SECTION 4 ADMINISTRATIVE PHASE 1

4.1 Project Safety Committee 1

4.2 Project Orientation 1

4.3 Awareness Campaign 2

4.4 Stakeholder HASP Alignment Meeting 2

4.5 Training 2

4.6 Audits and Inspections 3

4.7 Meetings 3

4.8 Measurement and Reporting 3

4.8.1 Reporting 3
4.8.2 Measurement 3
4.8.3 Incident Reporting 4

4.9 Incident Investigations 4

4.10 Responsibility/Identification of Key Line Personnel 5

4.11 Medical Requirements and Workers Compensation 5
4.11.1 Medical Surveillance and/or Functional Capacity Exams (FCEs) 6
4.11.2 Substance Abuse and Alcohol Testing 6
4.11.3 Medical Services and Panel of Physicians 6
4.11.4 Emergency Medical Response 9
4.11.5 Workers Compensation Program 9
4.11.6 Medical Monitoring 10

SECTION 5 PRE-FIELD WORK PHASE 1

5.1 Risk Analysis and Safety Specification Development 1

5.2Design and Remedial Action Review 2

5.3 Pre-bid Meeting 2

5.4 Subcontractor Prequalification Review 2

5.5 Pre-Field Work meeting 2

5.6 Competent Person Submission Review 2

5.7 Subcontractor Safety Plan Submission Review 3

5.8 Mobilization/Kickoff Safety Meeting 4

SECTION 6 INVESTIGATION PHASE 1

6.1 Site Risk Analysis 1
6.1.1 Chemical Hazards 1
6.1.2 Physical Hazards 1
6.1.3 Biological Hazards 7
6.1.4 Environmental Hazards 9
6.1.5 Fire Hazards 10
6.1.6 Site Characterization Activity Hazard Analysis 10

6.2 Five Hazard Control Measures – Order of Precedence 11
6.2.1 Engineer/Design to Eliminate or Minimize Hazards 11

6.2.2 Guard the Hazard....12
6.2.3 Provide Warnings....12
6.2.4 Provide Special Procedures or Training....14
6.2.5 Provide Personal Protective Equipment....15

6.3 Activity Hazards Analysis....17

6.4 Safety Systems Analysis....19

6.5 Site Inspection CHECKLIST and Daily SIte Walk....19

6.6 Safety and Health Enforcement....20

6.7 Notice of Violation of Safety and Health Regulations....20

6.8 Competent First Aid Person....20

SECTION 7 SAFETY TRAINING....1

7.1 Project Safety Orientation....1

7.2 ParsonsU Safety Modules and START Training – Zero Incident Techniques....1

7.3 Daily Toolbox Safety Meetings....1

7.4 Activity Hazards Analysis Training....2

7.5 Regulatory Training Programs....2

7.6 OSHA Outreach Programs....2

7.7 Specialized Training and Orientations....2

SECTION 8 RECORD KEEPING AND POSTING....1

SECTION 9 SAFETY AND HEALTH REQUIREMENTS....1

9.1 Safety and Health Requirements....1

TABLE OF CONTENTS
(CONTINUED)

Page

LIST OF EXHIBITS

Exhibit 1.1 Parsons Workplace Health and Safety Policy 1-2

Exhibit 3.1 Roles and Responsibilities 3-2

Exhibit 4.1 Project Orientation Outline 4-11

Exhibit 4.2 Project Orientation Attendance Sheet 4-15

Exhibit 5.1 Site-Specific Rick Review Checklist 5-5

Exhibit 5.2 Pre-Field Work Safety Meeting 5-7

Exhibit 5.3 Project Technical and General Conditions Specification Review 5-8

Exhibit 5.4 Subcontractor Competent Person Form 5-9

Exhibit 5.5 Subcontractor Safety Plan Review 5-10

Exhibit 5.6 Mobilization/Kick Off Safety Meeting Checklist 5-11

Exhibit 6.1 Activity Hazards Analysis Form 6-30

Exhibit 6.2 Activity Hazards Analysis Training Record 6-31

Exhibit 6.3 Site Safety and Health Inspection Checklist 6-32

Exhibit 6.4 Notice of Subcontractor Violation of Safety and Health Regulations 6-33

Exhibit 6.5 Notice of Noncompliance with Safety and Health Regulations 6-34

Exhibit 7.1 Employee/Subcontractor Training Acknowledgment 7-4

Exhibit 7.2 Employee Meeting Sign-In Sheet 7-5

Exhibit 9.1 Competent Person and Activity Hazards Analysis Requirements 9-1

TABLE OF CONTENTS
(CONTINUED)

LIST OF ATTACHMENTS

ATTACHMENT A PARSONS REQUIREMENTS

ATTACHMENT B CON EDISON REQUIREMENTS

ATTACHMENT C ACTIVITY HAZARD ANALYSIS

ATTACHMENT D MATERIAL SAFETY DATA SHEETS

LIST OF ACRONYMS

AED	Automated External Defibrillator
AHA	Activity Hazard Analysis
CFR	Code of Federal Regulations
CHSO	Corporate Health and Safety Officer
CPR	Cardiopulmonary Resuscitation
EMS	Emergency Medical Services
FCEs	Functional Capacity Exams
FSP	Field Sampling Plan
GBU	Global Business Unit
HAZWOPER	Hazardous Waste Operations and Emergency Response
IDLH	Immediately Dangerous to Life and Health
NAPL	Non-Aqueous Phase Liquid
NIOSH	National Institute for Occupational Safety and Health
OCIP	Owner Controlled Insurance Program
OSHA	Occupational Safety and Health Administration
PARCOMM	Parsons Commercial Technology Group
PEL	Permissible Exposure Limit
PID	Photo Ionization Detector
PPE	Personal Protective Equipment
PSM	Project Safety Manager
HASP	Health and Safety Plan
SCBA	Self Contained Breathing Apparatus
SCWP	Site Characterization Work Plan
SOW	Scope of Work
SSO	Site Safety Officer
SSP	Subcontractor Safety Plan
TBD	To Be Determined
UV	Ultraviolet Radiation
VOC	Volatile Organic Compounds
WP	Work Plan

SECTION 1

INTRODUCTION

This Health and Safety Plan (HASP) has been prepared for Site Characterization of the Former Hunts Point Gas Works, Halleck Street Sidewalk (Site). It provides guidance for office and field activities required to complete the scope of work.

Parsons, in their contracted role with Consolidated Edison Company of New York, Inc. (Con Edison), is providing site characterization services for the work as specified in the WP. The work is being performed under the Parsons Commercial Technology Group (PARCOMM) Technology Division, and is the responsibility of Program and Project Managers, Mr. Dan Martoccia and Mr. Eric Gaulin, respectively.

The primary field activities include geophysical site investigations and soil borings. These activities will be conducted in accordance with the Site Characterization Work Plan for the Former Hunts Point Gas Works, Halleck Street Sidewalk Site (WP) and the Field Sampling Plan for Site Characterization of the Former Hunts Point Gas Works, Halleck Street Sidewalk Site (FSP).

During sampling and other field activities, Parsons' staff and its subcontractors may be exposed to hazards associated with chemicals of concern at the Site. Employees will be required to use personal protective equipment (PPE) suitable for the level of contaminates present. Monitoring will be conducted to evaluate contamination levels and implement proper PPE upgrades, if necessary.

Field staff may also be exposed to other hazards that are encountered during field activities including slips, trips, falls, automobiles, traffic, heavy equipment, drill rigs, and winches. Depending upon the time of season, field staff may be exposed to biological hazards, for example insect bites, stings, ticks, and snakes. Meteorological hazards such as lightning, wind, rain, and ultraviolet radiation may also be present.

This HASP addresses these potential exposures for this project. This HASP is based upon the Parsons Model Project Safety Plan provided as Attachment A1 in the SHARP Management Manual, Version 1.5, January 2006. The Parsons Workplace Health and Safety Policy is provided in Exhibit 1.1.

1.1 PARSONS WORKPLACE HEALTH & SAFETY POLICY

Exhibit 1.1 Parsons Workplace Health and Safety Policy

POLICY: WORKPLACE HEALTH AND SAFETY

STATEMENT OF POLICY:

As an industry-leading engineering, construction and technical services firm, Parsons is firmly committed to maintaining a safe and healthy working environment at all its offices and project facilities. We share the National Safety Council's Safety and Health Code of Ethics as the principles guiding our commitment to safety.

- We will hold safety and health as our highest core value.
- Executive management will lead the safety improvement process.
- Safety will be a responsibility shared by everyone in our organization.
- Safety performance will be a key indicator of our organizational excellence and will be incorporated into our business processes.
- We will communicate safety performance openly with employees.
- All employees will be given the knowledge and skills necessary to safely perform their jobs.
- We will extend our safety efforts beyond the workplace to include transportation, homes and communities.
- We will continually strive to improve our safety and health processes.

To meet its health and safety objectives, all Parsons employees are expected to act proactively with regard to health and safety issues. This requires the combined efforts of a concerned management, responsible and knowledgeable supervision, and conscientious, well-trained employees.

Parsons will take all reasonable action to meet or exceed the applicable occupational health and safety requirements, domestically and internationally, and will continuously monitor and improve operations, procedures, technologies and programs that are conducive to maintaining a safe and healthy working environment.

RESPONSIBILITIES:

Parsons GBU management and supervisory personnel are responsible to:

- Comply with this policy and ensure that the applicable health and safety requirements at each domestic and international office and project facility are effectively implemented and monitored at all times.

Exhibit 1.1 Parsons Workplace Health and Safety Policy (Cont'd)

RESPONSIBILITIES: (cont'd.)

- Ensure that the applicable health and safety requirements at each domestic and international project facility are effectively integrated with the preparation of proposals, project planning, and project execution.
- Monitor subcontractor safety performance in accordance with contract specifications as required by the contract with client.
- Ensure that safety information and statistics are reported to Parsons Corporate Safety Manager on a consistent and regular basis, as shown in Appendix.1, *Safety Monthly Report*.

Parsons Corporate Safety personnel are responsible to:

- Develop, communicate, and oversee Parsons health and safety programs at all Parsons business units.
- Provide assistance to Parsons business unit managers regarding health and safety regulations, reporting requirements, safety training, and other related issues.
- Monitor the effectiveness of Parsons health and safety programs, conduct investigations, develop OSHA reporting and worker's compensation claim procedures.
- Collect and maintain safety information and statistics for all Parsons business units and operations, as shown in corporate policy Workplace Health and Safety, Appendix.2, *OSHA Safety and Health Statistics*.
- Keep senior management informed of significant internal and external developments regarding health and safety.

Parsons employees are responsible to:

- Exercise maximum appropriate care and good judgment at all times regarding health and safety, and adhere to safety procedures to prevent accidents and injuries.
- Promptly report all accidents and injuries to supervisory personnel.
- Promptly report any near misses, unsafe conditions, equipment, or practices to supervisory personnel.

Exhibit 1.1 Parsons Workplace Health and Safety Policy (Cont'd)

REFERENCES:

National Safety Council Safety and Health Code of Ethics
Parsons Construction Health and Safety Manual
Parsons Injury and Illness Prevention Program (Cal-OSHA IIPP)
Parsons Safety Monthly Reports, Workplace Health and Safety - Appendix.1
Parsons Health and Safety Statistics, Workplace Health and Safety – Appendix 2

DATE: 7/23/04

1.2 THE HEALTH AND SAFETY PLAN

Parsons goal is zero accidents and zero injuries with work tasks designed to minimize or eliminate hazards to personnel, process, equipment, and the general public. No employee should ever perform tasks that may endanger his/her own safety or health or that of others. This HASP outlines safety and health requirements and guidelines developed by Parsons for project work. When implemented, these requirements will help protect site personnel, visitors, and the public from exposure to potential safety and health hazards.

This HASP shall be updated as conditions change or situations change, usually by addenda to the HASP. All Parsons and subcontractor personnel must understand and implement the safety plans and any addenda. Parsons documents this by having employees sign an acknowledgement form stating that they understand the plan and its requirements.

1.3 THE CON-EDISON "RULES WE LIVE BY"

This HASP has been written to incorporate the Con Edison "Rules We Live By". As indicated by Con Edison, the Rules We Live By "…are critical work procedures or safety requirements that, if not followed, could result in a severe injury or fatality, or place other individuals at significant risk. Some of the Rules are based on OSHA regulations while others are Con Edison procedures." Parsons work performed on behalf of Con Edison will be in compliance with the Con Edison "Rules We Live By". A table summarizing the "Rules We Live By" (Revised November 2009) is included within Attachment B.

1.4 SUBCONTRACTOR SAFETY PLANS

Parsons subcontractors must establish a safety program for their work and employees. Contract specifications require all subcontractors to accept Parsons HASP and prepare their own subcontractor safety plan (SSP) for presentation to the Parsons Project Manager and Division Safety Manager at least 10 days before site mobilization. At a minimum, subcontractor safety and health plans must meet the requirements of this HASP and provide safety equipment and safeguards suitable for the hazards involved. This HASP may not cover all potential hazards on every project, and subcontractors must ensure that appropriate safety and health information is available for all project tasks.

All HASP requirements for Parsons personnel (e.g., training, substance abuse screening, and incident reporting) also apply to subcontractor personnel and should be spelled out in the SSP.

If a subcontractor is performing activities that require specialized training (i.e., confined space entry, excavation/trenching, scaffold use, Hazardous Waste Operations and Emergency Response (HAZWOPER, etc.), then copies of training certifications for applicable employees and the supervisor must be provided to Parsons, and copies of those documents will be given to a Con Edison representative. Refer to Section 5.7 for more details on SSP requirements.

Below are the names of the subcontractors and the work activities they will be performing as part of the Remedial Action Workplan. All contractors working on site are required to complete

a Contractor Safety Evaluation package. Parsons will prepare a contractor safety mitigation plan for those subcontractors scoring lower than a B grade.

SUBCONTRACTORS	WORK ACTIVITIES	EVALUATION GRADE
1. TBD	Surveying	?
2. TBD	Geophysical Investigation	?
3. Chemtech	Analytical Laboratory	Not Applicable (off-site lab)
4. Aquifer Drilling and Testing (ADT)	Soil Borings	C
5. Clean Earth Technologies	Waste Disposal	Not Applicable (no T&D of wastes will be conducted)

SECTION 2

SCOPE OF WORK

2.1 SCOPE OF WORK

The field activities associated with the Site Characterization include surveying, geophysical site investigations and the installation of soil borings. As mentioned in Section 1, ADT will be performing all drilling and well installation work. Parsons will be conducting sample collection and project oversight. These activities will be conducted in accordance with details provided in the WP and FSP previously reviewed and approved by the New York State Department of Environmental Conservation (NYSDEC).

2.2 HEALTH AND SAFETY PLAN APPLICATION

The purpose of this HASP is to establish personnel protection standards and mandatory safety practices and procedures for field investigation efforts conducted at the Site. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise during site characterization activities. The standard operating procedures and safety practices presented in this plan shall be followed by all Parsons' personnel and subcontractors conducting work at the Site. The provisions of this plan are mandatory for all Parsons personnel engaged in on-site hazardous waste operations. All subcontractors and agency personnel must review, sign and follow the Parsons safety plan. Subcontractors working for Parsons must prepare and administer a plan with equivalent requirements unless otherwise specified, this safety plan will be added as an addendum to the Parsons safety plan.

SECTION 3

PROJECT SAFETY MANAGEMENT RESPONSIBILITIES AND AUTHORITY

3.1 SAFETY RESPONSIBILITY MATRIX

Exhibit 3.1 summarizes the responsibilities of selected roles related to the primary safety activities identified in the HASP.

Exhibit 3.1 – Roles and Responsibilities

	Work Elements	Project Manager	Project Safety Manager	Project Controls Manager	Project HR Manager	Sector Manager	Division Manager	GBU Safety Manager	GBU QC Manager	GBU Risk Manager	GBU President	Corporate Workers Compensation Analyst	Corporate Safety	Resident Engineer/ Superintendent	GBU BD Manager	Parsons CEO/President
	1. Zero Incident Techniques and SHARP Management	X	D	P	P	R	R	R	E	S	E		E	S	S	E
	2. Business Development Phase	X	P	P	P	R	E	S		S	E		E	P	D	E
Startup Phase	3. Initial Hazards Analysis and Planning	X	P	P	P	R	E	R	E	P	E	P		P		
Startup Phase	4. Project Safety Plan (PSP)	X	D		P	R	E	R		R	E		C			E
Startup Phase	5. Stakeholder PSP Alignment Meeting	X	D			E	E	P					C	P		
Administration/ Design Phase	6. Awareness Campaign	X	D	P	P	E	A	R					C	P		
Administration/ Design Phase	7. Employee Orientation	P	P	P	D	R	A	E					C	P		
Administration/ Design Phase	8. Training	X	D	P	P	R	A	E					C			E
Administration/ Design Phase	9. Health and Safety Committee	X	D	P	P	R	A	R					C			
Administration/ Design Phase	10. Incident Investigations	X	P	P	P	R	R	A				P	E			E
Administration/ Design Phase	11. Measurement and Reporting	X	D	P	P	R	R	S				P	E			E
Administration/ Design Phase	12. Audits, Inspections and Record Keeping	X	X	P	P	R	R	S	R	R			E			E
Construction or Field Phase	13. Preconstruction Safety Activities	X	X			E	E	R					C			
Construction or Field Phase	14. Project Site Orientation	X	D	P	P	E	E	S					C			
Construction or Field Phase	15. Meet Local OSHA, Building Trades, and Other Agencies	X	D			E	E	S					C			
Construction or Field Phase	16. Review Contractor/Subcontractor Safety Programs	E	X			E	E	S					C	P		
Construction or Field Phase	17. Subcontractor Premobilization Meeting	X	P	P		E	E	S					C	P		
Construction or Field Phase	18. Risk Mitigation Planning (Two-week Look-ahead)	P	P			E	E	S					E	X		
Construction or Field Phase	19. Activity Hazard Analysis	E	P			E	E	S					E	X		
Construction or Field Phase	20. Recurring Field Safety Meetings/Training	X	D	P	P			S					E	P		
Construction or Field Phase	21. Project Management Site Safety Inspections	X	D					S					E	P		
	Testing, Commissioning, Operations, and Decommissioning Phases	(to be developed)														
Closeout Phase	22. Lessons Learned and Final Safety Report	E	X		X	E	E	S	R				E	P		
Closeout Phase	23. Records Retention	E	X		P	A	A	R					E			

Legend:

A – Approves tools, plans, etc. established by the project.

C – Consultant providing expert advice to the development leader.

D – Development leader tasked to establish the tools, plans, etc. needed for the work element.

E – Sponsor responsible to reinforce the need to comply with the established requirements.

P – Participants in team or group implementation efforts, supporting the implementation leader.

R – Reviews and comments on tools, plans, etc. established by the project to achieve the goal of the work element.

S – Establishes requirements applicable to the project.

X – Accountable and responsible to ensure that the project develops and implements the work element in accordance with established requirements.

SECTION 4

ADMINISTRATIVE PHASE

4.1 PROJECT SAFETY COMMITTEE

Depending on the size and type of project, a safety committee that includes representation from all project stakeholders shall be formed. If the project has less than five (5) Parsons employees or 25 subcontractors, then a Project Safety Committee will be handled at the Program or Facility level. The Program or Facility H&S Representative is responsible for communicating information from the Division Safety Manager conference call with the project personnel on a monthly basis. Review of the meeting minutes from the Division Safety Manager conference call will take place during the first week of the month at times and locations to be determined and posted by the Project Manager on the safety billboard at least one week in advance.

For this project, there will not be a Project Safety Committee.

4.2 PROJECT ORIENTATION

The Human Resources department has a comprehensive employee orientation program and annual refresher. The Safety Manager helps to develop the safety section of the orientation and meets with new employees to review site procedures and requirements. Topics covered include:

- Names of personnel responsible for site safety and health
- Reporting emergencies, incidents and unsafe conditions
- Emergency/evacuation plans
- Safety, health and other hazards at the site
- Review of relevant activities on site and related Activity Hazard Analyses (AHAs)
- Proper use of personal protective equipment
- Work practices by which a worker can minimize risk from hazards
- Site Access
- Safe use of engineering controls and equipment on site
- Acute effects of compounds at the site
- Decontamination procedures

All personnel, including subcontractors and visitors, on a project must attend the orientation program (Exhibit 4.1) and sign an acknowledgment form (Exhibit 4.2) indicating they attended and understood the orientation. Any individual who is unsure of any information presented in

the orientation must request clarification. Individuals who do not participate in the orientation or refuse to sign the acknowledgment cannot work on or access the site.

4.3 AWARENESS CAMPAIGN

The project has established an awareness program consistent with the Parsons safety awareness campaign and its various elements (e.g., signs, posters, banners, and focus briefings). This program promotes worker awareness of safety goals and daily risks, hazards, and exposures in the field. In addition to topics selected by corporate safety each month, the project will supplement the awareness program with information specifically applicable to the scope of work.

Safety bulletin boards maintained by the Project Safety Representative are primary information points for the project awareness campaign. Information required for bulletin boards is located in the field representatives vehicles.

The Project Safety Representative may also provide training, presentations, or informational materials as part of the awareness campaign.

4.4 STAKEHOLDER HASP ALIGNMENT MEETING

A stakeholder PSP alignment meeting must be held for projects that have a high health and safety risk.

This project is considered a low health and safety risk. As a result, the stakeholder PSP alignment meeting will be incorporated into the project kickoff meeting.

4.5 TRAINING

The project has a comprehensive health and safety training program tailored to the scope of work. All employees receive a general safety orientation as outlined in Section 4.2 upon assignment to the project. All Parsons new hires shall receive an employee orientation within the first 7 days of employment, provided by Human Resources, the Safety Representative and the Staff Coordinator. Specific training topics will include:

- Bloodborne Pathogens
- CPR/First Aid/AED
- Back Safety – lifting and carrying
- Defensive Driving
- Emergency Response
- Hazard Communication
- Initial Site Training
- Parsons Accident/Incident Reporting Procedures
- Respiratory Protection

- Con Edison Accident/Injury Reporting Procedures
- Con Edison *Rules We Live By*

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 Code of Federal Regulations (CFR) 1910.120, including, but not limited to, initial 40-hour, 8-hour Supervisor and annual 8-hour refresher training.

4.6 AUDITS AND INSPECTIONS

The PSM will implement an audit and inspection program in conjunction with the Global Business Unit (GBU) and corporate safety and quality assurance departments. The Project Manager, PSM or their designee, will conduct monthly safety inspections. Additional information on audits and inspections during field work is detailed in Section 6.5 of this HASP.

4.7 MEETINGS

All project meetings of three or more people must begin with a safety topic. The meeting chairperson may present the safety topic or ask for a volunteer to open the discussion. In general, the "safety moment" is only one or two minutes long and is directly relevant to the work at hand or applicable to most individuals outside the workplace.

Daily toolbox safety meetings are held with on-site personnel at the beginning of each shift to review current site conditions, incidents or injuries from the previous shift activities, safe or at-risk observations from the previous shift, activities planned for the current shift, anticipated hazards, engineering controls, work practices, PPE to protect against hazards, and any additional safety topic or comments. Toolbox safety meetings shall be documented and signed by all individuals accessing the site using a Safety Meeting Sign-In Sheet (see Exhibit 7.2 in Section 7 of this HASP).

4.8 MEASUREMENT AND REPORTING

4.8.1 Reporting

To accurately measure performance and comply with corporate and regulatory requirements, Parsons utilizes an online safety reporting system to report monthly work hours, near-miss incidents, first aid cases, property damage and personal injuries for its employees and subcontractors. The online safety reporting system instructions can be found in Attachment A. A wallet card containing Incident Reporting Guidelines, Parsons Accident/Incident Report Form, and Near Miss Report form are also available online and shown in Attachment A.

4.8.2 Measurement

The PSM and Project Manager may establish a measurement system to provide indicators of safety performance, including the following metrics for the project:

- Project and field task start dates

- Days without a recordable injury – updated monthly
- Date of last Occupational Safety and Health Administration (OSHA) recordable injury (if applicable)
- Percent of safe observations from audits

Subcontractors must submit a monthly report of exposure hours (hours worked on the project, paid or unpaid) to the Parsons Project Manager within three (3) days after the end of each month. The Project Manager compiles the figures and submits them to the Program Manager (or via the online safety reporting system if instructed by the Program Manager) and to Con Edison. Where necessary, estimated figures are acceptable. If a project involves air monitoring or personnel wearing any type of respirator, a monthly Field Project Report is also completed and submitted to the Division Safety Manger by the 3rd calendar day after the end of each month.

4.8.3 Incident Reporting

Employees involved in or witnessing an incident or near-miss incident must immediately report it to the responsible Field Team Leader (FTL) or Site Safety Officer (SSO), who in turn immediately relays the report to the Parsons Project Manager, Eric Gaulin, (732) 537-3570. A Con Edison representative will also to be notified immediately in the event of any chemical/oil spill incidents, and injuries/close calls to anyone on site or to any Member of the Public. No supervisor may decline to accept or relay a report of injury or significant near-miss incident from a subordinate.

The Project Manager must ensure that all incidents are reported to Anthony Miller, GBU Safety Manager, (704) 558-4079, Greg Beck, Division Safety Manager, (908) 887-1973, and to Dan Martoccia, (732) 537-3557, the Program Manager, and other management personnel (as required) within four hours. The Project Manager (who has been trained on Parsons' reporting requirements and Online Safety Reporting System) then prepares and submits the incident information.

The GBU Safety Manager must notify the local OSHA office immediately if an accident involves the death of an employee or hospitalization of three or more workers.

4.9 INCIDENT INVESTIGATIONS

All incidents and significant near-miss incidents are investigated by an individual or team with training in accident investigation and root cause analysis. Subcontractors must investigate incidents involving their employees or activities and submit an investigation report to the Parsons Project Manager within 48 hours of an incident.

If an injury occurs, all work stops, a Con Edison Contractor Injury Report form (Attachment B) must be completed and given to a Con Edison representative within 24 hours. Parsons is to provide an investigation report that includes a description of the incident, root cause analyses, and preventive actions to be taken to deter recurrence. Work will not re-commence on

the activity where the incident occurred, until Con Edison considers Parsons' preventive action plan acceptable. This procedure is the same for all significant near-miss incidents on site except that there is no requirement to complete and submit a Con Edison Contractor Injury Report.

In Parsons, the GBU Safety Manager investigates or assigns an investigator to each significant incident. The investigator submits a final investigation report using the online safety reporting system within 72 hours of the incident. The PSM maintains the investigation file. Copies of any incident/accident investigation reports must be provided to the Con Edison Construction EH&S Representative.

4.10 RESPONSIBILITY/IDENTIFICATION OF KEY LINE PERSONNEL

These personnel have the authority and responsibility for implementing the provisions of ***this program.***

Project Office:	Parsons – Somerset	
Address:	200 Cottontail Lane Somerset, NJ 08873	
Telephone	***Fax***	***Email***
(732) 537-3500	(732) 868-3110	
Company Executive responsible for project		***Contact No.***
Dan Martoccia		(732) 537-3557 (908) 625-5376 (cellular)
Project Manager		***Contact No.***
Eric Gaulin		(732) 537-3570 (908) 380-6880 (cellular)
Task Manager/Superintendent/Safety Manager		***Contact No.***
Samuel Monte		(732) 537-3551 (732) 832-5730 (cellular)
Project Scientists		***Contact No.***
Zohar Lavy		(732) 796-5536 (cellular)
Field Team Leader/Site Safety Representative		***Contact No.***
Zohar Lavy		(732) 796-5536 (cellular)
Client - Project Management		***Contact No.***
Ms. Yelena Skorobogatov		(718) 204-4205

4.11 MEDICAL REQUIREMENTS AND WORKERS COMPENSATION

In accordance with corporate requirements, the PSM (or the GBU Safety Manager) has established and implemented the following medical requirements for the project:

4.11.1 Medical Surveillance and/or Functional Capacity Exams (FCEs)

All personnel engaged in activities that results in the exposure to chemicals at or above the OSHA Permissible Exposure Limit (PEL) or wear a respirator for more than 30 days in a year, must comply with 29 CFR 1910.120(f) – medical surveillance. All personnel who wear a respirator must be medically qualified by a physician, trained and fit-tested on an annual basis, even if they are not required to participate in a medical surveillance under 29 CFR 1910.120(f).

Documentation verifying that each on-site Parsons employee has successfully been medically cleared and respiratory fit tested will either be provided in this HASP or the employee will bring the proper documentation with them to the site. Medical clearance and respiratory fit test documentation for subcontractor personnel will either be provided in the Subcontractor Safety Plan required by Parsons from each subcontractor, or the subcontractor employee will bring the proper documentation with them to the site. At Con Edison's request, the actual memos or letters from the physician will be provided within one business day from the request.

FCEs are not applicable for this project.

4.11.2 Substance Abuse and Alcohol Testing

The Division Safety Manager administers required substance abuse tests, including random drug and alcohol testing. A link to the corporate policy, located within Section 38 of the Parsons Corporate Safety and Health Manual, follows:

http://parsharesites.parsons.com/corp/HLTHSAFE/Health_and_Safety/Corporate_Safety_and_Health_Manual/CSHM%20Manual.pdf

Con Edison does not require additional drug and/or alcohol testing. Parsons may conduct random testing on a monthly basis.

4.11.3 Medical Services and Panel of Physicians

The following medical facilities are suggested to treat work-related injuries and illnesses:

Non-Emergency Medical Services

- New York Westchester Square, 2475 Saint Raymond Ave, Bronx, NY 10461, Phone (718) 430-7300; or
- Lincoln Medical Center, 234 E 149 Street, Bronx, NY (718) 579-5625

Emergency Medical Services

- New York Westchester Square, 2475 Saint Raymond Ave, Bronx, NY 10461, Phone (718) 430-7300; (Figure 4.1).

Note: Transportation to a medical facility for non-emergencies must be done by at least two (2) individuals (i.e. driver and observer).

Figure 4.1

New York Westchester Square Hospital
2475 Saint Raymond Ave
Bronx, NY 10461
(718) 430-7300
Directions:

A Halleck St, Bronx, NY 10474

	1. Head **north** on **Halleck St** toward **Food Center Dr** About 1 min	go 0.4 mi total 0.4 mi
	2. Continue onto **Edgewater Rd**	go 0.2 mi total 0.6 mi
↰	3. Turn left to stay on **Edgewater Rd** About 2 mins	go 0.5 mi total 1.1 mi
↱	4. Turn right onto **Bruckner Blvd**	go 0.1 mi total 1.2 mi
↰	5. Take the 1st left onto **Bronx River Ave** About 2 mins	go 0.4 mi total 1.6 mi
↱	6. Turn right onto **Westchester Ave** About 3 mins	go 1.2 mi total 2.8 mi
	7. At the traffic circle, continue straight to stay on **Westchester Ave** About 2 mins	go 0.6 mi total 3.3 mi
↰	8. Turn left onto **Castle Hill Ave** About 2 mins	go 0.5 mi total 3.8 mi
↱	9. Turn right onto **Zerega Ave**	go 52 ft total 3.8 mi
↱	10. Take the 1st right to stay on **Zerega Ave**	go 0.2 mi total 4.0 mi
↰	11. Turn left onto **St Raymonds Ave**	go 0.1 mi total 4.2 mi
↰	12. Take the 1st left onto **Seddon St** Destination will be on the right	go 108 ft total 4.2 mi

B 2475 Saint raymond ave. bronx ny

4.2 mi – about **14 mins**

4.11.4 Emergency Medical Response

The project shall display posters/signs with emergency telephone numbers and locations of facilities in visible locations and at selected phone locations throughout the project area (including subcontractor facilities).

Emergency Contacts	Phone Number
Ambulance	**911**
Fire Department	**911**
State Police (NYS)	**911**
Ms. Yelena Skorobogatov (Con Edison)	(718) 204-4205 – office
	(917) 380-4421 – pager
Mr. Tom O'Connell (Con Edison)	(718) 204-4282 – office
	(347) 672-6576 - cell
Pollution Toxic Chemical Oil Spills	(800) 424-8802
New York Westchester Square Medical Center	(718) 430-7300
Poison Control Center	(800) 222-1222

4.11.5 Workers Compensation Program

The Corporate Risk Management department establishes the appropriate workers compensation carrier. If a workers compensation loss occurs, the Corporate Workers Compensation Analyst (Donna Miller, 661-904-0978) handles all communication with the carrier.

This project does not participate in an Owner Controlled Insurance Program (OCIP) or project-specific insurance program. The workers compensation policy covering Parsons employees on this project is as follows:

AIG
P.O. Box 2310
New York, NY 10272
(212) 770-0100
Policy Number: WC 0007169963

4.11.6 Medical Monitoring

Based on the activities listed in Section 2.1, the following potential hazards or activities are associated with this project. As a result, medical surveillance will be required as listed below:

Name/Job Classification	Hazard/Activity	Medical Surveillance/Training
Field team (i.e. those working around excavators, drill rigs, including drillers and operators, field team leader, site safety officer and other personnel located within near vicinity of noise source.)	Noise – (Drilling, operating heavy machinery)	Activities with the potential for noise hazards will be initially mitigated with hearing protection. Noise level monitoring may be conducted to determine if an employee must participate in a Hearing Conservation Program. If noise exposures exceed 85 decibels over an 8-hour time weighted average, an employee must participate in a Hearing Conservation Program.
Field Team (e.g. those who handle and process samples, including drillers and operators, field team leader, site safety officer, and other personnel located within the exclusion zone.)	Chemical exposures – (Drilling, soil sampling , see Table 6.2.1 for list of chemical to be monitored)	If an employee is exposed at or above the Permissible Exposure Limit (PEL) of a chemical for more than 30 days in a year, they must participate in a Medical Surveillance Program.
Field Team (e.g. those who handle and process samples, including drillers and operators, field team leader, site safety officer, and other personnel located within the exclusion zone)	Respirator use – (If conditions dictate PPE upgrade, see Table 6.2.1 for action levels)	Medical qualification, training and fit-testing must be received on an annual basis. If an employee wears a respirator more than 30 days per year, they must participate in a Medical Surveillance Program.

Gregory H. Beck, Division Safety Manager, (908) 887-1973 administers the medical surveillance program.

Exhibit 4.1 Project Orientation Outline

I. Names of personnel responsible for site safety and health

A. Site Safety Representative/Field Team Leader- Zohar Lavy Contact Information

Zohar Lavy	732-537-3506 (office)
	732-796-5536 (cell)

II. Emergencies

A. Call 911 and/or your Supervisor for emergencies.

B. Route to Hospital

1. Head north on Halleck St toward Food Center Dr
2. Continue onto Edgewater Rd
3. Turn left to stay on Edgewater Rd
4. Turn right onto Bruckner Blvd
5. Take the 1st left onto Bronx River Ave
6. Turn right onto Westchester Ave
7. At the traffic circle, continue straight to stay on Westchester Ave
8. Turn left onto Castle Hill Ave
9. Turn right onto Zerega Ave
10. Take the 1st right to stay on Zerega Ave
11. Turn left onto St Raymonds Ave
12. Take the 1st left onto Seddon St
13. Destination will be on the right

C. Other Emergency numbers

Emergency Contacts	**Phone Number**
Ambulance	**911**
Fire Department	**911**
State Police (NYS)	**911**
Ms. Yelena Skorobogatov (Con Edison)	(718) 204-4205 – office
	(917) 380-4421 – pager
Mr. Tom O'Connell (Con Edison)	(718) 204-4282 – office
	(347) 672-6576 - cell
Dig Safely New York	811
Pollution Toxic Chemical Oil Spills	(800) 424-8802
New York Westchester Square Medical Center (Emergency)	(718) 430-7300
Poison Control Center	(800) 222-1222

III. Evacuation Procedures

A. In the event of an evacuation, personnel will procede to a predetermined assembly area. The location of the assembly area will be identified and discussed during the

first daily tailgate safety meeting. The SSO will use the daily sign-in sheet to account for site personnel and visitors. No one will be permitted to re-enter the site until the SSO in conjunction with the appropriate authorities has determined that it is safe to do so.

B. Depending on the work areas or site conditions, the assembly point may change during the site investigation. The SSO will review and record any assembly point changes during the daily toolbox safety meeting.

IV. Incidents

A. Parsons Accident/Incident- Reporting Procedures- report all incidents (any unplanned or unexpected event that results in personal injury, property damage or environmental release) and "near-miss incidents" to your Supervisor and the SSO. The SSO will immediately inform a Con Edison Construction Manager/representative, and will also inform Parsons Project Manager within 4 hours. Near incidents COULD HAVE been an incident, but didn't because of a slight change in conditions or luck. However, they have the same causal factors as an incident, so it is just important to investigate them for identifying solutions to prevent recurrence and share lessons learned.

V. Safety, health, and other hazards at the site

A. Physical activity, working around heavy equipment, and Review specific AHAs as appropriate to the worker's activities. working in adverse weather conditions pose the greatest risk for hazards.

B. Chemicals of concern and associated hazards

   a. Non Aqueous Phase Liquids (NAPL)

      i. Oil/tar like appearance with a hydrocarbon odor. Often brown or black in color.

      ii. Associated with former MGP structures including gas holders, tar tanks, etc.

      iii. Avoid dermal contact as it can be a cause mild to severe skin irritation. Strong hydrocarbon odors are associated with NAPL. A PID will be utilized to screen for VOCs emitted from any NAPL that may be encountered. The VOC action level is sustained readings of 1 ppm. Above 1 ppm, draeger tubes will be utilized to screen for benzene. If sustained VOC readings exceed 5 ppm, or benzene levels exceed 1 ppm, Level C PPE will be donned. Prior to donning level C PPE, a cartridge change-out schedule will be developed and reviewed by Con Edison and Parsons Division Safety Manager for acceptance.

   b. Hydrogen Cyanide (HCN)

      i. Colorless gas or bluish white liquid with a bitter almond odor.

      ii. Often associated with purifier waste. As part of the MGP process, gases were passed through wood chip to remove impurities. These wood chips often turned to a bluish color and contain elevated levels of HCN.

      iii. A multi-gas meter (MultiRAE Plus) will be utilized to screen for HCN during investigation activities. The HCN action level is 5 ppm.

C. Other hazards
    a. Slip, Trips and Falls
        i. Take the time to observe your surroundings and make note of uneven surfaces and/or obstructions.
    b. Traffic
        i. The Site is currently owned by the City of Yonkers and is occupied by the Yonkers DPW storage yard. Don high visibility clothing/vests at all times and establish visible barriers around the work area.
    c. Heavy Equipment
        i. Establish non-verbal communication methods prior to starting work.
        ii. Always establish eye contact prior to entering the reach or swing radius for a piece of equipment.
        iii. Be aware of overhead obstructions (e.g. electrical lines, etc.)

VI. Proper use of personal protective equipment

A. Minimum Personal Protective Equipment – Level D
    a. Level D PPE shall include steel-toe boots, safety glass with side shields, reflective safety vests, and hard hat (not blue or white).
B. Additional Personal Protective Equipment
    a. Hearing protection must be worn when working within 25 feet of heavy equipment
    b. Appropriate hand protection must be donned during work activities (e.g. nitrile gloves when handling samples, abrasion resistance gloves when operating drilling equipment, etc.)
    c. Metatarsal foot protectors must be donned when sawing or jack hammering.

VII. Work practices by which the employee can minimize risk from hazards

A. Training - all personnel must receive site-specific training (e.g. site orientation) and attend/review daily toolbox safety meetings.
B. Contamination - no eating, drinking or smoking in the work zone.
C. Proper hygiene – wash hands and face before eating, drinking and smoking and only in designated areas.
D. "Buddy System" – use two-way radio/ cell phone for communicating and reporting emergencies.

VIII. Site Access

A. Restrict access around and near work site, including areas surrounding excavated areas and decontamination zones, to site employees. Barriers and tape may be used to demarcate the work areas.

IX. Safe use of engineering controls and equipment on the site

A. Mobile equipment – use horns to alert others, mirrors and back-up/travel alarm must be functional.

X. Decontamination procedures

A. Personnel Decontamination Procedures – Review Table 6.2.3.
   a. For work zones, equipment, PPE (e.g., coveralls, gloves, footwear) must be decontaminated or disposed before leaving the exclusion zone. Use boot wash stations when appropriate.

B. Equipment Decontamination Procedures
   a. Prior to starting work, all non-dedicated equipment will be either steam cleaned for washed with potable water and phosphate-free detergent (Simple Green).
   b. Sampling equipment will be rinsed with potable water followed by a deionized water rinse.

Exhibit 4.2 Project Orientation Attendance Sheet

(For All Parsons and subcontract employees on site)

I hereby confirm that site-specific health and safety training has been conducted by the site health and safety officer which included:

- Names of personnel responsible for site safety and health
- Safety, health, and other hazards at the site
- Proper use of personal protective equipment
- Work practices by which the employee can minimize risk from hazards
- Safe use of engineering controls and equipment on the site
- Acute effects of compounds at the site
- Decontamination procedures

For the following project:

(Project Title)	(Project Number)	(City, State)

Name (print)	Signature	Company	Date

Note: Maintain in Health & Safety Plan file on-site.

SECTION 5

PRE-FIELD WORK PHASE

5.1 RISK ANALYSIS AND SAFETY SPECIFICATION DEVELOPMENT

Procurement procedures require that a site-specific risk analysis be conducted before issuance of investigation and remediation request for proposals (RFPs). Using the site specific risk review checklist (Exhibit 5.1), the Project Manager leads this analysis, which documents existing exposures that may impact the work, surrounding facilities, equipment, workers, or the public at large. The analysis includes locating, documenting, and photographing items such as:

- Overhead and underground power lines
- Sewer and water utilities
- Existing building interferences
- Traffic
- Security
- Fences
- Water hazards
- Existing geographical and environmental conditions
- Investigation Derived Waste (IDW) Disposal
- Underground gas mains

Upon completion of the site specific risk analysis, high-risk activities are listed in the RFPs (as applicable), and bidders must describe controls and mitigation strategies in their proposals. The RFP notes that the list is representative and that the selected contractor must identify and control all work-related hazards.

Pre-field work safety activities include a detailed analysis of the scope of work and safety specifications in the prime contract, Parsons' project schedule and HASP, draft RFPs, and proposed subcontractor agreements. The Project's standard safety specifications are given below.

- Site Specific Risk Review Checklist – Exhibit 5.1
- Pre-Field Work Safety Meeting – Exhibit 5.2
- Project Technical and General Conditions Specification Review – Exhibit 5.3

5.2 DESIGN AND REMEDIAL ACTION REVIEW

Periodic remedial action reviews are held in accordance with the project management plan. The Project Safety Manager participates in the review to ensure that safety issues are adequately addressed. During the remedial action review, the discussion focuses on how work is sequenced, interferences with continuing operations, and safe work approaches. Specific activity hazards analyses conducted before the scheduled work can mitigate identified/presumed risks.

5.3 PRE-BID MEETING

Pre-bid meetings are required to ensure that bidders understand the RFP, including expectations for safety and health performance. Subcontractors must complete a Parsons Safety Evaluation package as outlined in Section 5.6, prior to attending a pre-bid meeting. During the pre-bid meeting, the Project Manager uses the Pre-Field Work Safety Meeting Checklist (Exhibit 5-1) to review project safety philosophy, principles, and Parsons requirements with all prospective bidders. Although this information is included in the RFP, the meeting reinforces the message.

5.4 SUBCONTRACTOR PREQUALIFICATION REVIEW

Project procurement procedures require that all subcontractors submit prequalification documentation for evaluation. The Procurement Manager or Division Safety Manager conducts the safety prequalification evaluation in accordance with the Parsons Contractor Safety Evaluation Package. Subcontractors will be used on this project as identified in Section 1.3.

5.5 PRE-FIELD WORK MEETING

The Project Manager holds a Pre-field Work meeting before the subcontractor begins work which may be combined with the Mobilization/Kickoff Safety Meeting (Section 5.8). During the safety review, the meeting participants review specific safety site/area, pre-bid risk analysis, competent person and site-specific safety plan requirements. In addition, the Project Manager obtains a safety point of contact and emergency management information. The attached Pre-Field Work Safety Meeting Checklist (Exhibit 5.2) is used by the Project Manager to document the meeting.

5.6 COMPETENT PERSON SUBMISSION REVIEW

Parsons and its subcontractors must identify OSHA-regulated and certified competent persons for work or tasks requiring that level of supervision. The Parsons personnel listed below will be assigned to the project and have the designated certifications.

Name	Job Title	40-hr HAZWOPER	8-hr HAZWOPER Supervisor	8-hr HAZWOPER refresher expires	Other training (i.e. excavation, confined space)
Zohar Lavy	Field Team Leader/Site Safety Representative	Sept. 2003	8/4/09	Jan. 2012	Confined Space, Wilderness First Aid, LPS

Parsons subcontractors supervisor and competent person sign and submit the attached Parsons subcontractor competent person document to the Parsons Project Manager (Exhibit 5.4). The supervisor of the competent person must certify in writing the specific competencies of the named competent person.

5.7 SUBCONTRACTOR SAFETY PLAN SUBMISSION REVIEW

All subcontractors must submit safety plans to the Parsons Project Manager and Division Safety Manager for review before they begin work on site. The plan will be reviewed for adequacy in accordance with the Subcontractor Safety Plan Review Sheet, which is included as Exhibit 5.5.

At least ten days before work begins, each subcontractor must submit two copies of its SSP to the Parsons Project Manager and Division Safety Manager for review. The Project Manager and Division Safety Manager review the SSP to ensure that it meets Parsons' requirements.

If a contractor needs assistance developing an SSP, the PSM provides an electronic copy of Parsons' sample SSP from Attachment A2 of the SHARP Management manual.

The SSP must address the following elements:

- Responsibility
- Compliance
- Communication
- Hazard assessment
- Accident exposure and investigation
- Hazard correction
- Training and instruction
- Recordkeeping

The SSP must include applicable requirements of Parsons HASP and OSHA CFR 1910/1926:

- Scope of work evaluation that describes the sequence of work and associated hazardous activities.
- Specific AHA.
- A project site employee orientation program that addresses location specific issues relative to safety and health.
- A site-specific emergency action plan that includes a list of key management contacts with home office, project site, home, and cellular telephone numbers.

- A site-specific medical emergency plan that lists qualified first aid personnel by name and includes copies of their current certificates.
- Key line management personnel, by name and position, who will enforce the SSP.
- Key competent or qualified personnel by name and copy of current documentation identifying specific certified competency (e.g., scaffolding, excavations, and fall protection).
- Written progressive disciplinary program for violations of safety procedures.
- Trenching and shoring plan (if applicable).
- HAZWOPER training documentation (if applicable).
- Contractor task hazard planning.
- Subcontractor weekly safety planning submission.
- Contractor workers daily task safety planning.

5.8 MOBILIZATION/KICKOFF SAFETY MEETING

The Project Manager, or designee, and SSO conduct the Mobilization/Kickoff Safety Meeting on the first day of subcontractor mobilization in the field and at the work site. The meeting includes documentation with the Mobilization/Kickoff Safety Meeting (Exhibit 5.6) and the completion of a Site-Specific Risk Review Checklist (Exhibit 5.1) combined with a walkthrough of the work area to locate items on the site specific risk review checklist.

Exhibit 5.1 Site-Specific Risk Review Checklist

Date:_____ Project or Location:_____

Risk/Hazard	Detail	Present
Employee Exposure	Hazardous chemicals	_____
	Lead	_____
	Asbestos	_____
	UXO	_____
	PCB	_____
	Airborne contaminants (dust, mists, fumes)	_____
	Other (specify)	_____
	_____	_____
Hazardous Waste	Handling, removal or storage of hazardous is required	_____
	_____	_____
Crane Work	Mobile cranes	_____
	Tandem lifts	_____
	Bridge cranes	_____
	Derricks	_____
	_____	_____
Powered Industrial Trucks	Forklift training is required	_____
Aerial Lifts	Hydraulic booms	_____
	Scissor lifts	_____
	Mobile scaffolding	_____
	_____	_____
Drilling		
Soil Sampling	Geoprobe	_____
	Split Spoon Sampling	_____
Electrical	Staging area	_____

Risk/Hazard	Detail	Present
Personal Protective Equipment	Work activities or work site requires hearing protection	_____
	Work activities or location requires using respirators	_____
	Work activities or location requires special protective clothing	_____
	_____	_____
Public Exposure	Work activities or location requires special precautions to protect the public	
	_____	_____
Permits	required	_____
	Hot permit	_____
Other Exposures	Other exposure or high-risk activities (list)	
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

Exhibit 5.1 Site-Specific Risk Review Checklist

Notes: _____

_____

Reviewed by: _____ Title: _____ Date: _____

Exhibit 5.2 Pre-Field Work Safety Meeting

Date:		Project/Location:	
Subcontractor Representative:		Parsons Project Manager:	
Phone:		Phone:	
Subcontractor Safety Rep:		Parsons Safety Manager:	
Phone:		Phone:	

The following items were identified and reviewed with the subcontractor.

Health & Safety		Medical	
Site-Specific Safety Plans/Model Program		Substance Abuse Screening	
Competent/Qualified Person Documentation		Emergency Procedures	
Safety Audits/Inspections		Site Security	
Subcontractor Responsibilities		Smoking Policy	
Site Orientation Requirements		Medical Services Requirements	
Premobilization Safety Meeting/Date		Treatment Locations/Addresses/Phone List	
Crane Inspection Certification		Other	
Personal Protective Equipment (PPE)			
Environmental Hazards			
Other			

Additional Notes/Comments:

Exhibit 5.3 Project Technical and General Conditions Specification Review

Date: Project/Location:
Project Manager: Safety Manager:

The project specification review has revealed the following high-risk activities. Activities checked must be followed up during intrusive work with training, written plans and/or a specific Activity Hazard Analysis. This list should be reviewed with prospective bidders during the pre-bid meeting.

Excavations/Trenching		Demolition	
Powered Industrial Trucks, Fork Lifts		Heavy Hauling	
Work Involving Hazardous Materials		Concrete	
Electrical Tie-ins/Lockout–Tagout		Work Adjacent to Production Areas	
Drilling		Site Security/Visitor Control/Public Exposure	
Underground, Caissons, Cofferdams		Process Safety Management (PSM)	

High Risk Activities and Other Project Concerns:

Exhibit 5.4 Subcontractor Competent Person Form

Definition

A competent person is a person having the ability to recognize existing and predictable hazards and having the authority to correct them.

Responsibility

The designated subcontractor competent person is responsible for recognizing and correcting safety risks/hazards. This person has the authority to stop work in a potential safety concern on the jobsite. This Subcontractor Manager and competent person are considered the contacts for Parsons projects.

This form must be completed by each subcontractor's manager and the subcontractor's designated competent persons. ***Where a subcontractor is responsible for multiple crafts, it will be necessary to maintain additional designated competent persons and forms.*** Each subcontractor on a Parsons project must submit this completed form to the Parsons Construction Manager before beginning work on the project and must update it any time the designated representative(s) changes.

Acknowledgment

I,_____ representing, _____
Subcontractor Manager Subcontractor Company Name

have assigned _____ to be the competent person in the areas indicated and I _____ acknowledge that this individual has been thoroughly trained and is experienced in hazard recognition and has the authority to stop work and correct hazards in the event of a potential hazardous or imminent danger situation.

_____ _____
Subcontractor Manager (Signature) Date

I, _____ acknowledge that I have been thoroughly trained and have the experience
Competent Person (Signature)

to perform the duties as the _____competent person in the areas marked below and
Subcontractor Company Name

I understand that I have the responsibility and authority to correct hazards and to stop work in the event of a potential hazardous or imminent danger situation.

_____ Asbestos	_____ Hearing Protection	_____ Welding/Cutting
_____ Respiratory Protection	_____ Scaffolding	_____ Rigging
_____ Cranes/Derricks	_____ Electrical	_____ Lead
_____ Fall Protection	_____ Ladders	_____ Excavations/Trenches
_____ Demolition	_____ Tunnels/Shafts	_____ First Aid/CPR
_____ Underground Const.	_____ Material/Personnel Hoists	_____ Concrete/Forms/Shoring
_____ Marine Work/Diving	_____ Bolting/Riveting/Fitting	_____ Mechanical Demolition
_____ Sediment Sampling	_____ Permits	_____

PARSONS

Exhibit 5.5 Subcontractor Safety Plan Review

Date: _____ Project/Location: _____

Subcontractor: _____ Parsons Safety Manager: _____

The information provided here is based on a review of a subcontractor's safety plan. Areas identified as incomplete are reevaluated and modified based on the standards in the contract specifications and the Project Safety Program manual. Subcontractors resubmit corrected sections of the SSP to the Parsons Construction Manager within one week of receiving review documentation.

Section	Complete	Incomplete	Section	Complete	Incomplete
Site Specific Safety Plan			Specific Activity Hazard Analysis (AHA)		
Responsibilities assigned			Project Site Employees Orientation Program		
Compliance			Emergency Action Plan		
Hazard Communication			Site Specific Medical Emergency Plan		
Hazard Assessment			Identification of Key Line Personnel		
Accident Investigation			Identification of Competent & Qualified Personnel		
Hazard Correction			Written Progressive Disciplinary Program		
Training and Instruction			Written Trenching and Shoring Plan (if applicable)		
Recordkeeping			Written 100% Fall Protection Plan (if applicable)		
Scope of Work Evaluation			Other		

Additional Comments:

_____

_____

_____

_____

Reviewed by:

Name Title

_____ _____ _____

Exhibit 5.6 Mobilization/Kick Off Safety Meeting Checklist

Date: _____ Project/Location: _____

CM Representative: _____Subcontractor Representative:_____

The following project site safety, health, and security requirements, procedures, and hazards have been identified and reviewed with the subcontractor.

SSP/Emergency Planning/Response Plan			Demolition	
Competent/Qualified Person			Personal Protective Equipment	
Hazardous Materials/Waste			Cranes/Hoists/Annual Inspection Certificate	
Vehicle/Heavy Equipment			Overhead Power Lines	
Lockout/Tagout			Confined Spaces (Permit/Non-Permit)	
Electrical			Excavations/Trenching	
Fire Protection			Site Security/Visitor Control/Public Exposure	
Hot Work/Welding/Cutting			Process Safety Management (PSM)	
Fall Protection/Guardrails/ Scaffolding/Ladders			Permits (Excavation/Scaffolding/Demolition/Traffic/Confined Space/Hot/etc.)	
Drilling			Electrical and other utilities for stage area	
Sediment Sampling – Vibracore/grab samples				

Additional Project Concerns:

_____

_____

_____

_____

_____

Other Attendees:

Name	Title	Company

SECTION 6

INVESTIGATION PHASE

6.1 SITE RISK ANALYSIS

Before work begins, Project Managers lead a team that performs a risk analysis at each work site to identify hazards that require specific control measures. During weekly progress meetings, the FTL and subcontractors submit written summaries of upcoming work tasks and associated risks and control measures to the Project Manager using Exhibit 6.1 located at the end of this section. The weekly summaries identify upcoming mobilization or demobilizations tasks, audits and inspections, competent person changes, training and new activities requiring an AHA. Subcontractors add activities to these summaries at least two weeks in advance of the work. Potential hazards that may be encountered during the pre-design investigation are listed below. The AHA for the work activities are found in Attachment C.

6.1.1 Chemical Hazards

Health hazards and the exposure limits associated with chemicals of concern are presented in Table 6.1. These hazards can be encountered during subsurface and intrusive investigation in and around the Site. Parsons will perform both real time breathing zone air-monitoring and CAMP monitoring, using a photoionization detector, a multi-gas meter, and a dust monitor. The real time data will be recorded in the field book by Parsons field investigator/SSO, following each observation, during intrusive activities and sampling activities. CAMP monitoring data will be downloaded daily and kept as an electronic file.

6.1.2 Physical Hazards

Physical hazards that may be encountered during daily field activities include but are not limited to heat stress, cold-related illness, electrocution, ultra-violet radiation, and noise hazards.

Parsons will not access any manholes or vaults. Workers on this project will not be entering into confined spaces, which may include, but not limited to vaults, test pits, trenches and waste disposal containers.

Asbestos:

If potential asbestos containing material is encountered during investigation activities, follow the procedures listed below.

- Stop investigation activities and notify all site workers of a temporary stand down
- Notify Con Edison CM

- Notify Parsons Project Manager (Shane Blauvelt) or, in his absence, notify Parsons Program Manager (Dan Martoccia)
- Cover the exposed material with plastic and secure plastic with sand bags or equivalent. Minimize disturbance of material.
- Leave undisturbed (un-excavated) material that may be present in-place. Cover with plastic if safe to do so (i.e., shallow test pit excavation)
- Await further direction from Con Edison management regarding characterization and management of exposed material.

Heat Stress:

Heat stress is one of the most common (and potentially serious) illnesses that affect field personnel. When site personnel are engaged in operations involving hot environments, a number of physiological responses can occur which may seriously affect the health and safety of the workers. Heat stress can result in health effects ranging from transient heat fatigue to serious illness or death. Heat stress can be eliminated or controlled through the use of a comprehensive heat stress prevention and monitoring program.

Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72^{o}F or above. Monitoring frequency should increase as ambient temperature increases. To monitor the workers, be familiar with the following heat-related disorders and their symptoms:

- Prickly Heat (Heat rash)
- Painful, itchy red rash. Occurs during sweating, on skin covered by clothing.
- Heat Cramps
- Painful spasm of arm, leg or abdominal muscles, during or after work.
- Heat Exhaustion
- Headache, nausea, dizziness. Cool, clammy, moist skin. Heavy sweating. Weak, fast pulse. Shallow respiration, normal temperature.
- Heat Fatigue
- Weariness, irritability, loss of skill for fine or precision work. Decreased ability to concentrate. No loss of temperature control.
- Heat Syncope (Heat Collapse)
- Fainting while standing in a hot environment.
- Heat Stroke
- Headache, nausea, weakness, hot dry skin, fever, rapid strong pulse, rapid deep respirations, loss of consciousness, convulsions, coma. **This is a life threatening condition.**

- Do not permit a worker to wear a semi-permeable or impermeable garment when they are showing signs or symptoms of heat-related illness.

To monitor the worker, measure:

- Heart rate. Count the radial pulse during a 30-second period as early as possible in the rest period.
- If the heart rate exceeds 100 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same.
- If the heart rate still exceeds 100 beats per minute at the next rest period, shorten the following work cycle by one-third. A worker cannot return to work after a rest period until their heart rate is below 100 beats per minute.
- Oral temperature. Use a clinical thermometer (3 minutes under the tongue) or similar device to measure the oral temperature at the end of the work period (before drinking).
- If oral temperature exceeds 99.6oF (37.6oC), shorten the next work cycle by one-third without changing the rest period. A worker cannot return to work after a rest period until their oral temperature is below 99.6oF.
- If oral temperature still exceeds 99.6oF (37.6oC) at the beginning of the next rest period, shorten the following cycle by one-third.
- Do not permit a worker to wear a semi-permeable or impermeable garment when oral temperature exceeds 100.6oF (38.1oC).

Prevention of Heat Stress - Proper training and preventative measures will aid in averting loss of worker productivity and serious illness. Heat stress prevention is particularly important because once a person suffers from heat stroke or heat exhaustion, that person may be predisposed to additional heat related illness. To avoid heat stress the following steps should be taken:

- Adjust work schedules.
- Mandate work slowdowns as needed.
- Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided.
- Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods.
- Maintain worker's body fluids at normal levels. This is necessary to ensure that the cardiovascular system functions adequately. Daily fluid intake must approximately equal the amount of water lost in sweat, id., eight fluid ounces (0.23 liters) of water must be ingested for approximately every eight ounces (0.23 kg) of weight lost. The normal thirst mechanism is not sensitive enough to ensure that enough water will be

drunk to replace lost sweat. When heavy sweating occurs, encourage the worker to drink more. The following strategies may be useful:

- Maintain water temperature 50o to 60oF (10o to 16.6oC).
- Provide small disposal cups that hold about four ounces (0.1 liter).
- Have workers drink 16 ounces (0.5 liters) of fluid (preferably water or dilute drinks) before beginning work.
- Urge workers to drink a cup or two every 15 to 20 minutes, or at each monitoring break. A total of 1 to 1.6 gallons (4 to 6 liters) of fluid per day are recommended, but more may be necessary to maintain body weight.
- Train workers to recognize the symptoms of heat related illness.

Cold-Related Illness:

Cold weather conditions can be hazardous to the safety and health of employees, endanger the stability of the body system, and cause conditions such as hypothermia and frostbite. It is vitally important that adequate precautions be taken to alleviate the effect of cold environments and to ensure that personnel can work safely and efficiently.

Prevent the deep body temperature from dropping below 36^0 C (96.8^0 F) and the core temperature from dropping below 35^0C (95^0F).

The following factors may contribute to a cold injury:

- Age
- Contact with wetness or metal
- Exposure to high winds
- Exposure to humidity
- General health
- Inadequate clothing

The following physical conditions worsen the effects of cold exposure:

- Allergies
- Excessive drinking
- Excessive smoking
- Specific drugs and medicines
- Vascular disease (e.g., Raynaud's phenomenon, acrocyanosis)

To monitor cold stress:

- At air temperatures below 20F (-10C) measure and record the wind chill index at least every 4 hours. The equivalent wind chill temperature and frostbite precautions will be determined using the Wind Chill Index (Table 6.1.3).

- In indoor workplaces, measure and record the wind speed at least every 4 hours when the rate of air movement exceeds 5 mph (2.2 meters per second); in indoor work situations, measure and record the wind speed with the air temperature.
- The wind chill index takes into account the wind velocity. If no anemometer is available, use the following to estimate wind speed:
    - 5 mph: light flag moves
    - 10 mph: light flag fully extended
    - 15 mph: raises newspaper sheet
    - 20 mph: causes blowing and drifting snow

To prevent cold stress:

- Use general or spot heating to increase temperature at the site.
- If work is being performed with bare hands for 10 or more minutes, to keep the worker's hands warm supply warm air jets, radiant heaters, or contact warm heaters.
- If the air velocity at the site is increased by the wind, draft, or ventilation equipment, shield the work area.
- At temperatures below 40^0F, cover metal handles of tools and control bars with thermal insulation.
- When necessary, substitute, isolate, relocate, or redesign equipment and processes to reduce cold stress.
- Use power tools, hoists, cranes, and lifting aids to reduce the metabolic work load.
- If work is performed continuously in an equivalent chill temperature of 30^0F or below, supply heated warming shelters such as tents, cabins, automobiles, or trucks and encourage workers to use them.

Table 6.1.3 - WIND CHILL INDEX												
Estimated Wind Speed (mph)	Actual Temperature Reading (^{o}F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature (^{o}F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
Wind Speeds greater than 40 mph have little additional effect	LITTLE DANGER in < 1 hr with dry skin. Maximium danger of false sense of security.				INCREASING DANGER danger of freezing exposed flesh within 1 minute.			GREAT DANGER flesh may freeze within 30 seconds.				

Electrocution:

All drilling and excavation equipment will be kept a safe distance from live sources of electricity. At a minimum, a 10' clearance from any overhead electric lines (50kV or less) will be maintained. For electrical lines over 50kV, four-tenths of an inch (0.4 in.) additional for every 1 kV over 50kV will be added. Drill rods and other metal objects will not be raised above the height of the rig. The length of drill rods will be less than the distance to the nearest live electrical source so if the drill string is dropped it cannot fall across electrified equipment. All subsurface and overhead electrical sources and lines will be identified before digging, drilling, or sampling activities commence. For any intrusive digging tool such as, but not limited to, digging bars and post hole diggers shall either have electrically non-conductive handles and/or those workers using tools that have electrically conductive handles wear 1 kV dielectric gloves that are currently tested and stamped with the expiration date, with leather protectors over them. Proximity to electric lines up in excess of 1,000 volts will require higher rated dielectric protection – and possibly another control method to prevent contact with live electric. For any intrusive activities performed within seven feet of a critical utility (e.g., electric feeder, gas and water mains, fiber optic cables, etc.), those utilities shall first be exposed by manual or vacuum excavation methods. No saw-cutting will be permitted over any oil-filled pipe-type electric feeders (i.e., oil-o-static) no matter what their depth. Where possible and/or practical, electric lines and sources will be deactivated or insulated before digging, drilling, or sampling activities are commenced. Ground fault circuit interrupters (GFCIs) will be utilized on electrical equipment, and extension cords will be inspected for splices, taps, and breaks in its outer cover insulation. If splices, taps, or breaks are noted on an extension cord, it shall not be used and it will either be removed form the site or cut up and rendered unusable.

Ultraviolet Radiation:

The sun emits ultraviolet radiation (UV) as heat and light. The skin's natural defense mechanisms attempt to reject the UV by distributing melanin pigmentation where needed. However, overexposure to direct sunlight can cause inflammation or blistering of the skin (sunburn). The use of sunscreen, long sleeve shirts, and wide brim hats can help prevent sunburn. Chronic exposure to UV radiation is known to cause skin cancer. In case of sunburn, do not apply burn ointment, cold cream, or butter to relieve pain. Use a dry dressing and get medical attention for severe, extensive sunburns.

Noise:

Operating heavy equipment can be a potential noise source. Hearing protection will be worn by personnel operating heavy equipment, or other personnel within 25 feet of the equipment. Earplugs will be provided on-site for personnel who may be working in or around heavy equipment.

If noise hazards are of concern for a particular project (e.g. exceed 85 decibels over an 8-hour time weighted average), appropriate hearing protection should be used. The noise level will determine the appropriate type of hearing protection needed (e.g., earplugs or ear muffs).

6.1.3 Biological Hazards

Biological hazards can result from encounters with mammals, insects, snakes, spiders, ticks, plants, parasites, and pathogens. Mammals can bite or scratch when cornered or surprised. The bite or scratch can result in local infection or infection with systemic pathogens or parasites. Insect and spider bites can result in severe allergic reactions in sensitive individuals. Exposure to poison ivy, poison oak or poison sumac results in skin rash. Ticks carry a number of serious diseases. Dead animals, organic wastes, and contaminated soil and water can harbor parasites and pathogens. Most of the field activities will occur in a densely populated area; however, the possibility of encountering biological hazards still exists.

Poison Ivy:

Some of the most common and severe allergic reactions result from contact with poison ivy, poison oak, and poison sumac. Contact with the poisonous sap of these plants produces a severe rash characterized by redness, blisters, swelling, and intense burning and itching. The victim also may develop a high fever and may be very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

Ticks:

Ticks may be common during the spring and summer. Two types of ticks may be encountered: the dog tick and the deer tick. The dog tick is the larger, more common tick. After biting, the dog tick will remain attached to the victim until engorged with blood. Dog ticks may transmit rocky mountain spotted fever and other diseases. The deer tick is much smaller, ranging

from poppy seed to grape seed size, and does not remain attached to the skin for very long after biting. Deer ticks can transmit Lyme disease, which can have serious, long-term health effects if left untreated. Lyme disease is characterized by a bulls-eye type rash; light in the center with an outer red area. Flu-like symptoms may also occur. These signs may occur at different times and the rash may not appear. If you discover any bites on the skin, wash the affected area and seek medical attention if a rash or flu-like symptoms appear.

Bees, Wasps, Hornets, and Other Insects:

Symptoms of an insect bite are normally a sharp, immediate pain in the body part bitten. Poisonous insects and insect-like creatures that may be encountered at the Site include the following:

- Bees (honeybees, bumble bees, wasps, and hornets);
- Caterpillars; and
- Beetles/Bugs

Spiders:

The two poisonous spiders that may be encountered at the Site are the Brown Recluse and the Black Widow. The Brown Recluse is up to one inch long with a violin or "fiddle" shaped mark on the top of the head. The Black Widow is a smaller, bulbous black spider with a red hourglass-shaped mark on the underside.

Reactions to a Brown Recluse spider bite include mild to severe pain within two to eight hours and a star shaped area around the bite within three to four days. Significant tissue death and loss accompanies a Brown Recluse spider bite. Reactions to a Black Widow spider include intense pain at the site of the bite after approximately 15 to 60 minutes, followed by profuse sweating, rigid abdominal muscles, muscle spasms, breathing difficulty, slurred speech, poor coordination, dilated pupils, and generalized swelling of face and extremities.

Persons that have been bitten by a Brown Recluse or Black Widow spider should be immediately transported to a hospital. The spider should be collected (if possible) for confirmation of the species.

Bloodborne Pathogens:

Bloodborne pathogens include human immunodeficiency virus (HIV), hepatitis B virus (HBV), hepatitis C virus (HCV), and others. All occupational exposure to blood or other potentially infectious materials (OPIM) place workers at risk for infection with bloodborne pathogens. OSHA defines blood to mean human blood, human blood components, and products made from human blood. Other potentially infectious materials (OPIM) means: (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ

(other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

Understanding simple precautions can greatly minimize your chances of contracting a bloodborne disease. Practicing universal (standard) precautions refers to assuming that any and all blood or body fluids are contaminated and taking all safety measures to avoid transmission of a disease. Properly cover open cuts and skin abrasions. Never eat, drink, store food, smoke, handle contact lenses or apply cosmetics or lip balm in potential exposure areas. Wash hands and exposed skin immediately after an exposure incident, and after removing gloves. Utilize engineering controls to reduce exposure to bloodborne pathogens by removing, eliminating or isolating the hazard. Wear gloves, eye/face protection and mask when working with blood or a splash potential. Check gloves for tears, holes or punctures, and remove immediately when penetrated. Clean up spills and body fluids by carefully covering with a paper towel, gently pouring a 10% bleach solution over towels, and leaving it in place for 10 minutes. Use mechanical means, not your hands to pick up broken glass that is tainted with blood. Dispose of blood products, medical waste, gloves and equipment in properly labeled and approved biohazard containers. Clean wounds with soap and water. Flush eyes and mucous membranes with water or normal saline solution. Notify the site safety representative or your supervisor immediately and complete an incident report.

6.1.4 Environmental Hazards

Slip, Trip, and Fall Hazards:

Site workers may encounter slip, trip, and fall hazards due to uneven surfaces at sidewalk/pavement interfaces and obstructions protruding from the ground, such as:

- Holes, pits, tree roots, or ditches.
- Slippery surfaces.
- Steep grades.
- Uneven grades.
- Sharp objects, such as nails, metal shards, and broken glass.

Thunderstorm Hazards:

During the course of field operations, severe weather may be encountered, including thunderstorms, lightning, rainstorms, and other unsafe weather conditions (i.e., high winds and tornadoes). Criteria indicating that severe weather conditions may exist include:

- High winds (greater than 40 miles per hour – depending on the tree cover and other site specific conditions);
- Tornado watch or warning in place for the area including the site;

- Visible lightning;
- Extreme temperatures (e.g., greater than 100 degrees F); or
- Heavy rainfall that makes footing treacherous and visibility difficult.

If severe weather is approaching, the SSO and FTL will determine if weather conditions justify a stoppage of work activities. The SSO and FTL will also determine if weather conditions allow for restart of work activities following the severe weather. In general, work will not commence for 20 minutes after any lightning event. Monitor weather radio and if possible monitor weather radar via internet.

6.1.5 Fire Hazards

Although fires and explosions may arise spontaneously, they are more commonly the result of carelessness during the conduct of site activities, such as moving drums, mixing/bulking of site chemicals and during refueling of heavy or hand held equipment. Some potential causes of explosions and fires include:

- Mixing of incompatible chemicals, which cause reactions that spontaneously ignite due to the production of both flammable vapors and heat;
- Ignition of explosive or flammable chemical gases or vapors by external ignition sources;
- Ignition of materials due to oxygen enrichment;
- Agitation of shock or friction-sensitive compounds;
- Sudden release of materials under pressure.

6.1.6 Site Characterization Activity Hazard Analysis

(To be updated as new task/activities are required.)

- Activities - Field
- Site Visit or Site Walk
- Operation- Motor Vehicle
- Operation- Heavy Equipment or Machinery
- Fueling- Motor Vehicle
- Fueling- Heavy Equipment*
- Survey- Geophysical Investigation*
- Sampling- Soil
- Sampling- Water
- Sampling- Processing

- Decontamination- Large Equipment
- Decontamination- Personnel
- Decontamination- Portable Tools
- Utility Clearance Keyholing

* Indicates that these work activities will be primarily accomplished by subcontractors who will submit an updated AHA (to be added).

6.2 FIVE HAZARD CONTROL MEASURES – ORDER OF PRECEDENCE

Site hazards and hazards resulting from investigation and remediation activities are controlled using one or more of the control measures listed below. The order of precedence is as follows:

6.2.1 Engineer/Design to Eliminate or Minimize Hazards

A major component of the design or planning phase is to select appropriate safety features to eliminate a hazard and render it fail-safe or provide redundancy using backup components.

Exclusion Zone

The exclusion zone will be established at the site for each intrusive activity. The zone will be defined by temporary posts/stanchions and caution tape. Unprotected onlookers should be located 50 feet upwind of drilling or environmental sampling activities. In the event that action levels are exceeded in the breathing zone, all personnel in the exclusion zone must stop work, evacuate, evaluate the situation. If the actions levels continue to exceed recommended limits, upgrade the level of personal protective equipment on properly trained and certified crew members to continue work.

Decontamination Zone

A decontamination zone will be established between the exclusion zone and the support zone. This zone will also be delineated utilizing stanchions and caution tape, and will be up to 10 feet in width. Personnel decontamination must take place prior to leaving the decontamination area and prior to entering any personnel hygiene facilities, or before eating, drinking, or smoking. NOTE: Smoking is prohibited anywhere on site at all times during the work shift. Any decontamination water will be contained for appropriate disposal. Soiled PPE will be removed and placed in drums.

Support Zone

A support zone will be established. Break areas, operational direction and support facilities (to include supplies, equipment storage and maintenance areas) will be located in this area. No equipment or personnel will be permitted to enter the support zone from the exclusion zone without passing through the personnel or equipment decontamination zone.

6.2.2 Guard the Hazard

Hazards that cannot be eliminated by design must be reduced to an acceptable risk level by safety guards or isolation devices that render them inactive.

6.2.3 Provide Warnings

Hazards that cannot be totally eliminated by design or guarding are controlled through using a warning or alarm device.

Exposure/Air Monitoring Program

An environmental and personal monitoring program will be developed based on site-specific information for the project. This plan describes general information on wind direction monitoring, volatile organic compound (VOC) monitoring, dust monitoring, and hydrogen cyanide monitoring. The corresponding monitoring equipment will be calibrated at the start of each day and Parsons employees will follow manufacturer's calibration procedures that will be provided on site with monitoring equipment.

Wind Direction Monitoring

A wind direction indicator (such as survey flagging tied to a stake) will be erected at every active work site. This will enable the SSO and on-site personnel to determine upwind locations necessary for proper health and safety procedure implementation, (work areas relative to the excavation) and, if necessary, evacuation procedures.

Volatile Organics Monitoring

Field work at sites with VOC contamination shall use photoionization detector (PID) (OVM-580B/580S or equivalent) equipped with a 10.6e V lamp or other monitoring instrument deemed appropriate by the PSM to monitor VOC concentrations in the working area. Readings detected by the PID or other instrument will be used to determine the appropriate levels of protection. Action levels for VOCs and particulates are presented in Table 6.2.1.

Cyanide Vapor Monitoring

A multi-gas meter (VRae) calibrated to detect hydrogen cyanide or other monitoring instrument deemed appropriate by the PSM to monitor hydrogen cyanide in the working areas will be utilized. Readings detected by the analyzer or other instrument will be used to determine the appropriate levels of protection. Action levels are presented in Table 6.2.1.

Carbon Monoxide Monitoring

A multi-gas meter (VRae) calibrated to detect carbon monoxide or other monitoring instrument deemed appropriate by the PSM to monitor carbon monoxide in the working areas

will be utilized. Readings detected by the analyzer or other instrument will be used to determine the appropriate levels of protection. Action levels are presented in Table 6.2.1.

Dust Monitoring

If site activities generate sustained (15 minutes), visible dust due to wind erosion of soils, a personal DataRAM meter will be obtained to monitor worker breathing zones for total dust levels. Readings will consider upwind background dust levels, as well as diesel particulate emissions from heavy equipment before upgrades to higher levels of PPE are initiated as shown in Tables 6.2.1 and 6.2.2.

Community Air Monitoring Plan

Community air monitoring will be conducted in compliance with the New York State Department of Health's (NYSDOH's) Generic Community Air Monitoring Plan (CAMP). Real-time air monitoring for volatile compounds and particulates at the perimeter of the hot zone will be performed as described below.

VOC Monitoring

Periodic monitoring for VOCs will be conducted during non-intrusive activities such as the collection of soil, sediment, and groundwater samples. Periodic monitoring may include obtaining measurements upon arrival at a location, while opening a monitoring well cap, when overturning soil, when bailing/purging a well, and upon leaving the location. In some instances, depending on the proximity of exposed individuals, continuous monitoring may be conducted during these activities.

Continuous monitoring for VOCs will be conducted during all ground intrusive activities (i.e., hand clearing, soil boring and monitoring well installation). Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations. VOCs will be monitored continuously at the downwind perimeter of the hot zone. Monitoring will be conducted with a PID equipped with a 10.6 eV lamp capable of calculating 15-minute running average concentrations.

- If total organic vapor levels exceed 5 ppm above background for the 15-minute average at the perimeter, work activities will be temporarily halted and monitoring continued. If levels readily decrease (per instantaneous readings) below 5 ppm above background, work activities will resume with continued monitoring.
- If total organic vapor levels at the downwind perimeter of the hot zone persist at levels in excess of 5 ppm above background but less than 25 ppm, work activities will be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. The corrective actions may include physically covering the source area and/or application of foam. After these steps work activities will resume provided that the total organic vapor level 200 feet downwind of the hot zone or half the distance to the nearest potential receptor or residential /commercial structure, whichever

is less – but in no case less than 20 feet, is below 5 ppm above background for the 15-minute average.

- If the total organic vapor level is above 25 ppm at the perimeter of the hot zone, activities will be shutdown.

All 15-minute readings will be recorded and available for New York State Department of Environmental Conservation (NYSDEC) and NYSDOH personnel to review. Instantaneous readings, if any, will also be recorded.

Particulate Monitoring

Particulate concentrations will be monitored continuously at the downwind perimeter of the hot zone with a portable real-time particulate monitor capable of measuring particulate matter less than 10 micrometers in size and capable of integrating over a period of 15 minutes (or less). The equipment will include an audible alarm to indicate exceedence of the action level. Upwind concentrations will be measured at the start of each workday and periodically thereafter to establish background concentrations.

- If the downwind particulate level is 100 micrograms per cubic meter ($\mu g/m^3$) above background for the 15-minute period or if dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression provided that the downwind particulate level does not exceed 150 $\mu g/m^3$ above background and no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, the downwind particulate level is greater than 150 $\mu g/m^3$ above background, work will be stopped and a re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other controls are successful in reducing the downwind particulate level to within 150 $\mu g/m^3$ of the background (upwind) level and in preventing visible dust migration.

All readings will be recorded and be available for NYSDEC and NYSDOH personnel to review.

6.2.4 Provide Special Procedures or Training

When design, guarding, or warnings cannot eliminate hazards, subcontractors must develop procedures, training, and audits to ensure safe completion of work. Training cannot be a substitute for hazard elimination when life-threatening hazards are present.

Decontamination Procedure

Level D or Modified Level D protection will be worn for initial entry on-site and initially for all activities. If air concentrations exceed action levels, workers will employ engineering controls first before upgrading the level of protection. Personal decontamination may be necessary for activities involving the use of Level C or Level B PPE. Table 6.2.3 includes the proper decontamination procedures that must be implemented if chemical contamination is

present and PPE protection greater than Level D is used. The SSO will determine the proper procedures for decontamination based on the work activities and amount of contamination.

Temporary wash facilities will be provided in the decontamination zone for personnel hand/face washing. This may be substituted with disposable wet towels based on the weather conditions. Waste water and solid waste generated during decontamination procedures will be transferred to appropriate 55 gallon drums and will be labeled as IDW. For this project we anticipate IDW will be non-hazardous and that an onsite waste storage area will be available. Parsons will collect representative waste characterization samples for laboratory analysis and arrange for transportation and disposal of IDW periodically using a Con Edison approval transporter (Auchter Industrial Vac Service, Inc.) and TSDF(s) (TBD based on waste characterization results).

Spill Prevention and Control

All heavy equipment and vehicles will be parked/staged on full length/width poly sheeting. At least one spill kit including "speedy dry", sorbent pads and sorbent booms/sausage booms will be available on site throughout the project. The kit will be containerized in a clean rubber garbage containers labeled "spill kit" and will be kept in the Parsons field vehicle near the work area. When heavy equipment is working in close proximity to catch basins, manholes, transformer vaults, etc., oil-absorbent booms ("sausage booms") will be placed at grade around the structure (i.e., ringing the structure). Fueling of equipment on site shall be performed over polyethylene sheeting with a currently inspected ABC or BC fire extinguisher, 10# minimum, nearby and ready for use.

In the event of a spill, employees involved in or witnessing the spill must immediately report it to the responsible Field Team Leader (FTL) or Site Safety Officer (SSO), who in turn immediately relays the report to the Parsons Project Manager, Shane Blauvelt, (315) 451-9560. A Con Edison representative will also be notified immediately in the event of any chemical/oil spill incidents.

6.2.5 Provide Personal Protective Equipment

To protect workers from injury, the last method in the order of precedence is the use of personal protective equipment, such as hard hats, gloves, eye protection, and other protective equipment with the understanding that bulky, cumbersome, and heavy personal protective equipment is often discarded or not used, rendering this method ineffective without proper controls. Emergency eyewash stations will be kept in the cab of the truck/drill rig to keep it from freezing and remain operational at all times.

PPE Selection

The selection and use of PPE at individual sites will be initially Level D unless specified by the SSO. The unknown nature of hazardous waste site work and the possibility of changing conditions during the work may require changes in the personal protective equipment. When changes in personal protective equipment become necessary, these changes shall be made in

accordance with the action levels and criteria set forth in this plan. As a rule, levels of PPE will need to be reassessed if any of the following occur:

- Appearance of previously unidentified or anticipated chemical conditions or task hazards (this may require a HASP Addendum for Con Edison review and acceptance prior to proceeding).
- Ambient weather conditions change which impact the use of assigned PPE.
- A new task is introduced or a previously assigned and evaluated task is expanded in scope.

If work tasks are added to the Scope of Work (SOW) after approval of this HASP, the Division Safety Manager or PSM shall identify and assess the task hazards, complete and sign an AHA form and designate the level and type of PPE to be used during conduct of the task. The new AHA, along with any other additions, changes or modifications to the approved HASP shall be approved by the Division Safety Manager, PSM and/or the Project Manager. Subsequently, these modifications, resulting in a HASP Addendum, shall be reviewed and accepted by Con Edison's Construction EH&S representative, prior to proceeding.

Initially for all activities, personnel will be in Level D protection. This includes safety glasses with permanent side shields, steel toe boots, hearing protection (e.g. when working within 25 feet of heavy equipment – the FTL or SSO may decide to perform noise monitoring if she determines that quantitative measurement is necessary), metatarsal foot protectors (when sawing or jack hammering), long pants or jeans, reflective traffic safety vests (when working on streets, sidewalks, parking lots, or driveways), disposable boot covers (when in contact with disturbed soil), short or long sleeve shirts, nitrile outer and PVC inner gloves (required during all sampling activities), and hard hat (cannot be blue or white). Required equipment for Levels B, C, and D are detailed in Table 6.2.2, Description of Personal Protective Equipment and Levels of Protection.

The organic vapor monitor and multi-gas meter will be the primary instruments for determining contaminant concentrations that may trigger a change in respiratory protection during intrusive and sampling activities. Other instruments such as Draeger tubes, miniRAMs and/or other particulate air monitors may also trigger changes in PPE. Action levels for changes in personal protection equipment are shown in Table 6.2.1.

In the event that personal protective equipment is ripped or torn, work shall stop and PPE shall be removed and replaced as soon as possible.

OSHA Requirements for Personal Protective Equipment:

All personal protective equipment must meet the following OSHA standards:

Type of Protection	Regulation	Source
Eye and Face	29 CFR 1910.133 29 CFR 1926.102	ANSI Z87.1-1968

Respiratory	29 CFR 1910.134 29 CFR 1926.103	ANSI Z88.1-1980
Head	29 CFR 1910.135 29 CFR 1926.100	ANSI Z89.1-1969
Foot	29 CFR 1910.13629 CFR 1926.96	ANSI Z41.1-1967

ANSI = American National Standards Institute

Both the respirator and cartridges specified for use in Level C protection must be fit-tested prior to use in accordance with OSHA regulations (29 CFR 1910.1025; 29 CFR 1910.134). In addition, if Level C protection is required, a cartridge change-out schedule will be developed.

Air purifying respirators cannot be worn under the following conditions:

- Oxygen deficiency;
- IDLH concentrations;
- High relative humidity;
- For chemicals with poor warning properties (e.g., carbon monoxide and hydrogen sulfide) [These chemicals do not have odors (or the body loses its sensitivity to odors), so a person wearing a respirator would not detect breakthrough]; and,
- If contaminant levels exceed designated use concentrations.

6.3 ACTIVITY HAZARDS ANALYSIS

Parsons and its subcontractors are required to conduct an activity hazards analysis for all aspects of the work. The activity hazards analyses consist of the following three steps:

- Identify the task and break it down into steps.
- Identify the hazards associated with each step.
- Identify the specific hazard control measure used for each step in accordance with the order-of-precedence method of control.

The U.S. Army Corps of Engineers website www.swl.usace.army.mil/safety/asaindex.html contains a library of sample AHAs that may be useful on projects. The Parsons PWeb should also be checked for AHAs. The Project Managers may use the following list as a guide in determining the investigation and remediation activity hazards analyses for various high-hazard operations and critical tasks.

- **Premobilization inspection**. Conduct an initial site inspection for pre-job planning. The inspection should cover potential exposures such as the location of electrical lines, underground utilities, nearby structures, traffic conditions, site security needs, public exposures general liability, and other potential exposures.

- **Traffic Controls.** Control measures include warning signs, flagmen, traffic stoppage and control, and unloading procedures. Internal traffic control plans should include ways to restrict the number of vehicles on site, the flow of vehicles accessing the site and driving through the site, haul roads, speed controls, subcontractor employee parking areas, merging of site traffic with local vehicle traffic, pedestrian controls in traffic zones, access by emergency and rescue vehicles and operator controls. The Con Edison *Work Area Protection and Traffic Control Field Manual* will be consulted as necessary to create safe work areas.
- **Vehicle Operation.** Although driving a vehicle may be second nature to many individuals, there are many hazards and controls that need to be identified. Fatigue and distractions are two hazards that many individuals do not think about on a regular basis. Operating off-road vehicles such as an All-Terrain Vehicle (ATV) also require training.
- **Field Activities.** Many different types of activities occur in the field from excavations, groundwater sampling, soil sampling, liner installation, well installation and monitoring, and pump tests. A variety of hazards could be incurred with each activity such as biological, slip/trips/falls and lacerations. An activity hazard analysis is required for each different field activity to identify the hazards and controls.
- **Field Visit.** When a field visit occurs, it may be before any field activities are taking place. However, there may still be hazards present such as walking or driving in fields with uneven terrain, poisonous vegetation, etc. Although personal protective equipment such as a hard hat and safety glasses may not be needed, sturdy work boots, long pants, long sleeve shirts and sunscreen may be necessary.
- **Mobilization/Demobilization.** Conduct an initial site inspection for pre-job planning. The inspection should cover potential exposures such as the location of electrical lines, underground utilities, nearby structures, traffic conditions, site security needs, public exposures general liability, and other potential exposures.
- **Material storage**. Consider where materials and equipment will be stored on site. Implement measures to protect against chemical spills/releases, fire, vandalism and theft of tools, equipment, or materials. Also consider the hazards that may exist for workers when they are storing or retrieving those materials.
- **Material handling**. Consider the size and weight of loads, the equipment to be used, how the equipment is set up and protected, and safety and maintenance inspections of material handling and rigging equipment. Also consider to employee training in the use of the equipment or personal body mechanics when engaged in manual material handling activities.
- **Heavy equipment controls**. Evaluate the use of heavy equipment in operations such as site clearing, grading, drilling and excavation or lifting. Controls should include equipment alarms, use of qualified operators, pre-use inspections, and any specific OSHA regulatory requirements.

- **Personal protective equipment (PPE**). Consider operations where PPE is required and the type of PPE required (e.g. eye, head, foot, respiratory, hearing and hand protection, and types of special protective clothing – Tyvek and Nomex coveralls).
- **Portable hand and power tools**. Evaluate the tools to be used and the ways that workers are protected from the hazards associated with the use of tools. Consider tool maintenance requirements; electrical requirements; the use of ground fault circuit interrupters, grounding, extension cords, and tool inspection procedures; and employee training and PPE requirements.
- **On-site traffic**. Internal traffic control plans should include ways to restrict the number of vehicles on site, the flow of vehicles through the site, haul roads, speed controls, subcontractor employee parking areas, merging of site traffic with local vehicle traffic, pedestrian controls in traffic zones, access by emergency and rescue vehicles and operator controls.
- **Employee training**. Always review the safety training needs of employees. Training should include initial site safety orientations. Some operations (e.g., HAZWOPER activities, excavation, blasting, scaffold erection, tunneling, confined space, and operating heavy equipment and working in highly hazardous plant process operations) may require special training that must be checked and evaluated.

Exhibit 6.1 is a sample activity hazards analysis form. Exhibit 6.2 shows a training record to be completed and kept on file for each activity hazards analysis. Completed AHAs can be found in Attachment C.

6.4 SAFETY SYSTEMS ANALYSIS

GBU Safety Managers use the safety systems analysis for field staff and subcontractors whose work requires that they be on site for over six months. The analysis provides management with a rating that reflects the safety and health program effectiveness. Attachment B1 to the SHARP Management manual provides the program, protocol, and methodology.

6.5 SITE INSPECTION CHECKLIST AND DAILY SITE WALK

The site inspection is a protocol designed to identify and correct unsafe acts and conditions, as well as recognize safe work practices and accomplishments, in Parsons or subcontractors' scope of work. The Project Manager or PSM should develop standard safety checklists appropriate to the work being performed. Exhibit 6.3 is an example of a simple checklist to evaluate a project's status. The Project Manager shall develop a checklist based on questions from the audit programs in Attachment B of the SHARP Manual.

Inspections involve a daily or weekly site walk of a project site that focuses on safety. The Project Manager or FTL responsible for the work conducts inspections, accompanied by the PSM as necessary. Daily site walks do not have to be documented, but once a week the Project Manager, or designee, prepares an inspection report using Exhibit 6.3 and forwards it to the PSM for maintaining in the project file. Items found to be out of compliance must be assigned to the

responsible party for corrective action and the corrective action tracked to completion. Subcontractors shall be advised of noncompliance items using a Notice of Subcontractor Violation, included as Exhibit 6.4 and Exhibit 6.5.

6.6 SAFETY AND HEALTH ENFORCEMENT

Parsons and its subcontractors enforce all applicable requirements of OSHA 1910 and 1926, where applicable. In addition, subcontractors must comply with and enforce Parsons' site requirements.

Parsons and its subcontractors have written progressive disciplinary systems available for review in the respective Human Resources departments.

6.7 NOTICE OF VIOLATION OF SAFETY AND HEALTH REGULATIONS

The project has a formal notice of subcontractor violation of safety and health regulations program to ensure that violations are issued in an immediately dangerous to life and health (IDLH) situation or when the subcontractor repeatedly fails to comply with safety and health requirements.

The notice (Exhibit 6.4) documents poor performance and requires a response from subcontractor senior management. The notice contains five distinct levels of discipline, from submission of a recovery plan to contract termination.

6.8 COMPETENT FIRST AID PERSON

The OSHA Regulations (29 CFR 1910.151 and 1926.50) state the employer shall ensure the ready availability of medical personnel for advice and consultation on matters of occupational health. In the absence of an infirmary, clinic, hospital, or physician, that is reasonably accessible in terms of time and distance to the worksite (i.e. 4 minutes for activities that can be expected to result in an accident involving suffocation, severe bleeding, or other life threatening or permanently disabling injury or illness and 15 minutes for other types of injuries), which is available for the treatment of injured employees, a person who has a valid certificate in first-aid training from the U.S. Bureau of Mines, the American Red Cross, or equivalent training that can be verified by documentary evidence, shall be available at the worksite to render first aid. First-aid supplies must be accessible for immediate use and be of sufficient size and number to handle common first aid incidents.

The response time and distance to the nearest clinic, hospital or physician identified in Section 4.11.3 has been determined to be 3 minutes; however this may vary depending traffic. Based on the activities provided in the Scope of Work (Section 2.1) and the list of AHA included in Section 6.1.6, the project has the potential for an accident involving suffocation, severe bleeding, or other medical emergencies or permanently disabling injury or illness. Since the response time for Emergency Medical Services (EMS) may be greater than four minutes if traffic conditions are not favorable, the project will require at least one individual at the work location have a valid certificate in CPR and first aid.

The employee(s) listed below are assigned to the project on a full time basis and will have a valid certificate in CPR and first aid:

- Zohar Lavy - Parsons

TABLE 6.1
HEALTH HAZARD QUALITIES OF HAZARDOUS SUBSTANCES OF CONCERN
AT THE FORMER HUNTS POINT GAS WORKS HALLECK STREET SIDEWALK SITE

Compound (Synonym)	OSHA PEL[1] (ppm)	IDLH (ppm)	LEL (%)	Odor Threshold[2] (ppm)	Odor Character	Vapor Pressure (mm Hg)	Physical State	Detectable w/ 10.6 eV lamp PID (I.P. eV)
Benzene	1 5 [STEL]	500 [Ca]	1.2	119	Aromatic, sweet	75	Flammable Liquid	Yes (9.24)
o-,m-, p- Xylenes	100 150 [STEL]	900	0.9	20	Aromatic	7,9,9	Flammable Liquid vapor	Yes (8.4-8.6)
Toluene	200 300 [CEIL]	500	1.1	37	Sweet, pungent Benzene-like	20	Flammable Liquid vapor	Yes (8.82)
Ethyl Benzene	100 125 [TLV-STEL]	800	0.8	0.6	Oily Solvent	10	Flammable Liquid	Yes (8.76)
Hydrogen Sulfide	10	100	4.0	0.8	Rotten Egg	17.6	Flammable Gas	Yes (10.46)
Naphthalene	10 15 [TLV-STEL]	250	0.9	0.64	Mothballs/ Tar/ Creosote	0.08	Combustible Solid	Yes (8.12)
Polynuclear Aromatic Hydrocarbons (PAH's)	0.2 mg/m³	80 mg/m³ [CA]	varies	varies	varies	very low	Combustible Solid	No
Cyanide	5.0 mg/m³	50	5.6	5	Bitter almond	630	Flammable Liquid	No (Draeger Tube) (13.6)

(1) 29 CFR 1910, June 30, 1993 (8-hour Time weighted average unless otherwise specified.)
(2) ACGIH 1989 Highest reported value of acceptable odor threshold range.
[IDLH] Immediately dangerous to life or health.
[CA] Suspect carcinogen - Minimize all possible exposures.
[STEL] 15 minute Short Term Exposure Limit
[SKIN] Designates that skin is an important possible route of exposure.
[CEIL] Ceiling Limit - not to de exceeded at any time during a work day.
[TLV] Threshold Limit Value.

Table 6.2.1
Action Levels for Changes in Respiratory Protection

Contaminant	PEL/TLV/ TWA	Monitoring Instrument	Action Level	PPE	Action Taken
VOCs	n/a	PID	<1 ppm	Level D	None.
			1-5 ppm	Level D	Implement engineering controls to suppress vapor levels. Monitor for benzene with draeger tube.
			5-25 ppm	Level C (qualitative fit test)	Take 3 consecutive readings. If confirmed, wear half or full facepiece respirator if readings do not exceed 10 ppm. Wear full facepiece respirator if action levels are greater than 10 ppm and less than 25 ppm. Continue engineering controls to suppress vapor levels.
			> 25 ppm		Stop work activities until engineering controls are implemented to suppress vapor levels.
Hydrogen Cyanide	10 ppm	Multi-gas Meter	< 5 ppm	Level D	None
			> 5 ppm		Stop work activities until engineering controls are implemented to suppress levels.
Carbon Monoxide	OSHA PEL 50 ppm	Multi-gas Meter	Less than 25 ppm	Level D	None
			Greater than 25 ppm		Stop work activities until engineering controls are implemented to reduce levels below 25 ppm.
Dust	n/a	Mini-RAM	<5 mg/m^3	Level D	None
			>5 mg/m^3	Level C (qualitative fit test)	Take 3 consecutive readings. If confirmed, wear half or full facepiece respirator. Implement engineering controls to suppress dust levels.
Benzene	1.0 ppm	Draeger tube	<0.5 ppm	Level D	None
			0.5 - 5 ppm	Level C (qualitative fit test)	Take 3 consecutive readings. If confirmed, wear half or full facepiece respirator. Continue engineering

					controls to suppress benzene levels.

Table 6.2.1 (Continued)
Action Levels for Changes in Respiratory Protection

Contaminant	PEL/TLV/ TWA	Monitoring Instrument	Action Level	PPE	Action Taken
			5 - 25 ppm	Level C (quantitative fit test)	Stop work activities. Take 3 consecutive readings. If confirmed, wear full facepiece respirator.
			> 25 ppm	Level B	Stop work activities. Take 3 consecutive readings to confirm. If trained and fit tested, donn supplied air respirator.

Note: All readings that will be used to determine the appropriateness of an upgrade in PPE shall be taken in the worker's breathing zone. PID readings shall be sustained readings of 15 minutes or more. Multi-gas meter readings shall be 30 second sampling periods with the meter held in the worker's breathing zone.

Readings will be taken at the beginning of the day, changes in work activities and during all sampling activities. If readings exceed level D, then stop work, leave the area or allow to ventilate. If actions levels are maintained then consult with the PSM on upgrading PPE appropriately.

If Level C PPE (respiratory protection) is required, contaminant concentrations measured during on-site air monitoring will be used to estimate the breakthrough times of the organic vapor cartridges using the Gerry O. Wood Math Model (Wood, G.O., Estimating Service Lives of Organic Vapor Cartridges, *American Industrial Hygiene Association Journal, 55:11-15, 1994).* Prior to donning level C PPE, a cartridge change-out schedule will be developed and reviewed by Con Edison and Parsons Division Safety Manager for acceptance.

Table 6.2.2
Description of Personal Protective Equipment and Levels of Protection

LEVEL D

Level D protection will be worn for initial entry on-site and for all activities unless otherwise noted by the SSO. Level D protection will consist of:

- Standard work clothes
- Steel-toe safety boots
- Safety glasses with attached sideshields (goggles must be worn when splash hazard is present)
- Hearing protection (when working within 25 feet of vacuum excavation equipment, drill rigs, sawing, or jack hammering)
- Metatarsal foot protectors (when sawing or jack hammering)
- Traffic safety vests, reflective (when working on streets, sidewalks, parking lots, and driveways)
- Nitrile outer gloves and nitrile inner gloves (sampling operations)
- One (1) kV dielectric glove protectors (i.e., leather gauntlets), currently tested and stamped (when saw-cutting and jackhammering, or performing soil intrusive activities using electrically-conductive equipment). Proximity to electric lines up in excess of 1,000 volts will require higher rated dielectric protection – and possibly another control method to prevent contact with live electric. Reflective traffic safety vests (when working on streets, sidewalks, parking lots, and driveways).
- Hard hat (must be worn during all site activities and cannot be blue or white)
- Disposable boot covers will be worn when in contact with disturbed soils

MODIFIED LEVEL D

Modified Level D protection, unless otherwise specified by the SSO, will consist of Level D equipment and the following additional equipment:

- Nitrile outer gloves and nitrile inner gloves
- Tyvek coveralls if particulate hazards only are present, poly-coated Tyvek coveralls if liquid hazards are present

LEVEL C

Level C protection, unless otherwise specified by the SSO, will consist of Level D equipment and the following additional equipment:

- Full-face air-purifying respirator
- Combination HEPA filter/organic vapor cartridges
- Tyvek coveralls if particulate hazards only are present, poly-coated Tyvek coveralls if liquid hazards are present
- PVC or nitrile inner and nitrile outer gloves

LEVEL B

If the concentration of volatile organics or cyanide equals or exceeds the specified action levels, all field personnel associated with the project will immediately retreat to a location up-wind of the source of contamination. At this point the SSO must consult with Con Edison to discuss appropriate actions. Level B PPE will not be worn until authorization is given by the Parsons Safety Manager.

Table 6.2.3

Decontamination Procedure

* Decontamination procedures can be modified by the SSO based on work activities and potential contamination.

STATION	NAME	DESCRIPTION
Station 1	Segregated Equipment Drop	Deposit equipment used on the site (tools, sampling devices and containers, monitoring instruments, clipboards, etc.) on plastic drop cloths or in different containers with plastic liners. Each will be contaminated to a different degree. Segregation at the drop reduces the probability of cross-contamination.
Station 2	Suit, Safety Boots, and Outer Glove Wash	Thoroughly wash chemically resistant suit, safety boots and outer-gloves. Scrub with long-handle, soft-bristle scrub brush and copious amounts of Simple Green/water solution. Necessary equipment includes: • Wash tub (30 gallon or large enough for person to stand in); • Simple Green/water solution; and, • Long-handle soft-bristle scrub brushes.
Station 3	Suit, Safety Boots, and Outer Glove Rinse	Rinse off Simple Green/water solution using copious amounts of water. Repeat as many times as necessary. Necessary equipment includes: • Wash tub (30 gallon or large enough for person to stand in); • Spray unit; • Water; and, • Long-handle, soft-bristle scrub brushes.
Station 4	Outer Gloves Removal	Remove the outer gloves and deposit in individually marked plastic bags. Necessary equipment includes: • Plastic bag
Station 5	Canister, Air Tank, or Mask Change	If a worker leaves the exclusion zone to change a canister, mask or air tank, this is the last step in the decontamination procedures. The worker's canisters or tank are exchanged, new outer glove donned, and joints taped. Worker returns to duty. Otherwise the worker proceeds to Station 6. Necessary equipment includes: • Canisters, air tanks, or mask; • Tape; and, • Gloves.
Station 6	Removal of Chemically Resistant Suit	With assistance of helper, remove suit. Deposit in container with plastic liner. Necessary equipment includes: • Container with plastic liner
Station 7	Inner-Glove Wash	Wash inner gloves with Simple Green/water solution that will not harm skin. Repeat as many times as necessary. Necessary equipment includes: • Simple Green/water solution; • Wash tub; and, • Long-handle, soft-bristle brushes.
Station 8	Inner-Glove Rinse	Rinse inner-gloves with water. Repeat as many times as necessary. Necessary equipment includes: • Water; and, • Wash tub.

Table 6.2.3
(continued)

Decontamination Procedure

* Decontamination procedures can be modified by the SSO based on work activities and potential contamination.

STATION	NAME	DESCRIPTION
Station 9	Respirator Removal	Remove face-piece. Avoid touching face. Wash respirator in clean, sanitized solution, allow to dry and deposit face-piece in plastic bag. Store in clean area. Necessary equipment includes: • Plastic bags; • Sanitizing solution; and, • Cotton
Station 10	Inner-Glove Removal	Remove inner gloves and deposit in container with plastic liner. Necessary equipment includes: • Container with plastic liner
Station 11	Field Wash	Wash hands and face. Necessary equipment includes: • Water; • Soap; • Tables; • Wash basins or buckets; and, • Clean towels.
Station 12	Redress	If re-entering Exclusion Zone put on clean field clothes (e.g., Tyvek, gloves, etc.). Necessary equipment includes: • Table; and, • Clothing. The site safety officer (SSO) will monitor the decontamination system for effectiveness.

Exhibit 6.1 Activity Hazards Analysis Form

Page____ of _____

Project Name & Number:	AHA No.	Date:	New:
Location:	Contractor:		Revised:
Required Personal Protective Equipment		Analysis by:	Date:
	Superintendent/Competent Person	Reviewed by:	Date:
Work Operation:		Approved by:	Date:

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements

Training Requirements:

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity and review it with their Supervisor during their Daily Safety Huddle.

Exhibit 6.2 Activity Hazards Analysis Training Record

JOB NUMBER_____

AHA NUMBER_____

JOB LOCATION_____

DATE:_____

NAME OF TRAINER:_____

SUBJECTS COVERED:_____

_____

_____

_____

TRAINING AIDS USED:_____

_____

_____

ATTENDEES (PLEASE SIGN NAME LEGIBLY):

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

(Use additional sheets if necessary)

Parsons

Exhibit 6.3
Site Safety And Health Inspection Checklist

Project: _____ Date: _
Name: . Time: _
Any items that have been found deficient must be corrected before work or use. This checklist includes, but is not limited to, the following:

	Yes	No
Safe Access and Workspace		
Are safe access and adequate space for movement available for:		
Emergencies		
Work area		
Walkways and passageways		
Are ladders, stairways, and elevators properly located and functioning?		
Is protection provided for floor and roof openings?		
Is overhead protection provided for all areas of exposure?		
Is lighting adequate?		
Planning Work for Safety		
Are employees provided with all required protective equipment?		
Have other contractors and trades been coordinated with to prevent congestion and avoid hazards?		
Is all temporary flooring, safety nets, and scaffolding provided where required?		
Utilities and Services Identification		
High voltage lines		
Have all been identified by signs?		
Have high voltage lines been moved or de-energized, or barriers erected to prevent employee contact?		
Sanitary Facilities		
Drinking water		
Are toilet facilities adequate?		
Work Procedures – Materials Handling		
Is material handling space adequate?		
Is material handling equipment adequate and proper?		
Is material handling equipment in good condition?		
Other (e.g., tunnels, excavations, shafts)		

Comments:

Exhibit 6.4 Notice of Subcontractor Violation of Safety and Health Regulations

Date: _____

Contractor Name: _____
Address: _____

_____

_____

Attention: _____

This letter officially notifies you that you have been found to be in violation of the following Safety Regulations:

_____
on (date) _____, by_____.

Confined Space Entry __	Lockout/Tagout __	Hot Work __	Personal Protective Equipment __
Knowledge of the environment __	Awareness of warning alarms __	Evacuation routes __	Back-up Alarms __
Assembly locations __	Fall Protection __	Scaffolding __	Environmental/Hazardous Material Storage __
Safe Work Practices __	Security Practices __	__	__

Other: _____
_____
_____
This/These violations occurred at the following locations: _____
_____
at the following times_____ and dates _____
The name of the employees was/were _____
under the supervision of_____.

Exhibit 6.5 Notice of Noncompliance with Safety and Health Regulations

Under conditions of this enforcement procedure check all items that apply:

_____ 1. You are being notified of this violation and should take corrective action to prevent a reoccurrence. The corrective action shall be documented to the Parsons Construction Management representative immediately.

_____ 2. You must submit a plan for compliance to your Parsons Construction Management representative and the Construction Safety Manager within two days of receipt of this letter. The compliance plan must include the means or methods of compliance and the date that the requirements for compliance will be completed. Once compliance has been achieved, a follow up letter must be sent to the Parsons Construction Management representative and Construction Safety Manager. Failure to comply will result in disciplinary action against your Company.

_____ 3. You are required to review the stated procedures with your Parsons Construction Management representative. Work may not commence on the site until the review is complete and the Subcontractor responds formally that the procedure is understood and will comply.

_____ 4. You are required to review the stated procedures with your Parsons Construction Management representative. Work may not commence on the site until the review is complete and you **must** confirm formally the disciplinary action to be taken against the supervisor and employees.

_____ 5. All work on the site will stop until the Parsons Construction Management representative reviews all the facts with the Subcontractor and determines if the contract between the parties will be terminated.

Sincerely,

_____
Parsons Representative

cc: Issuing Construction Manager Representative
Job File
GBU Safety Manager
Project Manager

SECTION 7

SAFETY TRAINING

7.1 PROJECT SAFETY ORIENTATION

The Parsons Project Manager, PSM, FTL, or SSO conducts the documented site-specific orientation for all new Parsons staff and subcontractor management personnel.

The Orientation takes approximately one hour to complete and consists of applicable Con Edison, Parsons, and regulatory reference material, including:

- Applicable OSHA 1910 General Industry and 1926 Construction Regulations and others as required
- Health and Safety Plan (HASP)
- Parsons applicable requirements, including items covered in Section 4.2
- Subcontractor requirements

All visitors must receive a brief orientation as described in Section 4.2, and be escorted by the Project Manager, PSM, FTL, SSO or a designee familiar with the potential hazards on the project.

Subcontractors must conduct similar orientations for their staff and craft employees and must document all orientations using the Employee/Subcontractor Training Acknowledgement and sample form (Exhibit 7.1). The Project Manager maintains the orientation documents and acknowledgement forms.

7.2 PARSONSU SAFETY MODULES AND START TRAINING – ZERO INCIDENT TECHNIQUES

Consistent with Parsons corporate initiatives in safety training, the Project Manager will identify all applicable personnel (i.e. managers, engineers and supervisors, including subcontractor personnel), that shall be current in the completion of safety modules on ParsonsU and that should receive START training to further Parsons' goal of zero incidents.

The GBU and Division Safety Manager serve as the certified trainers for periodic START training sessions for new personnel. They should be contacted if personnel need to receive training.

7.3 DAILY TOOLBOX SAFETY MEETINGS

Parsons and its subcontractors conduct daily toolbox safety meetings at the beginning of each day. These meetings include topics relevant to upcoming work and may include reviews of

recent incidents on the project. The Project Manager or the FTL is responsible for the toolbox safety training content and documenting and retaining attendance records using Exhibit 7.2.

7.4 ACTIVITY HAZARDS ANALYSIS TRAINING

When the activity hazards analysis is complete, the Parsons Project Manager, FTL, SSO or subcontractor conducts a training session with all employees involved with the analyzed task. The training may be informal and at the site where the task is performed. Employees should be given an opportunity to provide input regarding task steps, hazards identified, and appropriate control measures.

The Project Manager documents and maintains the activity hazards analyses using Exhibit 6.2.

7.5 REGULATORY TRAINING PROGRAMS

OSHA regulations require specific training in certain circumstances. Based on the scope of work and meetings with regulatory officials, the following training topics are provided on the project:

- General – all workers engaged in activities which are potentially exposed to hazardous substances and health hazards must be trained to meet 1910.120(e)(1). Annual 8-hour refresher training as per 29 CFR 1910.120(e)(3) is required for workers and supervisors must be trained to meet 29 CFR 1910.120(e)(4).
- CPR/AED/First aid/Bloodborne Pathogen (as needed) – provided to personnel based on project activities identified in the Scope of Work (i.e. life threatening) and EMS response time (i.e. more than 3 minutes). See Section 6.8.
- Emergency response – only applicable to workers engaged in emergency response as per 29 CFR 1910.120(q).
- Respiratory protection – must meet 29 CFR 1910.134. Medical qualification by a physician is required to wear a respirator. Annual fit testing and training is also required.
- **Others to be added as needed or determined**

The Project Manager determines the necessary training and coordinates the training with the PSM.

7.6 OSHA OUTREACH PROGRAMS

- *NOT APPLICABLE FOR CURRENT PHASE OF WORK*

7.7 SPECIALIZED TRAINING AND ORIENTATIONS

Project personnel receive specialized training on client rules and requirements as well as the unique tools, equipment, and procedures used to perform the work. The project budget includes funding for the following training:

Description	Attendees	Schedule
General rules and safety requirements – HASP review	All workers assigned to the site	Half-hour training session, provided to new employee on the first day of work at the site.

Exhibit 7.1 Employee/Subcontractor Training Acknowledgment

Name of Trainer: _____

Training Subject: _____

Training materials used: _____

Name of employee: _____

Date of hire/assignment: _____

I, _____, hereby certify that I have received training as described above in the following areas:

- The potential occupational hazards in general in the work area and associated with my job assignment.
- General safety requirements indicate the safe work conditions, safe work practices and personal protective equipment required for my work.
- The hazards of any chemicals to which I may be exposed and my right to information contained on material safety data sheets for those chemicals, and how to understand this information.
- My right to ask questions, or provide any information to the employer on safety either directly or anonymously without any fear of reprisal.
- Disciplinary procedures the employer will use to enforce compliance with general safety requirements.

I understand this training and agree to comply with general safety requirements for my work area.

_____ _____

Employee Signature Date

Exhibit 7.2 Employee Meeting Sign-In Sheet

Safety Meeting Presenter: _____Date: _____

Current Weather Conditions:

Temperature (^{o}F) = _____ Wind Direction = _____ Wind Speed = _____

Clear - Sunny – Cloudy – Rain - Snow Forecast = _____

Current Site Conditions (circle as appropriate):

Dry - Wet - Muddy - Frozen - Snow Covered - Other (describe) _____

1. Incidents or Injuries to report from Previous Day Activities: No □ Yes □ - explain below:

_____

2. Safe and/or At-Risk Observations from Previous Day Activities: _____

_____

_____

3. Activities Taking Place Today: _____

_____

_____

3. Anticipated Hazards: _____

_____

_____

4. Engineering Controls-Work Practices-PPE to Protect Against Hazards: _____

_____

_____

5. Additional Safety Topic or Comments: _____

_____

Exhibit 7.2 Employee Meeting Sign-In Sheet

PRINTED NAME	SIGNATURE	COMPANY

SECTION 8

RECORD KEEPING AND POSTING

Parsons and its subcontractors must comply with the recordkeeping requirements of OSHA, Con Edison, Parsons Corporation, and this safety program, including:

- OSHA 300 logs
- Medical treatment and follow-up
- Cranes
- Heavy equipment inspection logs
- Fall protection
- Training
- Inspections
- Audits
- Others as required

The Project Manager is the official record keeper for files relating to Parsons employees. Each subcontractor will provide copies of HAZWOPER training and certification, first aid and CPR certification to the FTL or SSO.

SECTION 9

SAFETY AND HEALTH REQUIREMENTS

9.1 SAFETY AND HEALTH REQUIREMENTS

Exhibit 9.1 represents OSHA, owner, and Parsons corporate regulations and requirements applicable to the project. Based on the most recent risk assessments, Parsons Project Manager and PSM update the listed topics periodically. Training and other requirements are updated in this HASP as required by changes to Exhibit 9.1.

Parsons and its subcontractors are individually responsible for training their respective employees and for complying with all project requirements. Failure to comply could lead to disciplinary actions against Parsons employees and subcontractors or their employees.

Exhibit 9.1 Competent Person and Activity Hazards Analysis Requirements

Safety and Health Requirement	OSHA Regulation	Competent Qualified Person-Supv	Training Required	Written Plan and AHA Required
General Safety & Health	1926.20	Yes	Yes	Yes
Safety Training	1926.21	Yes	Yes	Yes
First Aid and Medical	1926.23, 50	Yes	Yes	Yes
Emergency Employee Action Plans	1926.35	Recommended	Yes	Yes
Hazard Communication	1926.59	Yes	Yes	Yes
Hazardous Waste Operations and Emergency Response	1910.120; 1926.65	Yes Supv – 8 hr	Yes	Yes
Waste Disposal	1926.252	Yes	Yes	Yes
Excavations	1926.650-652	Yes	Yes	Yes

ATTACHMENT A

PARSONS REQUIREMENTS

- **PARSONS WALLET CARD-INCIDENT REPORTING GUIDELINES**
- **PARSONS ONLINE REPORTING INSTRUCTIONS**
- **PARSONS MONTHLY FIELD/PROJECT REPORTING FORM & SUPPLEMENTAL INFORMATION FORM**
- **PARSONS INCIDENT REPORT FORMPARSONS INVESTIGATION REPORT FORM**

ATTACHMENT A

PARSONS REQUIREMENTS

- **PARSONS WALLET CARD-INCIDENT REPORTING GUIDELINES**
- **PARSONS ONLINE REPORTING INSTRUCTIONS**
- **PARSONS MONTHLY FIELD/PROJECT REPORTING FORM & SUPPLEMENTAL INFORMATION FORM**
- **PARSONS INCIDENT REPORT FORMPARSONS INVESTIGATION REPORT FORM**

PARSONS (PARCOMM)

Incident Definition: any unexpected or unplanned event that involves personal injury, property damage, environmental spill release or a near miss.

Any incident that results in onsite medical treatment or an employee being taken to a medical facility requires the immediate notification of Division or GBU Safety.

- Buildings Div Safety – John Barker; (704) 778-0033
- Energy Div Safety – Anthony Miller; (704) 264-6159
- Env/VIC Div Safety – Greg Beck; (908) 887-1973
- Life Science/Ind Safety – Anthony Miller; (704) 264-6159
- GBU Safety Director – Anthony Miller; (704) 264-6159

Rev 3/10

PARSONS (PARCOMM)

Procedures following a Parsons/Subcontractor Incident

If the incident results in a lost workday case or worse:

- The Project Manager contacts the Division Manager and Operations Director immediately.

Within four (4) hours of any incident:

- The Project Manager ensures the incident is entered into the PWeb online Safety Reporting System (PARCOMM Home Page)

Within 48/72 hours (Contractor/Parsons) of an incident:

Complete an incident investigation report to determine root causes and corrective actions to prevent recurrence.

PARSONS Emergency Contact Numbers:

- US/Canada: (866) 727-1411; International: (775) 326-4594

PARSONS (PARCOMM)

Procedures following a Parsons/Subcontractor Incident

Incident Definition: any unexpected or unplanned event that involves personal injury, property damage, environmental spill/ release or a near miss.

If the incident results in a lost workday case or worse:

- The Project Manager contacts the Div. Manager and Operations Director immediately.

Within four (4) hours of any incident:

- The Project Manager ensures the incident is entered into the PWeb online Safety Reporting System (PARCOMM Home Page)

Within 48/72 hours (Contractor/Parsons) of an incident:

- Complete an incident investigation report to determine root causes and corrective actions to prevent recurrence. 3/10

PARSONS (PARCOMM)

Additional Instructions and Phone Numbers

Any incident that results in onsite medical treatment or an employee being taken to a medical facility requires the immediate notification of Division or GBU Safety.

- Buildings Div Safety – John Barker; (704) 778-0033
- Energy Div Safety – Anthony Miller; (704) 264-6159
- Env/VIC Div Safety – Greg Beck; (908) 887-1973
- Life Science/Ind Safety – Anthony Miller; (704) 264-6159
- GBU Safety Director – Anthony Miller; (704) 264-6159

PARSONS Emergency Contact Numbers:

- US/Canada: (866) 727-1411; International: (775) 326-4594

Online Safety Reporting System

Policy Requirements

- Initial incident reports for all incidents, including near misses, shall be reported within 2 hours.
- Detail incident reports are required within 24 hours.
- Reporting is done via the online (PWeb) incident report form: https://project1.parsons.com/safety/login.htm
- Injuries with Days Away from Work - immediate supervisor and PM must teleconference with GBU President within 4 hours.
- Projects enter hours via on-line form by FIRST Friday of new period.

Reporting Incidents

Corporate policy requires that all employees report safety incidents to their supervisor immediately. Supervisors must report all incidents to the appropriate Project Manager (Department Manager if the incident is not related to a project), who must officially report the incident to the GBU within four hours. This official reporting is done via the PWeb, unless PWeb is unavailable, in which case the incident can be reported by email, fax or telephone.

"Incidents" include work related injuries, work related illness, accidents with property damage only and near misses. "Near misses" are any unplanned event that had the potential to (but did not) result in injury or property damage.

Incident reports should reflect the best available information at the time. Where exact information is not known (recordability, days away from work, etc.) the PM's best judgment should be used when completing the initial incident report. This information can be subsequently revised when the detail incident report is submitted.

When in doubt, submit an initial report or contact the GBU Safety Manager.

Online Reporting System

Parsons currently uses the IndustrySafe online reporting system. It can be found at PWeb by following the following steps:

1. From the Corporate PWeb Homepage, select PARCOMM from the Org Units menu
2. Locate and select "SAFETY" from the center of the screen.
3. Select the "Online Safety Reporting" drop down.
4. Select the "IndustrySafe Incident Reporting (new tool)" in the center of the screen
5. Select the "Incidents" tab.
6. Select "Add New Incident" at the left hand side of screen.

To update and existing incident report or complete the Detail Incident page, locate and select the appropriate incident from the list.

Creating or Updating Incidents

The Initial Incident page of the report must be completed within four hours of the incident occurring. This page includes basic information needed for the first notification to our insurance carriers. If possible, all of the fields should be completed in the initial report. A list is provided at the end of this document describing all fields contained on the initial incident page.

Incident Detail Reports

Within 24 hours of the incident occurring, the Incident Detail page of the on-line report must be completed. This page includes detailed information about the injured party, the nature and extent of injuries, medical treatment provided, corrective actions taken, and witness statements. In the event of property damage, this page also includes descriptive information on the property owner. Finally, the page includes a section to include electronic attachments. These might include photographs, signed witness statements, etc.

Monthly Reporting of Hours

Hours for each project are automatically reported downloaded from PRISM to the IndustrySafe program each month on a project / job number basis. However, the project team must still continue to track on a monthly basis, hours served by Contractors and JV Partners.

Hours served by Contractors and JV Partners must be entered into the on-line reporting system no later than the first Friday of the new period. If an accurate accounting of hours is not available, estimated hours are submitted into the system. The estimated hours can be revised later in the month, or the following month, when accurate data is available.

To enter in the hours:

1. From the Corporate PWeb Homepage, select PARCOMM from the Org Units menu
2. Locate and select “SAFETY” from the center of the screen.
3. Select the “Online Safety Reporting” drop down.
4. Select the “IndustrySafe Incident Reporting (new tool)” in the center of the screen
5. Select “System Functions” at the top of the page
6. Select “Monthly Statistics (Hours Worked and Employees)”
7. Enter the Project / Job Number
8. When your Project / Job Number appears, click the appropriate system id number
9. Select the “all” and the appropriate year. Enter the hours served by the Contractors and JV Parter

Be sure to select the correct month and year when entering hours.

Monthly Statistics Summary Reports

The on-line reporting system automatically calculates incident rates based on incidents and hours entered into the system. To view the statistics, select the "Reports" page from the mainpage of the IndustrySafe website. Select "Incidents", then click the "Reports and Analysis" link at the left.

Contact Greg Beck for Assistance

PARSONS PARCOMM®

Field/Project Monthly Report Form

Instructions: Enter the total number of labor hours spent in the field by all Parsons employees and subcontractors during the reporting period. Cost Type (CT) "04" used for WebTime labor entries should represent these hours for Parsons employees. Labor hours spent in the office are classified as CT "01" in WebTime. Incidents/near-miss incidents, air monitoring completed and the type of PPE worn by personnel (i.e. Parsons employees and contractors) must also be reported. Submit by the 3rd working day of the following month (an estimation of the monthly field hours based on number of people working on the project each day is acceptable).

Definitions and Reporting Criteria

Field Hours - **time spent by the employee outside his/her home office working at a job site or traveling to/returning from either the job site or a client's office. Working in another Parsons office or at a client's office is not considered field hours for the purposes of this reporting.**

Incident - **any unplanned or unexpected event. This includes near-misses, first aid cases, personal injuries requiring medical treatment, property damage or environmental release.**

Near-miss Incident (NI) - **an unplanned or unexpected event that has the potential for personal injury, property damage or environmental release, but does not occur or almost happened.**

PPE - **Personal Protective Equipment above Level D (work clothes) or Modified Level D (coveralls e.g. Tyvek). This includes Level C (chemical resistant suit and/or air-purifying respirator), Level B (chemical resistant suit and/or supplied air) or Level A (full encapsulation suit with SCBA).**

Subcontractor - contractors hired by Parsons or their subcontractor, to perform activities in the field. Contractor company names should be listed and tracked separately in the Table below, followed by the hiring company in parentheses (i.e. Parsons or subcontractor).

Project Name:		Client:			
Project Location:		Client Contact:			
Parsons Contact:		Project #:		Month:	

Parsons and/or Contractor	Hours	Type of Activities	Incident or NI
Parsons			Yes No
			Yes No
			Yes No
			Yes No

Air Monitoring

Was there any air monitoring that took place during the month? No Yes - If "Yes", indicate below the potential hazards/chemicals monitored (i.e. O2, LEL, dust, VOCs), the monitoring equipment used (i.e. PID, FID, Draeger tubes, 4-gas, DataRAM, cassettes), whether the air monitoring results exceeded an Action Level (AL) or Permissible Exposure Limit (PEL), the level of PPE worn above Level D (C, B or A) and the number of days working in the specific PPE.

Chemical Monitored	Equipment Used	Exceed AL– Exceed PEL	PPE	Days in PPE
		Yes No - Yes		
		Yes No - Yes		
		Yes No - Yes		
		Yes No - Yes		

NOTE: If an AL/PEL is exceeded or PPE above Level D is worn, a Supplemental Information Form (available in the Industrial Division Safety Folder on LiveLink) must be completed. All incidents must be reported on the PWeb (PARCOMM Online Safety Reporting System).

PARSONS PARCOMM®

MONTHLY FIELD/PROJECT REPORT – SUPPLEMENTAL INFORMATION

Employee Name: **Job Title:** **Facility:**

Chemical Exposure Records

Date	Project Name	Chemical Involved	Exposure Duration	Chemical Concentration

Personal Protective Equipment (PPE) Records

Date	Project Name	Level of PPE (A, B or C)	Length of Use (hrs)

PARSONS – TECHNOLOGY DIVISION
INVESTIGATION REPORT

Date of Incident:	Client:	Client Contact:
Project Name:	Project Location:	Project Manager:

Time of Incident:	Job/WBS:	Incident Reported by:

Type of Incident (check one): __ Near-miss incident __ Personal Injury __ Property damage __ Environmental spill/release	Name of Company/Subcontractor:

Name of Individual(s) Involved:	Trade/Function:

Was the Individual Involved with the Incident Performing their Regular Job? If "No", explain why:	Date of Site Safety Orientation:	Last Formal/Documented Safety Meeting Attended:

Description of incident according to the individual(s) involved or injured (including what happened and how the incident occurred):

According to the individual(s) involved with the incident or injured, what could have been done differently to prevent this incident from occurring?

Why weren't these done prior to the incident?

Describe any First Aid or Medical Treatment Provided On Site and/or at a Medical Facility.

Did the Individual Return to Work by the next day?	Any Work Restrictions or Lost Time? If "Yes", describe:

Complete the information below with an Investigation Team, if appropriate.

Team Investigation – List the Possible Causes of the Incident Below (specify **Personal Factors** (1 = lack of skill/knowledge, 2 = following correct procedure takes more time, 3 = supervisor reinforces unsafe behavior, 4 = did it this way before without adverse consequences), **Job Factors** (5 = lack of or inadequate procedure, 6 = inadequate communication of expectations or procedure, 7 = inadequate tools or equipment) or **External Factors**).

1.
2.
3.
4.

For Each Possible Cause Listed Above, Reply "Why" or "Why not" the Cause Occurred.

1.
2.
3.

Corrective Action(s) for Each Cause - List Person(s) Responsible and Target Date:

1.
2.
3.

Investigation Team Members:

Individual Involved/Injured (Print):	Signature:	Date:
Supervisor (Print):	Signature:	Date:

PARSONS – ENVIRONMENTAL/VIC DIVISION
INVESTIGATION REPORT

Date of Incident:	Client:	Client Contact:
Project Name:	Project Location:	Project Manager:

Time of Incident:	Job/WBS:	Incident Reported by:

Type of Incident (circle one): Near-miss incident - Personal Injury - Property damage - Environmental spill/release	Name of Company/Subcontractor:

Name of Individual(s) Involved:	Trade/Function:

Was the Individual Involved with the Incident Performing their Regular Job? If "No", explain why:	Date of Project Safety Orientation:	Last Formal/Documented Safety Meeting Attended:

Description of incident according to the individual(s) involved or injured (including what happened and how the incident occurred):

According to the individual(s) involved with the incident or injured, what could have been done differently to prevent this incident from occurring?

Why weren't these done prior to the incident?

Describe any First Aid or Medical Treatment Provided On Site and/or at a Medical Facility.

Did the Individual Return to Work by the next day?	Any Work Restrictions or Lost Time? If "Yes", describe:

Complete the information below with an Investigation Team, if appropriate.

Team Investigation – List the Possible Causes of the Incident Below (specify **Personal Factors** (1 = lack of skill/knowledge, 2 = following correct procedure takes more time, 3 = supervisor reinforces unsafe behavior, 4 = did it this way before without adverse consequences), **Job Factors** (5 = lack of or inadequate procedure, 6 = inadequate communication of expectations or procedure, 7 = inadequate tools or equipment) or **External Factors**).

1.
2.
3.
4.

For Each Possible Cause Listed Above, Reply "Why" or "Why not" the Cause Occurred.

1.
2.
3.
4.

Corrective Action(s) for Each Cause - List Person(s) Responsible and Target Date:

1.
2.
3.
4.

Investigation Team Members:

Approval (Individual Involved/Injured):	Signature:	Date:
Supervisor Approval (Print Name):	Signature:	Date:

 Report incidents within 4 hours using the Online Safety Reporting System (PWeb). If completing this report, upload to PWeb at the bottom of the Incident Detail page.

ATTACHMENT B

CON EDISON REQUIREMENTS

- CON EDISON CEHSP A32.00 – RULES WE LIVE BY
- CON EDISON UTILITY CLEARANCE CHECKLIST
- CON EDISON CONTRACTOR INJURY REPORT
- CON EDISON EH&S HAZARD ANALYSIS FOR CONTRACTOR WORK
- CON EDISON CEHSP E08.02 – NOISE CONSTRUCTION AND UTILITY ACTIVITIES
- CON EDISON CEHSP S05.03 – PERSONAL PROTECTIVE EQUIPMENT: PROTECTIVE CLOTHING
- CON EDISON CEHSP S12.00 – LOCKOUT/TAGOUT PROCEDURES
- CON EDISON EH&S PLAN CHECKLIST
- CON EDISON WORK AREA PROTECTION AND TRAFFIC CONTROL FIELD MANUAL
- CON EDISON CEHSP A28.00 – CALLING A TIME OUT
- SPECIFICATION: G-11863-6- CON EDISON INSPECTION AND MAINTENANCE REQUIREMENTS ASSOCIATED WITH EXCAVATION ACTIVITIES NEAR GAS PIPELINES OPERATING AT 125 PSIG AND ABOVE
    - APPENDIX A- WEEKLY TRANSMISSION MAIN PATROL REPORT
    - APPENDIX B- DAMAGE PREVENTION CHECKLIST FOR CONSTRUCTION AND ERC FOR EXCAVATIONS WITHIN 25’ OF TM
    - APPENDIX C- TELEPHONE NUMBERS-GAS OPERATIONS
    - APPENDIX D- PROCESS FLOW DIAGRAMS

ATTACHMENT B

CON EDISON REQUIREMENTS

- **CON EDISON CEHSP A32.00 – RULES WE LIVE BY**
- **CON EDISON UTILITY CLEARANCE PROCESS**
- **CON EDISON CONTRACTOR INJURY REPORT**
- **CON EDISON EH&S HAZARD ANALYSIS FOR CONTRACTOR WORK**
- **CON EDISON CEHSP E08.02 – NOISE CONSTRUCTION AND UTILITY ACTIVITIES**
- **CON EDISON CEHSP S05.03 – PERSONAL PROTECTIVE EQUIPMENT: PROTECTIVE CLOTHING**
- **CON EDISON CEHSP S12.00 – LOCKOUT/TAGOUT PROCEDURES**
- **CON EDISON EH&S PLAN CHECKLIST**
- **CON EDISON WORK AREA PROTECTION AND TRAFFIC CONTROL FIELD MANUAL**
- **CON EDISON CEHSP A28.00 – CALLING A TIME OUT**
- **SPECIFICATION: G-11863-6- CON EDISON INSPECTION AND MAINTENANCE REQUIREMENTS ASSOCIATED WITH EXCAVATION ACTIVITIES NEAR GAS PIPELINES OPERATING AT 125 PSIG AND ABOVE**
    - **APPENDIX A- WEEKLY TRANSMISSION MAIN PATROL REPORT**
    - **APPENDIX B- DAMAGE PREVENTION CHECKLIST FOR CONSTRUCTION AND ERC FOR EXCAVATIONS WITHIN 25’ OF TM**
    - **APPENDIX C- TELEPHONE NUMBERS-GAS OPERATIONS**
    - **APPENDIX D- PROCESS FLOW DIAGRAMS**

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP A32.00 – Rules We Live By
Effective Date: 01/04/2010

CONTENTS

SECTION 1.0 – PURPOSE
SECTION 2.0 – APPLICABILITY
SECTION 3.0 – INTRODUCTION
SECTION 4.0 – COMPLIANCE REQUIREMENTS
- 4.1 – RULES WE LIVE BY IDENTIFICATION, TRAINING AND REPORTING
- 4.1.1 – IDENTIFICATION
- 4.1.2 – TRAINING AND COMMUNICATION
- 4.1.3 – REPORTING AND INVESTIGATION
- 4.2 – VIOLATION OF A RULE WE LIVE BY
- 4.3 – DEFINITIONS

1.0 PURPOSE

This procedure establishes a consistent approach to communicating and reinforcing the importance of following critical safety work practices designed to protect employees, contractors, and the public.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) apply to all Con Edison employees (management and union) and contractor employees working for Con Edison.

3.0 INTRODUCTION

There are safety and operational procedures specifically designed to protect against the potential for significant injury due to the energy (electricity, gas, steam, or falling from elevation) that must be controlled. Operating groups that work with these sources of energy have identified Rules We Live By. This is defined as a work procedure or safety requirement that, if not followed, could result in a severe injury or fatality, or place other individuals (employees or members of the public) at significant risk.

4.0 COMPLIANCE REQUIREMENTS

4.1 RULES WE LIVE BY IDENTIFICATION, TRAINING, AND REPORTING

4.1.1 IDENTIFICATION

Where work tasks require the safe control of electricity, gas, steam, or work at elevation, the operating organization must identify key procedures required to control the energy or mitigate the effect or impact onto the employee, fellow employees, contractor employees

or the public. Lessons learned from previous incidents must be included in the identification process. To see the Central List of the Rules, click here.

.
An organization must notify Corporate EH&S of any change to a Rule.

4.1.2 TRAINING AND COMMUNICATION

An organization's Rules We Live By and associated procedures must be reinforced in applicable skills training.

Each employee in the organization must receive OJT training on the Rules We Live By identified by the organization.

Rules We Live By must be reinforced, when applicable, in job briefings.

Rules We Live By must be incorporated into the scope of safety field observations and inspections.

Where contractor work practices involve Rules We Live By, contractor employees will be trained on the applicable Rules We Live By, reporting procedure, and consequences. The operating organization must communicate the applicable Rules to contractor management and ensure the Rules are incorporated in the HASP. The contractor supervision will be required to train their affected employees and subcontractor employees before they begin work.

4.1.3 REPORTING AND INVESTIGATION

If a supervisor observes a Rule We Live By being violated, the work must be stopped immediately.

If an employee, not a supervisor, believes a Rule We Live By may have been violated, he/she must stop the work immediately and report the situation to the supervisor of the employee who committed the alleged violation.

Resolution of the alleged violation must follow the Time Out process as defined in CEHSP 28 – Calling a Time Out.

4.2 VIOLATION OF A RULE WE LIVE BY

A violation of a Rule We Live By will result in significant consequences.

Any employee who witnesses a violation of a Rule We Live By and does not stop the work and report the violation will also be considered to have violated the Rule.

A violation by a contractor company or by a sub-contractor must be reported via an action line by the operating organization with contractor oversight.

The organization must notify Corporate EH&S after action has been taken as a result of the violation.

4.3 DEFINITIONS

Con Edison employee: This includes all management and union employees.

Contractor employee: This includes all per-diem contractor employees and those employees working for a contractor company hired by Con Edison.

RULES WE LIVE BY

Hazard	Electric Operations	Central Operations	Gas Operations	Customer Operations	Business Shared Services (CFS)	Enterprise Shared Services (Facilities)
Verify Dead/Lockout-Tag Out	Properly test or spear to ensure that electric equipment, cable, or wire is "dead" as required regardless of voltage, before beginning dead work activities.	Properly test or verify that equipment is in a de-energized state before beginning dead work activities				Properly lock out/tag out equipment before beginning work on the equipment
Permits (Operating, D-faults)	Enter D-Fault tagged structures only when authorized by the operating authority to perform feeder processing.	Operating Orders and Work Permits • Only perform work that is within the authorized scope of work as listed on the work permit. • Do not change the status of a piece of equipment that has a Stop Tag applied to it. • Follow the sequence of an operating order.		Do not enter a structure that has been classified and tagged as a D-fault	Operating Orders and Work Permits • Only perform work that is within the authorized scope of work as listed on the work permit.	
Atmospheric Testing	Perform atmospheric testing before entering and while working in an enclosed space, a permit-required confined space, and excavations greater than 4 feet in depth.	Perform atmospheric testing before entering and while working in an enclosed space, a permit-required confined space, and excavations greater than 4 feet in depth.	Perform atmospheric testing before entering and while working in an enclosed space, a permit-required confined space, and excavations greater than 4 feet in depth.	Perform atmospheric testing before entering and while working in an enclosed space and a permit-required confined space.	Perform atmospheric testing or verify that testing has been performed before entering and while working in an enclosed space and a permit-required confined space.	
Rescue/Retrieval	Entrant and attendant are required to wear rescue/retrieval harness when working in enclosed/confined space.	Use enclosed or permit-required confined space rescue equipment as required.	Use enclosed/confined space rescue equipment or overhead fall protection equipment when required.	Use enclosed/confined space rescue equipment or overhead fall protection equipment when required.	Use enclosed/confined space rescue equipment when required. Use fall protection equipment when required.	
High Hazard Energy PPE	Use the appropriate rubber gloves, rubber sleeves, fire retardant clothing, fall protection and eye protection/face shield as required for the electrical hazard.	• Use the appropriate rubber gloves, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for electrical work. • Use fall protection equipment as required.	Wear fire retardant coveralls when working on blowing gas.	Use appropriate rubber gloves, rubber sleeves, fire retardant clothing, and eye protection/face shield as required for electrical work.	Use the appropriate rubber gloves, rubber sleeves, fire retardant clothing and eye protection/face shield as required for the electrical hazard	
Sheeting/Shoring			Ensure that excavations five feet or deeper are properly sheeted and shored before anyone enters.			
Gas Piping Integrity Test			Perform an integrity test before introducing gas into customer piping.	Perform an integrity test before introducing gas into customer piping.		
Securing Loads					Reels over 5,000 Lbs are secured per DOT requirements	

UTILITY CLEARANCE PROCESS FOR INTRUSIVE ACTIVITIES
E H&S REMEDIATION PROGRAM

1.0 INTRODUCTION

This document outlines the process that should be used to identify, locate and clear subsurface utilities as part of all Environmental Health and Safety Department's Remediation Section intrusive site investigations. The various activities that comprise this process are specified in efforts to eliminate or substantially reduce the risk of encountering a subsurface utility while performing intrusive activities. Where appropriate, reference is made to other existing safety procedures, which should also be considered.

Due to the potential presence of subsurface utilities and the inherent variable of their size, depth and layout, it is not possible to address all situations and circumstances that may be encountered during intrusive activities. However, adherence to the steps outlined here will effectively minimize physical impacts to subsurface utilities and prevent associated health and safety risks that might otherwise result from field investigation activities. The activities prescribed below should not be blindly followed. Rather, it is the intent of this document that **ALL FIELD PERSONNEL**:

1) Understand the terms of this process;

2) Develop an awareness and be mindful of, the potential and actual risks associated with utilities and other related hazards at a site;

3) Become familiar with the location(s) and configuration(s) of all subsurface utilities at the site, as marked out and as delineated on available drawings;

4) Develop an awareness and understanding of the potential uncertainties associated with utility locations as marked out;

5) Maintain a high level of vigilance while implementing all components of intrusive fieldwork.

ALL FIELD PERSONNEL, including the Con Edison Project Manager (PM), Construction Management (CM), consultants and contractors should be become with these fundamental provisions of this utility clearance process PRIOR to engaging in any field activities.

The process described in the remainder of this document consists of the three (3) primary components summarized below. These components are designed for use in an integrated manner.

Process Narrative – The narrative provides detailed descriptions of the specific steps that should be taken prior to and during intrusive activities to minimize the potential of encountering subsurface utilities.

Utility Clearance Flow Chart: The key steps of the utility clearance process, as outlined in the narrative, are shown graphically on the flow chart provided in **Attachment A**. The flow chart serves as a guide and should not replace the narrative for developing an understanding of and/or implementing the process.

Utility Clearance Checklist - A key component of this process is the completion of the checklist provided in **Attachment B**. **The checklist shall, in a cooperative effort, be completed and subsequently signed by ALL FIELD PERSONNEL involved with the planning and implementation of an intrusive field investigation.** The intent of the checklist is two-fold. First, it will serve to ensure that all appropriate steps of the process described herein have been completed. Second, it will be used to document that all reasonable steps were taken to prevent conditions that may be potentially harmful to the on-site workers and the surrounding community at large, and that might otherwise adversely impact the physical integrity of, or cause damage to, the utility. The completed checklist will be incorporated in the project files maintained by the Con Edison PM.

2.0 APPLICABILITY

The utility clearance process shall be performed prior to and/or during the intrusive site investigation activities listed below.

- Excavation of Soil Borings
- Installation of Monitoring Wells
- Installation of Soil Gas Sampling Probe Points
- Excavation of Exploratory Test Pits/Trenches

3.0 SUBSURFACE UTILITY CLEARANCE PROCESS

The key activities that comprise the process are listed below and a detailed description of each is provided in the remainder of this document in the order in which they should be completed (as shown in the Utility Clearance Flow Chart in Attachment A).

- Obtain Plates, Drawings and Maps
- Notification to Con Edison Operating Groups and Submission of Site-Specific HASP for Review

- Code 753 Utility Mark-Out
- Site Walk
- Utility Clearance - Sample Location Confirmation
- Checklist Completion

It is noted that completion of some steps may not be warranted for all intrusive activities at all sites. The process is designed to be flexible and, thus, allows the Con Edison PM to incorporate those utility clearance activities that are appropriate given site-specific conditions, knowledge of the site, previous work completed at a site, etc. Exceptions are summarized in Section 5.0 of this document. The key premise is that any deviations and the rationale for each are well documented and reflect sound judgment on the part of the Con Edison PM and other project personnel.

3.1 Obtain Plates, Drawings and Maps

Hard copies of available utility plates, drawings and/or maps should be obtained. Drawings, plates, etc. should be reviewed as a preliminary step to determine the type, size and location of utilities in the vicinity of the work site. The drawing title, most recent revision date on the drawings, approximate scale and source shall be documented in the appropriate space(s) on the Utility Clearance Checklist (**Attachment B**).

The source of the drawings may vary depending on whether the site is a Con Edison owned/operated facility, private/public property, or extends into a public street/sidewalk. The various sources for substation utility drawings are discussed below and listed in **Table 1**. Drawings for private properties and facilities, such as apartments, schools, churches, residences, etc., can typically be reviewed at, and/or obtained from, the property/facility manager and Department of Public Works and/or Department of Buildings in the municipality where the property is located.

NOTE: Copies of all drawings obtained during this step should be available at the site during all site walks/inspections and at all times during subsequent intrusive activities. The drawings should be reviewed immediately prior to implementing intrusive activities at each new site location where intrusive activities are to be performed.

Steam, Gas and Electric

Conduit and Duct Occupancy (C&DO) utility plates should be obtained from the appropriate Con Edison engineering group(s) including, electric (e.g., distribution lines, transmission feeders, etc.) steam and gas by the Con Edison PM. All electric and gas plates are available on Con Edison's intranet by searching for 'maps' or accessing the Advanced Mapping System website listed below.

http://maps/AdvancedMappingHomePage.htm

AFTER accessing the website and obtaining the required drawings, the appropriate party listed in **Table 1** may be contacted with inquiries regarding electric and steam plates or for questions regarding use of the Advanced Mapping System. Similarly, steam plates can be obtained by selecting "Active" and "Archived" Steam Plates from the website:

http://maps/steam.htm

Sewer and Water
Drawings showing water and sewer utilities should be obtained as appropriate by contacting the New York City Department of Environmental Protection (NYCDEP) personnel at the telephone numbers listed in **Table 1**.

Subterranean Tunnels
Drawings showing locations and depths of tunnels including subways and automobile tunnels and related subsurface infrastructure should be obtained as appropriate by contacting the appropriate organization listed below.

- Subways: New York City Transit Authority (NYCTA)
- Hudson River Tunnels: Port Authority of NY and NJ (PANYNJ)
- East River Tunnels: Triboro Bridge and Tunnel Authority (TBTA)

Personnel and telephone numbers for these parties are listed in **Table 1**.

Miscellaneous
Con Edison generally, does not maintain plates and drawings showing detailed information of utility distribution on private property. However, as discussed above, facility managers, property owners, Department of Public Works and/or Department of Buildings of the municipality where the site is located, should be contacted in efforts to obtain available utility drawings for the facility. Contact information (e.g., telephone numbers, e-mail addresses, etc.) for municipalities can typically be obtained by accessing the municipality's website. The name, address and telephone numbers for the Department of Buildings in New York City are listed in **Table 1**.

3.2 Complete Utility Markouts

Due to the diversity and nature of sites investigated by the EH&S Remediation Group and the potential utilities at these sites, an effective mark out may require an M-scope survey by Con Edison, request a Code 753 utility survey, and/or a subsurface utility survey by a private utility-locating contractor. The applicability of each of these is discussed below.

Table 1 - Summary Table of Resources for Obtaining Subsurface Utility Plates and Drawings

Utility Type	County	Company	Organization	Name	Telephone Number
Electric	All	Con Edison	Electric Engineering	http://maps/AdvancedMappingSystem.htm(1)	
			For Questions contact:	John Ensemplare (Mgr. – B&Q)	(718) 802-5540
				Mike Mitchell (Mgr. – Manhattan)	(212) 460-1119
				Richard Mariani (Mgr. – Westchester)	(914) 925-6026
Gas	All	Con Edison	Gas Engineering	http://maps/steam.htm(1)	
			For Questions contact:	Mike Verlizzo (Mgr.)	TBD
Steam	All	Con Edison	Steam Engineering	http://maps/steam.htm(1)	
		Con Edison	For Questions contact:	Tony Barbera	(212) 460-4843
Sewer	NYC	NYC DEP /		TBD	TBD
Water	NYC	NYC DEP /		TBD	TBD
Tunnels	Subway	NYCTA /		TBD	TBD
	Crossing the East River	TBTA		TBD	TBD
	Crossing the Hudson River	Port Authority of NY/NJ		TBD	TBD

(1) "Maps" website listed is accessible on the Con Edison Intranet.

3.2.1 Overview of Utility Markout Methods

Code 753

The Con Edison PM should instruct their consultant and/or contractor to request a Code 753 utility mark out as per the 16 New York City Rules and Regulations (NYCRR) Part 753. Consistent with the One-Call (also called Dig Safe New York) criteria, the request should be made at least 72 hours prior to initiating fieldwork. The telephone numbers of the various one-call systems are listed by region below.

New York City / Long Island:	(800) 272-4480
Westchester	(800) 962-7962

Confirmation that mark outs completed under Code 753, and as received by facsimile or telephone from the participating utility companies, should be documented on spaces provided on the Utility Clearance Checklist (**Attachment B**). The markouts should be maintained by the Con Edison PM or designated representative. If the markings become faint or obscure they should be refreshed as needed. When the utility markouts are being refreshed, a Con Edison representative or their designee **MUST** be present and observe this activity.

Con Edison M-Scope Survey

Con Edison engineering groups (see below for contacts) can conduct utility surveys using a 'M-Scope'. This tool uses the magnetic susceptibility of subsurface features such as electrical conduits, electric cables, pipes, etc. This method of survey can be subject to interference by other conductive bodies at grade or in the subsurface, such as buried pieces of metal, rebar in concrete, iron-rich soil, etc., and can be ineffective or produce misleading results in these types of conditions. A utility survey using an M-Scope can be requested by contacting the appropriate party listed below.

County	Contact Name	Telephone Number
Manhattan	Jane Shin	(212) 894-9345
Brooklyn & Queens	John Haas	(718) 348-6725
Bronx	Greg Kasbarian	(718) 904-4659
Westchester	Faney Bantin	(914) 789-6715
Staten Island	Joseph Nappi	(718) 890-6231

Private Utility Contractor

Private utility contractors employ a variety of utility detection and location techniques, which may include:

- Ground Penetrating Radar (GPR)

- Magnetometer
- M-Scope
- Electrical Conductivity
- Electrical Resistance
- Accoustics

Use of multiple methods may permit the detection and surveying of conducting and non-conducting buried utilities.

3.2.2 Applicability of Utility Clearance Resources

The use of the various utility markout resources that may be employed at various sites summarized in the table below and discussed in the remainder of this section.

Site Setting	Utility Survey by Con Edison	Utility Survey by Private Contractor	Code 753 (1)
Con Edison Facility	X	X (optional)	X[1]
Street / Sidewalk			X
Private Property	X (optional)	X	X[1]

(1) At larger Con Edison Properties (e.g., Astoria) or large private or publicly owned properties, a Code 753 survey may not be warranted.

Con Edison Facility

Utility markouts at Con Edison facilities should be coordinated by the Con Edison PM with support from the Construction Management (CM) inspector assigned to the project (if any) and/or facility personnel, as appropriate. At a minimum, an M-Scope survey should be completed. In some circumstances, a independent utility locating contractor should also be used. The use of an independent utility mark-out contractor is strongly recommended at sites where a variety of utilities are known or suspected to be present and which may not be readily identified or mapped using M-Scope alone. A benefit of using a utility locator contractor is that, as described above, they can provide a greater array of tools to locate a variety of subsurface utilities that are non-conductive, such as concrete sewer lines, PVC pipes, etc. in addition to identifying/confirming the presence and location of conductive utilities.

Private Property (including Soil Gas Sampling Probes)

A independent utility locator should be used for utility markouts on private properties. It is noted that utility markouts in basements or slab-on-grade constructed buildings may be inconclusive due to the presence of rebar or welders-mesh commonly used as reinforcement in concrete. Accordingly, a thorough inspection of the basement floor and walls should be performed to identify where utilities enter and leave the building. Sub- or in-floor utilities often enter the floor perimeter, at support columns, and/or dividing walls. The observation of utilities entering the floor may indicate utilities that lie within or immediately beneath the concrete basement slab. If the location of the utility layout of any such sub- or in-floor utility cannot be effectively determined, then any intrusive work must be discussed with the Con Edison PM and may require that no intrusive activities be performed at that location.

Public Street / Sidewalk

A combination of Con Edison utility survey staff and independent utility locator contractors should be used for work areas located in and along roadways. Since Con Edison maintains utilities in streets and along sidewalks, in addition to the mark outs performed through the Code 753 survey, an M-scope survey should be performed within a 10 foot radius of each proposed sample location.

3.3 Site Walk

After completion of the activities outlined above, a site walk shall be conducted by the Con Edison PM with participation from Construction Management, contractors (drillers, soil gas, excavators, etc.), Con Edison facility managers, NYSDEC (as deemed appropriate by the Con Edison PM), and private facility managers/property owners. The key objectives of the site walk are to:

- Review the all planned locations where invasive activities will be performed,
- Adjust the positions of the locations away from utilites as marked out (as necessary)
- Collectively determine the appropriate utility clearance activities (e,g., test pits, etc.) that will be performed at each location (as described in Section 3.4) and document all decisions and /or concerns using the Utility Clearance Checklist (as described in Section 4.0) and in **Table 2**.

Other site conditions and project issues assessed during the site walk should include:

- Presence and location of overhead utilities and/or obstructions that might prevent the safe operation of drilling /excavating equipment;

- Presence of, or need for, appropriate grounding for electrical equipment at the site;
- Site access to equipment;
- Storage of equipment/supplies overnight (e.g., establish a staging area);
- Storage and management of investigative derived waste (IDW);
- Hours of on-site work;
- Permits needed, if any;
- Review roles and responsibilities of all project personnel who will be onsite;
- Review site and emergency contacts; and
- Review anticipated schedule of work.

3.4 Utility Clearance - Sample Location Confirmation

The appropriate actions necessary to confirm the location and/or absence of utilities, which are agreed on during the site walk and as documented in the Utility Clearance Checklist and in **Table 2**, will be implemented at each sample location during the investigation. As discussed above, and consistent with th Utility Clearance Process Flow Chart, the actions will generally include one or more of the following:

- Moving the location outside the *tolerance zone*, if possible. If no *tolerance zone* is marked out during the utility survey (i.e., only a utility center line is marked), the *tolerance zone* will be defined in the field as: *the distance of one-half of the known diameter of the utility plus two feet on either side of the centerline as marked out.*
- Performing a utility clearance test pit at each location where intrusive work will be performed; and/or
- Performing a utility clearance test pit using non-mechanical means to expose and physically verify the exact location and configuration of all nearby utilities.

Brief descriptions of the activities that will be completed during the various investigation activities are discussed below.

NOTE: When working within 12 feet of high pressure gas lines (i.e., 125 psig or greater), Gas operations shall be contacted and the gas line will be carefully excavated by hand in accordance with the Gas Operations Standard G-11863, titled "Inspection and Maintenance Requirements Associated with the Excavation Activities Near Gas Pipelines Operating at 125 psig and Above".

Soil Borings / Monitoring Wells

All locations within the tolerance zone should be moved outside the zone, if possible. After moving the location, a utility clearance test pit should be excavated to a minimum of 5-feet below ground surface using non-mechanical methods, such as hand auger, post-hole digger and/or vacuum truck. The diameter of the test pit should be at least two inches wider than the outer diameter (OD) of the mechanized drilling equipment. The 5-foot depth is consistent with the concept that most utilities are typically installed within the top five feet of the subsurface.

NOTE: Utilities may be deeper than five feet due to buildup of surface grade on properties and or streets or right-of-ways. Although the original depth of utilities is anticipated to be within the upper five feet, utilities that are buried in areas that have been built up will presently be deeper by the thickness of the built-up material.

Intrusive investigation locations where physical space prohibits the relocation of proposed sample locations outside the tolerance zone, the adjacent utility(ies) will be exposed by excavating using non-mechanical methods to visually confirm its physical location and configuration. This confirmatory excavation will be completed in addition, a 5-foot excavation at the specific location being investigated (e.g., soil boring, monitoring well boring, etc.), as described above.

Soil Gas Sampling

At soil gas sample locations, test pits will also be excavated to one foot below grade or below the bottom of a concrete floor, if present, prior to installation of soil gas sample probes points. The one-foot depth specified is consistent with the concept that most utilities that could be impacted by the advancement and emplacement of the probe points, such as telephone lines, local electric (e.g., for outdoor lighting), cable television, in-ground sprinkler lines, etc., are typically installed from grade to a depth of one foot.

Basements / Indoor Soil Borings and Monitoring Wells

Prior to installing a soil boring, monitoring well or soil gas sample probe point in a basement and after identifying that no utilities are present in the floor of the basement or foundation slab (as per Section 3.2.2), an electric powered diamond core drill, concrete saw or jack hammer will be used to advance through the concrete and expose the underlying soil. At each location where soil borings and/or monitoring wells will be installed, a hand excavated test pit will then be advanced to a depth of five feet below the

bottom of concrete slab. This test pit should be excavated using hand auger, post-hole digger and/or vacuum truck in tandem with a non-conductive probe rod, which can be used to confirm the absence of utilities to a depth of five feet below the bottom of the concrete slab.

NOTE: The use of a jack-hammer to loosen compact soil while hand excavating a utility clearance test pit is strictly prohibited, except as noted above.

Exploratory Test Pit/Trench

Exploratory test pits/trenches will be performed to identify the presence or absence of subsurface structures related to former operating facilities at the site, such as gas holder foundations at former manufactured gas plant (MGP) sites, and should not be confused with *utility clearance test pits* discussed above. The *exploratory test pits* or *trenches* will typical have dimensions of approximately five feet wide by 10 feet deep by 10 to 20 long, accordingly, excavating them by hand is impracticable. The excavation of *exploratory test pits/trenchs* must be approached with heightened awareness as the potential for damaging subsurface utilities, if present, is great.

In efforts to develop a reasonable degree of confidence that utilities will not be encountered during excavation of *exploratory test pits/trenches*, a focused utility survey will be conducted in the area immediately surrounding the test pit or the area defined by a boundary established by measuring five feet perpendicular from all sides of the proposed exploratory test pit boundaries. For example, if the surface dimensions of the exploratory test pit are 10 feet long by 5 feet wide, the surrounding area of the focused utility survey will have dimensions 20 feet long by 15 feet wide. It is suggested that the focused utility survey should be completed after all other on-site surveys have been completed. This will allow the surveyor(s) to develop a better understanding of the site-wide subsurface utility configuration.

Following completion of the focused utility survey, *utility clearance test pits* will be excavated by hand to confirm the presence of any and all utilities identified within five feet from the exploratory test pit/trench. After exposing the utilities, the excavator can proceed to excavate the *exploratory test pit/trench*, however, the operator should be experienced with digging in areas where underground utilities may be present and should use the utmost care when performing the excavation. Excavation should proceed slowly enough so that any obstruction/structure encountered can be evaluated and to confirm that the structure is not a utility.

4.0 Checklist Completion

The Utility Clearance Checklist (**Attachment B**), as well as the overall Utility Clearance Process to locate and clear utilities was designed to be dynamic. Accordingly the Utility Clearance Checklist should be updated throughout the process as each utility clearance activity is completed. During the site walk and after all utility-related issues at each location have been identified and addressed to the satisfaction of all project personnel, the

relevant portions of the Utility Clearance Checklist will be completed and signed by all participating parties. It is noted that the Utility Clearance Checklist will be considered complete only after all proposed utility clearance actions identified during the site walk have been successfully implemented and all pertinent sections have been signed.

5.0 Exceptions to Requirements of the Utility Clearance Process

Due to the inherent diversity and conditions present at project sites, some general exceptions to the utility clearance process are identified below.

- Sites where extensive utility mapping has been completed and/or where extensive intrusive activities have already been performed.
- Locations where facility layout is well documented and understood.
- Sites or portions of large sites (e.g., Astoria facility) where utilities are known not to exist currently or to not have ever existed throughout the life of the facility, property or site.

All circumstances where one or more steps of this process are not being implemented must be discussed with the Con Edison PM and must be duly documented. Regardless of whether or not exceptions are made during the utility clearance process, a Utility Clearance Checklist should always be completed for each site, in accordance with the terms outlined in Section 4.0 of this document.

ATTACHMENT A

Utility Clearance Process Flow Chart

Utility Clearance Process During Intrusive Activities
E H & S – Remediation Group

CON EDISON FACILITY

PM to Obtain & Review
Facility Excavating Procedure

As stringent as Remediation's process?

No

Yes

Use Facility Clearance Protocol

PM to Obtain Plates for all CE Utilities
Steam, Electric, Gas, etc.

Perform Utility Markout:
- Con Edison Mark-out Staff and/or
- Private Utility Locating Contractor

PRIVATE PROPERTY

PM to Review Drawings
- Department of Buildings
- Department of Public Works
- Building Plans at Facility

Perform Utility Markout:
- Private Utility Locating Contractor
- Con Edison Mark-out Staff

STREET / SIDEWALK

PM to Obtain Plates for all CE Utilities
Steam, Electric, Gas, etc.

Review Drawings
- Department of Buildings
- Department of Public Works
- Others (NYCTA, DEP, etc.)

Contractor to Request Code 753 Mark-out:
- Provide maps of locations
- Request sn-site work
- Obtain mark-out confirmations

Contractor to Request Code 753 Mark-out:
- Provide maps of locations
- Request on-site work
- Obtain mark-out confirmations

Site Walk for Location Confirmation
Prior to Intrusive Activities
- Con Edison PM
- Construction Management
- Project Consultant
- Contractor (Driller, excavator, etc.)
- Complete Utility Clearance Checklist

No

Indoors / Basement

Yes

Inspect Basement
Attempt to visually locate all utility service lines into and out of the walls and floors of building.

Drill Through Concrete
(Use Core Drill)

Soil gas sample below slab?

Yes

No

Box A
Hand auger one foot prior to driving soil gas sample probe to required depth

Yes

Utilities identified within 2 feet from proposed sample location

NOTE: If location is near a high pressure Gas main (>125 psig then) MUST contact Gas Ops and hand expose.

No

Can location be moved at least 2 feet from all utilities?

Yes

Move it

No

Hand Excavate
To locate nearby utility

Excavate Test Pit by Hand or Vacuum Truck

- Soil Boring / Monitoring Wells

Excavate test pit using hand auger , post-hole digger and/or vacuum truck: minimum hole diameter 2-inches greater than diameter of Auger and minimum of 5 ft deep. Use non-conducting probe rod during excavation.

(**NOTE:** for soil gas only go to **Box A**)

ATTACHMENT B

Utility Clearance Process Checklist

CHECKLIST FOR INTRUSIVE FIELDWORK

PROJECT BACKGROUND INFORMATION

Site Name: _____ **Job #** _____

Site Address: _____

Con Edison Project Manager: _____ **Phone:** _____

Con Edison Site Manager: _____ _____

Consultant Project Manager: _____ **Phone:** _____

Consultant Site Manager: _____ **Phone:** _____

Subcontractor (driller, excavation, etc): _____

Subcontractor's Contact Person: _____ **Phone** _____

Meeting / Start Date _____ **Time** _____

HEALTH AND SAFETY PLAN REVIEW

Name: _____ **Signature:** _____ **Organization:** _____ **Date:** _____

Name: _____ **Signature:** _____ **Organization:** _____ **Date:** _____

Name: _____ **Signature:** _____ **Organization:** _____ **Date:** _____

Health and Safety Form Completed: _____ **Date** _____

Site Drawings (yes/no/NA): _____ **(Attach site figure with proposed boring locations)**

CODE 753 UTILITY MARK-OUT RREQUESTED? Y / N

Called by: _____ **Organization:** _____

Date: _____ **Time** _____ **Initials** _____

Reference # _____

Utility Drawings Received: _____ (Attach copy of utility maps)

UTILITY INVENTORY

Utility	Utility Company Name	Depth (ft)	Phone	Date Notified	Notification Method	Marked
Above Ground Services:						
Electric		NA				Y / N
Telephone		NA				Y / N
Cable		NA				Y / N
Overhead Supports		NA				Y / N
Traffic light cables		NA				Y / N

Notes: _____

CHECKLIST FOR INTRUSIVE FIELDWORK

UTILITY INVENTORY (continued)

Below Ground Services:

Electric						Y / N
Telephone						Y / N
Cable						Y / N
Gas						Y / N
Water						Y / N
UST System						Y / N
Storm						Y / N
Sanitary						Y / N
Steam						Y / N
Pipeline Companies						Y / N
Other (Tunnels, etc.)						Y / N

PRIVATE UTILITY LOCATING SERVICE RETAINED? Y / N

Called: Date _____ **Time** _____ **Initials** _____

Name of Locating Service: _____

Telephone #/ contact: _____

Type of sensing equipment used: _____

METAL DETECTOR SURVEY

Drilling location cleared by Parsons with a metal detector: **By (initials):** _____ **Date:** _____

INTRUSIVE SAMPLING LOCATIONS MARKED, M-SCOPED AND CLEARED

Locations Marked by: _____ Date: _____

M-Scope performed by: _____ Date: _____

Conduct Site Walk and Complete Site Walk Table

ACKNOWLEDGEMENT

We the undersigned have participated in a site walk at _____ to review proposed intrusive sampling locations and to evaluate the presence, configuration and identification of utilities at this site, as marked out. We agree with the proposed activities that will be completed prior to conducting intrusive work. The utility clearance activities will be completed as summarized in Table A (attached).

Name:		**Signature:**		**Organization:**		**Date:**	
Name:		**Signature:**		**Organization:**		**Date:**	
Name:		**Signature:**		**Organization:**		**Date:**	
Name:		**Signature:**		**Organization:**		**Date:**	
Name:		**Signature:**		**Organization:**		**Date:**	
Name:		**Signature:**		**Organization:**		**Date:**	

CHECKLIST FOR INTRUSIVE FIELDWORK

ADDITIONAL COMMENTS / NOTES:

Utility Clearance
Site Walk Summary Table

Sampling Location	Nearest Utility Distance	Nearest Utility Type	Depth	Clearance Required (Y/N)	Accepted Clearance Method	Rationale for Clearance Method	Depth of Clearance	Date Utility Cleared	Findings /Comments

Signature of Site Walk Participants - Remediation PM: _____ Date Site Walk Conducted:

Construction Management: _____

Consultant PM: _____

Contractor: _____

Table 1 - Summary Table of Resources for Obtaining Subsurface Utility Plates and Drawings

Utility Type	County	Company	Organization	Name	Telephone Number
Electric	All	Con Edison	Electric Engineering	http://maps/AdvancedMappingSystem.htm(1)	
			For Questions contact:	John Ensemplare (Mgr. – B&Q)	(718) 802-5540
				Mike Mitchell (Mgr. – Manhattan)	(212) 460-1119
				Richard Mariani (Mgr. – Westchester)	(914) 925-6026
Gas	All	Con Edison	Gas Engineering	http://maps/steam.htm(1)	
			For Questions contact:	Mike Verlizzo (Mgr.)	TBD
Steam	All	Con Edison	Steam Engineering	http://maps/steam.htm(1)	
		Con Edison	For Questions contact:	Tony Barbera	(212) 460-4843
Sewer	NYC	NYC DEP /		TBD	TBD
Water	NYC	NYC DEP /		TBD	TBD
Tunnels	Subway	NYCTA /		TBD	TBD
	Crossing the East River	TBTA		TBD	TBD
	Crossing the Hudson River	Port Authority of NY/NJ		TBD	TBD

(1) “Maps” website listed is accessible on the Con Edison Intranet.

CONSOLIDATED EDISON COMPANY OF NEW YORK
CONSTRUCTION EH&S
CONTRACTOR INJURY REPORT

Injury Date: _____ *Time of Injury:* _____ *Work Location:* _____

Date Reported: _____ *Time Reported:* _____

Name of Injured: _____ *Contractor Co:* _____

Home Address: _____

Date of Birth: _____ *SS# (Last 4 digits):* _____ *Length of Svce:* _____

Supervisor: _____ *Phone:* _____ *Shift:* _____

PART OF BODY

Be as specific as possible (e.g. right index finger, left foot, etc.)

_____ 1. Head
_____ 2. Nose
_____ 3. Ears
_____ 4. Eyes
_____ 5. Mouth
_____ 6. Face
_____ 7. Jaw
_____ 8. Neck
_____ 9. Shoulder
_____ 10. Elbow
_____ 11. Wrist
_____ 12. Arm
_____ 13. Hand
_____ 14. Finger
_____ 15. Chest
_____ 16. Abdomen
_____ 17. Back
_____ 18. Hip
_____ 19. Knee
_____ 20. Ankle
_____ 21. Leg
_____ 22. Foot
_____ 23. Toe
_____ 24. Body
_____ 25. Heart
_____ 26. Lungs
_____ 27. Skin
_____ 28. Throat

NATURE OF INJURY / ILLNESS

_____ 1. Laceration
_____ 2. Puncture
_____ 3. Contusion / Bruise
_____ 4. Sprain / Strain
_____ 5. Fracture / Dislocation
_____ 6. Concussion
_____ 7. Amputation
_____ 8. Foreign Matter
_____ 9. Burns
_____ 10. Shock
_____ 11. Inhalation
_____ 12. Infection
_____ 13. Hernia
_____ 14. Skin Disorder
_____ 15. Irritation
_____ 16. Unconsciousness

INJURY CLASSIFICATION

Medical Treatment _____
Restrictions (if yes, please describe): _____
Lost Time _____
First Aid _____
Non-recordable (FYI) _____

TYPE OF INCIDENT

_____ 1. Animal
_____ 2. Insect
_____ 3. Electric flash
_____ 4. Electric contact
_____ 5. Burns (Other)
_____ 6. Slip
_____ 7. Trip
_____ 8. Fall
_____ 9. Flying Objects
_____ 10. Falling Objects
_____ 11. Gas / Fumes
_____ 12. Handling Objects
_____ 13. Pushing Objects
_____ 14. Pulling Objects
_____ 15. Lifting Objects
_____ 16. Striking Objects
_____ 17. Struck By Objects
_____ 18. Stepped On
_____ 19. Stepped In
_____ 20. Caught Between
_____ 21. Altercation
_____ 22. Improper Body Pos
_____ 23. Vehicle Accident
_____ 24. Improper Tool Use
_____ 25. Flames
_____ 26. Smoke
_____ 27. Vapors
_____ 28. Steam
_____ 29. Heat
_____ 30. Sun
_____ 31. Chemicals
_____ 32. Plants
_____ 33. Carrying Obj
_____ 34. Hearing Loss
_____ 35. Repetitive Motion
_____ 36. Other

Describe nature, extent and type of injury (if not listed above):

_____

Describe fully how injury was sustained:

_____

Witnesses (Name & Address): 1) _____
2) _____

Hospital: _____ Address: _____

Physician: _____ Admitted to Hospital: _____YES _____NO

Treatment Received: _____

Report Prepared By: _____ Emp #: _____ Phone: _____ Date: _____

CCI / Supervisor: _____ Emp #: _____ Phone: _____

EH&S Rep: _____ Emp #: _____ Phone: _____

PO # _____

If you cannot e-mail the form, then you may fax it to: Construction EHS&T at 917-534-4490

ATTACHMENT 3
EH&S HAZARD ANALYSIS FOR CONTRACTOR WORK
CONSTRUCTION MANAGEMENT: Buildings & Stations - Remediation
PROJECT: **MGP Site Characterization**
LOCATION: **Former Ludlow Street Gas Works Site, Yonkers, New York**

Section	Applicable Yes	Applicable No	Comments	Indicate Section in EHASP item(s) discussed
1.0 Introduction	X		Provide Scope of Work, Chain-of-Command, Responsibilities	
2.0 Air Resources	X		State that vehicles/equipment not permitted to idle in excess of three minutes unless operation is required for work (e.g. vacuum truck, bucket truck, etc.)	
3.0 Asbestos Awareness		X		N/A
4.0 Bloodborne Pathogens Exposure Control Plan (including first aid)	X		Please indicate the First Aid and BBP equipment you will maintain at the site and employee training as required by OSHA.	
5.0 Chemical Safety & Handling	X		Please provide MSDS sheets for any chemicals that will be used. MSDSs must be the most current ones available and will not be accepted if they are older then 5 years. Chemicals must be pre-approved before arriving on site. Discuss HAZCOM training, container labeling, etc.	
6.0 Confined Space Program		X	Entries into confined spaces, including manholes, should not occur. If this is not the case, Parsons will need to prepare a HASP Addendum for this activity.	N/A
7.0 Electrical Safety	X		Include a statement regarding underground utility clearance overhead clearance limits, as applicable, as well as use of GFCI, appropriate extension cord use with no breaks in outer cover, ground pins in place, etc.	
8.0 Electrical Enclosed Spaces		X		N/A
9.0 Excavation & Trenching	X			
10. Fish, Wildlife and Wetlands		X		N/A
11. Fire Protection & Prevention	X		Discuss fire prevention issues (e.g. extinguishers present, re-fueling procedures, etc.) as appropriate.	
12. Gas Enclosed Spaces		X		N/A
14. Hearing Conservation	X		Discuss Action Levels for wearing hearing protective devices (HPD), noise monitoring and calibration equipment, and the types of HPDs to be used.	
15. Insulation Materials		X		N/A
16. Lead Management Program		X	Con Edison assumes that all paint contains lead unless tested otherwise. Employees must have awareness level training.	N/A
17. Management of Change	X		Please indicate how you will manage unexpected changes in the scope of the work (i.e. HASP addenda with Con Edison review/acceptance prior to beginning that work).	

Section	Applicable Yes	Applicable No	Comments	Indicate Section in EHASP item(s) discussed
18. Material Handling	X		Please indicate how materials and equipment will be moved about the site.	
19. Mechanical Equipment	X		Address all safety and environmental issues related to the equipment being used ("Guzzlers", drill rigs, etc.).	
20. Mercury Management		X		N/A
21. Noise	X		Please address how you will manage community noise issues.	
22. Oil & Dielectric Fluid	X		Please address spill cleanup equipment that will be available to clean up/prevent any spills (e.g. oily water found upon opening manholes, etc.)	
23. PCB Management		X	Con Edison assumes that all paint contains PCBs unless tested otherwise. Employees must have awareness level training (HAZCOM).	N/A
24. Personal Protective Equipment	X		Please indicate the appropriate PPE for the various tasks to be performed.	
25. Pesticide/Herbicide		X		N/A
26. Respiratory Protection Program	X		If any task requires respiratory Protection please describe. Copies of medical clearance and fit test documentation will be required to be provided to Con Edison for each worker who may wear a respirator.	
27. Sampling	X		Describe any/all dust, noise, fume/vapor OSHA-type sampling to be performed. Include the instrumentation to be used and calibration procedures for that equipment.	
28. Vehicle Management	X		Concerned particularly with vehicle/equipment spills. Describe how any fluids released will be prevented from getting into the environment.	
29. Waste Management	X		How/by whom IDW will be managed (i.e. stored, characterized, and to where it will be transported and disposed).	
30. Water Resources	X		See Waste Management, No. 29, above	
31. Welding & Burning		X		N/A
32. Work Area Protection	X		Describe how your work space will be protected from vehicles/traffic for any activities in the streets. Also describe how the EZ, CRZ, and SZ will be delineated.	
33. Working at Elevations	X		Open manhole protection precautions (i.e. manhole cages?)	
34. Drug and Alcohol Program		X		N/A
35. FR Clothing		X		N/A
36. Close Call Program	X		Contractors shall report close calls. Provide a statement as such. Additionally, Con Edison expects the Contractor to prepare a root cause investigation report and Preventative Action Plan (PAP) with Con Edison acceptance of the PAP for all Close Calls experienced on the job.	

Section	Applicable Yes	No	Comments	Indicate Section in EHASP item(s) discussed
37. Job Briefings	X		Provide that daily documented job briefings are required	
38. Time Out Program	X		Contractor's employees and subs are authorized to call a *Time Out*. Provide a statement/program as such. See attached example program for the Contractor's use should they want.	
39. Other – Emergencies/Injuries/Accidents	X		State that Contractor shall prepare a root cause investigation report and Preventative Action Plan (PAP) with Con Edison acceptance of the PAP for all injuries to workers, Con Edison personnel, or the Public.	

Provided by: Con Edison Maintenance & Construction Services: Remediation (*date*): [03/03/08]

(a) Environmental & Safety – *Thomas O'Connell, Project Specialist*
O'Connellt@coned.com

Received by:
Contractor Representative: _____
(Name & Date)

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

LAND USE

CEHSP E08.02 – Noise Construction and Utility Activities

(CEP converted to CEHSP on 07/24/2008)

Revision 5: 12/10/2008 Effective Date: 12/10/2008

CONTENTS

SECTION 1.0 – PURPOSE
SECTION 2.0 – APPLICABILITY
SECTION 3.0 – INTRODUCTION
SECTION 4.0 – COMPLIANCE REQUIREMENTS
- 4.1 – FIELD OPERATIONS
- 4.2 – OPERATIONS UNDERTAKEN OUTSIDE OF PERMISSIBLE TIMES
- 4.3 – MONITORING NOISE METHODOLOGY

SECTION 5.0 – DEFINITIONS
SECTION 6.0 – REFERENCES
- ATTACHMENT 1 – NORMAL FIELD OPERATION REGULATIONS
- ATTACHMENT 2 – UTILITY NOISE MITIGATION PLAN TEMPLATE
- ATTACHMENT 3 – CONSTRUCTION NOISE MITIGATION PLAN TEMPLATE
- ATTACHMENT 4 – NOISE REGULATIONS FOR OPERATIONS UNDERTAKEN OUTSIDE OF PERMISSIBLE TIME

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH STATE AND LOCAL REGULATIONS PERTAINING TO NOISE. The purpose of this procedure is to ensure that all company personnel perform appropriate actions to prevent ***unreasonable noise*** and comply with permissible noise limits.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to all Con Edison personnel and contractors, both on and off Con Edison facilities and at field locations, who attend to Con Edison equipment, facilities, or operations that create noise that could be considered unreasonable.

3.0 INTRODUCTION

New York City, and many local governments in the Company's service area have restrictions on the level of noise that may be produced. In general, these limits apply to two types of situations: ***facility operations***, and ***field operations***. In New York City, however, three distinct situations apply: ***facility operations***, construction activities and utility activities (street work). In addition, the restrictions vary by time of day. Con Edison has compiled tables summarizing the noise regulations applicable in the Company's service area. These tables can be found in Attachments *1* and *2*.

In addition, New York State regulations address noise from certain heavy duty trucks. These requirements are discussed in Section 4.4, New York State Noise Requirements.

4.0 COMPLIANCE REQUIREMENTS

Equipment and operations associated with Con Edison facilities and services can produce noise. All equipment used by Con Edison should be in good working order, properly maintained, and properly used. Where possible, noisy equipment should not be located near ***noise-sensitive areas and/or sensitive receptors***, e.g., schools, hospitals, and churches.

Where a given operation could be accomplished using a variety of equipment, equipment with operating characteristics that produce less noise should be used. The facility or field manager is responsible for ensuring compliance with all federal, state and local noise regulations.

Qualified personnel should execute the procedures regarding noise measurements described in the following sections. Qualified personnel are defined as personnel from Con Edison Technical Service, who are trained to make noise measurements according to American National Standards Institute ***(ANSI)*** standards, and are operating under the advice from Con Edison's Environment, Health and Safety (EH&S) noise subject matter expert (SME). The person should be familiar with the make and type of equipment used in these measurements, calibration and should be experienced in general noise data collection procedures. The person should be able to identify ***impulsive*** and ***tonal noise.*** Measurements should be made using a Type 1 ***Sound Level Meter (SLM)*** / preamplifier/microphone combination.

4.1 FIELD OPERATIONS

Field operations include maintenance, installation, upgrade, and repair of Con Edison equipment. These types of operations include repair or installation of aboveground and belowground power transmission conduits (electrical, natural gas, steam), repair or installation of power transmission equipment, tree maintenance, on-site or off-site construction or demolition, and use of any safety equipment associated with these procedures.

Most field operations, other than operations undertaken outside of permissible times, can be thought of as construction activities. Construction activities additionally covered under this CEHSP include any activity (except tunneling) necessary or incidental to the erection, demolition, assembling, altering, installing, or equipping of buildings, public or private highways, roads, premises, parks, utility lines including such lines in already-constructed tunnels or other property, land clearing, grading, excavating and filling. Many communities have time restrictions on such activities, which must be adhered to. Additional requirements (discussed below), including the preparation of a Noise Mitigation Plan and additional sound-reducing devices, are required for work performed in New York City.

Unreasonable Noise

In addition to time restrictions, certain noise codes have specific regulations that must be followed regarding field activities. These regulations are summarized below.

- Construction devices – Prohibiting use of construction devices (e.g., air compressor, pile driver, bulldozer, crane, hoist) so as to create unreasonable noise.

- Containers and construction material – Prohibiting handling or transport of any container or any construction material in a public place so as to create unreasonable noise.

- Exhausts - Except as otherwise provided in the New York City code, prohibiting discharge into the open air of the exhaust of any device, including but not limited to any steam engine, diesel engine, internal combustion engine or turbine engine, so as to create unreasonable noise.

- Power tools – Prohibiting use of power tools (e.g., nail guns, saws, vacuums, drills) so as to create unreasonable noise.

- Schools, hospital, courts – Prohibiting unnecessary noise through the use of any device on any street adjacent to any school or court while the same is in session, or adjacent to any hospital.

- Sensitive receptors – Prohibiting unnecessary noise through the use of any device within 50 feet of a school, house of worship, hospital, retirement community, open tract of serene land, park or recreation area, and psychiatric centers.

4.1.1 Utility Activities Within New York City

Negotiations with NYCDEP from 2005 to 2006 resulted in the partial exemption for utility-related construction, such as street activities, cable and pipe replacements, and new infrastructure installation.

Utility-related Construction must meet the following requirements:

- Each site where utility-related construction activities occur, or construction devices/tools are used, must have a filled-out Utility Noise Mitigation Plan on-site and posted. This requirement does not apply to safety devices utilized while performing routine maintenance task, such as ventilation blowers.

- OJT/Tailboard Talk training for all personnel who perform utility-related construction is required. Although our present CEHSP and GEIs satisfy this training requirement, additional training has been developed to assist with full compliance.

- The new code has restrictions on the types of tools that can be used, rather than list noise limits for each type as in the prior code requirements.

- Sensitive Receptors such as hospitals and schools adjacent to work locations should be communicated with prior to work starting when possible.

- For work longer than 3 days continuously in one location, postings and other communication must be sufficient to inform all residents within 200 feet of schedule.

Utility Noise Mitigation Plans

A utility noise mitigation plan template is included as *Attachment 3*. The utility noise mitigation plan should be filled out by the job supervisor or field foreman prior to the start of construction activities – only devices deemed in compliance with NYCDEP regulations shall be utilized. If there are any deviations from the approved items, the ConEd noise SME must be consulted prior to the start of work activities.

Elements of the utility noise mitigation plan include the following requirements:

- Self-certification that tools/equipment maintained so they operate at normal manufacturer's operating specifications.
- Tools/equipment must be equipped with appropriate manufacturer's noise reduction device.
- Specialized vehicles require use of additional noise mitigation measures.
- Use of noise-insulating fabric for portable pumps, compressors, generators, etc.
- Quieter equipment shall be used when available or when required by the NYCDEP. Prohibit unnecessary engine idling.
- Properly install and secure steel traffic plates – must re-set and secure within 24 hours of a call from the DEP to the utility.
- Notify all residents within 200 feet of construction area when work is scheduled to be longer than 3 days.
- Notification shall include information on schedules/work locations.
- Respond to all noise complaints/official DEP notice on same day. If after hours, respond next day.
- Phase in vehicles with quieter backup alarms – already being done at ConEd.
- Establish / implement formal noise mitigation training program.
- Includes field supervisory personnel and subcontract supervisors.
- Supervisors shall field-train all field workers.
- Minimize noise impact of sensitive receptors.
- Schools, hospitals, places of worship, etc.
- Required to work with facility owner/operator.
- Perimeter ***noise barriers*** must be used in accordance with 28-101(g) of NYC Chapter 28.
- If project is non-emergency, long-term (greater than 15 days) where there is a dedicated lane, must comply with 28-100 through 28-104.

Permissible Hours of Utility Activities

Regulations concerning utility activities within New York City are listed below. All utility-related construction activities which fall outside these hours require after-hours authorization from the NYCDEP, the NYCDOB, or the NYCDOT. Additional noise mitigation methods may also be required if the NYCDEP so indicates for after-hours work.

Hours of Work are to be in accordance with NYC DOT permit stipulations and/or NYC DOT Highway Rules, generally 7 AM through 10 PM weekdays for utility activities. Please note the extension to 10 p.m., also applies to Con Edison's contractors. Additional mitigation techniques for receptors within 200 feet may be required by the DEP for hours between 10 PM and 7 AM during weekdays and 7PM through 7AM during weekends.

4.1.2 Construction Operations Within New York City

Construction Activities

General construction and demolition will have to meet the Utility requirements in addition to the following:

- More complex Mitigation Plans (must be completed as part of planning the work and prepared with the assistance of the noise SME)
- Specific mitigation requirements for a variety of tool/equipment types
- Certain activities may require enclosures/barriers to reduce noise
- Certain projects with perimeter construction fences shall be required to have noise attenuating material added to the fencing
- Quieter or "smart" back-up alarms are required.

Construction Noise Mitigation Plans

All construction work performed within New York City must be performed in accordance with NYC Administrative Code, Chapter 28. For all construction activities, a Noise Mitigation Plan (*Attachment 3*) must be completed. Only NYCDEP-approved devices or equivalent may be used on-site. NYCDEP must approve the plan, however would pre-approve generic plans with checklists for certain repetitive work. Consult with the Corporate Environmental Health and Safety Department for assistance.

The Mitigation Plan must be written and clearly posted at the job site. Elements of the construction and demolition noise mitigation plan include the following requirements:

- More complex Mitigation Plans (must be completed as part of planning the work and prepared with the assistance of the noise SME)
- Residents within 200 feet of a construction site shall be given notice when work is scheduled for longer than 3 days. Conspicuous posting of such information, or where necessary notification of building managers/owners, shall satisfy this requirement.
- The owner/operator of sensitive receptors (e.g. schools, hospitals and places of worship), adjacent to this site, shall be contacted when practicable to coordinate work to minimize impact on the property.
- Self-certification that tools are maintained so that they operate at normal manufacturer's operating specifications. The NYCDEP will refer to an outside source to determine if your equipment "may be the source of a noise complaint".

- Use of mufflers/noise mitigation devices on equipment and construction vehicles to meet requirements. *(Note: If equipment continues to exceed level as specified in the Appendix of Rules, a five day cure periods is allowed to perform maintenance, replace equipment and file an Alternative Noise Mitigation Plan.)*

- Mitigation of noise from internal combustion engines.

- Prevention of vehicle idling and use of quieter backup alarms.

- Use of noise barriers if site is within 75 feet of a residential receptor or 200 feet of ANY receptor.

- By January 1, 2008, quieter or "smart" back-up alarms will be required.

- Construction projects that are not regard as "utility work" (e.g. building construction or demolition, major renovation, or any installations) that are not completed within **15 calendar days**, will not fall under the same exemption as work on the system.

- Construction material shall not be handled in such a way as to create unreasonable noise.

Permissible Hours of Construction

Regulations concerning construction activities within New York City are listed below. All construction activities which fall outside these hours require after-hours authorization from the NYCDEP, the NYCDOB, or the NYCDOT. Additional noise mitigation methods (such as noise barriers) are required if work is performed outside these hours.

Hours of Work are to be in accordance with NYC DOT Permit Stipulations and/or NYC DOT Highway Rules, generally 7 AM through 6 PM weekdays for construction activities. Additional mitigation techniques for receptors within 200 feet may be required by the DEP for hours between 7 PM and 7 AM during weekdays and during weekends. There is an exception for occupied one or two family dwellings, convents or rectories between 10 a.m. and 4 p.m. on wither Saturday or Sunday (Note: Must be a minimum of 300 feet from house of worship).

4.1.3 Operations Outside New York City

Permissible Hours of Construction

Regulations concerning normal field operations are listed in the table in *Attachment 1*, Normal Field Operation Regulations. Except where indicated, these are simply day and time restrictions imposed by the various communities. In many cases, providing that field operations do not occur outside these day and time restrictions, the field operations will be in compliance with the local noise codes.

Specific Requirements

Some noise codes require special muffler requirements on devices such as engines, air compressors, and pavement breakers. In addition, certain communities impose noise limits on construction activities. If there are specific noise levels stated in the Special Requirements column of the table in *Attachment 1*, noise monitoring may be required. Careful attention should be given to the equipment and vehicles used in field operations utilizing impact equipment that

emit high impulsive noise levels such as pile drivers, pavement breakers, and steam shovels. [6] P

The following procedures apply only to field operations that require noise monitoring as indicated in *Attachment* 1 and may be skipped if no special requirements are listed in Attachment 1.

4.2 OPERATIONS UNDERTAKEN OUTSIDE OF PERMISSIBLE TIMES

In some jurisdictions, noise from operations undertaken outside of permissible times as a result of dealing with emergency situations is exempt from local noise restrictions. However, some jurisdictions impose time limits on such operations, may require a variance for such operations, and/or may require repair operations to commence within a certain time limit of the ***emergency event***. NYC may issue variance from noise standards for the construction activity. Variance may be granted for the initial period of three days and then renewed. The variance must be clearly posted. If work must begin without variance, an application must be submitted within ***12*** **hours** of commencement.

4.2.1 Utility Activities Within New York City

For utility work conducted outside of 7AM – 10 PM on weekdays, additional authorization must be obtained from NYCDOB, NYCDOT or NYCDEP to work outside those hours. From 6PM – 10PM weekdays, any required daytime noise mitigation controls must be utilized. From 10PM – 7AM weekdays and 7PM – 7AM weekends, additional noise mitigation controls may be required by the DEP if there are any receptors within 200 feet. This will be determined on a case-by-case basis.

4.2.2 Construction Operations Within New York City

In New York City, in the case of urgent necessity in the interest of public safety, the NYCDEP is authorized under the New York City Noise Code to issue a variance from the provisions of the Construction Activity Noise Code provisions for any such construction activity. Such a variance may be granted for an initial period of up to 3 days, and may be renewed for periods of 3 days or less while such urgent necessity continues. The variance must be clearly marked on the license or permit, which must be prominently posted at the job site.

4.2.3 Operations Outside New York City

Refer to the Noise Regulations for Operations Undertaken Outside of Permissible Times (*Attachment 4*), for any required variances, time limitations, and exemptions regarding operations undertaken outside of permissible times. [8] R/P

4.3 NOISE MONITORING METHODOLOGY

The noise measuring device should be set to use the descriptor specified in the local noise code, as indicated in Special Requirements column of the *Attachment* 1. Noise that is considered impulsive must be noted and used in the evaluation of the maximum allowable levels given in *Attachment 3*, the Normal Field Operation Regulations Table. Measurements should be made in such a way as to exclude ***extraneous noises***. Measurements should not be made while ***adverse meteorological conditions*** are occurring in the study area.

Repeat this procedure for each boundary at the property line. Compare the measured property line levels with the maximum allowable levels for the corresponding area in *Attachment* 1. If measured noise levels are below the maximum allowable noise levels for the corresponding types of noise, as indicated in the Special Requirements column of (*Attachment* 1), then noise levels from the Normal Field Operations meet the requirements of the local noise code. If measured levels exceed the maximum allowable levels, the noise from l field operations exceeds the local noise codes. [7]

New York City no longer requires noise measurements for normal field locations. Use ***A-weighted*** measurements. All measurements must be taken by "qualified personnel" only.

5.0 DEFINITIONS

Adverse Meteorological Conditions: Rain, snowfall, snow-covered ground, wet ground, gusty winds, and high winds. Measurements should not be made during these types of conditions.

ANSI: Acronym for "American National Standards Institute".

A-Weighted: Measurement that assigns each frequency a "weight" through the use of a filter network that is related to the sensitivity of the ear at that frequency. The level of the filtered signal is displayed as the A-weighted level. The A-weighted frequency characteristic was originally designed to mirror the 40-phon equal-loudness-level contour of the 1933 Fletcher-Munson data.

Emergency Event: The need for immediate repair of Con Edison equipment associated with Con Edison operations due to situations that are causing or are likely to cause service interruptions, or situations that present an imminent danger to the public. Examples include repair or installation of aboveground and belowground power transmission conduits (e.g., electrical, natural gas, steam), immediate repair or installation of power transmission equipment, and immediate tree maintenance.

Extraneous Noises: Noises that are not associated with Con Edison operations. Extraneous noises include, but are not limited to, passing automobiles or trucks, railway activity, nearby aircraft, nearby construction or demolition, natural sounds, and other nearby noises not associated with Con Edison operations.

Facility Operations: Operational procedures of Con Edison facilities which are essential for normal Con Edison operations. Examples include power generation, compressors, turbines, pipes and valves, bulk material transport, deliveries, fans, and any on-site maintenance or modifications.

Field Operations: Maintenance, installation, upgrade, and repair of Con Edison equipment associated with Con Edison operations. Examples include repair or installation of aboveground and belowground power transmission conduits (e.g., electrical, natural gas, steam), repair or installation of power transmission equipment, tree maintenance, and on-site construction or demolition.

Impulsive Noise: A single short burst or a series of short bursts of sound pressure. The pressure-time history of a single burst includes a rise to peak pressure, followed by a decay of the pressure envelope. The pressure-time history of a single burst includes a 6 dB, or greater, rise to peak pressure, followed by a decay of the pressure envelope, when the rise to peak

pressure occurs in 1 second or less. For noise containing a series of short bursts of sound pressure, the noise will be considered impulsive if each impulse in the series is separated in time by less than 1 second. Examples include thunder, noise as a result of pile-driving, steam-shoveling, etc.

Noise Barrier: A structure used for the purpose of placing near a noise source to reduce the noise level measurable at a receptor location.

Noise-Sensitive Area (a.k.a Sensitive Receptor): Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks, or portions of parks or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and old-age homes.

Octave Band: A filter with a single transmission band or passband with relatively low attenuation extending from a lower band-edge frequency greater than zero to a finite upper edge frequency which is twice the lower band-edge frequency. The nominal midband frequency, for a set of contiguous octave bandpass filters, is one of a series that includes 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, and 8000 hertz, extended by successive multiplication or division by 10.

Qualified Personnel: Personnel from Con Edison Technical Service, who are trained in calibrated noise measurements and calibrated ***octave band*** measurements, according to ANSI standards, and are operating under the advice from Con Edison EH&S. Qualified personnel should be familiar with the make and type of equipment used in the measurements, and experienced in general noise data collection procedures. Qualified personnel should be able to identify impulsive and periodic noise.

Receptor: Real property, including but not limited to buildings, grounds offices and dwelling units, from which sound levels from sound sources outside such property may be measured.
Sound Level Meter (SLM): Device used to measure sound pressure level with a standardized frequency weighting and indicated exponential time weighting for measurements of sound level, or without time weighting for measurement of time-average sound pressure level or sound exposure level.

Tonal Noise: For the purposes of this document, noise containing single-frequency tones, when the sound pressure of any single-frequency tone in any octave band exceeds the non-tonal masking noise in the corresponding octave band by 6-dB or more. This corresponds, in general, to a tone being prominent when it is more than 10 dB above the threshold of audibility. Examples of tonal noise would include transformer hum, idling engine noise, and constant-rpm engine noise.

Unreasonable Noise: Any excessive or unusually loud sound that annoys, disturbs, injures, or endangers the comfort, repose, health, peace, or safety of a person or that causes injury to plant or animal life, or damage to property or business.

6.0 REFERENCES

NOTE: Con Edison is subject to numerous local noise regulations. Tables have been developed summarizing the local noise regulations applicable in Con Edison's service area. These tables include:

- Attachment 1, Field Operation Regulations
- Attachment 4, Noise Regulations for Operations Undertaken Outside of Permissible Time

For purposes of the References section, the annotations are limited to citations to New York City and New York State regulations. Readers are referred to the Tables for local requirements.

Note: References are forthcoming.

ATTACHMENT 1
FIELD OPERATION REGULATIONS

CITY, TOWN or VILLAGE	ALLOWABLE NORMAL OPERATION DAYS/HOURS	SPECIAL REQUIREMENTS
Airmont	Mon-Sat 8:00am-10:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary
Beacon	7:00am-11:00pm	
Briarcliff Manor	Mon-Sat 8:00am-7:00pm	Blasting and Rock Drilling permitted only Mon-Fri 9:00am-5:00pm
Bronxville	Mon-Fri 8:00am-6:00pm	
Buchanan (Village of)	8:00am-7:00pm	
Chestnut Ridge (Village of)	Mon-Sat 8:00am-7:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary
Clinton	7:00am-8:00pm	
Croton on Hudson	Mon-Sat 8:00am-10:00pm Sundays 10:00am-8:00pm	
Dover	7:00am-9:00pm	
Greenburg	Mon-Fri 7:00am-8:00pm Sat 9:00am-6:00pm; no work on Sunday	
Hyde Park	6:00am-11:00pm	
LaGrange (Town of)	6:30am-9:00pm	
Larchmont	Mon-Fri 8:00am-7:00pm Sat 9:00am-6:00pm Sun 10:00am-5:00pm	L_{10} (1) levels must not exceed 70dB(A) at a distance of 40 feet
Lewisboro	Mon-Sat 8:00am-7:00pm	
Mamaroneck	Mon-Fri 8:00am-8:00pm Sat 9:00am-6:00pm Sun 9:00am-5:00pm	Pile Drivers and Steam Shovels permitted only Mon-Fri 8:00am-6:00pm No noise permitted beyond property border
Millbrook (Village of)	7:00am-10:00pm	Hours of restriction only apply when within 500 feet of residential zone.
Montebello	Mon-Sat 8:00am-10:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary
Mount Pleasant	8:00am-6:00pm	• L_{10} (1) levels must not exceed 70dB(A) at a distance of 400 feet when bordering residential zone from 8:00am-6:00pm. • L_{10} (1) levels must not exceed 55dB(A) at a distance of 400 feet when bordering residential zone from 6:00pm-8:00am. • L_{10} (1) levels must not exceed 75dB(A) at a distance of 400 feet bordering nonresidential zone during business hours. • L_{10} (1) levels must not exceed 80dB(A) at a distance of 400 feet bordering nonresidential zone during nonbusiness hours.
Mount Vernon	Mon-Fri 7:00am-6:00pm No weekends permitted unless have current permit from the Committee of Buildings	• L_{10} (1) levels must not exceed 70dB(A) at 400 feet when bordering residential zone from 8:00am-8:00pm. • L_{10} (1) levels must not exceed 55dB(A) at 400 feet when bordering residential zone from 8:00pm-8:00am. • L_{10} (1) levels must not exceed 75dB(A) at 400 feet when bordering commercial zone during business hours. • L_{10} (1) levels must not exceed 75dB(A) at 400 feet when bordering commercial zone during non-business hours. • Sound levels must not exceed 80dB(A) at the site boundary when bordering a manufacturing zone. • Sound levels must not exceed 55dB(A) at site boundary when near any noise-sensitive areas.

ATTACHMENT 1 (CONTINUED)
FIELD OPERATION REGULATIONS

CITY, TOWN or VILLAGE	ALLOWABLE NORMAL OPERATION DAYS/HOURS	SPECIAL REQUIREMENTS
New Castle	Mon-Fri 7:30am-8:00pm Sat-Sun 10:00am-5:00pm	No blasting on Saturday, Sunday or holidays
New Rochelle (Residential)	Mon – Fri 8:00am-10:00pm Sat-Sun 10:00am-5:00pm 10:00pm-8:00am	• L_{10} (1) levels must not exceed 70dB(A) at a distance of 400 feet in residential areas. • Sound levels must not exceed 55dB near any sensitive receptor. • Compressors require mufflers with 20dBA or more Insertion Loss. • Pavement Breakers manufactured before 12/31/74 require mufflers with 5dBA or more Insertion Loss. • For residential areas, no noise must be audible beyond property perimeter.
New Rochelle (Commercial)		L_{10} (1) levels must not exceed 75dB(A) at a distance of 400 feet during normal business hours L_{10} (1) levels must not exceed 80dB(A) at a distance of 400 feet at all other times In manufacturing areas, during a 24hour period, L_{10} (1) levels must not exceed 80 dB(A) when measured at construction site boundary
New York City	Mon-Fri 7:00am-6:00pm	
North Castle	8:00am-6:00pm(or sundown) Sundown – 8:00am	• Sound levels must not exceed 70dB(A) at a distance of 400 feet when bordering residential zone. • Sound levels must not exceed 75dB(A) at a distance of 400 feet when bordering commercial zone. • Air Compressors require mufflers with 20 dBA or more Insertion Loss. • Paving Breakers manufactured before 12/31/74 require mufflers with 5 dBA or more Insertion Loss. • Sound levels must not exceed 55dB(A) in residential areas or 65dB(A) in commercial / manufacturing areas
North Hempsted (Village of)	Mon-Fri 8:00am-9:00pm Sat-Sun 10:00am-6:00pm	
Ossining (Town of)	Mon-Fri 8:00am-8:00pm Saturday 9:00am-5:00pm	
Ossining (Village of)	Mon-Fri 7:30am-8:00pm Saturday 9:00am-5:00pm	
Pawling (Village of)	Mon-Sat 7:00am-8:00pm	L_{10} (1) levels must not exceed 80dB(A) at construction site boundary. IMPULSIVE Noise must not exceed 130dB(A) at property line.
Peekskill	Mon-Fri 7:30am-8:00pm Saturday 9:00am-5:00pm	No holiday work permitted
Piermont	7:00am-5:00pm	
Poughkeepsie (City)	6:30am-9:00pm	Other hours for construction (emergency work) only with a permit issued by the Building Inspector
Poughkeepsie (Town)	7:00am-10:00pm	
Ramapo	Mon-Sat 8:00am-10:00pm	L_{10} (1) levels must not exceed 60dB(A) at construction site boundary

CITY, TOWN or VILLAGE	ALLOWABLE NORMAL OPERATION DAYS/HOURS	SPECIAL REQUIREMENTS
Sleepy Hollow (Village of)	Mon-Fri 8:00am-9:00pm Saturday 9:00am-9:00pm	
Sloatsburg	Mon-Fri 7:00am-7:00pm	
Suffern	Mon-Fri 7:00am-8:00pm	
Unionvale	7:00am-8:00pm	
West Haverstraw	Mon-Fri 6:00am-9:00pm Saturday 8:00am-22:00pm	
White Plains	7:00am-7:00pm	
Yonkers	Mon-Fri 7:00am-9:00pm	

$L_{eq}(1)$: Time-average sound energy level during a time period of 1 hour. For the purposes of this document, all $L_{eq}(1)$ levels are expressed in dB(A).

L_{10}: The sound level exceeded for 10% of the specified time period.
L_{90}: The sound level exceeded for 90% of the specified time period.

ATTACHMENT 2
UTILITY NOISE MITIGATION PLAN

This document must be used for Utility Activities taking place from 7AM to 10 PM Monday through Friday and 7AM – 6 PM weekends. If work is performed outside these hours, additional noise mitigation measures may be required. (Must have authorization to work any time between 6PM and 7AM)

I Site-Specific Information

If any receptor(s) within 200 feet (if working outside 7AM – 6PM weekdays only), additional noise mitigation may be required by DEP.

If any sensitive receptor(s) have been identified, the building occupant **has been** be contacted. Noise impact of sensitive receptors has been minimized. Con Ed has contacted the facility owner/operator to minimize impact on their operations.

If work scheduled to take longer than 3 days, all residents within 200 feet of construction area have been notified. If job less than 3 days is about to run over, STOP work and perform necessary notifications.

If non-emergency work scheduled to take longer than 15 days, resident notification has been performed, and additional conditions have been met if a dedicated lane is available (all construction mitigation requirements apply).

If the site is required to utilize DOB-specified perimeter barriers at the site **and** a receptor is within 200 feet, a perimeter noise barrier is also being used at the site.

This Plan certifies that all equipment on site is maintained to operate in accordance with the manufacturer's operating specifications.

All tools/equipment are equipped with appropriate manufacturer's noise reduction device

Noise-insulating fabric is utilized for portable pumps, compressors, generators, etc.

Work which occurs after 6PM and before 7AM has after hours work authorization. Additionally:

a. From 6-10PM weekdays, daytime noise mitigation controls apply
b. Between 10PM and 7AM weekdays, and between 7PM and 7AM on weekends, may be required by NYCDEP to employ additional noise mitigation techniques for receptors within 200 feet

Quieter equipment is used when available or when required by the NYCDEP

Unnecessary engine idling is prohibited

Steel traffic plates are properly seated and secured. All are re-set and secured within 24 hours of a call from the DEP

All noise complaints/official DEP notice are responded to on the same day or, if after hours, the next day.

Vehicles with quieter backup alarms are utilized.

A formal noise mitigation training program has been established and site personnel have been trained.

Perimeter noise barriers are used if required in accordance with 28-101(g)

b) If project is non-emergency, long-term (greater than 15 days) where there is a dedicated lane, sections 28-100 through 28-104 are being follow

ATTACHMENT 3
HOLD SPACE FOR DRAFT CONSTRUCTION MITGATION PLAN

ATTACHMENT 4
NOISE REGULATIONS FOR OPERATIONS UNDERTAKEN OUTSIDE OF PERMISSIBLE TIME

CITY, TOWN, or VILLAGE	Regulations	DETAILS
Bedford	EXEMPT	
Airmont (Village of)	EXEMPT	
Chestnut Ridge (Village of)	EXEMPT	
Clinton (Town of)	EXEMPT WITH APPROVAL	Granted by Zoning Enforcement Officer and the Zoning Board of Appeals
Croton-on-Hudson	EXEMPT	
Dover (Town of)	ONLY FOR TEMPORARY CONDITIONS	
Fishkill (Town of)	BY TEMPORARY PERMIT	Granted by Town Clerk upon recommendation of Zoning Enforcement Officer
Hastings-on-Hudson	EXEMPT	
Hyde Park (Town of)	EXEMPT	
LaGrange (Town of)	EXEMPT	
Mamaroneck (Town of)	ONLY WITH EXCEPTION	Issued by Town of Mamaroneck
Mamaroneck (Village of)	SPECIAL PERMIT REQUIRED	Issued by Building Inspector
Millbrook (Village of)	EXEMPT	
Montebello (Village of)	EXEMPT	
Mount Pleasant	SPECIAL PERMIT REQUIRED	Issued by Building Inspector
Mount Vernon	SPECIAL PERMIT REQUIRED	Issued by Commissioner of Buildings
New Castle	VARIANCE REQUIRED	Issued by Zoning Board of Standards and Appeals
New Hempstead (Village of)	EXEMPT	
New Rochelle	PERMIT FOR RELIEF REQUIRED	Issued by City Clerk
New York City	VARIANCE REQUIRED	Within 12 hours, Variance Required. Variance Valid for 3 days, and must be renewed as required. Mitigation Plan required.
North Castle	SPECIAL PERMIT REQUIRED	Issued by Building Inspector
Nyack (Village of)	EXEMPT	
Pawling (Village of)	EXEMPT	
Piermont (Village of)	VARIANCE REQUIRED	Issued by Village Board
Poughkeepsie (City)	SPECIAL PERMIT REQUIRED	Issued by Building Inspector, valid for up to 3 days. May be renewed for an additional 3 days.
Poughkeepsie (Town of)	EXEMPT	
Ramapo (Town of)	EXEMPT	
Scarsdale	EXEMPT	
Sleepy Hollow	EXEMPT	
Spring Valley (Village of)	SPECIAL	Exempt for 24 hours
Suffern (Village of)	EXEMPT	
Wappingers Falls (Village of)	EXEMPT	
West Haverstraw (Village of)	SPECIAL PERMIT REQUIRED	Issued by Building Inspector for periods of 3 days. May be renewed.
Yonkers	EXEMPT	

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP S05.03 – Personal Protective Equipment: Protective Clothing

(CSP converted to CEHSP on 07/17/2008)

Revision 8: 06/10/2008 Effective Date: 06/30/2008

CONTENTS

SECTION 1.0 – PURPOSE
SECTION 2.0 – APPLICABILITY
SECTION 3.0 – INTRODUCTION
SECTION 4.0 – COMPLIANCE REQUIREMENTS
- 4.1 – HAZARD ASSESSMENT AND GENERAL GUIDELINES FOR SELECTION AND USE OF PPE
- 4.2 – CON EDISON PPE REQUIREMENTS
- 4.3 – PPE INSPECTION AND MAINTENANCE
- 4.4 – TRAINING AND TESTING
- 4.5 – RECORDKEEPING

SECTION 5.0 – DEFINITIONS
SECTION 6.0 – RESPONSIBILITIES
SECTION 7.0 – REFERENCES
- ATTACHMENT 1 – GUIDELINES FOR SELECTION OF PROTECTIVE CLOTHING
- ATTACHMENT 2 – PERSONAL PROTECTIVE CLOTHING

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH FEDERAL, STATE, AND LOCAL REGULATIONS PERTAINING TO THE SELECTION OF PROTECTIVE CLOTHING FOR THE BODY (ARMS, LEGS, AND TORSO). The purpose of this procedure is to ensure that appropriate ***personal protective equipment (PPE)*** is selected and worn to protect Con Edison workers, contractors, and visitors at Con Edison facilities and work sites from chemical and physical hazards to the ***body***.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to any Con Edison activity that presents work hazards to the body that require the use of PPE.

3.0 INTRODUCTION

Many hazards can threaten the body, including heat, splashes from hot metals during welding, splashes from hazardous liquids (acids, bases, solvents), impacts, cuts, electrical hazards (arc, flame), and radiation. Based on the results of ***hazard assessments*** performed in each facility in accordance with CEHSP S 05.01, *Hazard Assessment and Personal Protective Equipment*, protective clothing must be identified that provides the correct protection.

Where hazards are determined to be present that can cause injury or impairment in the function of any part of the body through absorption, inhalation, or physical contact, it is necessary to select PPE to adequately protect affected employees. A variety of protective clothing is available to protect against these hazards, including vests, jackets, aprons, coveralls, and full-body suits. In

addition, the OSHA Electrical Maintenance Standard, 29 Code of Federal Regulations (CFR) 1910.269, prohibits generation, transmission, and distribution employees who may be exposed to flame or electric arc from wearing clothing that may increase the severity of an injury.

This procedure presents requirements for selecting and maintaining protective clothing to control work hazards to the body, specifically the arms, legs, and torso.

4.0 COMPLIANCE REQUIREMENTS

4.1 HAZARD ASSESSMENT AND GENERAL GUIDELINES FOR SELECTION AND USE OF PPE

Con Edison must perform a hazard assessment to determine the ***proper*** personal protective equipment required for each job task performed by employees. The hazards, physical requirements of the operation, resistance of clothing to work-related destructive factors (chemicals, abrasion, etc.), and worker comfort must be considered when selecting required clothing. The PPE hazard assessment is performed to ensure that PPE is correctly identified and that implementation is consistent with workplace conditions. The assessment must be reviewed when new PPE or new chemicals are introduced into the workplace or when operations change. A ***hazard assessment certification*** must be maintained by personnel and the facility to provide a record of workplace reviews. [1] R

The following paragraphs identify guidelines for the selection and use of protective clothing.

4.1.1 Arc or Flame Protection

OSHA standard 29 CFR 1910.269 requires that all electric power generation, transmission, and distribution employees who may be exposed to arc or flames wear clothing that does not contribute to the severity of an injury that could be sustained by the employee. This requirement is based on the fact that certain fabrics are easily ignited and can cause burns. Employees who are potentially be exposed to electrical arc and/or gas fires must wear flame resistant/flame retardant clothing. Employees who are not exposed to electrical arc and/or gas fires may wear 100% natural fiber clothing (wool or cotton). [2] R

4.1.2 Fit and Appearance

Clothing of all kinds must meet certain safety requirements when there is a potential for it to catch on moving parts of machinery (gears, pulleys, rotating shafts, etc.). Clothing, whenever practical, must not have loose parts, such as sleeve tabs, pant cuffs, pocket flaps, etc. Sleeves or pant legs must fit closely to the wearer.

When appropriate, the color of the garment selected must be chosen to show stains that could indicate contact with a hazardous substance or to make a worker conspicuous. Also, persons working in areas near traffic must wear fluorescent yellow/reflective vests as specified in the Con Edison Work Area Protection and Traffic Control Field Manual. [3] R/P

4.1.3 Laundering

Maintenance and laundering are needed when clothing is soiled due to ***incidental contact*** with substances typically found in the workplace. In the event an employee's uniform or coveralls are contaminated with a hazardous substance (as outlined in this CEHSP) the employee will turn the

clothing over to supervision for proper cleaning or disposal as required. All clothes must be laundered in accordance with manufacturer's instructions. [4] R/P

4.2 CON EDISON PPE REQUIREMENTS

4.2.1 Selection of Protective Clothing

Decisions regarding the appropriate garment to wear must be made on a daily basis according to existing field conditions. The following conditions or materials may be encountered during daily duties:

- Potential for flame or electric arc.
- Presence of oil - non-PCB and PCB-containing.
- Presence of asbestos-containing material (ACM).
- Work with or on lead-containing material.
- Work with hazardous chemicals.

Attachment 1 is a flowchart that provides guidelines for the selection of protective clothing for these hazards. Attachment 2 identifies types of protective clothing.

Based on the potential exposure of the employees, natural fiber clothing may be acceptable. However, in any situation where employees may be exposed to the hazards of electric arc or flame these employees must wear appropriate flame-retardant clothing. These situations will be documented on the appropriate hazard assessment form for the task being conducted.

Requirements for Flame-Retardant Clothing

Employees and contractors must wear flame retardant (FR) clothing when performing tasks that may expose them to the hazards of flame or electric arc. Employees who are potentially exposed to electric arc must wear Nomex, Indura, or other FR materials approved by Corporate EH&S. Employees who are potentially exposed to gas flash fire must wear Nomex.

In situations where employees and contractors are required to wear FR clothing, all layers of clothing underneath the FR clothing must be either FR or 100% natural fiber (wool or cotton), including undergarments. In warmer weather, employees or contractors may choose to wear only 100% natural fiber undergarments under the outermost layer of FR clothing. In all cases, the outermost layer of clothing must be FR. Employees and contractors are prohibited from wearing clothing containing polyester, nylon, rayon, and acetate, alone or in blends, when performing tasks that may expose them to flames or electric arc.

In situations that present the potential for flame or electric arc exposure and the possibility that the garments may become soiled with oil, PCB-containing oil, or other liquid, limited-use FR/ **Chemical Resistant (CR)** disposable outerwear must be worn over the FR coveralls. **These disposable FR/CR garments must not be worn without the FR coveralls.**

Clothing Requirements for Oil and PCB-Containing Oil

If oil is present and there is reason to expect that a flame or electrical arc will not occur, employees must use garments that protect against the oil hazard. Depending on the amount of oil present and the potential for contact with oil, either disposable polycoated or Saranex coveralls must be worn. The selection of garment is independent of the PCB content of oil.

- Saranex coveralls provide greater protection against oil breakthrough and ***penetration*** than do polycoated coveralls. For this reason Saranex coveralls must be worn when the amount of oil present may result in substantial contact.

- In situations where potential contact with oil is minimal, polycoated coveralls can be used.

If a situation has the potential for flame or electric arc exposure and possible soiling of garments with oil, limited-use FR disposable outerwear must be worn over the FR coveralls. **These disposable FR garments must not be worn without the FR coveralls**.

After work involving potential contact with oil is completed, the disposable coveralls must be removed. If the garments have been in direct contact with oil containing 50 parts per million (ppm) or greater PCBs, the coveralls must be disposed of in accordance with Corporate Environmental Procedure (CEP) 06.12, *Disposal*. If the garments have been in direct contact with oil containing less than 50 ppm PCBs, the coveralls must be disposed of as general waste.

Clothing Requirements for Asbestos-Containing Materials

If asbestos-containing material (ACM) is present and there is reason to expect that a flame or electrical arc will not occur, employees must use garments that protect against the asbestos hazard. In this situation, a Con Edison-approved disposable coverall (Tyvek) must be worn during asbestos removal. This coverall may be worn alone or over FR coveralls.

If there is reason to expect that a flame or electrical arc may occur during asbestos work and there is a potential chemical or oil exposure, such as during the removal of arc-proofing tape in a manhole, the limited-use, chemically resistant FR disposable garments (polycoated Sontara) must be worn in place of the asbestos coverall. If there is reason to expect that a flame or electrical arc may occur during asbestos work and there is no potential chemical or oil exposure, the limited-use FR disposable garments (uncoated Sontara) must be worn in place of the asbestos coverall. In these situations, the limited-use FR disposable outerwear must be worn over the FR coveralls. **These disposable FR garments must not be worn without the FR coveralls**.

Upon completion of asbestos work, the asbestos coverall or limited-use FR garment must be removed and disposed of in accordance with the Asbestos Management Manual, Chapter 11 - Storage, Transfer, Transportation and Disposal.

Clothing Requirements for Work with Hazardous Liquid Chemicals

The proper selection of protective clothing depends on the nature of potential hazard (routes of entry, physical characteristics, toxicological properties, etc.), the type of work to be done, ergonomic constraints, and the chemical and physical performance or resistance characteristics required by the protective clothing. Both polycoated and Saranex Tyvek coveralls are chemical resistant to a wide range of chemicals. If a hazardous chemical splashes onto the coveralls, remove the chemical first by washing it off and then remove the coveralls. Saranex coveralls must be worn when the amount of acid, bases, solvents or other hazardous liquids present may result in substantial contact.

- In situations where potential contact with acids, bases, solvents and other hazardous liquid material is minimal, polycoated Tyvek must be worn.

- The PPE for battery maintenance activities includes a rubber apron and vinyl sleeves.

Clothing Requirements for Welding and Burning

Employees exposed to the hazards created by welding, cutting or brazing operations, including assistants and fireguards, must wear flame-retardant coveralls. Employees performing welding or cutting activities must also don the following equipment:

- Flame-resistant gauntlet gloves.
- Flame-retardant coveralls.
- Flame-resistant aprons or leather vests, jackets, leggings, sleeves and spats worn over the flame-retardant coveralls when additional protection against sparks and radiant energy is needed.
- 100% natural fiber undergarments
- A flame-retardant skullcap with ear covers for overhead work.

Clothing Requirements for Lead Splicing Work

Persons performing lead splicing work must wear FR coveralls. If the job will result in soiling of the FR coveralls, limited-use FR garments must be worn over the FR coveralls. This should protect and extend the life of the FR coveralls. **The limited-use FR garment must not be used without the FR coveralls.**

Clothing Requirements for Working with Hazardous Materials

Clothing for all tasks where there is a potential for exposure to hazardous materials must be approved by EH&S. [5] R/P

Clothing Requirements for Working Near or Over Water

U.S. Coast Guard approved personal flotation devices must be worn by an employee whenever the danger of drowning exists. This condition may exist whenever an employee is working near or over water and could be pulled or pushed or fall into the water.

Each personal flotation device must be maintained in a safe condition and inspected frequently enough to ensure that it does not have rot, mildew, water saturation, or any other condition that could render the device unsuitable for use. An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge, is provided. [6] R/P

4.2.2 Reusable Clothing Maintenance and Laundering

Most reusable work garments require periodic laundering to clean them of general debris and material that accumulates on them at the work location due to incidental contact. The vendor will maintain those clothes that are part of the rental contract. All other clothes must be laundered according to manufacturer's specifications.

When ***accidental contact*** occurs and reusable clothing becomes soiled or contaminated with materials such as ACM or PCBs, appropriate precautions must be taken.

PCB-Contaminated Reusable Clothing

Reusable clothing that has been in direct contact with oil containing 50 ppm or greater PCBs must be disposed of in accordance with CEP 06.12, *Disposal*.

Reusable clothing that has been in direct contact with oil containing 1 ppm or more PCBs, but less than or equal to 49 ppm PCBs, must be collected and bagged at the work location for vendor pickup.

Friable ACM-Contaminated Reusable Clothing

Reusable clothing that has been in direct contact with friable ACM must be wet down to minimize fiber release, placed in a sealed container, and collected from the employee. The contaminated garment must be removed and disposed of in accordance with the Asbestos Management Manual, Chapter 11 - Storage, Transfer, Transportation and Disposal.

Laundering of 100% Cotton Clothing

The laundering instructions for 100% cotton garments are as follows:

- Machine wash in warm water with similar colors.
- Use only non-chlorine bleach, when needed.
- Tumble dry at low to medium temperature.
- Iron on a low to medium temperature, if required.

Laundering Indura and Proban Coveralls

Both Indura and Proban coveralls are made of cotton that has been treated to make them fire retardant. When washed properly, the fire-retardant treatment should last the life of the garment. The manufacturer's instructions for laundering Indura and Proban treated fabrics must be adhered to, including the following washing instructions:

- Wash clothing inside out to minimize edge and surface abrasion.
- Use a water level sufficient for the quantity of clothing to be washed, preferably the high tide level on the washer.
- Use a quality detergent, such as Tide, All, Era, Yes, or Wisk. Follow the detergent manufacturer's instructions.
- Use a temperature that is as low as possible but that still cleans the garment. When using a quality detergent, the warm or cold setting may be sufficient.
- Do not use chlorine (sodium hypochlorite) bleach such as Clorox as this can affect the fire-retardant properties of these garments.
- When drying garments, use the minimum setting required to dry the clothing in a practical time
- Dry garments inside out.
- To minimize shrinkage, immediately remove garments from the clothes dryer when they are dry or slightly damp.

Laundering Nomex Garments

Nomex garments are made of flame-retardant aramid fibers. The flame-retardant property is "built into" the fiber; it is not applied to a fabric as a treatment or additive, as in the case of the Indura and Proban coveralls. The manufacturer's instructions for laundering Nomex garments must be adhered to, including the following washing instructions:

- Nomex garments must be sorted and washed separately from other garments to prevent flammable fibers/lint from being transferred to the Nomex garment.
- Heavily soiled or stained garments must be pre-treated as soon as possible with a full-strength heavy-duty liquid detergent.
- The wash load size must allow the garment to move freely throughout the wash and rinse cycles.
- Normal wash water setting (approximately 140^{o} Fahrenheit) is adequate for moderately soiled garments. Higher temperatures may be required for heavily soiled or stained garments.
- A synthetic heavy-duty liquid laundry detergent, such as liquid Tide, All, Era, Yes, and Wisk, is recommended for cleaning Nomex garments.
- Chlorine bleach must not be used. Bleach will not degrade the flame-retardant properties of the garment, but it may cause strength and color loss over time.
- Nomex garments must be tumble-dried on medium or high temperature settings.
- Iron on medium setting, if necessary. [7] R/P

4.3 PPE INSPECTION AND MAINTENANCE

This information will help to ensure that equipment is maintained in a satisfactory condition and provides the required protection when used. The following minimum requirements for inspection and maintenance will be followed.

- PPE must be properly inspected prior to use. Damaged or missing items like holes in gloves or protective clothing, missing side shields on glasses, and broken laces or cracked soles on shoes can significantly impact the effectiveness of the PPE. Signs of wear, such as smooth soles on shoes that can cause slipping or scratches on goggles that limit vision, can present new hazards. PPE that is damaged, missing items, or shows signs of wear, jeopardizing the protection afforded by the equipment, will be removed from service and repaired or replaced.
- PPE must be cleaned and properly decontaminated in accordance with manufacturer recommendations.
- PPE must be properly stored to protect it from exposure to conditions that can damage or compromise its effectiveness. Specific locations acceptable for the storage of PPE will be identified.
- Employees must be familiar with methods for obtaining new PPE in the event that testing and inspection identify unacceptable equipment.

Con Edison maintains a supply of PPE that can be used by facility personnel when needed. The equipment is specific to the tasks performed by Con Edison personnel. [8] R/P

4.4 TRAINING AND TESTING

Refer to CEHSP S05.01, *Hazard Assessment and Personal Protective Equipment*, Section 4.4 for detailed training and testing requirements. [9] R/P

4.5 RECORDKEEPING

In accordance with CEHSP S05.01, *Hazard Assessment and Personal Protective Equipment,* the Training Coordinator for each operating organization must retain training records for three years. Additionally, OSHA 1910.269(a)(2)(vii) requires that training records associated with FR clothing be maintained for the duration of the employee's employment. The Safety Administrator must maintain hazard assessment documentation for all job types currently performed within the organization. [10] R/P

5.0 DEFINITIONS

***Accidental Contact*:** An unexpected event where a substantial amount of a substance spills, splashes, sprays, or otherwise comes into contact with a worker. It is not a typical occurrence for the duties/job being performed.

Body: Arms, legs, and torso.

Hazard Assessment: A systematic review performed to identify exposure hazards and appropriate PPE for specific work operations. This assessment includes a review of the work activities, equipment, and materials used, and end products and by-products to evaluate the potential for physical contact, noise hazards and/or respiratory hazards.

Hazard Assessment Certifications: Written verification that identifies a completed exposure assessment, including the evaluated tasks/processes and areas, the person who performed the assessment, and the date(s) of the assessment.

Incidental Contact: Materials that an employee may contact during the performance of his daily duties. For example, an auto mechanic contact with lube oil while replacing a part or a troubleshooter brushing up against equipment in a vault during an inspection that results in a smudge on their clothing.

Penetration: Flow of chemicals through clothing discontinuities, such as zippers, seams, and pinholes.

***Personal Protective Equipment (PPE)*:** Clothing and equipment worn by personnel to prevent contact with hazards present in the work area. PPE includes safety glasses, face shields, gloves, safety shoes, hearing protection, hard hats, etc.

Proper: Approved, certified, or suitable, within acceptable guidelines set forth by governing codes and standards, as well as recognized safe work practices.

6.0 RESPONSIBILITIES

Employees: The PPE user is responsible for following the requirements of the PPE procedure, including: wearing required PPE; attending required training; caring for, cleaning, and maintaining PPE; and submitting equipment for repair or replacement.

Environment, Health, and Safety (EH&S): EH&S performs the following functions:

- Reviews applicable regulations and ensures that procedures meet all regulatory requirements.
- Revises procedures as applicable.

- Reviews/approves controlled documents prior to release.
- Distributes updates and changes.
- Reviews training prepared by the Learning Center.
- Provides technical assistance to Safety Administrators.

Facility or Site Manager Responsible for Compliance: The Con Edison designated individual within each operating organization who is responsible for ensuring compliance with federal, state, and local regulations and this procedure.

Law Department: The Law Department assists and provides guidance to EH&S by reviewing changes to these procedures in light of all applicable statutes and regulations to ensure that the procedures meet all legal requirements.

Operating Organizations: Unless otherwise indicated, operating organizations are responsible for compliance with federal, state, and local regulations and this procedure.

Safety Administrator: Responsible for performing hazard assessments, selecting PPE, and maintaining hazard assessment certifications.

Supervisors: Responsible for ensuring that personnel wear proper PPE and for performing necessary training.

Training Coordinators: Enters PPE training records into the Training Registration System.

7.0 REFERENCES

4.1 HAZARD ASSESSMENT AND GENERAL GUIDELINES FOR SELECTION AND USE OF PPE

[1] 29 CFR 1910.132(d) (hazard assessment, including written certification requirement); 29 CFR 1910.132, Appendix B (non-mandatory compliance guidelines for hazard assessment, including Section 7, reassessment of hazards). NOTE: The OSHA regulations do not specifically require reassessment of hazards, although the issue is addressed in the Appendix B non-mandatory guidelines).

[2] 29 CFR 1910.137 (electrical protective equipment); 29 CFR 1910.269(l)(6) (apparel for electrical power generation, transmission, and distribution).

[3] USDOT Federal Highway Administration, *Manual on Uniform Traffic Control Devices,* Section 6D.03, Worker Safety Considerations (2003 Edition) (clothing requirements when working near traffic). The manual can be found at: http://mutcd.fhwa.dot.gov/HTM/2003/html-index.htm. The remaining requirements in this section relating to fit and appearance are required by Con Edison as a matter of policy.

[4] See Note 6 below regarding laundering.

4.2 CON EDISON REQUIREMENTS

[5] 29 CFR 1910.132 (general PPE requirements); 29 CFR 1910.137 (electrical protective equipment); 29 CFR 1910.252(b)(3) (protective clothing for welding, cutting and

brazing); 29 CFR 1910.269(l)(6) (apparel for electric power generation, transmission and distribution). NOTE: The OSHA regulations do not contain specific requirements for protective apparel comparable to those discussed in CEHSP S 05.01, *Hazard Assessment and Personal Protective Equipment* relating to head, eye and/or face, hand and foot protection. The specific clothing identified in this section has been determined to meet OSHA requirements relating to proper PPE. NOTE: 29 CFR 1910.269(l)(6) allows clothing made of acetate, nylon, polyester or rayon provided it has been treated to eliminate hazards; Con Edison bars all clothing containing such fibers as a matter of policy.

[6] 29 CFR 1910.269(w)(5)(i)-(iii) (requiring personal flotation device when danger of drowning exists). NOTE The cited provision applies only to the operation and maintenance of electric power generation, control, transformation, transmission and distribution lines and equipment. Con Edison applies this requirement to all activities that involve the potential for drowning as a matter of policy.

[7] 29 CFR 1910.132(a) (general PPE maintenance requirement); 29 CFR 1910.132(e) (prohibiting use of damaged/defective PPE); 29 CFR 1910.132, Appendix B, Sec. 12 (non-mandatory: cleaning and maintenance); 29 CFR 1910.137(b) (in service use and care of electrical protective equipment). NOTE: Con Edison has developed the specific procedures in this section relating to maintenance and laundering of particular types of clothing to ensure that the clothing continues to provide proper protection to Con Edison employees.

4.3 PPE INSPECTION AND MAINTENANCE

[8] 29 CFR 1910.132(a) (general PPE maintenance requirement); 29 CFR 1910.132(e) (prohibiting use of damaged/defective PPE); 29 CFR 1910.132, Appendix B, Sec. 12 (non-mandatory: cleaning and maintenance); 29 CFR 1910.137(b) (in service use and care of electrical protective equipment). NOTE: Con Edison has developed the specific procedures in this section relating to inspection and maintenance to ensure that protective clothing is maintained in a satisfactory condition.

4.4 TRAINING AND TESTING

[9] See CEP 05.01, *Hazard Assessment and Personal Protective Equipment*, for training and testing requirements.

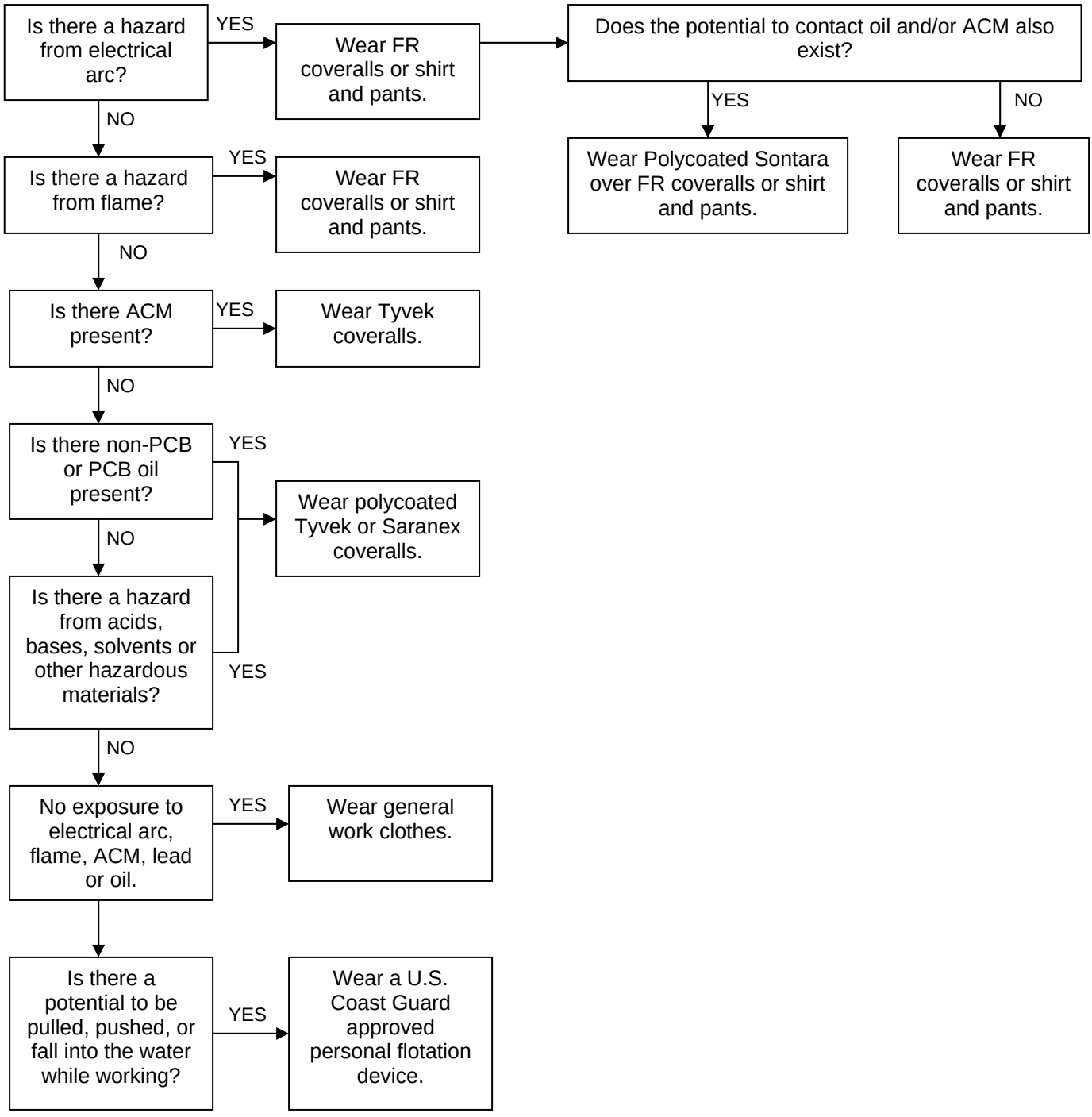
4.5 RECORDKEEPING

[10] 29 CFR 1910.132(d)(2) (written hazard assessment certification); 29 CFR 1910.132(f)(4) (training records); 29 CFR 1910.269(a)(2) (electric power generation, transmission and distribution training recordkeeping). NOTE: the OSHA regulations do not specify a retention period for training records under 29 CFR 1910.132(f)(4). Con Edison has adopted a three-year record retention period as a matter of policy. 29 CFR 1910.269(a)(2) requires training records to be retained for the duration of the employee's employment**.** This training covers PPE, including FR clothing.

National Safety Council - Accident Prevention Manual for Business and Industry, 10th edition.

ATTACHMENT 1

GUIDELINES FOR SELECTION OF PROTECTIVE CLOTHING



ATTACHMENT 2
PERSONAL PROTECTIVE CLOTHING

PROTECTIVE CLOTHING	USE	GROUP/OPERATION
Flame Retardant (FR)	• Worn when there is potential exposure to flame or electric arc. • Worn when performing lead splicing.	Steam, Powerhouse, Electrical Welding, Hotwork Gas Operations Welding, Hotwork
U.S. Coast Guard Approved Personal Flotation Device	Worn when the potential of drowning exists.	Steam, Powerhouse, Electrical, Spill Response Team Members
Tyvek	Worn when potential for contact with asbestos-containing materials (ACM).	Maintenance, Spill Response Team Members
Kleenguard Ultra (Tyvek equivalent)	Worn for general utility, asbestos, bloodborne pathogens, lead dust, bulk chemical delivery, and short-term, incidental contact with oil, including polychlorinated biphenyls (PCB).	Maintenance, Spill Response Team Members
Disposable Polycoated / Saranex	• Polycoated is worn when there is minimal potential for contact with PCBs. • Saranex is worn where there is greater potential for contact with PCBs.	Maintenance, Spill Response Team Members
Disposable Polycoated/ Saranex	• Polycoated is worn when there is a minimal potential for contact with acid, bases, solvents and other hazardous liquid materials. • Saranex is worn where there is a greater potential for contact with acids, bases, solvents and other hazardous liquid materials	Acid Deliveries, Maintenance of Acid Systems, solvents
Polycoated Sontara	Polycoated Sontara is worn when there is both a potential for arc or flame and a potential for exposure to an oil contaminant or asbestos. This garment protects normal FR clothing.	Operations where there is an exposure to arc or flame and where there is an exposure to oil and/or asbestos
Uncoated Sontara	Uncoated Sontara is worn when there is a potential for arc or flame and no potential for exposure to an oil contaminant. This garment protects normal FR clothing.	Operations where there is an exposure to arc or flame and where there is an exposure to asbestos (no oil)
Rubber Apron Vinyl Sleeves	Rubber apron bib style and vinyl sleeves are worn over work clothes to protect against acids.	Battery Maintenance and acid handling

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP S12.00 – Lockout/Tagout Procedures

(CSP converted to CEHSP on 07/17/2008)

Revision 3: 12/17/2007 Effective Date: 12/31/2007

CONTENTS

SECTION 1.0 – PURPOSE
SECTION 2.0 – APPLICABILITY
SECTION 3.0 – INTRODUCTION
- 3.1 – PROCEDURE
- 3.2 – PERSONNEL

SECTION 4.0 – COMPLIANCE REQUIREMENTS
- 4.1 – LOCKOUT PROCEDURE
- 4.2 – LOCKOUT/TAGOUT PROCEDURE SEQUENCE
- 4.3 – GROUP LOCKOUT OR TAGOUT
- 4.4 – SHIFT OR PERSONNEL CHANGES
- 4.5 – ANNUAL INSPECTION
- 4.6 – PROTECTIVE HARDWARE AND MATERIAL
- 4.7 – TRAINING

SECTION 5.0 – DEFINITIONS
SECTION 6.0 – REFERENCES
- ATTACHMENT 1 – EXAMPLE SITE PROCEDURE
- ATTACHMENT 2 – LOCKOUT/TAGOUT PERIODIC INSPECTION

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO COMPLY WITH ALL FEDERAL REGULATIONS RELATING TO *LOCKOUT/TAGOUT*. The purpose of this procedure is to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment is isolated from the ***energy source*** and rendered inoperative.

This document does not supersede Con Edison's General Instructions Governing Work on System Electrical Equipment (i.e., Bluebook) or any other existing corporate documents (i.e., COP 5-1-2, Processing & Controlling Operating Orders and Work Permits).

2.0 APPLICABILITY

This Corporate, Environmental and Safety Procedure (CEHSP) applies to all Con Edison facilities, each of which is responsible for establishing and documenting site-specific lockout/tagout procedures for each piece of equipment, machinery or system under that site's supervision. Procedures may be established for classes of equipment or machinery if their function and operation are similar and the procedure can collectively account for the control of all hazardous energy sources.

This CEHSP also applies to all outside contractors performing work on Con Edison equipment within the facility. It is the responsibility of the Facility's Manager to ensure compliance. Failure to comply may result in immediate termination of such outside contractor's services.

Procedures must be developed, documented and utilized by each Con Edison site for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

Exception: The site does not need to document the required procedure for a particular machine or equipment, when **all** of the following elements exist:

(1) The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees;

(2) The machine or equipment has a single energy source which can be readily identified and isolated;

(3) The isolation and locking out of that energy source will completely de-***energize*** and deactivate the machine or equipment;

(4) The machine or equipment is isolated from that energy source and locked out during ***servicing and/or maintenance***;

(5) A single ***lockout device*** will achieve a locked-out condition;

(6) The lockout device is under the exclusive control of the authorized employee performing the servicing or maintenance;

(7) The servicing and/or maintenance does not create hazards for other employees; and

(8) The employer, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing and/or maintenance.

3.0 INTRODUCTION

3.1 PROCEDURE

This procedure applies to any job task that may expose workers to potentially hazardous energy. There are several qualified exceptions:

- Anytime a guard is removed. Minor tool changes and adjustments and/or other minor servicing activities that are routine, repetitive, and integral to the use of the equipment and that occur during ***normal production operations***, are not covered by the lockout/tagout standard, provided the work is performed using alternative measures that provide effective protection.

- The standard does not apply while servicing or maintaining cord and plug connected electrical equipment, provided that the equipment is unplugged from the energy source; and the plug remains under the exclusive control of the employee performing the servicing and/or maintenance.

- ***Hot tap*** operations that involve transmission and distribution systems for gas, steam, water, or petroleum products when they are performed on pressurized pipelines provided that continuity of service is essential, shutdown of the system is impractical, and employees are provided with alternative protection that is equally effective. [1] R

3.2 PERSONNEL

Authorized Employees

An authorized employee is one who is able to initiate these procedures, and to employ all parts of the procedures to ensure the safe completion of work. Authorized employees are selected on the basis of either their formal training, on the job experience, licenses held or familiarity with mechanical and electrical work and associated hazards related to this work.

Affected Employees

Individuals whose jobs requires them to operate a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires them to work in an area in which such servicing or maintenance is being performed.

All other company and outside contract employees whose work operations are or may be in an area where lockout/tagout procedures may be utilized are also deemed affected employees. [2] R

4.0 COMPLIANCE REQUIREMENTS

4.1 LOCKOUT PROCEDURE

Except under conditions noted in Section 4.4, the only authorized employee that can remove a lock and tag is the authorized employee who installed the lock and tag.

- The authorized employee who performed all the steps in Section 4.2, A-B-C-D-E, may apply a sequentially numbered padlock to equipment capable of accommodating a padlock for the purpose of preventing the normal operation of an ***energy isolating device*** such as a switch, valve, etc.

- The authorized employee will continue the procedure in Section 4.2 steps F and G to completion, and return the padlock along with all Stop Tags.

- The authorized employee will update log entries as stated in 4.2 E. [3] R/P

4.2 LOCKOUT/TAGOUT PROCEDURE SEQUENCE

A. Notification

The authorized employee will notify the supervisor of the facility and any affected employee in the facility that a lockout/tagout procedure will be put into effect, the location of the equipment to be taken off-line, and the reason for the procedure.

The authorized employee will issue the appropriate amount of Stop Tags, and enter data into a logbook consisting of:

- Date and time

- ID number of tag(s) issued
- Equipment removed from service
- Authorized employee name(s)
- Date and time tags were returned (equipment returned to service).

The authorized employee is to acknowledge understanding the procedure, and the importance of adhering to the procedure.

B. Identification and Location of Devices

After receiving a job briefing on the hazards associated with the work assignment and required personal protective equipment, the authorized employee will make a survey to locate and identify all energy isolating devices (i.e., which switch(s) valve(s) or other isolating devices apply to the equipment) to be locked out.

Note: More than one energy source may be involved.

C. Shut Down of Equipment

The authorized employee must shut the machinery or equipment down in the operational method described by departmental procedure, or stop and obtain an operating procedure from his/her supervisor before shutting down the equipment.

D. Isolation - Dissipation

The authorized employee will operate the switch, valve, or other energy-isolating device, or multiple combinations thereof, so that the equipment is isolated from all of its energy sources. Stored energy between the isolating device and the equipment must be dissipated. Energy such as spring-loaded components, rotating components, pressurized hydraulic, water, steam, gas, air pressure, or potential stored energy (i.e., capacitors) must be relieved of potential hazard by blocking, restraining, re-positioning or bleeding down as required.

E. Tagout Procedure Sequence

Lockout is the preferred method of isolating machines or equipment from energy sources, and must be used when the energy isolating device is ***capable of being locked out***.

A tagout procedure may be used on those energy isolating devices that are incapable of being locked out after all available methods and means have been exhausted and no satisfactory alternative is available.

The authorized employee will apply Stop Tags to each energy isolating device, in accordance with an associated procedure.

The authorized employee will record the following information on each tag affixed:
1. Name of employee invoking the procedure
2. Date procedure initiated
3. Reason for procedure
4. Warning legend

When the equipment is returned to operation, the authorized employee will remove all Stop Tags and log each stop tag removed, completing the procedure.

F. Verification

The authorized employee will verify that all energy has been isolated by going back to the original device and verifying by testing that an unexpected release of stored energy will not occur (i.e., electrical, hydraulic, pneumatic, pressurized liquids and gases etc.). After ensuring that personnel are not exposed to any hazards from the release of stored energy, the authorized employee will follow written procedures for performing the assigned task.

G. Restoring Machine or Equipment to Normal Operation

After the assigned task is completed and the equipment is ready for return to normal operation, the authorized employee will perform the following sequence:

1. Check area around the equipment to be sure no other personnel are exposed to danger. Notify all affected employees of the intent to restore energy.
2. Remove all tools and supplies from immediate vicinity.
3. Check to make certain all protective guards, covers, casings, etc. are in place, and that all moving parts are unrestricted.
4. Check position of local starting mechanism, valves, controls, etc. to ensure against premature or unwanted action leading to a hazardous condition.
5. Remove, in reverse sequence of application, all Stop Tags.
6. Re-position valves, switches, etc. in compliance with operating procedures.
7. Operate the energy isolating devices to restore energy to the equipment.
8. Notify the supervisor of the facility and affected employees of the restoration of energy to the equipment.
9. Operate the equipment in the normal manner to detect any discrepancies. Repeat procedures as found necessary.
10. Return Stop Tags and update the log in accordance with step 4.1 E. [4] R/P

4.3 GROUP LOCKOUT OR TAGOUT

When work is performed on machinery or equipment involving more than one person, each employee in the group is responsible for adhering to all provisions of the procedures for lockout or tagout.

In the event a group of employees require the procedure to be used, the following actions must be followed:

1. A single authorized employee will be designated by the supervisor of the facility as having primary responsibility for a set number of persons working under the protection of a group procedure.

2. This authorized employee will be the individual designated to coordinate with the affected employees and ensure continuity of protection.

3. Each employee working on the unit must review with the authorized employee designated by the supervisor of the facility, placement of Stop Tag or padlock device on each energy isolating device de-energized under the procedure.

4. All affected employees must receive a job briefing by an authorized employee. [5] R

4.4 SHIFT OR PERSONNEL CHANGES

Shift Changes

When work on a machine or piece of equipment will continue into the next work shift, protection must be continued. The oncoming authorized employee must be satisfied that the procedure is properly in effect and it is safe to transfer lockout or ***tagout devices***.

- The oncoming authorized employee will be given a job briefing, and will accompany the off-going authorized employee to the location of each Stop Tag or padlock device.

- The off-going authorized employee will point out the location of all Stop Tags and padlocks tags applied during his/her shift.

- The oncoming authorized employee will record the number of Stop Tags and padlocks applied.

- The oncoming authorized employees must ensure that they are familiar with the existence and reason for the lockout or tagout procedure, and the number of Stop Tags and padlock devices recorded.

- The authorized employees will review the number of Stop Tags and padlock devices for discrepancies, and then record the transfer of responsibility from the off-going to the oncoming employee in the log.

Personnel Changes

Each Stop Tag or padlock device must be removed from each energy isolating device by the authorized employee who applied them.

If the employee who initiated the procedure is not available to remove the Stop Tag or padlock device, they may be removed by a ***qualified employee*** provided the following conditions are completely satisfied:

1. The qualified employee must be trained in all aspects of this procedure.

2. The qualified employee has complied with all parts of this procedure prior to removing the device.

3. The qualified employee verifies that the employee who initiated the procedure is unavailable. All reasonable attempts must be made to contact the employee and inform the employee of the intended action.

The employee will be informed that the above action was taken before the employee begins work again at the location.

Special Circumstances

In situations where a lockout device must be removed by someone other than the person who installed it, the following steps must be taken:

- A qualified employee on site must personally verify that no affected employees are exposed to danger from re-energizing or reactivating equipment.

- The lockout device(s) may be removed by cutting or similar method only after the qualified employee has verified that no affected employee exposure exists. [6] R

4.5 ANNUAL INSPECTION

The operating organization must conduct, on at least an annual basis, an inspection of the requirements and compliance with this procedure. This inspection must:

- Be performed by an authorized employee other than those using the procedure.

- Correct any inadequacies or deficiencies found.

- Include a review of the employee's responsibilities between each authorized employee and the inspector.

- Be certified to include the machine or equipment, the date of the inspection, the employees included, and the person performing the inspection.

Attachment 2 must be used for these inspections.

These annual inspections are intended to assure that the energy control procedure continues to be implemented properly and that the employees involved are familiar with their responsibilities under that procedure. The inspection must be able to determine whether the:

- Steps in the energy control procedure are being followed;

- Employees involved know their responsibilities under the procedure;

- Procedure is adequate to provide the necessary protection, and what changes, if any, are needed.

When lockout is used, the inspection must include:

- A review with all authorized employees for the procedure being inspected,

- Their responsibilities under that procedure.

- Group meetings between the authorized employee and affected employees.

When tagout is used, this review must be performed with all affected employees, as defined in the standard, as well as with all authorized employees, for the procedure being inspected.

The site's senior manager must certify that the annual inspections have been performed. The certification must identify:

- The machine or equipment on which the energy control procedure was being utilized,

- The date of the inspection,
- The employees included in the inspection,
- And the person performing the inspection.

The results of the audit will be forwarded to the manager of maintenance, for recordkeeping. [7] R

4.6 PROTECTIVE HARDWARE AND MATERIAL

Lockout and tagout equipment must be provided in sufficient quantity to satisfy the requirements of this procedure. Such hardware and material must be capable of safely tagging, isolating, securing or blocking machines and equipment from energy sources.

Lockout and tagout devices must be singularly identified, must be the only devices used for controlling energy, and must not be used for other purposes.

Whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment must be designed to accept a lockout device

Durable

Lockout and tagout devices must be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.

Tagout devices must be constructed and printed so that exposure to weather condition or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.

Tags must not deteriorate when used in corrosive environments such as areas where acid and alkaline chemicals are handled and stored.

Standardized

Lockout and tagout devices must be standardized within the facility where used in at least one of the following criteria - color, shape, or size. Additionally, on tagout devices, print and format must be standardized.

Substantial

Lockout devices must be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.

Tagout devices, including their means of attachment, must be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means must be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than fifty (50) pounds and having the basic characteristics of being at least equivalent to a one-piece, all-environment-tolerant nylon cable tie.

Identifiable

Lockout and tagout devices must indicate the identity of the employee applying the devices.

Tagout devices must warn against hazardous condition if the energy isolating device is not operated, and must include a legend such as the following - Do Not Open, Do Not Close, Do Not Start, Do Not Energize, Do Not Operate. [8] R

4.7 TRAINING

The company will provide training to ensure that employees understand the purpose and function of the lockout/tagout procedure and that the knowledge and skills required for the safe application, usage and removal of lockout/tagout controls are acquired by authorized employees.

The company must certify that employee training has been accomplished and is up to date. The certification must contain each employee's name and dates of training.

Equipment-Specific Training

Each authorized employee must receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.

Each affected employee must be instructed in the purpose and use of the lockout/tagout procedure.

All other employees whose work operations are or may be in an area where lockout/tagout procedures may be utilized must be instructed about the procedure and about the prohibition relating to attempts to restart or reenergize machines or equipment that are locked out or tagged out.

Specific instructions will include the proper procedure for locking out and tagging out of devices. Specific training will be given regarding the limitations of tags. Attachment 1 must be utilized for this purpose.

Training will be done through The Learning Center, or by the safety administrator or by the responsible shop operating supervisor. The tracking and recording of this training will be the responsibility of the department training Coordinator. [9] R/P

Retraining

Retraining must be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedure.

Additional retraining must be conducted whenever a periodic inspection reveals, or local EH&S has reason to believe, that there are deviations from, or inadequacies in the employee's knowledge, or use of the energy control procedures.

The training must reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary. [10] R

5.0 DEFINITIONS

Affected Employee: An employee whose job requires him/her to operate or use a machine or equipment on which servicing or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.

Authorized Employee: A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.

Capable of Being Locked Out: An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energized: Connected to an energy source or containing residual or stored energy.

Energy Isolating Device*:* A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.

Energy Source: Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Hot Tap: A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. It is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.

Lockout: The placement of a lockout device on an energy isolating device, in accordance with an established procedure, ensuring that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device: A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.

Normal Production Operations: The utilization of a machine or equipment to perform its intended production function.

Qualified Employee: A qualified person is a person who has been trained and has demonstrated proficiency, in compliance with 29 CFR 1910.147(c)(7), to perform servicing and maintenance on the machine or equipment to be inspected.

Servicing and/or Maintenance: Workplace activities such as constructing, installing, ***setting up***, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or un-jamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.

Setting Up: Any work performed to prepare a machine or equipment to perform its normal production operation.

Tagout: The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device: A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to an energy isolating device in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

6.0 REFERENCES

3.0 INTRODUCTION

3.1 PROCEDURE

[1] 29 CFR 1910.147(a)(2)(ii)-(iii) (applicability and exceptions).

3.2 PERSONNEL

[2] 29 CFR 1910.147(b) (definitions).

4.0 COMPLIANCE REQUIREMENTS

4.1 LOCKOUT PROCEDURE

[3] 29 CFR 1910.147(c)(1) (energy control program generally). See 29 CFR 1910.147, Appendix A (non-mandatory guidelines: typical minimal lockout procedure).

4.2 LOCKOUT/TAGOUT PROCEDURE SEQUENCE

[4] 29 CFR 1910.147(c)(2) (preference for lockout); 29 CFR 1910.147(c)(3) (full employee protection); 29 CFR 1910.147(c)(4) (energy control procedure); 29 CFR 1910.147(c)(9) (notification of employees); 29 CFR 1910.147(d)(1)-(6) (preparation for shutdown, machine or equipment shutdown; machine or equipment isolation; lockout or tagout device application; stored energy; verification of isolation); 29 CFR 1910.147(e)(1)-(3) release from lockout or tagout). See 29 CFR 1910.147, Appendix A (non-mandatory guidelines: typical minimal lockout procedure).

4.3 GROUP LOCKOUT OR TAGOUT

[5] 29 CFR 1910.147(f)(3) (group lockout/tagout).

4.4 SHIFT OR PERSONNEL CHANGES

[6] 29 CFR 1910.147(c)(8) (requiring lockout/tagout to be performed only by authorized employee performing servicing and/or maintenance); 29 CFR 1910.147(f)(4) (shift changes).

4.5 ANNUAL INSPECTION

[7] 29 CFR 1910.147(c)(6).

4.6 PROTECTIVE HARDWARE AND MATERIAL

[8] 29 CFR 1910.147(c)(5) (protective materials and hardware).

4.7 TRAINING

[9] 29 CFR 1910.147(c)(7)(i), (iv) (training and recordkeeping). NOTE: This section includes Con Edison-specific procedures relating to training and recordkeeping.

[10] 29 CFR 1910.147(c)(7)(iii) (retraining).

ATTACHMENT 1
EXAMPLE SITE PROCEDURE

GENERAL

The following simple lockout procedure is provided to assist employers in developing their procedures so they meet the requirements of this standard. When the energy-isolating devices are not lockable, tagout may be used, provided the employer complies with the provisions of the standard that require additional training and more rigorous periodic inspections. When tagout is used and the energy-isolating devices are lockable, the employer must provide full employee protection (see 29 CFR 1910.147 (c)(3)) and additional training and more rigorous periodic inspections are required. For more complex systems, more comprehensive procedures may need to be developed, documented, and utilized.

Lockout Procedure for

_____

(Name of Company for single procedure or identification of equipment if multiple procedures are used).

Purpose

This procedure establishes the minimum requirements for the lockout of energy isolating devices whenever maintenance or servicing is done on machines or equipment. It must be used to ensure that the machine or equipment is stopped, isolated from all potentially hazardous energy sources and locked out before employees perform any servicing or maintenance where the unexpected energization or start-up of the machine or equipment or release of stored energy could cause injury.

Compliance With This Program

All employees are required to comply with the restrictions and limitations imposed upon them during the use of lockout. The authorized employees are required to perform the lockout in accordance with this procedure. All employees, upon observing a machine or piece of equipment which is locked out to perform servicing or maintenance, must not attempt to start, energize, or use that machine or equipment.

_____

Type of compliance enforcement to be taken for violation of the above.

Sequence of Lockout

(1) Notify all affected employees that servicing or maintenance is required on a machine or equipment and that the machine or equipment must be shut down and locked out to perform the servicing or maintenance.

_____

Name(s)/job title(s) of affected employees and how to notify.

(2) The authorized employee must refer to the company procedure **for the particular machine or equipment** to identify the type and magnitude of the energy that the machine or equipment

utilizes, must understand the hazards of the energy, and must know the methods to control the energy.

Type(s) and magnitude(s) of energy, its hazards and the methods to control the energy.

(3) If the machine or equipment is operating, shut it down by the normal stopping procedure (depress the stop button, open switch, close valve, etc.).

Type(s) and location(s) of machine or equipment operating controls.

(4) De-activate the energy isolating device(s) so that the machine or equipment is isolated from the energy source(s).

Type(s) and location(s) of energy isolating devices.

(5) Lock out the energy isolating device(s) with assigned individual lock(s).

(6) Stored or residual energy (such as that in capacitors, springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.

Type(s) of stored energy - methods to dissipate or restrain.

(7) Ensure that the equipment is disconnected from the energy source(s) by first checking that no personnel are exposed, then verify the isolation of the equipment by operating the push button or other normal operating control(s) or by testing to make certain the equipment will not operate.

Caution: Return operating control(s) to neutral or "off" position after verifying the isolation of the equipment.

Method of verifying the isolation of the equipment.

(8) The machine or equipment is now locked out.

Restoring Equipment to Service

When the servicing or maintenance is completed and the machine or equipment is ready to return to normal operating condition, the following steps must be taken.

(1) Check the machine or equipment and the immediate area around the machine to ensure that nonessential items have been removed and that the machine or equipment components are operationally intact.

(2) Check the work area to ensure that all employees have been safely positioned or removed from the area.

(3) Verify that the controls are in neutral.

(4) Remove the lockout devices and reenergize the machine or equipment. Note: The removal of some forms of blocking may require re-energization of the machine before safe removal.

(5) Notify affected employees that the servicing or maintenance is completed and the machine or equipment is ready for use.

ATTACHMENT 2
LOCKOUT/TAGOUT PERIODIC INSPECTION

Facility Name _____ Date _____
Address _____
Equipment Name _____ I.D. No. _____
Authorized Inspector (Print) _____ I.D. No. _____

The identified equipment requires a periodic inspection of the energy control procedures according to §1910.147(6) The Control of Hazardous Energy (Lockout/Tagout). Check (✓) or complete all elements of this form that apply to the Periodic Inspection. Note deficiencies in comments section.

ENERGY SOURCES

☐ Electrical ☐ Hydraulic ☐ Chemical ☐ Other _____
☐ Mechanical ☐ Pneumatic ☐ Thermal _____

ENERGY ISOLATING DEVICES

☐ A manually operating electrical circuit breaker.
☐ A disconnect switch
☐ A manually operated switch by which the circuit's conductors can be disconnected from all underground supply conductors (no pole can be operated individually).
☐ A line valve
☐ A block
☐ A similar device used to block or isolate energy.
☐ Other _____

Note: Push buttons, selector switches, and other circuit type devices are not energy-isolating devices.

	YES	NO	COMMENTS
Do authorized employees understand the energy control procedures for this equipment?			
Do the authorized employees understand the requirements of the standard for this equipment?			
Do the authorized employees understand which locks/tags are to be used on this equipment?			
Are the lockout/tagout procedures being followed?			
Do employees understand their responsibilities in the energy control procedure?			
Have any deviations or inadequacies been identified during this inspection that require attention? If so, list.			
Have tagout procedures been reviewed when tagout alone is the only means of energy isolation?			
Have you reviewed the removal of an isolating circuit breaker?			
Have you reviewed blocking of a controlling switch?			
Have valve handle removal procedures been reviewed?			
Have you reviewed the opening of an extra disconnect switch?			

The items checked above have been reviewed with/explained to the authorized employees at the time of the periodic inspection.

Authorized Employee (Signature) Date Authorized Employee (Signature) Date

_____ _____ _____ _____

_____ _____ _____ _____

I hereby certify that the periodic inspection for compliance with lockout/tagout standards on the equipment as specified by OSHA 29 CFR §1910.147 has been satisfactorily completed with the authorized employees identified above.

Inspector _____ _____ _____
Signature Title Date

conEdison

Work Area Protection and Traffic Control

Field Manual

THE WAY WE WORK IS SAFELY

To All Con Edison Field Forces:

This is your field manual on Work Area Protection and Traffic Control. It is designed to help you achieve a safe work area for our employees, with limited obstruction to traffic, through the use of uniform traffic devices. In addition, it provides protection for pedestrians and motorists.

This edition of the manual has been updated to comply with the current *Manual on Uniform Traffic Control Devices* (MUTCD). The MUTCD is published by the Federal Highway Administration under 23 Code of Federal Regulations, Part 655, Subpart F.

This field manual is based upon three fundamental principles:

- Protection for you and your coworkers while you work in the streets;
- Protection for motorists and pedestrians;
- Safe and expeditious movement of traffic around your work area.

Not all work sites, traffic, or pedestrian situations can be illustrated in this manual. Employees must apply the principles and tools covered in this manual to set up work area protection and traffic-control devices with all applicable traffic regulations in mind.

Table of Contents

1 Practical and Procedural Considerations

Basic Principles of Work Area Protection 4
Plan the Work and Work the Plan 4
Evaluate the Work Area 5
Work Space Considerations 6
Following Through: Setting Up the Street Work Area 7
Terminating the Job: Moving Out of the Work Area 9

2 Advance-Warning Signs and Equipment for Work Area Protection

Advance-Warning Signs 12
High-Level Warning Devices 15
Work Area Protection 16

3 Traffic Control and Work Area Protection Arrangements

Work Area Protection Diagrams 24
Excavation Operations 44
Flagger at Work Sites 45

Practical and Procedural Considerations

1

Because of the vital nature of our jobs, we must gain access to areas where repair, maintenance, and construction are required. Providing a work area that is safe for everyone is of critical importance.

Basic Principles of Work Area Protection

Traffic conditions in our operating area make it necessary to plan protection for work areas in order to avoid vehicular and pedestrian traffic hazards and thus safeguard the public and our own employees.

The work area protection that you set up at the job site has two main goals:

- To provide suitable work area devices so that pedestrians and drivers of vehicles are aware of work area boundaries;
- To provide bridging over excavations where pedestrian and vehicle traffic must be maintained during the job.

In addition, when planning work area setups, an important company concern is to maintain good relations with the public while maintaining safety in the work area. Employees in the field help create good will by the way they conduct themselves and by the way they arrange and maintain their work areas.

Con Edison's reputation as a good neighbor is important. Do your part to preserve it by always using the work area protection principles described in this document when you are on the job.

Plan the Work and Work the Plan

In order to work efficiently and to minimize possible disruptions for pedestrians and vehicular traffic, it's important to prepare in advance before arriving at a work location. Here are some factors to consider:

Scheduling: When scheduling street work, try to avoid hours of unusually heavy traffic.

Permits: Review the work and Department of Transportation (DOT) permit requirements before planning work. Follow DOT stipulations.

Requirements include:

- Posting of permits to face the nearest curb line at the work area setup. Posted permits must provide the following information: name of the contractor, start and expiration dates, contact telephone number, permit number, and type of work (gas, steam, or electric system). Lettering must be 1 1/2 inches high;
- Determining days and times to perform work;
- Securing permission for lane closings.

Efficient Deployment: Maintain street work areas only for as long as is necessary. Move in quickly and safely, do the job, and move out. Minimize obstruction and excessive exposure to traffic.

Materials: Before leaving the yard, review work orders and make sure that all equipment and supplies are available to complete the job as promptly as possible.

Evaluate the Work Area

Determine how existing conditions will affect the job, and how work area protection must be adapted to the location. The following must be considered:

Vehicular Traffic:

- Assess the volume and speed of traffic.
- Arrange in advance with the appropriate authority to shut down a traffic lane when work must be done at approaches to and exits from tunnels and bridges.
- Allow for the free passage of emergency vehicles, including fire engines and ambulances.

Pedestrian Traffic: Observe the pedestrian routes to crosswalks and bus stops.

Changes in Work Plan: Reassess protective devices and working conditions based on any changes in the traffic patterns or scope of work that may occur during the work operation.

Business Establishments and Other Public Facilities: When excavations are to be made near schools, hospitals, theaters, or large business establishments, where there is substantial pedestrian and vehicular traffic, notify customers in advance so that they will be inconvenienced as little as possible.

Work Area Considerations

Use the following parameters in your planning so that the job setup can occupy the smallest work area consistent with safe operations:

Width of Work Area: Generally should not exceed the width of one traffic lane.

Where this is not possible (e.g., excavations, manholes between two lanes), doing the job in steps should be considered. In congested areas with unusual traffic conditions, notify the local police precinct.

Length of Work Area: Should be separated from oncoming traffic by placing a tool cart, Pel bag, vehicle, or other suitable barrier between the working point and oncoming traffic. For increased protection, a buffer zone (the same width as the work area) should be located in front of the work area. The area in front of the buffer zone will be used to channelize and taper traffic flow away from the work area by using traffic cones and/or stanchions.

Mobilization:

1. Day or night, before moving out into traffic lanes, operate hazard lights on the vehicle. For tool carts, mount the directional arrow signs and appropriate advance-warning flasher; and use channelizing devices (traffic cones and/or stanchions), as well as the required warning signs.
2. Warn oncoming motorists during the move into traffic lanes. When necessary, a crew member equipped with a signaling device and wearing a retroreflective vest should warn oncoming motorists.
3. If a traffic light is present, wait for the light to change before mobilizing equipment in or out of traffic lanes.
4. Some operations require work vehicles to be positioned facing oncoming traffic. Maneuvering a vehicle into such a position can present a risk to workers, the vehicle, and the public, if it is not performed using good judgment and appropriate safety equipment, i.e., a hard hat, flag, and retroreflective clothing.
5. The vehicle's hazard lights must be in operation and visible to all approaching traffic during the maneuver until the vehicle is within a protected work area.
6. Select traffic-control devices to protect the work areas.

Following Through: Setting Up the Street Work Area

In creating the work area protection setup, these elements are a part of the job-site characteristics to consider and the tools to use.

Steps to follow for setting up work area:

- Wear proper PPE (traffic vests, hard hat).
- Dome light/flashers/arrow boards.
- Position vehicle upstream from work site to begin channeling traffic.
- Flaggers to warn traffic, when necessary.
- Place advance warning sign(s); "Men Working" sign is first.
- Begin laying down traffic devices (e.g., cones, stanchions), working your way down to the work site.
- Continue to channel traffic using cones; determine work site termination.
- Establish work site.
- Establish work site termination with cones (downstream).
- Establish pedestrian channeling, when necessary.

Hard Hats and Vests: Employees exposed to vehicular traffic, e.g., when setting up, maintaining, removing, or working outside of work area protection, must wear hard hats and retroreflective safety apparel.

Advance-Warning Signs: Remember – oncoming drivers must be able to see the work area if they are to avoid it. Therefore, night or day, arrange your traffic-warning equipment to provide advance warning to oncoming drivers. Channelizing devices tapered to move traffic away from the work area with a series of warning signs extended in the direction of oncoming traffic must be used.

Traffic Devices: Set up the selected devices to control vehicle and pedestrian traffic and protect the work area. Provide clearly defined boundaries of street and sidewalk work areas throughout the work operation day and night.

Intersections: At intersections, place the most effective warning equipment so that it faces the heaviest oncoming traffic. Set up traffic-control devices on alternate sides of an intersection to control flow around a work area.

Lamp Reels: When taking temporary service from a lamppost, cover the open door with a lamppost apron to protect exposed wiring. (Contractors are required to use generators to obtain power.) ALWAYS lay cord along the curb. AVOID laying cord diagonally across traffic lanes. If necessary, use an extra lamp reel. Use shunt boards to cover cord and hose that protrude into pedestrian walkways or traffic lanes.

Pedestrian Passageways: Must be 5 feet wide. Where required, protect pedestrian and bus-stop passageways with barricades, planking, steel plates, or shunt boards extending well beyond the defined passageway. Use signage to indicate alternate pedestrian paths and access to bus stops.

Chock Equipment: Vehicles and tool carts at work sites must be chocked.

Hazard-Vehicle Lights: If a vehicle must stand in lanes of moving traffic for work purposes and is not within a protected work area, the hazard-vehicle light(s) must be in operation day and night.

Street Openings: If it is necessary to leave street work areas unattended at night, provide traffic-control devices to include use of Type III barricades around the work area to protect motorists and pedestrians.

Plating: Provide plating or decking when required. All road plates must be pinned and ramped to avoid pedestrian foot injury or injury to motorists due to plate movement.

Floodlights: When it is dark, and when using flaggers, use flood lamps where required for additional protective illumination or work illumination. Lamp glare should not impede motorists or workers.

Subsurface Structure Openings: When opening any underground structure, manhole guardrails or telescoping rails must be in place to prevent persons from falling into the structure and to prevent debris or other materials from entering. In addition, you must follow the appropriate entry procedures for enclosed or confined spaces.

Housekeeping: Good housekeeping is an important item in street work area protection.

Terminating the Job:

Steps to follow for breaking down work area:

- Clean up work area.
- Break down work site.
- Pick up traffic devices in reverse order.
- Work your way back toward the "Men Working" sign.

Moving Out of the Work Area

Just as with setup of the work area, proper procedures must be observed when the job is finished and the site is being cleared.

Hazard-Vehicle Lights: Traffic-warning equipment and hazard-vehicle lights must be in operation while moving from traffic lanes to the curb.

Flagger: A trained member of the crew, wearing a retroreflective vest and hard hat, should warn oncoming motorists with a signaling device where necessary.

Traffic Controls: If a traffic light is present, wait for the red light before moving out of the traffic lane.

Plates: Ensure that all road plates are left pinned and ramped to maximize public safety.

Ongoing Work: If the job is shared by another Con Edison work area setup, make sure to leave the work area protection and the setup in good condition.

Housekeeping: Before leaving the area, inspect the site to be sure that no tools, equipment, or debris are left behind. Always work the job to make the public think well of you and the company. Remember, on the job, ***you are Con Edison.***

Advance-Warning Signage and Equipment for Work Area Protection

2

The purpose of advance warning is to properly alert motorists and pedestrians to physical conditions ahead.

Note: The advance-warning area may vary from a single sign to a series of signs in advance of the temporary traffic-control zone activity area.

Signage distances may be adjusted where necessary, depending on roadway limitations or for more effective warning and guidance.

Signage must effectively warn oncoming traffic, allowing adequate time for driver response. The employee must make the judgments necessary to establish and maintain effective advance warning.

Advance-Warning Signs

Description: Warning signs must have a black legend on an orange background and be reflectorized for nighttime use. Diamond-shaped warning signs are preferred. However, where necessary, the alternate rectangular shape may be used. Minimum sizes for warning signs are 36 inches by 36 inches (diamond) and 36 inches by 24 inches (rectangle).

Signs Displaying the Symbol of a Worker or the Words "Road Work Ahead" or "Utility Work Ahead"

Instructions for Use: These signs are required to be posted for all work done in a traffic lane, parking lane, or on a shoulder. They must be posted first and in front of channelizing devices.

The sign displaying the symbol of a worker (the "worker symbol") may be used for short-duration work areas, while the "Road Work Ahead" and "Utility Work Ahead" signs are to be used for long-duration work areas (i.e., more than three days).

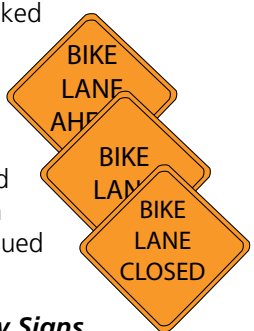
The sign may be mounted on portable "crashworthy" supports and must face oncoming traffic.

For short-duration work that occupies a location for up to three days, such as a manhole operation where workers are present or work in a parking lane, the standard distance between the warning sign and the lane closure or work area is 150 feet.

For long-duration work (more than three days), such as an excavation in a travel lane, the standard distance between the warning sign and the lane closure or work area is 300 feet.

Different distances may be used where necessary for more effective warning and guidance.

Signs placed on the sidewalk should be 2 feet in from the curb and at a height of 7 feet, where the sign is not likely to interfere with pedestrians or be obscured by parked vehicles.

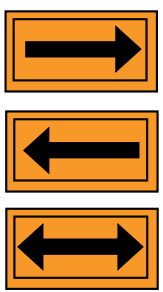


Bike Signs

Use of "Bike Lane" signs are to be used when stipulated on the work permit issued by the city.

Directional-Arrow Signs

Description: Orange reflectorized background at least 3 feet wide and 2 feet high with a clearly recognizable black arrow symbol. Standard or variable arrow signs (as shown) may be used.



Instructions for Use: The arrow may be mounted on a vehicle, tool cart, barricade, or portable supports. It must be mounted at a height of at least 4 feet to the bottom of the sign and must face in the direction of the oncoming traffic. The arrow must indicate the direction in which the traffic may pass.

Note: Arrow signs are intended to give motorists clear information and provide them with effective guidance. Therefore, care must be taken to ensure that the proper message is displayed at all times.

"Flagger Ahead" Signs

Description: The "Flagger Ahead" sign must be diamond shaped, 36 inches by 36 inches, with a black legend and border on an orange background. It shows the silhouette of a person standing with the right arm (facing the viewer) extended horizontally and holding a flagstaff horizontally, with the flag hanging down. The free arm is shown bent with the palm above shoulder level.

Instructions for Use: The "Flagger Ahead" sign shall be placed after the worker symbol or "Road Work Ahead" or "Utility Work Ahead" sign and well before the flagging location.

Lane-Closure Signs

Description: Lane-closure warning signs must have a black legend and border on an orange background.

Instructions for Use: Advance notice of closed lanes must be provided when work areas must interrupt the flow of traffic in through lanes. This sign should be placed after the worker symbol or "Road Work Ahead" sign and may be placed at the beginning of the taper created by the use of channelizing devices.

Street/Road Closed Signs

Description: This is a horizontal rectangular white sign, 36 inches by 36 inches, with a black border and the words "Road Closed" in black on two lines.

Instructions for Use: The "Street Closed Ahead" sign should be used when the roadway is closed to all road users except contractors' equipment or officially authorized vehicles. This sign should be accompanied by appropriate warning and detour signage. This sign should be installed at or near the center of the roadway, on or above a Type III barricade that closes the roadway.

Note: New York City requires closed-street permits from the DOT. Both the police department and the fire department's communications center require notification 24 hours in advance of nonemergency street closings. The local community planning board requires a notification seven days in advance when closing more than 50% of moving lanes per direction. Westchester permits vary by municipality.

"Sidewalk Closed" Signs

Description: This device is used when a sidewalk must be closed in order to conduct work. This is a visual indicator to notify pedestrians that passage though this area is prohibited. Provisions must also be made to indicate redirection of pedestrian traffic.

Persons With Visual Disabilities

Adequate provisions, as determined by an engineering study or by engineering judgment, should be made for persons with visual disabilities. Because printed signs and surface delineations are not accessible to pedestrians with visual disabilities, blocked routes, alternate crossings, and sign and signal information should be communicated to pedestrians with visual disabilities by providing the following: audible information devices, accessible pedestrian signals, and barriers and channelizing devices that are detectable to pedestrians who have low vision or who are traveling with the aid of a long cane. The following three items should be considered when planning for pedestrians:

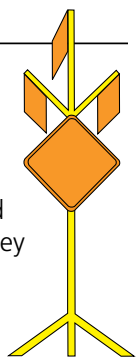
A. Pedestrians should not be led into conflicts with work site vehicles, equipment, and operations.

B. Pedestrians should not be led into conflicts with vehicles moving through or around the work site.

C. Pedestrians should be provided with a reasonably safe, convenient, and accessible path that replicates as nearly as practical the most desirable characteristics of the existing sidewalk(s) or foot path(s). Where pedestrians who have visual disabilities encounter work sites that require them to cross the roadway to find an accessible route, instructions

should be provided using an audible information device. Accessible pedestrian signals with accessible pedestrian detectors might be needed to enable pedestrians with visual disabilities to cross wide or heavily traveled roadways. A pedestrian route should not be severed and/or moved for nonconstruction activities, such as parking for vehicles and equipment.

High-Level Warning Devices



These devices are used in addition to signage. They can be lighted or unlighted as described below, and they provide clear, highly visible warning of the work area for both pedestrians and vehicles.

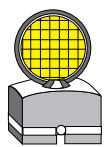
Flag Trees

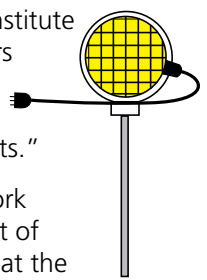
Description: The flag tree should display a minimum of two flags with their lowest corners at a height of 8 feet. Other warning signs may be mounted below the flags to alert and warn traffic in advance of a work area during daylight hours.

Instructions for Use: At work areas where the placement of the advance-warning sign at the standard distances is not practical or is found to be ineffective, a flag tree may be used in conjunction with a worker symbol or road work ahead sign in advance of the work area (also in advance of any arrow boards) to effectively warn traffic. It must be placed at a sufficient distance in front of the work area to warn oncoming drivers.

Advance-Warning Flasher: Type B High-Intensity Flashing Warning Lights

Description: The high-intensity, 7-inch (minimum) warning light (Type B) provides a flashing yellow light in one direction only, for use both day and night. These lights can be mounted on traffic cones, signs, flag trees, or barricades to warn road users. Warning lights must have a minimum mounting height of 30 inches. These warning lights must be in accordance with current Institute of Transportation Engineers (ITE) "Purchase Specification for Flashing and Steady-Burn Warning Lights."





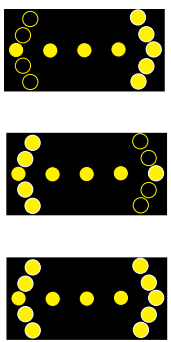
Instructions for Use: At work areas where the placement of the advance warning sign at the standard distances is not practical, or is found to be ineffective, and the advance-warning sign with flag tree is also found to be ineffective, the

advance-warning flasher may be used in conjunction with the advance-warning sign to provide additional warning to oncoming traffic. When mounted on an advance-warning sign, the distance from the roadway to the bottom of the lens of the light must not be less than 8 feet.

Note: The flag tree can be used in conjunction with the advance-warning sign during daylight hours and/or the advance-warning flasher during hours of darkness.

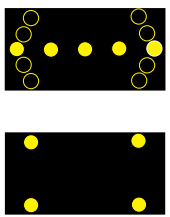
Flashing-Arrow Panel

Description: The unit must consist of a black rectangular background at least 4 feet wide and 2 feet high, with yellow flashing lights at least 4 inches in diameter, which form a clearly recognizable arrow symbol.



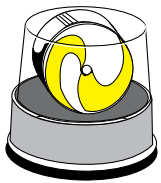
Instructions for Use: The unit may be mounted at a height of at least 7 feet from the bottom of the unit on a trailer or other suitable support. Vehicle-mounted panels should be as high as practicable. This sign can provide additional warning and directional information to assist in merging and controlling traffic around the work area.

If using an arrow panel, the arrow or chevron mode must be used for lane closures on multi-lane streets. If more than one lane is closed, a separate arrow panel must be used for each closed lane. The caution mode must be used in situations where one lane of a two-way street is closed. The caution mode may also be used for work (including surveying) done on shoulders and sidewalks near traffic situations.



Note: Arrow panels may be used in conjunction with warning signs. They may not be used to replace warning signs.

Hazard-Vehicle Light



Description: Vehicle-mounted, revolving (360 degrees) amber light.

Instructions for Use: The light must be displayed and be visible to all approaching traffic when the vehicle is operated at a work site in the roadway and the vehicle is not within a protected work area.

Work Area Protection

Work area protection involves the immediate area in which workers' activities are taking place. Consideration must be given to pedestrian and motorist protection. The work area is generally bordered by:

- stanchions with telescoping rails and/or orange barrier tape, and/or
- barricades Type I, Type II, or Type III.

Traffic-control devices, including channelizing devices, such as stanchions and cones, as well as sign supports and barricades, must conform to new requirements set by the National Cooperative Highway Research Program (NCHRP) Report 350, "Recommended Procedures for the Safety Performance of Highway Features," and are to be constructed of crashworthy materials.

Protection of Pedestrians

Traffic-control devices used to delineate pedestrian walkways must be crashworthy so that if struck by a vehicle, there will be a minimal threat to pedestrians, workers, and the occupants of vehicles.

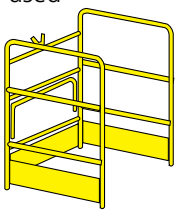
When existing pedestrian paths are disrupted or closed, alternate routes must be provided to crosswalks and bus stops. Signage may be provided to improve recognition of a temporary pedestrian route.

Type II or Type III barricades should be used to channel pedestrians safely around the work area. Such barricades should be detectable to users of canes with a bottom rail no higher than 6 inches aboveground and a top rail at least 36 inches aboveground.

If storing materials outside of the work area setup near pedestrian pathways (sidewalks and crossings), Type III barricades should be used to channel pedestrians safely around these storage areas.

Note: If drums, cones, or stanchions are used to channel pedestrians, there must be no gaps between the bases of these devices (this may be a solid rail between devices), and the devices must be at least 36 inches in height.

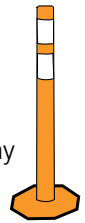
Subsurface Protection Devices



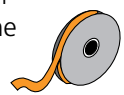
Description: Manhole guardrail and telescoping rails are used to prevent personnel and pedestrians from falling into subsurface structures and is not a traffic-control device. Manhole guardrails are yellow and equipped with three sides and two rails, plus a toe-board. The height of the top rail must not be less than 42 inches. Telescoping rails are mounted onto stanchions. The first rail is placed at the bottom of the stanchions and the second rail is secured at the top.

Instructions for Use: Manhole guardrails are to be used for open manholes. Telescoping rails are to be used for other subsurface structures not accessible by manhole.

Stanchions, Telescoping Rails, and Boundary Tape

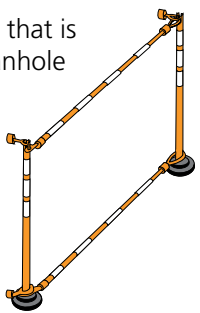


Description: Stanchions must be crashworthy*, must consist of orange uprights at least 42 inches high with bases, and may be of a tubular or cone style. Each must have a minimum of two reflectorized bands near the top of the stanchion. The boundary tape is orange.



Instructions for Use: To outline the boundaries of street work areas such as:

- An open manhole that is protected by a manhole guardrail;
- Vault cage entry;
- Overhead pole work;
- Setup around Vactor/flush trucks.



Note: Type II or Type III barricades or other Temporary Traffic Control (TTC) devices (such as stanchions used together with telescoping rails) consisting of a bottom rail no higher than 6 inches aboveground and a top rail at least 36 inches aboveground should be used to channel pedestrians safely around the work space.

* Temporary Traffic-Control (TTC) devices used to delineate a TTC zone pedestrian walkway must be crashworthy and, when struck by vehicles, present a minimum threat to pedestrians, workers, and occupants of impacting vehicles.

Barricades

Description: Barricades must be crashworthy and are of three types:

Type I – Has one rail that must be a minimum length of 2 feet and a width of 8 inches to 12 inches.

Type II – Has two rails that must each be a minimum length of 2 feet and a width of 8 inches to 12 inches.

Type III – Has three rails that must each be a minimum length of 4 feet and a width of 8 inches to 12 inches.

In addition, for all types:

- Rails must be marked with alternate orange and white stripes at an angle of 45 degrees. Stripes must be 4 inches wide for rails less than 2 feet long and 6 inches wide for rails longer than 3 feet.
- Rails must be reflectorized for night use with a minimum of 270 square inches of reflective area facing traffic.

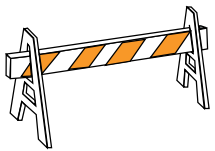
Instructions for Use: Barricades are used to mark an obstruction (work area) in the roadway and are required to outline excavations.

- The Type I barricade is used for temporary or short-duration work and for outlining excavations.

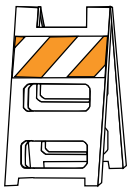
- The Type III barricade is normally used to face oncoming traffic for long-duration work where the barricade is to remain in the roadway for extended periods.
- Type II or Type III barricades may be used to channel pedestrians safely around the work area. Type II or Type III barricades may be used at pedestrian crossings, as well as at sidewalks or other areas where pedestrians would normally come into contact with the work area.
- The stripes of barricades that face oncoming traffic should slope down toward the side on which traffic is to pass.
- Ballasts must not be placed on the top rail and must not consist of nondeformable objects such as rocks or concrete.

Note: The addition of company identification must not detract from the striping on the face of the barricade rail(s) facing oncoming traffic.

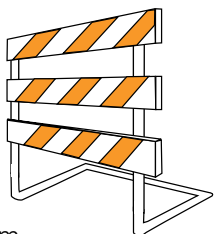
Barricade Panels



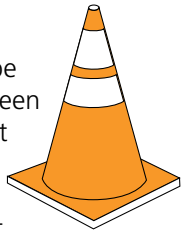
Description: The face of barricade panels must be the same as the face of a barricade rail.



Instructions for Use: A single panel may be placed on the manhole guardrail, a temporary fence, vehicle, or other obstruction in the roadway when the use of a Type I barricade is not practical. The panel must face oncoming traffic, and the top of the panel must be at a minimum height of 3 feet.



Cones



Description: Cones must be orange and must be between 28 and 36 inches in height with two reflectorized bands near the top. For nighttime use, cones must be retroreflectorized or equipped with lighting devices for maximum visibility. Retroreflectorization of cones that are 28 to 36 inches in height must be provided by a 6-inch-wide white band located 3 to 4 inches from the top of the cone and an additional 4-inch-wide white band located approximately 2 inches below the 6-inch-wide band.

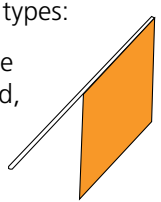
Instructions for Use: The primary function of cones is to channel traffic. The cone should be used to control and direct traffic around or through the work area by gradually narrowing the roadway and indicating the path to be followed. Cones may be used in combination with:

- A flag inserted in the top of the cone to enhance its target value during daylight hours;
- Type B warning lights (high-intensity flashers), which may be used day or night (warning lights must flash when used to warn of a condition);
- Type C steady-burn warning lights when used to channelize traffic.

Signaling Devices

Description: Signaling devices must be one of the following types:

- Signal flag – must be retroreflectorized red, at least 24 inches by 24 inches, securely fastened to a staff 36 inches long.



- Signal light – a steadily burning red or red-orange flashlight wand.

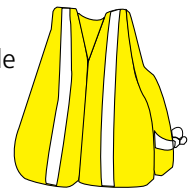
- Paddle – a combination "Stop" and "Slow" sign on an octagonal panel, at least 18 inches wide with letters 6 inches high, securely fastened to a rigid handle. Both faces must be retroreflectorized for nighttime use. The "Stop" face must be red with white letters and border. The "Slow" face must be orange with black letters and border.

Instructions for Use: Signaling devices should be used by flaggers to issue signals to oncoming traffic.

- The signal flag is for use during daylight hours, and the signal light is for use during hours of darkness at locations controlled by a single flagger.
- The "Stop" and "Slow" paddles are used day or night when more guidance to motorists is needed. However, they should not be used where display of the paddle face in the opposite direction would be inappropriate or misleading.
- Use of the "Stop" and "Slow" paddle is preferable in a two-way traffic condition, such as the middle of a street, as opposed to an intersection where traffic may travel in four directions.

Safety Apparel

Description: Flaggers, as well as employees outside of the work area setup, must wear approved safety apparel available in Class & Stock.



Instructions for Use: Vests or compliant apparel must be worn on the outside of all other clothing. Trained employees assigned as flaggers must wear safely apparel when controlling traffic. When leaving or working outside a protected work area, employees exposed to vehicle traffic, e.g., setting up, maintaining, or removing work

area protection, must wear a safety vest. Surveyors and employees working in the roadway with minimum protection must wear a safety vest.

Remember: The value of your safety vest is diminished when you crouch, bend, or move into a position that reduces your visibility or the reflective value of the vest.

Flags (used in conjunction with traffic-control devices)

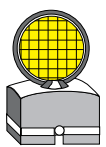
Description: Flags must be orange; a minimum of 16 inches by 16 inches and attached to a staff at least 30 inches long.

Instructions for Use: Flags may be displayed in a manner that does not obscure the legend above any channeling device, on vehicles or tool carts, on stanchions and barricades, and above warning signs.

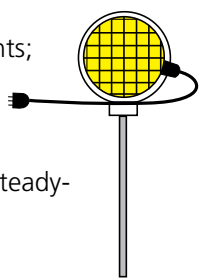
Note: Flags are a supplement to increase the target value and visibility of the work area during daylight hours. Flags may be placed at suitable intervals of not more than 20 feet during daylight hours on barricades used to outline excavations.

Low-Intensity Warning Lights

Description: Low-intensity lighting is for use during nighttime hours only. All warning lights must comply with the ITE "Purchase Specification for Flashing and Steady-Burn Warning Lights," such as:



- Type A low-intensity flashing warning lights;
- Type C steady-burn warning lights;
- Type D 360-degree steady-burn warning lights.



Instructions for Use: On barricades used to outline excavations, one light must be placed on the barricades at suitable intervals of not more than 20 feet. Use during hours of darkness only. (Use Type B high-intensity flashing warning lights for day and night.) Warning lights must have a minimum mounting height of 30 inches.

Traffic Control and Work Area Protection Arrangements

3

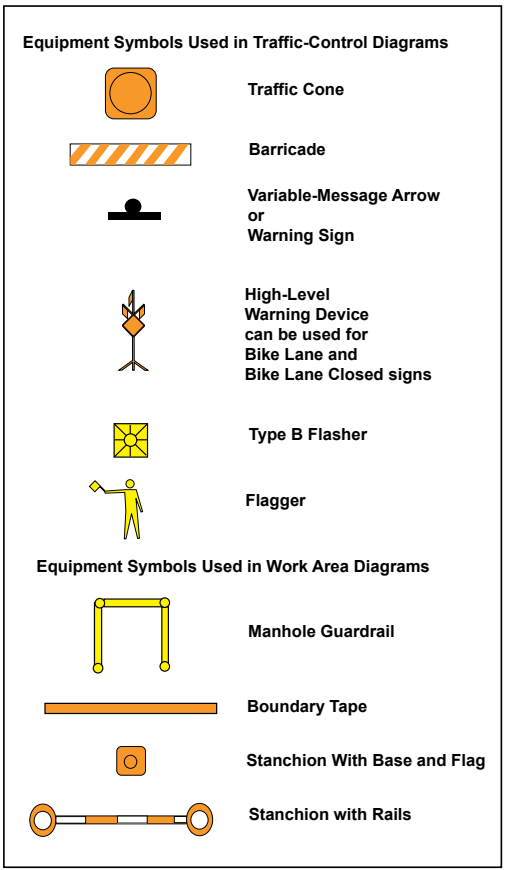
Work Area Protection Diagrams

This section provides graphic diagrams showing a variety of typical work locations. In each case, a scene is provided showing the work area protection properly deployed. In addition, a smaller "blueprint" diagram providing an overhead view of the job site helps to clarify the placement of signage, lights, barriers, and other work area protection equipment.

The arrangements shown in this section do not cover every possible work area configuration. They are intended to provide a representative sample of field conditions and to offer guidance when planning work area protection in similar settings. If you're not sure how to proceed, talk to your supervisor.

Using these diagrams as reference, you must also:

1. Review the DOT permit for conditions of work. Verify information if needed.
2. Select a traffic-control diagram that meets most nearly the requirements to control traffic at the work site.
3. Select a work area protection diagram for your type of operation.
4. Set up the work site in accordance with the arrangements selected. Adapt the arrangements where necessary to meet local conditions.



Work Area Protection Diagrams

These configurations are generally applicable to comparable work areas with similar road conditions.

- Setup for Pole Setting on Four-Lane Road With Two Lanes of Traffic in Each Direction
- Setup for Curved Two-Lane Road With Two-Way Traffic
- Setup in Middle Lane of Three Lanes of Traffic Moving in the Same Direction
- Setup in One Lane of a Four-Lane Road With Two Lanes of Traffic in Each Direction
- Setup at an Intersection With Pedestrian Crosswalks
- Setup at an Intersection With Pedestrian Crosswalks
- Setup Around Subsurface structure in Sidewalk Area
- Setup in Middle of Roadway Diverting Traffic
- Setup in Street Blocking Bike Lane

Setup for Pole Setting on Four-Lane Road With Two Lanes of Traffic in Each Direction

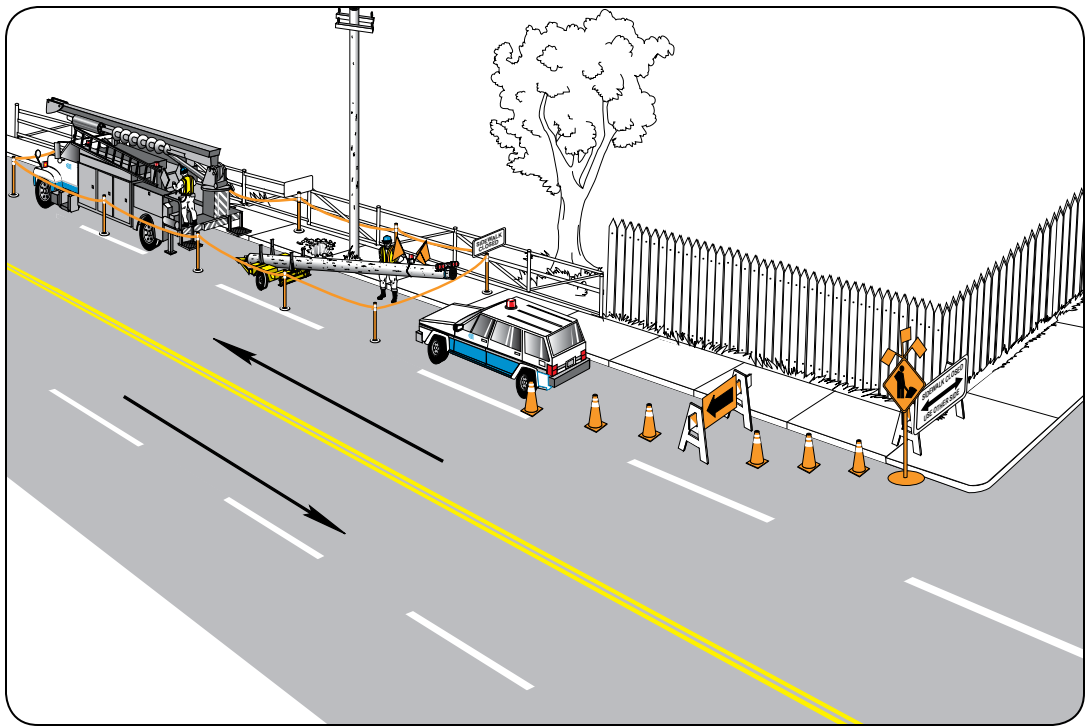
This configuration is generally applicable to comparable work areas with similar road conditions.

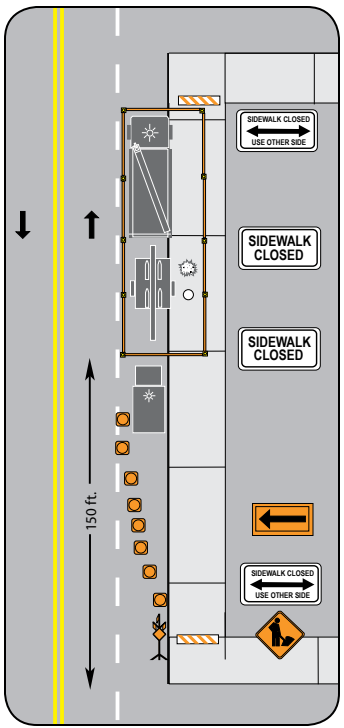
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning sign at the beginning of the tapered work zone.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning sign for traffic traveling toward the one closed lane.
- Place traffic cones so that the traffic is tapered away from the work area.
- Set up stanchions and boundary tape. (Tape may be used when pedestrians have restricted access to the work area.)
- Post "Sidewalk Closed" sign near setup (optional).
- Post "Sidewalk Closed — Use Other Side" sign on both sides of the work area, at the nearest corners to restrict pedestrian traffic on the work side of the street.

Equipment

- advance-warning sign ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- Flag tree and flags
- 28" or 36" traffic cones
- lane-closure sign (arrow board or flashing-arrow panel)
- stanchions and boundary tape
- sidewalk-closed signage





Blueprint of work area

Setup for Bucket Truck on Curved Two-Lane Road With Two-Way Traffic

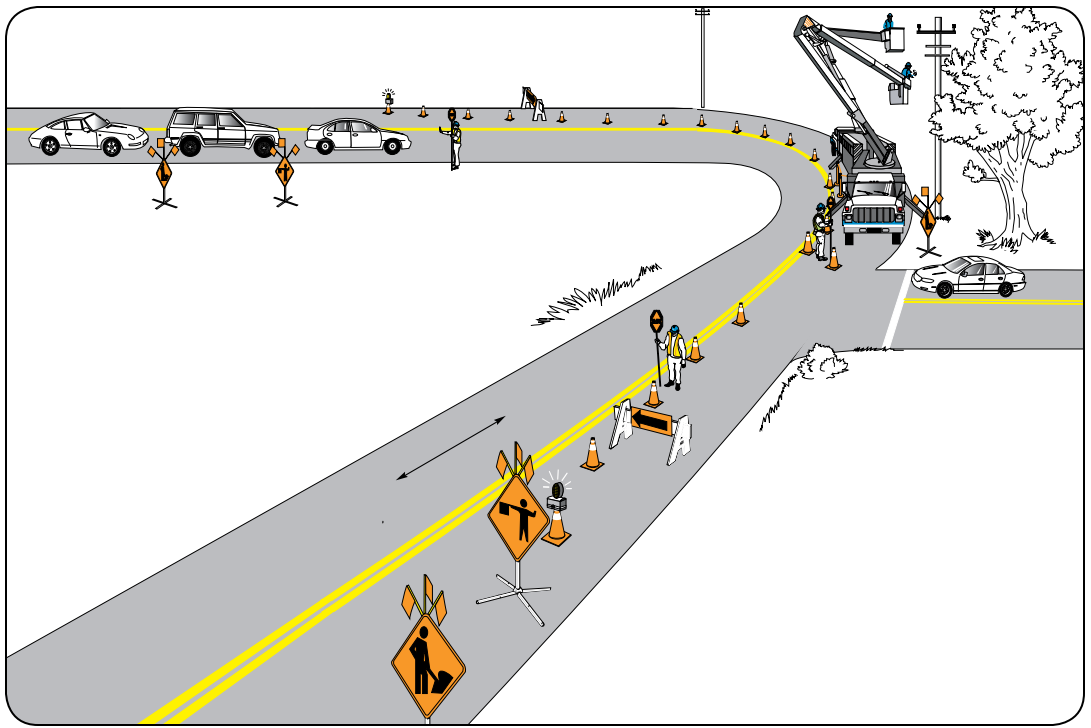
This configuration is generally applicable to comparable work areas with similar road conditions.

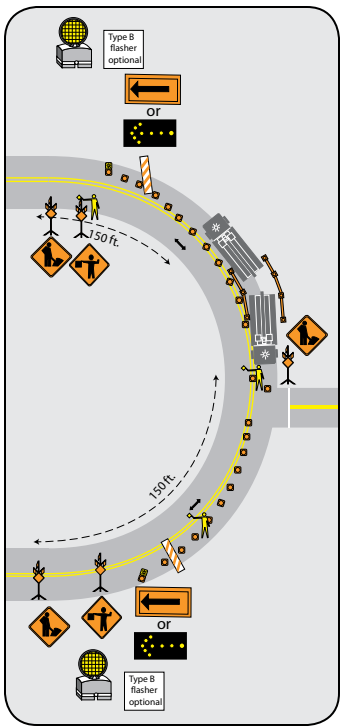
Setup

- Assign three flaggers, one at each end of the work area, and one at a nearby intersection, to control the flow of two-way traffic in one lane. The flagger position should be within a protected area, such as the tapered area.
- Ensure communications among flaggers (walkie-talkies).
- Place the advance-warning sign at the beginning of the tapered work zone for both sides of oncoming traffic.
- Place "Flagger Ahead" signs after the advance-warning sign and well before the flagger position.
- Place the "Lane Closed" sign to appear in plain view after the advanced warning sign for traffic traveling toward the one closed lane.
- Place the "Lane Closed" sign for traffic approaching on the opposite side of the double yellow line (optional).
- Place traffic cones so that upstream and downstream traffic are both tapered away from the work area.
- Set up stanchions and boundary tape to extend around work areas (tape may be used when pedestrians have restricted access to the work area).

Equipment

- 2 advance-warning signs ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- 2 flag trees and flags
- 2 lane-closure signs (arrow board or flashing-arrow panel)
- 2 "Flagger Ahead" signs
- 28" or 36" traffic cones
- stanchions and boundary tape
- Type B flashers (optional)
- 3 sets of flagger-communication equipment
- 3 flagger paddles





Blueprint of work area

Setup for Excavation in Middle Lane of Three Lanes of Traffic Moving in the Same Direction

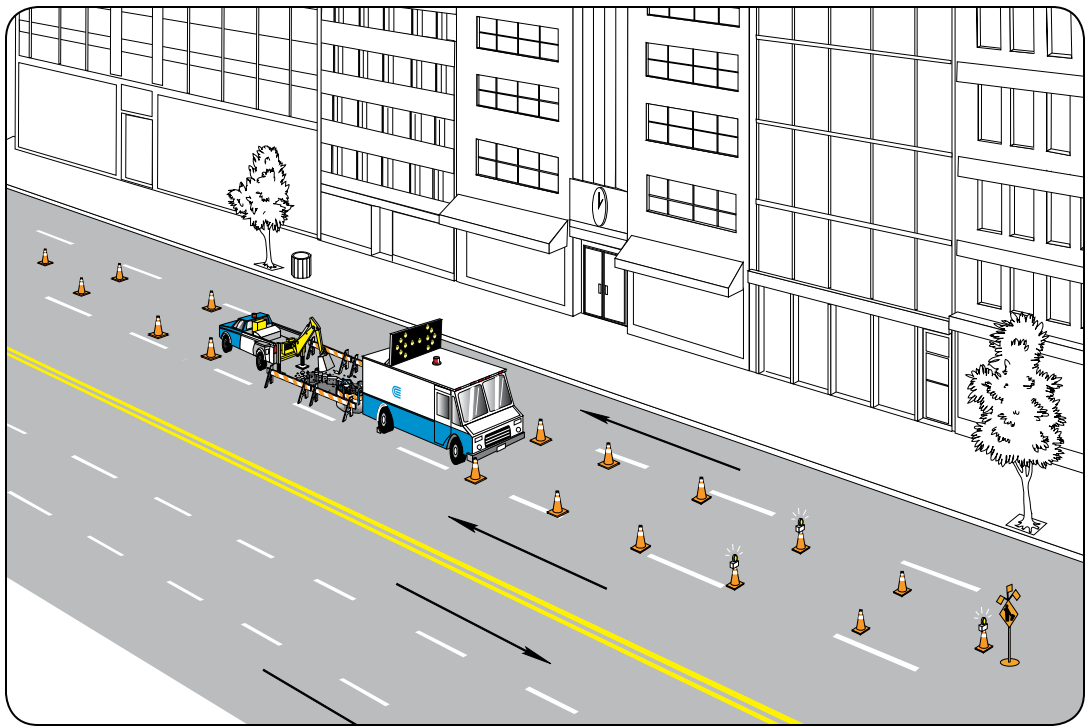
This configuration is generally applicable to comparable work areas with similar road conditions.

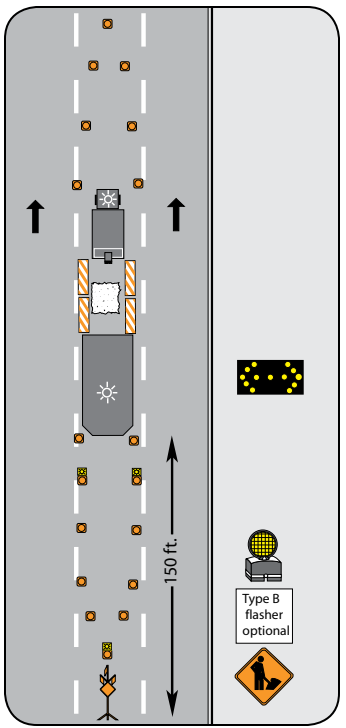
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning sign at the beginning of the tapered work zone.
- Place the "Lane Closed" sign in plain view after the advance-warning sign.
- Place traffic cones so that the traffic is tapered away from the work area.
- Place sturdy barricades around the excavation work area.
- Filled Pel bags should be placed inside the work area nearest barricades that are most at risk of impact from oncoming traffic.

Equipment

- advance-warning sign ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- flag tree and flags
- 28" or 36" traffic cones
- lane-closure sign (arrow board or flashing-arrow panel)
- Type B flashers (optional)





Blueprint of work area

Setup for Flush Truck in One Lane of a Four-Lane Road With Two Lanes of Traffic in Each Direction

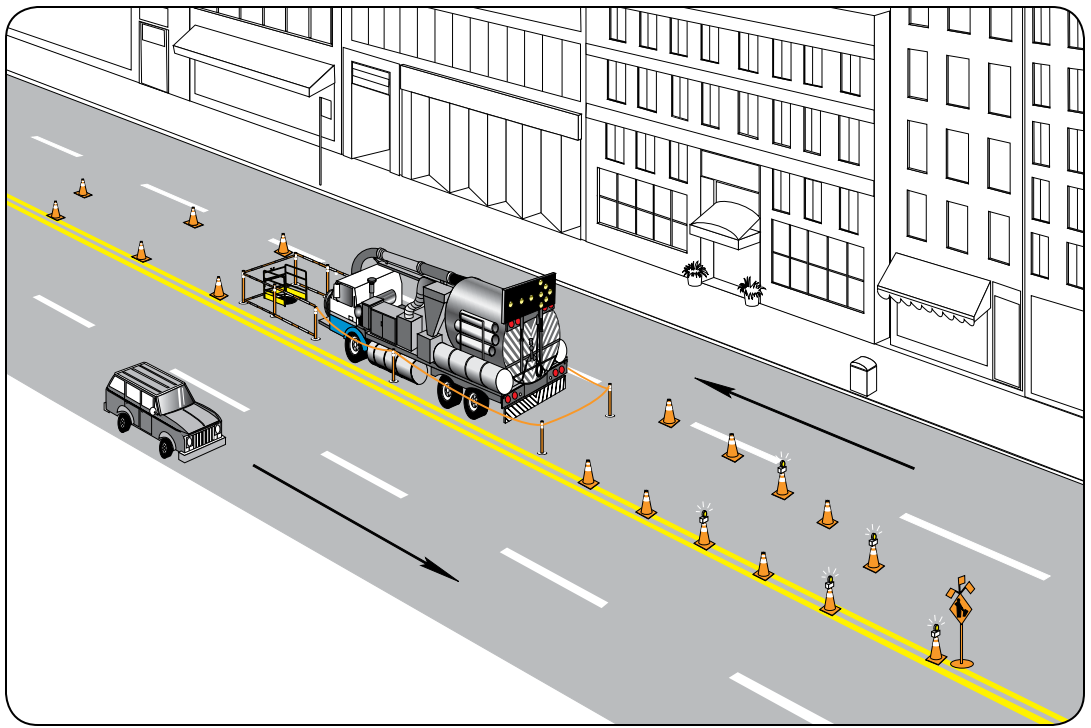
This configuration is generally applicable to comparable work areas with similar road conditions.

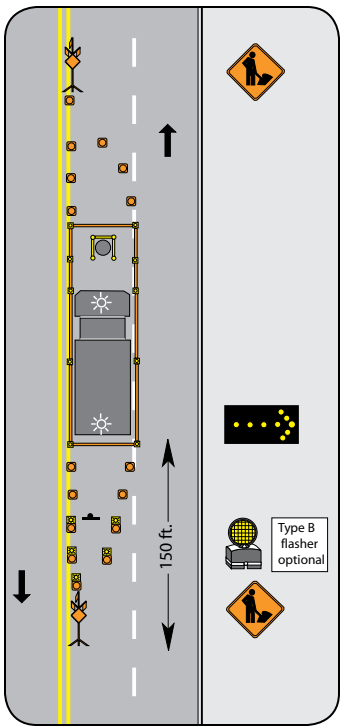
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning sign at the beginning of the tapered work zone for both sides of oncoming traffic.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning sign for traffic traveling toward the one closed lane.
- Place the flashing-arrow panel, in the caution mode (no arrow) for traffic approaching on the opposite side of the double yellow line (optional).
- Place traffic cones so that the oncoming traffic is tapered away from the work area.
- Place traffic cones to ease the downstream traffic flow and maintain separation of traffic flowing in the opposite direction.
- Set up stanchions and boundary tape to extend completely around the flush operation. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- 2 advance-warning signs ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- 2 flag trees and flags
- 28" or 36" traffic cones
- lane-closure sign (arrow board or flashing-arrow panel)
- flashing-arrow panel, in the caution mode (optional)
- stanchions and boundary tape
- Type B flashers (optional)
- manhole guardrail





Blueprint of work area

Setup for Tool Cart at an Intersection With Pedestrian Crosswalks

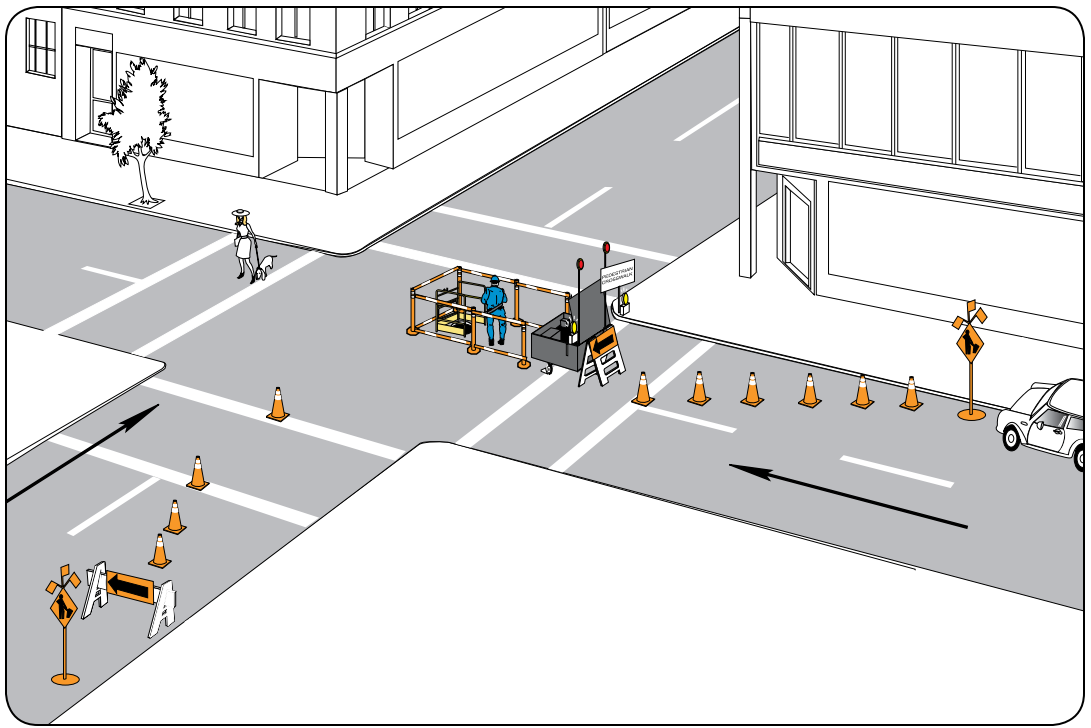
This configuration is generally applicable to comparable work areas with similar road conditions.

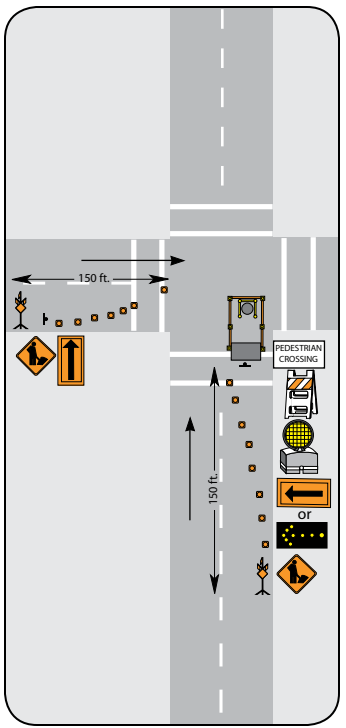
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- This work area is immediately preceded by a parking lane. Place one advance-warning sign in the parking lane and another advance-warning sign for traffic that is restricted to the left of the work area.
- Place the "Lane Closed" sign so that it appears in plain view after the advance-warning sign for traffic that is restricted to the left of the work area. ("Lane Closed" signs are not required for parking lanes.)
- Place traffic cones so that the traffic is tapered away from the work area for oncoming traffic. Maintain pedestrian access to crossings not affected by the work area.
- Maintain pedestrian safety from upstream traffic at all relocated crossings with placement of Type III barricades or with barricades equipped with a bottom rail at most 6 inches above street level and a top rail at least 36 inches high (see Protection of Pedestrians, page 17).
- Place Type B flashers on barricades at pedestrian crossings.
- Post the "Pedestrian Crossing" sign to redirect pedestrian traffic.
- Set up stanchions and boundary tape to extend around work areas. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- 2 advance-warning signs ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- 2 flag trees and flags
- 28" or 36" traffic cones
- 1 lane-closure sign (arrow board or flashing-arrow panel)
- Type III barricades or barricades equipped with two rails
- stanchions and boundary tape
- 2 to 4 Type B flashers (required)
- "Pedestrian Crossing" sign (optional)
- manhole guardrail





Blueprint of work area

Setup for Cable Trucks at an Intersection With Pedestrian Crosswalks

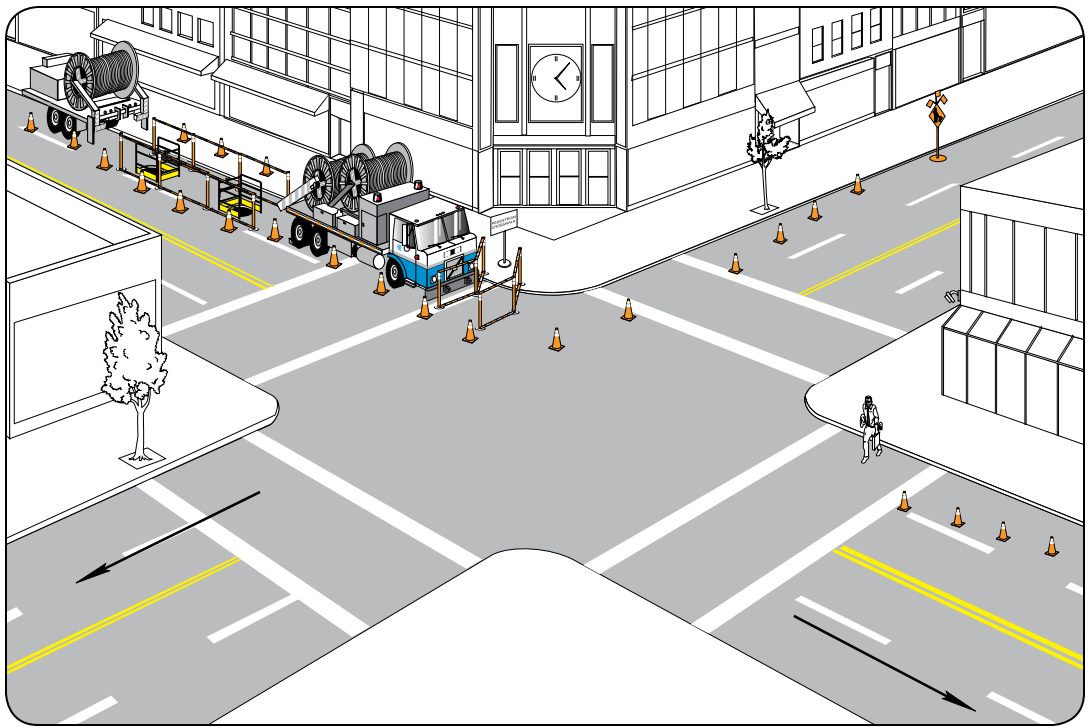
This configuration is generally applicable to comparable work areas with similar road conditions.

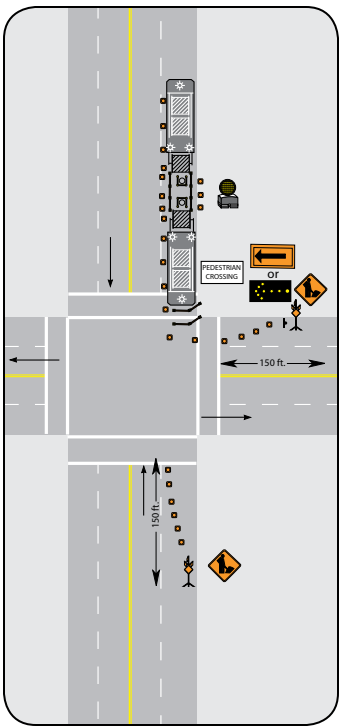
Setup

- Where necessary, assign a flagger while the work area is being prepared.
- Place the advance-warning signs on the far side of the intersection for traffic traveling upstream and for traffic that is restricted from turning into that lane.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning sign for traffic traveling toward the one closed lane.
- Place traffic cones so that the traffic is tapered away from the work area for oncoming traffic.
- Maintain pedestrian access to crossings not affected by the work area.
- Maintain pedestrian safety from upstream traffic at all relocated crossings with placement of Type III barricades or with barricades equipped with a bottom rail at most 6 inches above street level and a top rail at least 36 inches high (see Protection of Pedestrians, page 17).
- Place Type B flashers on barricades at pedestrian crossings.
- Post the "Pedestrian Crossing" sign to redirect pedestrian traffic.
- Set up stanchions and boundary tape to extend around work areas. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- 2 advance warning signs ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- 2 flag tress and flags
- 28" or 36" traffic cones
- 2 lane-closure signs (arrow board or flashing-arrow panel)
- Type III barricades or barricades equipped with two rails
- stanchions and boundary tape
- 2 to 4 Type B flashers (required)
- "Pedestrian Crossing" sign (optional)
- manhole guardrail and boundary tape
- "Sidewalk Closed" signage





Blueprint of work area

Job setup on sidewalk

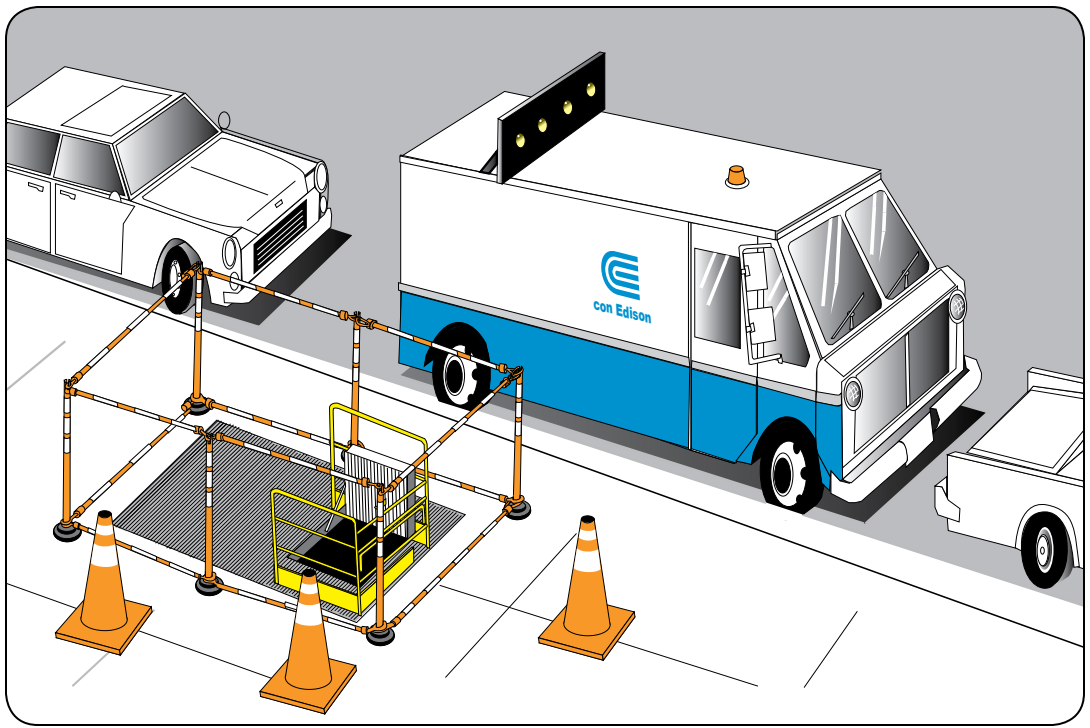
This configuration is generally applicable to comparable work areas with similar sidewalk conditions.

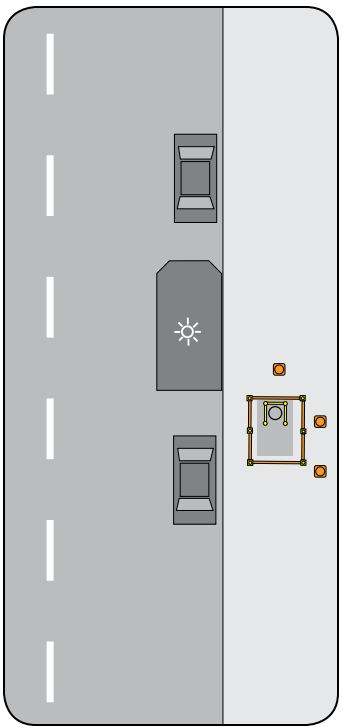
Setup

- Secure area with telescoping rail/stanchion combination.
- Two telescoping rails must be used per section, one on the bottom and the other hung on the top of the stanchions.
- Place cones around setup to give advance warning to pedestrians.
- Open underground structure covers.
- Utilize manhole guardrails, when feasible.

Equipment

- 28" or 36" traffic cones
- stanchions and telescoping rails
- manhole guardrail





Blueprint of work area

Closure/redirection of bike lane

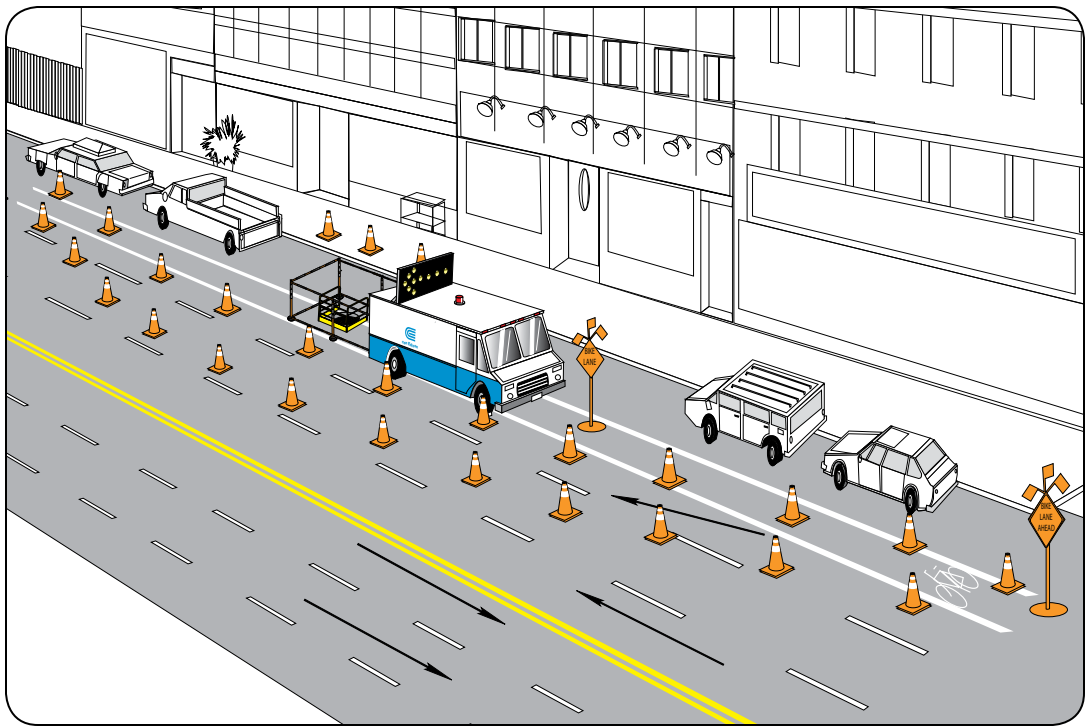
This configuration is generally applicable to comparable work areas with similar road conditions.

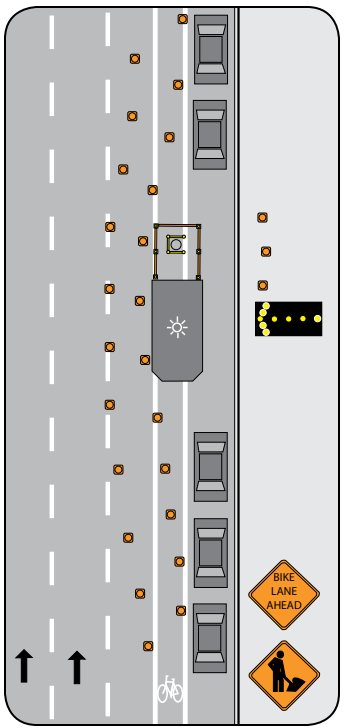
Setup

- Assign two flaggers while the work area is being prepared.
- Place the advance-warning signs on the far side of the intersection for traffic traveling upstream and for traffic that is restricted from turning into that lane.
- Place the "Bike Lane Ahead" sign to appear in plain view to alert all bicyclists to the redirected bike lane.
- Place traffic cones so that the traffic is tapered away from the work area for oncoming traffic, while maintaining the bike lane.
- Maintain pedestrian access to crossings not affected by the work area.
- Set up stanchions with telescoping rails to extend around work areas. (Tape may be used when pedestrians have restricted access to the work area.)

Equipment

- advance-warning signs ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- flag trees and flags
- 28" or 36" traffic cones
- 2 lane-closure signs (arrow board or flashing-arrow panel)
- stanchions and telescoping rails
- manhole guardrail and boundary tape





Blueprint of work area

Diverting traffic into an oncoming lane

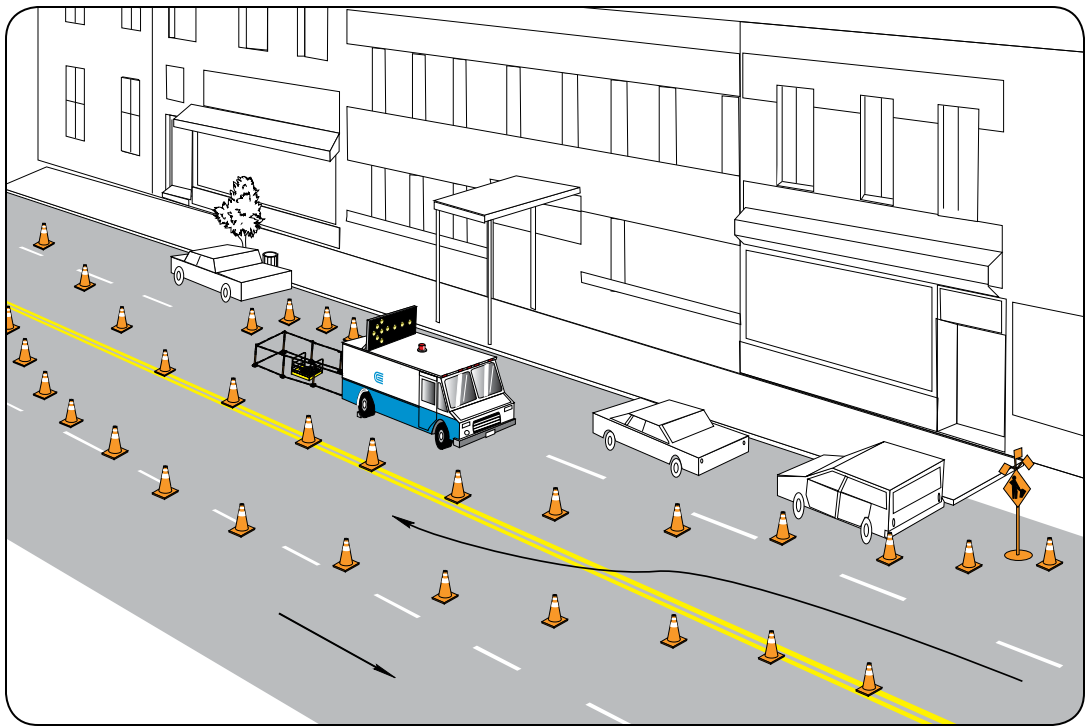
This configuration is generally applicable to comparable work areas with similar road conditions.

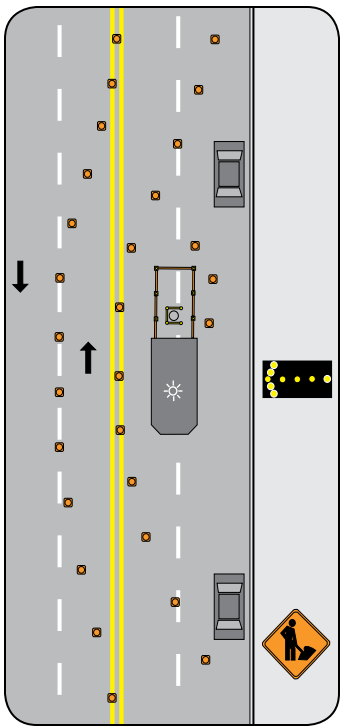
Setup

- Assign two flaggers while the work area is being prepared.
- Place the advance-warning sign at the beginning of both ends of the tapered work zone for both sides of oncoming traffic.
- Place the "Lane Closed" sign to appear in plain view after the advance-warning signs for traffic traveling toward the one closed lane.
- Place the flashing-arrow panel for traffic approaching on both sides of the double yellow line, directing the the traffic away from the work area.
- Place traffic cones so that the oncoming traffic is tapered away from the work area.
- Place traffic cones to ease the downstream traffic flow and maintain separation of traffic flowing in the opposite direction.
- Set up stanchions with telescoping rails around work set up behind the vehicle.

Equipment

- 2 advance-warning signs ("Digger," "Work Area Ahead," or "Utility Work Ahead")
- 2 flag trees and flags
- 28" or 36" traffic cones
- 2 lane-closure signs (arrow board or flashing-arrow panel), whichmust direct traffic coming from both directions
- stanchions and telescoping rails around work area
- manhole guardrail and boundary tape



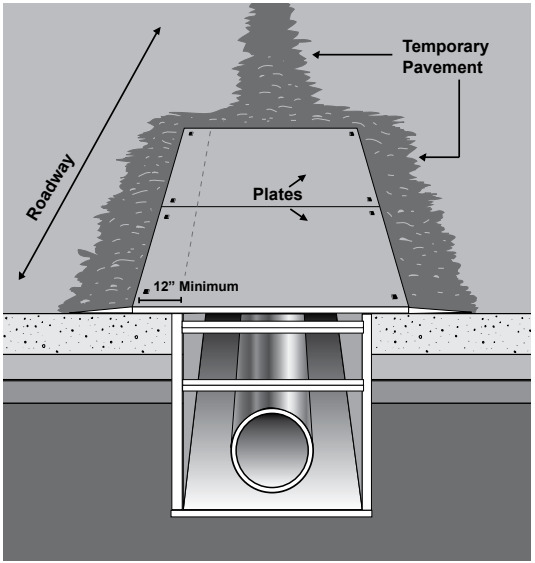


Blueprint of work area

Excavation Operations

Where operations require open trenches, and pedestrian or vehicular traffic requires maintaining passageways or traffic lanes, plates should be used.

- Plates must be large enough to span the opening, must have a minimum bearing area 1 foot wide on each side of the trench, and must be adequate to carry the load.
- Trench walls and adjacent soil must be sufficiently stable for the use of plates.
- Area at the edge of plates must be tapered to provide smooth riding and safer walking conditions. ***It is important to avoid pedestrian tripping hazards or plate movement.***
- Plates must be fastened with spikes in pre-drilled holes or spiked securely from the side so that they will not move off of the openings.
- For wide trenches or where unstable soil conditions exist, consideration should be given to construction of temporary bridges.

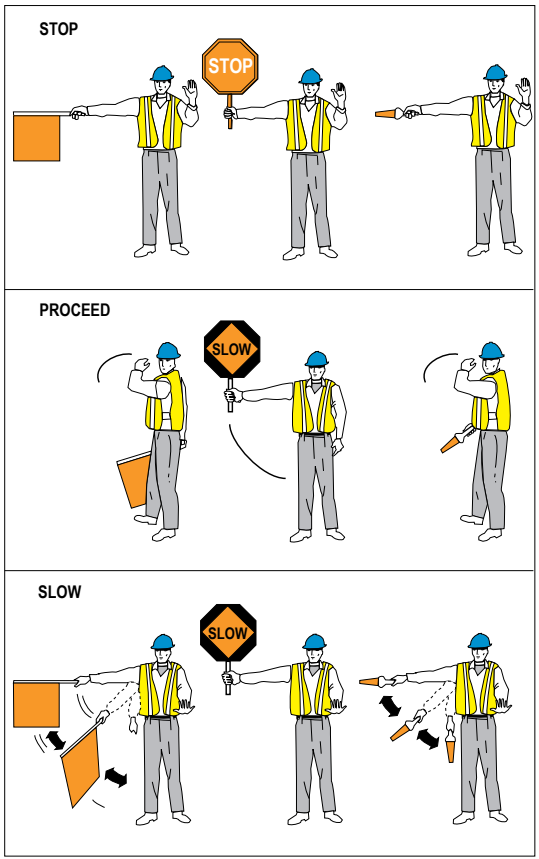


Flagger at Work Sites

A flagger will be required for certain work operations where the traffic must be stopped or controlled. Flagging is a form of communication with the motorist. The language of flagging consists of only three signals: STOP, SLOW, and PROCEED.

When traffic in both directions must use a single lane for a limited distance, movements from each end must be coordinated. Provisions should be made for alternate one-way movement through the constricted section via methods such as flagger control, a flag transfer, a pilot car, traffic-control signals, or stop, or yield control. Control points at each end should be chosen to permit easy passing of opposing lanes of vehicles. If traffic on the affected one-lane roadway is not visible from one end to the other, then flagging procedures, a pilot car with a flagger, or a traffic-control signal should be used to control opposing traffic flows.

- Flaggers must wear approved safety apparel available in Class & Stock that is compliant with American National Standard for High-Visibility Apparel, ANSI/ISEA 107-2004, Class 2 or 3 risk exposure.
- The flagger must be clearly visible at all times to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagger's instructions and to permit traffic to reduce speed before entering the work zone.
- The "Flagger Ahead" sign must go before the flagger station, and the flagging station should be well ahead of the work area.



- The flagger station should be located at the start of the taper.
- The flagger should always face the oncoming traffic and make eye contact with the lead motorist.
- The flagger should stand alone, never permitting a group of workers to congregate around the flagger station.
- Flaggers will focus on the task at hand, directing traffic, and shall not be distracted by other factors, including, but not limited to, personal cell phones, electronic devices, and the like.
- When the situation requires the use of flags, only approved flags shall be used.
- When two flaggers are used, one flagger will be designated as the lead flagger.
- When two flagging stations are not visible to one another, radio communication is required or a third flagger may be stationed at a point visible in between each flagging station.
- If the flagging stations are too far apart for verbal communications, the flag transfer method of one-lane, two-way traffic control may be used. In this method, the driver of the last vehicle proceeding into the one-lane section is given a red flag and instructed to deliver it to the flagger at the other end. The opposite flagger, upon receipt of the flag, then knows that it is reasonably safe to allow traffic to move in the other direction.
- Flaggers must be illuminated at night.
- Floodlights must not produce a disabling glare condition for approaching road users, flaggers, or workers.

THE WAY WE WORK IS SAFELY


conEdison

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CORPORATE ENVIRONMENTAL, HEALTH AND SAFETY PROCEDURE

CEHSP A28.00 – Calling A Time Out

(CSP converted to CEHSP on 07/16/2008)

Revision 4: 08/04/09 Effective Date: 10/01/09

CONTENTS

SECTION 1.0 – PURPOSE
SECTION 2.0 – APPLICABILITY
SECTION 3.0 – INTRODUCTION
SECTION 4.0 – COMPLIANCE REQUIREMENTS
- 4.1 – CALLING A TIME OUT
- 4.2 – RESOLVING A TIME OUT
- 4.3 – TIME OUT SAFETY TALK
- 4.4 – TIME OUT CARD

SECTION 5.0 – DEFINITIONS
SECTION 6.0 – RESPONSIBILITIES
SECTION 7.0 – REFERENCES

1.0 PURPOSE

IT IS THE POLICY OF CON EDISON TO MINIMIZE ENVIRONMENTAL, HEALTH AND SAFETY (EH&S) CONCERNS WHENEVER POSSIBLE. This procedure outlines the process for calling a ***Time Out*** or work stoppage due to a safety, health and/or an environmental concern and resolving the Time Out before proceeding with work.

2.0 APPLICABILITY

This Corporate Environmental, Health and Safety Procedure (CEHSP) applies to all Con Edison employees and contractors.

3.0 INTRODUCTION

The company's commitment to EH&S excellence requires that all work proceed only if it is safe and environmentally sound. The responsibility for fulfilling this requirement rests with every employee and contractor. Success depends on open communication between individuals and their supervisors prior to beginning work, and – in certain cases – after EH&S issues are identified.

4.0 COMPLIANCE REQUIREMENTS

4.1 CALLING A TIME OUT

All work shifts must begin with a job briefing in which safety, health, and environmental issues are discussed. If an employee has an EH&S concern, he/she must discuss it with his/her supervisor before proceeding with the job. After discussion, if there is still uncertainty on how to

proceed or the concern is not adequately addressed, the employee has the right to call a Time Out without reprisal.

When a safety, health, and/or environmental concern arises on a job, the concerned employee must stop the work in question and immediately contact his/her supervisor to provide information regarding the nature of the hazard or EH&S-related concern. The supervisor must discuss the concern with the employee, either in person or on the phone, and attempt to resolve it. If the concern is resolved to the satisfaction of the employee and the supervisor and if there is certainty that all safety, health, and environmental procedures are being followed, the work may continue. If the concern is not resolved to the satisfaction of the employee and/or supervisor, work is to remain stopped and the employee must call a Time Out. The Time Out applies only to the location where it has been called; there are no system-wide or company-wide Time Outs.

4.2 RESOLVING A TIME OUT

Once a "Time Out" is called, the following process must be followed to resolve the concerns:

- The local EH&S representative is to be contacted to obtain assistance in resolving the concern. For support groups working in the field, their organization's contact person must also be notified. The local EH&S representative will act as the authority (expert) related to health, safety, and environmental rules, regulations, and procedures and either make a determination on the merits of the concern or contact an appropriate subject matter expert (SME) from other areas of the company, including, but not limited to Engineering, Corporate EH&S, or operations. In general, the number of people involved in the Time Out must be kept to the minimum required to resolve the issue. If the local EH&S representative understands all of the issues involved in the Time Out and all EH&S concerns are addressed, the local EH&S representative's determination is final and the Time Out is concluded.

- When the local EH&S representative determines that support is needed from a company SME, the SME will serve as the final arbiter of the Time Out. In this instance, once all EH&S concerns are addressed, the SME's decision is final and the Time Out is closed.

- In either case, whether the local EH&S representative or the SME is called, once the EH&S concern is evaluated and either it is determined that no safety, health or environmental issue exists or that the EH&S concern has been mitigated, the employees are expected to return to work.

- If the local EH&S representative cannot be reached, the job cannot continue until EH&S intervention is obtained. The Corporate EH&S Response Team (ERT) can be used either to directly resolve the issue or to reach another EH&S representative who can. Furthermore, any person listed on the ***Time Out card*** may be called to resolve the issue.

- Pending resolution of the Time Out, in emergency and other situations where extensive job and procedural reviews are necessary to resolve the concerns, an alternate work plan (where practical) approved by the responsible SME will be implemented to complete the job. Before proceeding with any work prior to the resolution of the "Time Out," the Operating Supervisor and the local EH&S representative must ensure that the work will be performed in full accord with EH&S procedures, that all rules and regulations will be followed, and that safety, health, and environmental risks will be minimized.

At the conclusion of all “Time Out” situations, it must be clearly stated to all those involved that the “Time Out” is over.

When an EH&S concern has been raised, the employee and supervisor have resolved the issue themselves, and work has proceeded, the supervisor must notify the local EH&S representative if the concern was significant or could recur. In all Time Out situations, the EH&S representative will review the incident in a timely manner, determine if the Time Out has implications outside the organization/area where it occurred, and take appropriate steps to prevent its recurrence.

4.3 TIME OUT SAFETY TALK

To ensure that all employees are familiar with and understand the Time Out Program, an annual safety talk (SAF7240) must be provided.

4.4 TIME OUT CARD

Each organization must issue a Time Out card to all of its employees. All cards is must be green and white, approximately 3-1/2 inches by 2 inches, and include the following information, at a minimum:

SIDE 1	SIDE 2
You Can Always Call a Time Out	Operating Area Location/Organization
If you have a safety, health, and/or environmental question and/or concern, we are available 24 hours a day for assistance.	No job proceeds until it is made safe and environmentally sound
Con Edison Picture of “Referee”	List names and telephone numbers of local EH&S staff or Call the Control Center at (xxx) xxx-xxxx, to reach a Safety or Environmental Specialist to assist you

5.0 DEFINITIONS

Time Out: Mechanism for any company employee to stop a job if he or she is unsure of how to proceed because of a safety, health or environmental concern. A Time Out can only be called if the concern cannot be resolved to the satisfaction of the employee and supervisor.

Time Out Card*:* A green and white card, approximately 3-1/2 inches by 2 inches, issued to all company employees for the purpose of calling a Time Out.

6.0 RESPONSIBILITIES

Employees**:** Employees are responsible for discussing EH&S concerns with their operating supervisors and calling a Time Out, when appropriate.

Local EH&S Representative: The local EH&S representative is the operating department’s EH&S manager or one of his/her staff members. The local EH&S representative is responsible for:

- Determining the merits of EH&S issues identified by operating supervisors and resolving Time Outs, if possible.

- Contacting the appropriate SME if additional guidance is needed.

Operating Supervisor: The operating supervisor is a supervisor in an operating department with that title or any other supervisor in another department. The operating supervisor is responsible for:

- Attempting to resolve EH&S concerns raised by employees.

- Contacting the local EH&S representative if the employee EH&S concern cannot be resolved.

- Assessing the significance of any EH&S concerns raised and notifying the local EH&S representative of concerns that are significant or are likely to recur.

Subject Matter Expert: The SME is an individual who has detailed, specific knowledge on a particular subject by the nature of his/her education, training and experience. The SME is responsible for:

- Providing assistance to the local EH&S representative in resolving Time Outs.

- Serving as final arbiter of Time Outs.

- Approving alternate work plans, where necessary

Corporate EH&S Response Team (ERT)**:** If the local EH&S representative cannot be reached, the ERT is responsible for directly resolving the Time Out or reaching another EH&S representative who can.

7.0 REFERENCES

This CEHSP was developed by Con Edison as a matter of policy to ensure open communication about, and prompt resolution of, EH&S issues arising on the job.

conEdison

LAST REVIEW DATE:	REVIEW CYCLE:
1/30/08	5 Years

SPECIFICATION: **G-11863-6**

TITLE: **"INSPECTION AND MAINTENANCE REQUIREMENTS ASSOCIATED WITH EXCAVATION ACTIVITIES NEAR GAS PIPELINES OPERATING AT 125 PSIG AND ABOVE"**

VOLUME: **1 and 10**

REGISTRATION NO.: **GAS0178**

GAS TARGET TRAINING GROUPS: **Gas Construction, Major Projects, Maps & Records, Pipeline Integrity, LNG, Corrosion Control, Pressure Control, Emergency Response Center, Tunnels,**

★ **OTHER TARGET TRAINING GROUPS:** **Construction, Electric Operations, Steam Operations**

REVISIONS:(See ★)

1)	Cover Page	-	Revised Target Training Groups to reflect new Construction Group Names.
2)	Various	-	Changed “Maintenance and Construction Services” department to “Construction” in the following sections: 3.0, 5.1, 7.0, 7.2, 7.3, 7.4, 7.7, 7.8, 7.10, 7.11, 8.0, 9.4, 9.5 and 9.6.
3)	Various	-	Added Pipeline Integrity group in the following sections: 5.5, 5.6, 6.1,6.2, 6.3, 8.0 and 9.5.
4)	Section 4.1	-	Added “Company Contractors, Municipal Contractors”
5)	Section 4.2	-	Added “within 25’ of a gas pipeline operating at 125 PSIG and above.”
6)	Section 5.1	-	Added: “ERC will document excavation activities using the “Damage Prevention Checklist” found in Appendix B as a guideline, based on communication with Construction Inspectors/company personnel as described in Sec 7.0, Responsibilities – Construction.”

7)	Section 5.2	-	Further defined and clarified when valve standby is required
8)	Section 5.4	-	Added requirement for Construction to arrange for Corrosion inspection
9)	Section 5.5	-	Replaced “between 5’ and 25’…” with “within 25’…”. Added “or approved company personnel”
10)	Section 5.6	-	Clarified wording
11)	Section 5.7	-	Replaced “excavation work” with “all work within 25 feet of a gas pipeline operating at or above 125 psig”
12)	Section 6.1	-	Added Pipeline Integrity group. Added Rubber mat requirement.
13)	Section 7.0	-	Changed title to “RESPONSIBILITIES – CONSTRUCTION AND/OR ALL OPERATING AREAS WITH EXCAVATION ACTIVITIES”
14)	Section 7.1	-	Revised bulleted notification information
15)	Section 7.4	-	Fig. 1 redrawn; Wording change to align w/Code 753.
16)	Section 7.5	-	Changed wording to align with Code 753.
17)	Section 7.6	-	Changed requirement to arrange for Corrosion inspection from ERC to Construction
18)	Section 7.7	-	Backfilling activities shall be reported to ERC via email.
19)	Section 7.8	-	Section reworded for clarity.
20)	Section 7.11	-	Removed requirement for Construction Inspector to complete and fax Appendix B. Tracking of excavations and work in the vicinity of the TM will be handled via email communications between ERC, Construction and Gas Engineering.
21)	Section 9.8	-	Section Added; Renumbered subsequent sections.
22)	Section 9.9	-	Reworded section. Removed test and inspection requirements and replaced with reference to spec. G-11814 and Con Edison’s integrity Management Plan for detailed testing requirements. Added follow-up activities.

23)	Section 11.0	-	Added new section on descriptive Process Flow Diagrams. Renumbered remaining sections.
24)	Section 12.0	-	Added G-11814 to “Reference Specifications” section.
25)	Appendix B	-	Changed Appendix B to a guideline for use by ERC and Construction in accordance with Sec 5.0 and Sec 7.0.
26)	Appendix D	-	Added new descriptive Process Flow Diagrams.

conEdison

Gas Operations Standards

TITLE: INSPECTION AND MAINTENANCE REQUIREMENTS ASSOCIATED WITH EXCAVATION ACTIVITIES NEAR GAS PIPELINES OPERATING AT 125 PSIG AND ABOVE

EFFECTIVE DATE: February 29. 2008

TABLE OF CONTENTS

	SECTION	TITLE	PAGE
	1.0	SCOPE	2
	2.0	LEGAL REQUIREMENTS	2
★	3.0	ORGANIZATIONS APPLICABLE	2
	4.0	NOTIFICATIONS	2
★	5.0	RESPONSIBILITIES –EMERGENCY RESPONSE CENTER	3
★	6.0	RESPONSIBILITIES – GAS ENGINEERING	4
★	7.0	RESPONSIBILITIES – CONSTRUCTION	5
★	8.0	RESPONSIBILITIES – GAS ENGINEERING AND CONSTRUCTION	7
	9.0	RESPONSIBILITIES – CORROSION CONTROL	8
	10.0	RESPONSIBILITIES – LOCAL GAS OPERATIONS AREAS	11
	11.0	INSPECTION & MAINTENANCE PROCESS FLOW	11
	12.0	REFERENCE SPECIFICATIONS	11
		APPENDIX A -WEEKLY TRANSMISSION MAIN PATROL REPORT	
		APPENDIX B - DAMAGE PREVENTION CHECKLIST (EXCAVATOR WITHIN 25')	
		APPENDIX C TELEPHONE NUMBERS – GAS OPERATIONS	
		APPENDIX D - PROCESS FLOW DIAGRAM	

TITLE: INSPECTION AND MAINTENANCE REQUIREMENTS ASSOCIATED WITH EXCAVATION ACTIVITIES NEAR GAS PIPELINES OPERATING AT 125 PSIG AND ABOVE

1.0 SCOPE

This specification covers the inspection and maintenance procedures that Con Edison will perform associated with any excavation activity within 25 feet of a gas pipeline (mains and services) operating at 125 psig and above.

2.0 LEGAL REQUIREMENTS

FEDERAL: Title 49 of the Code of Federal Regulations Part 192 Sections 459, 614, 705, 706 and 935.

STATE: 16NYCRR Part 255 Sections 459, 614, 705 and 706 and Part 753.

★ 3.0 ORGANIZATIONS APPLICABLE

All Con Edison Departments (Gas Operations, Electric Operations, Steam Operations, etc.) that perform excavation work or have contractors that excavate for them in Manhattan, Queens, Bronx and Westchester. This also includes the Construction Department, who oversees and monitors municipal (including New York City) contractors, company contractors, third party contractors and the Code Rule 753 markout vendor(s).

Also included are the Gas Emergency Response Center (ERC), Gas Engineering, and Corrosion Control, who all have responsibilities associated with this procedure.

4.0 NOTIFICATIONS

★ 4.1 The Emergency Response Center at telephone number 718-319-2330 must be notified of any excavation activity within 25 feet of a pipeline operating at 125 psig and above. This notification includes planned and emergency work by all Company forces, Company Contractors, Municipal Contractors and all third party Contractors excavating.

★ 4.2 Con Edison's Code Rule 753 mark out vendor(s) and/or Company personnel will make this notification when they receive a mark out request associated with any plans to excavate within 25' of a gas pipeline operating at 125 PSIG and above. However, all Company departments actually doing the excavating shall also make this notification. Corrosion Control is responsible for making other notifications associated with the patrol of the pipelines as shown in Section 9.0.

4.0 **NOTIFICATIONS** (Continued)

4.3 The ERC must also be notified anytime a pipeline operating at 125 PSIG and above is exposed.

5.0 **RESPONSIBILITIES – EMERGENCY RESPONSE CENTER**

★ 5.1 Upon notification, the ERC will prepare and issue an e-mail contingency notification to Gas Engineering, the applicable Gas Construction and Gas Distribution Services groups, Gas Control and Construction Department. They will also establish and maintain a tracking system for all new and completed reports of excavations crossing or within 25 feet of a pipeline operating at 125 psig and above. ERC will document excavation activities using the "Damage Prevention Checklist" found in Appendix B as a guideline, based on communication with Construction Inspectors/company personnel as described in Sec 7.0, Responsibilities – Construction.

★ 5.2 The ERC will arrange for crews to standby valves whenever an excavator is using mechanical excavation equipment within 5 feet of a pipeline operating at 125 psig and above or whenever any heavy mechanical construction work is being performed within 5 feet of an exposed pipeline operating at 125 psig and above (e.g. lifting/placing of heavy materials that could potentially damage an exposed main). They will also arrange for valve crews when otherwise requested by Gas Engineering.

5.3 The ERC will maintain appropriate mailing lists for their notifications.

★ 5.4 The ERC shall be notified whenever a pipeline operating at 125 psig and above is exposed and when Construction has arranged for an inspection by Corrosion Control.

★ 5.5 If the ERC receives notification of a suspected water leak, they shall dispatch Gas Distribution Services (GDS) or other department to investigate the water leak. If the water leak is within 5' of a pipeline operating at 125 psig and above, the ERC shall request a review by Gas Engineering - Pipeline Integrity or Major Projects. Based on their inspection, Gas Engineering - Pipeline Integrity or Major Projects will determine the need to excavate. If the water leak is within 25' of a pipeline operating at 125 psig and above, Gas Distribution Services or

5.0 **RESPONSIBILITIES – EMERGENCY RESPONSE CENTER** (Continued)

approved company personnel shall perform a gas leak investigation. If the water leak is greater than 25' feet away from a pipeline operating at 125 psig and above, no further action is required.

If the ERC receives any notifications of a water services being installed using trenchless technology, that crosses a pipeline operating at 125 psig and above,

they shall notify Gas Engineering - Pipeline Integrity or Major Projects to review.

★ 5.6 If the ERC receives a notification of coating and/or pipe damage, they shall notify Gas Engineering – Pipeline Integrity or Major Projects and Corrosion Control to arrange for a damage inspection.

★ 5.7 After all work within 25 feet of a gas pipeline operating at or above 125 psig is completed, the ERC will issue a notice to cancel the contingency.

6.0 **RESPONSIBILITIES – GAS ENGINEERING**

★ 6.1 Gas Engineering – Pipeline Integrity or Major Projects will arrange for any test pits required when an unknown patch, plate or unmonitored excavation is discovered over or within 5 feet of a pipeline operating at 125 psig and above as reported to them by the ERC. This shall be done as soon as possible. Unless Company personnel can provide written verification that the pipeline was not exposed, it shall be exposed and examined for coating and/or pipe damage by Corrosion Control as described in Section 9.0. Test pits shall also be requested when a water service crossing a pipeline operating at 125 psig and above was installed using trenchless technology.

Gas Engineering shall specify the placement of water impingement rubber mat(s) (Class & Stock #: 059-5306) between a water facility and the transmission main, anytime a new water service or main crosses the transmission pipeline and/or an existing facility is discovered without rubber mat protection. Rubber mat installations shall be in accordance with specification G-8005.

★ 6.2 Gas Engineering –Pipeline Integrity or Major Projects will review any reports by Corrosion Control or others of defects or damage to the pipeline. They will also

6.0 **RESPONSIBILITIES – GAS ENGINEERING** (Continued)

determine what corrective actions, if any, are needed. A report of their review and the corrective actions taken will be prepared and maintained for the life of the structure.

★ 6.3 Gas Engineering –Pipeline Integrity or Major Projects will determine if special circumstances warrant crews standing by valves when not required per Section 5.2.

6.4 Gas Engineering – Maps and Records will notify Corrosion Control anytime an M&S Plate is updated that has a pipeline operating at or above 125 psig.

6.5 Gas Engineering – Maps and Records will correct any verified mapping errors.

★ 7.0 **RESPONSIBILITIES – CONSTRUCTION AND/OR ALL OPERATING AREAS WITH EXCAVATION ACTIVITIES**

★ 7.1 Construction will notify the ERC of all excavation work with which they are involved within 25 feet of a gas pipeline operating at 125 psig and above. This includes any Code 753 markout requests as well as any contractors they oversee working for Con Edison, a municipality or private contractors. Whenever feasible, this notification should be made as a result of Code 753 requests and faxed or e-mailed to the ERC.

This notification will include:

- the location of the work
- name and telephone number of the Contractor
- start and completion dates
- brief description of the planned excavation
- remarks (i.e. identifying where work will take place)
- gas transmission main size
- M&S plate number

All notifications should be made at least two working days prior to the start of the excavation, when known. They will also notify the ERC when the work is complete.

7.0 **RESPONSIBILITIES – CONSTRUCTION** (Continued)

★ 7.2 Prior to excavation, a representative from Construction must meet with the excavator at the field site to explain the physical attributes of the pipeline(s) such as size, operating pressure, depth of cover, presence of special facilities or appurtenances (regulators, drips, etc.). They must also discuss limits of excavation and methods and procedures for supporting and protecting the pipeline and facilities.

★ 7.3 Construction must make and document a daily visual inspection of all excavation work within 25 feet of the pipeline and ensure the contractors are renewing markings as required.

★ 7.4 Anytime an excavation is made within 15 feet (see Figure 1) of the gas transmission main centerline, Construction shall assign a full time inspector to the location. For guidance related to this section and for special circumstances which may not require full coverage contact Gas Engineering – Pipeline Integrity or Major Projects (see Appendix C).

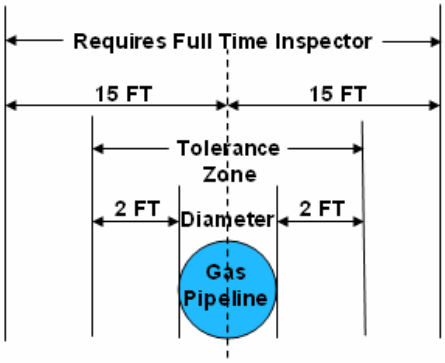


Figure 1

★ 7.5 As required by Code Rule 753, hand excavation must be performed until the exact location of the gas pipeline is determined before powered equipment can be used within the tolerance zone (one half of the pipe diameter plus two feet). Maintain minimum 4" clearance from pipeline after verifying location.

7.0 **RESPONSIBILITIES – CONSTRUCTION** (Continued)

★ 7.6 If the pipeline is exposed, Construction will arrange for an inspection by Corrosion Control (see Section 9.0) and notify the ERC.

★ 7.7 Construction must witness and report to ERC on backfilling activities to assure adequate support and to prevent large rocks or other injurious debris (e.g. wood, asphalt, rags, etc.) from being placed in contact with the pipeline.

★ 7.8 Construction will assign inspection of: A) confirmed water leaks that are within 5 feet of the transmission pipe; B) confirmed water leaks that are within 5 to 15 feet of the transmission pipe in which a gas leak is detected in the water leak area, upon notification from the ERC.

The ERC shall also be notified of any known locations where a third party water service crossing a pipeline operating at 125 psig and above was installed using trenchless technology.

7.9 Notify the ERC when the coating and/or pipeline is damaged.

★ 7.10 When crews are standing by valves, Construction must maintain a full time inspector who will maintain communication with the ERC. ERC will direct gas field crews as required.

★ 7.11 Construction will communicate with ERC via phone and/or email to update the status of known excavations and work within 25 feet of a transmission main. Completion of such activities shall be communicated to ERC so the contingency and activity can be placed on the completed work list. See Appendix C.

★ 8.0 **RESPONSIBILITIES - GAS ENGINEERING AND CONSTRUCTION**

For excavations parallel to and within 5 to 15 feet of a gas pipeline operating at 125 psig and above and within the angle of repose of the transmission main, Construction will contact the ERC, who will advise Gas Engineering – Pipeline Integrity or Major Projects. If the pipeline is within the angle of repose and the excavation is longer than shown in the table below, Gas Engineering will discuss the project with Construction to evaluate sheeting being used, type of soil, method of excavation and other field

★ 8.0 **RESPONSIBILITIES - GAS ENGINEERING AND CONSTRUCTION** (Continued)

conditions. When warranted, field visits will also be made by Gas Engineering with Construction.

The need for follow up visits by Construction will be jointly determined after the discussion and/or field visit.

Pipe Size	Length of Excavation
8" or less	20 feet
12"	30 feet
16"	35 feet
20" or larger	40 feet

9.0 **RESPONSIBILITIES – CORROSION CONTROL**

9.1 Corrosion Control will use the tracking system established by the ERC during patrol of the pipelines.

9.2 Corrosion Control will patrol the routes of all of the pipelines operating at 125 psig and above on a weekly basis not to exceed 12 calendar days as follows:

A) The patrol (visual survey) is conducted in all four-gas operating areas to observe the conditions along the route of the pipelines as listed in Tables II and IV of Specification G-11810. Their observations shall be recorded on the electronic form in Appendix A. The patroller must possess up-to-date M&S Plates (hard copy or electronic) in their possession for the pipeline being patrolled. The patroller must also immediately notify the ERC, who will notify the DEP and municipalities, regarding any suspected water leaks (See Sec. 9.2 B). Corrosion Control shall retain copies of all reports for 5 years.

B) The patrol shall include a visual inspection for:

- Construction activity and other factors that would affect the pipeline integrity or operation.
- The presence of any new patches, cuts, excavations, or steel plates over the pipeline not previously reported and listed in their tracking system.

9.0 **RESPONSIBILITIES – CORROSION CONTROL** (Continued)

- The presence and condition of pipeline markers including signs at submarine crossings.
- The presence of suspected water leaks, which may include sunken depressions and visible water at street surface.
- Location of roadway or sidewalk depressions, cave-in over or within 5 feet of the pipeline.
- The presence of bubbles at any submarine crossings that might indicate a gas leak.

9.3 If a leak or some other situation that presents an immediate danger to the pipeline is discovered, the patroller shall immediately notify the Emergency Response Center (ERC) and standby for further instructions.

★ 9.4 If any unknown (not already covered by Construction or Gas Operations) contractor activity is discovered, the patroller shall immediately notify the ERC, who shall arrange for immediate coverage by Construction as per section 5.1.

★ 9.5 If a recent patch or plate is found over or within 5 feet of a pipeline that was not previously identified in the patrols tracking system, the patroller shall notify the ERC, who shall request a review by Construction. Construction shall provide an update to the ERC. If Construction determines an excavation was performed and not covered by Con Edison personnel, the ERC will notify Gas Engineering - Pipeline Integrity or Major Projects for further investigation.

★ 9.6 Corrosion Control will monitor the accuracy of the mark-outs completed by Con Edison's Code Rule 753 vendor(s) for any excavation activity within 25 feet of a pipeline operating at 125 psig and above. A minimum of 15% of planned mark-outs will be monitored for accuracy. A planned mark-out is defined when notification is received at least 48 hours prior to the commencement of excavation activity. The monitoring can be performed before, during or after excavation as long as the mark-outs are still visible. . If a discrepancy (more than 2 feet) is found, Corrosion will immediately notify Construction and Gas

9.0 **RESPONSIBILITIES – CORROSION CONTROL** (Continued)

Engineering - Maps and Records for a resolution. Maps and Records will correct any confirmed mapping errors. Corrosion Control shall maintain records of all locations verified for 5 years.

9.7 Corrosion Control during their normal operations shall verify the accuracy of our Gas M&S Plates for all pipelines operating at 125 psig and above. Any discrepancies (greater than 2 feet) found shall be immediately reported to Gas Engineering – Maps and Records and Gas Engineering – Pipeline Integrity.

★ 9.8 If a main is partially (less than ½ the circumference) exposed, Corrosion Control will inspect the coating on the exposed pipe and any damage evident as a result of excavation activities and determine if the entire circumference of the pipe should be excavated and inspected. If no damage is discovered and the exposed coating is in acceptable condition full excavation may not be deemed necessary.

★ 9.9 If a pipeline is partially or fully exposed, regardless of the reason, Corrosion Control will inspect the coating on the pipe and any steel that might be exposed and determine the need for complete abatement of the coating to inspect the entire surface of the steel main. The as-found conditions of the main and any pipe anomalies (e.g. corrosion, dents gouges, etc.) discovered will be documented in accordance with Spec G-11814 and Con Edison's Integrity Management Plan (Chapters 7 & 10).The follow-up activities include, but are not limited to, the following:

A) If no pipe anomalies are found, Corrosion Control will arrange for the coating to be replaced or repaired.

B) If pipe anomalies are found, after documenting the as-found conditions, Corrosion Control will arrange to have the pipe cleaned to bare metal to inspect the severity of each anomaly.

C) Corrosion Control will prepare reports on all inspections they make and send a copy of the Direct Examination Data Collection Form to Gas Engineering – Pipeline Integrity.

D) Contact Gas Engineering - Pipeline Integrity when additional remedial action is required so a repair plan can be developed.

10.0 RESPONSIBILITIES - LOCAL GAS OPERATIONS AREAS

Upon notification of a plan to excavate, the Local Gas Operations Area shall verify the locations and accessibility (except ROVs) of the isolation valves.

★11.0 INSPECTION & MAINTENANCE PROCESS FLOW

Inspection and maintenance process flow diagrams are included in Appendix D of this procedure. These diagrams shall be used as an aid to assist in handling various typical types of excavations and work within 25 feet of gas transmission pipelines. The three (3) representative cases covered in the flow diagrams:

- **Unregistered excavations within 25 feet of a pipeline** – excavations or work which was **not** reported to the ERC.
- **Registered excavation activity** - excavations or work which was reported to the ERC.
- **Water leaks within 25 feet of a pipeline** – Water main in the vicinity of the transmission main.

Note: The diagrams in Appendix D are aids for the handling of typical types of excavations described herein. Other non-typical excavations, work and situations in the vicinity of the transmission main shall be handle as specified herein or as directed by Gas Engineering.

★12.0 REFERENCE SPECIFICATIONS

G-11810 - Procedure for Inspection and Maintenance of Gas Transmission Pipelines and Distribution Mains Operating at 125 psig or more

★ G-11814 - Procedure for Determining the Soundness of Steel Gas Transmission and Distribution Piping

G-8005 - General Specification For the Installation Of Gas Distribution Mains

G-11854 - Installation And Maintenance Of Line Markers And Signs For Gas Transmission And Distribution Mains

APPENDIX A

conEdison

Weekly Transmission Main Patrol Report

Inspecting Gas Organization: Corrosion Date _____ Time _____ AM/PM

Borough: _____ Pipeline Section: _____ Patrolled By: _____
(Employee Name, #)

Location (Start): _____

Location (End): _____

Location:

_____

_____

Findings	Findings Yes/No/NA
Excavation within 25' of main	
Street marked out within 25' of main	
Excavation within 5' of main	
Transmission main exposed	
Distribution main (125 psig or more) exposed	
Steel plates over transmission main	
Depression or cave-in within 5' or over transmission main	
Excavation near regulator station	
Damaged or missing Pipeline markers or Signs (at Submarine Crossings)	
Presence of bubbles at Submarine Crossings	
Other (Describe) _____	

Remarks:

ERC Notification:

Via Telephone _____ Nextel _____ Other (Explain) _____

ERC Representative: _____ Date: _____ Time: _____

APPENDIX B

DAMAGE PREVENTION CHECKLIST FOR CONSTRUCTION AND ERC FOR EXCAVATIONS WITHIN 25' OF TM

The ERC shall document the following information for each known excavation within 25' of a gas transmission main:

- **Location**
- **Work Description**
  - **Excavation Type (Hand/Machine)**
  - **M&S Plate Number**
  - **Facility Main Size**
  - **Called In By:**
- **Code 753 Ticket Number**
- **Transmission Contingency Case Number**
  - **Valve Number/Location**
  - **Is manning of valves required?**
- **Contractor's Name**
- **Contractor's Contact Info**
- **Project Start Date**
- **Project Completion Date**
- **Inspector's Name**

When applicable, the following items must be addressed by either Construction, Gas Operations, etc., for each known excavation within 25' of a gas transmission main:

- **The location is monitored daily by Construction and markouts are renewed as required until start of excavation;**
- **The physical attributes (size, pressure, cover, etc.) of the main we are protecting from damage is communicated by Construction to the excavator;**
- **The methods and means for supporting and protecting the main is reviewed with the excavator by Construction;**
- **That, if the excavation is within 15' of the pipe centerline, Construction assigns a fulltime inspector to the location throughout the excavation or other heavy mechanical construction work (see Section 5.2);**
- **That, if the excavation or other heavy mechanical construction work (see Section 5.2) is within 5' of the pipe centerline, Gas Operations will standby the valves during excavation;**
- **That, if the pipe is/was exposed, Corrosion Control is notified to inspect the pipe;**
- **That, if the pipe was exposed and following inspection, Construction documents any damage to the pipe and/or coating by the excavator;**
- **That, if the pipe was exposed and following inspection, Construction inspector witness the backfilling operation to insure no large rocks or other injurious material are placed against the pipe.**

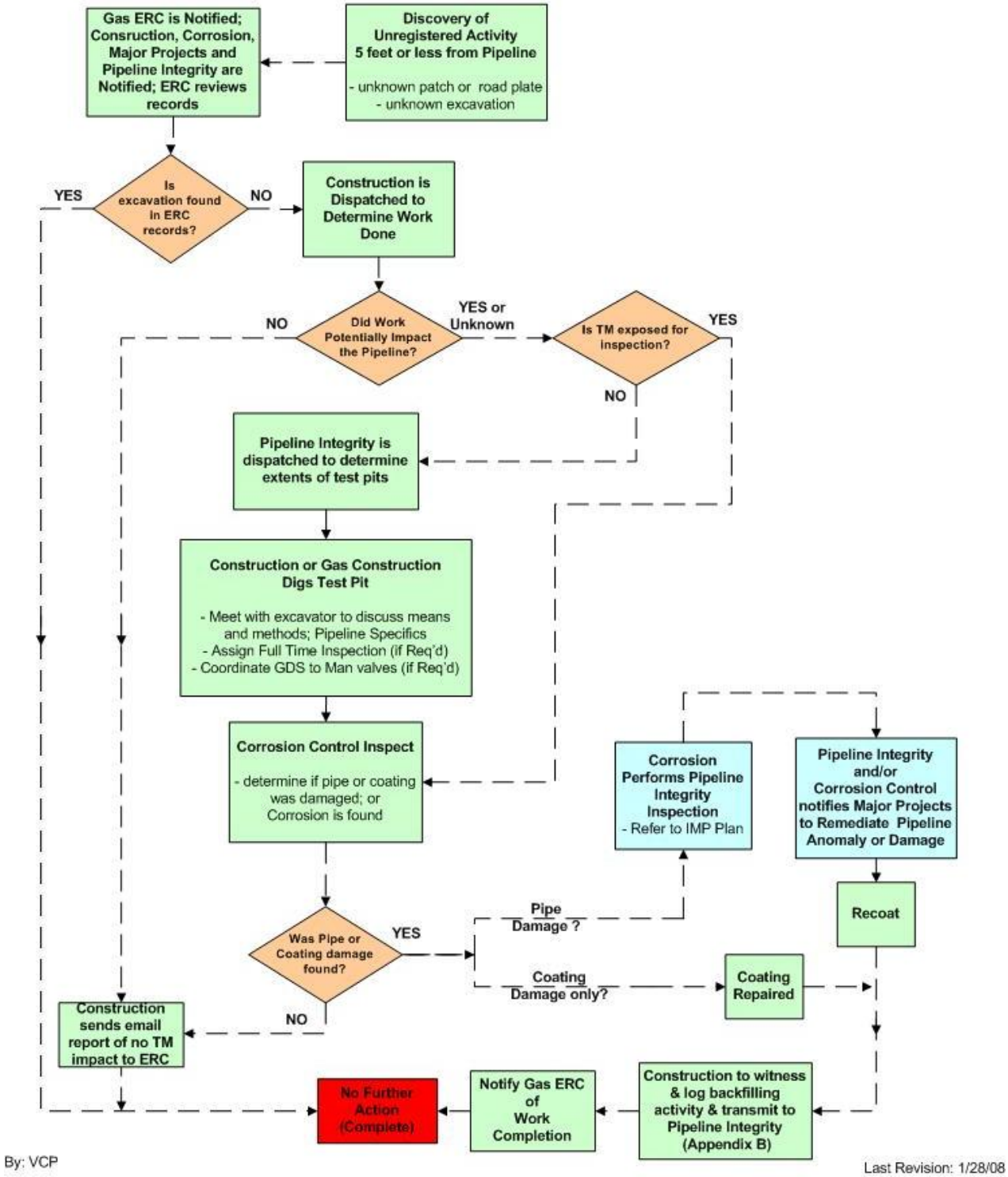
APPENDIX C

TELEPHONE NUMBERS – GAS OPERATIONS

Section	Phone Number
Gas Engineering – Major Projects	718-319-5461
Gas Engineering – Pipeline Integrity	718-319-2335 or email to PipelineIntegrity@coned.com
Fax Number for Appendix B Forms	718-923-7052
Corrosion Control	718-579-1233
Leakage Survey	718-579-1225
Emergency Response Center	718-319-2343

PROCESS FLOW DIAGRAMS

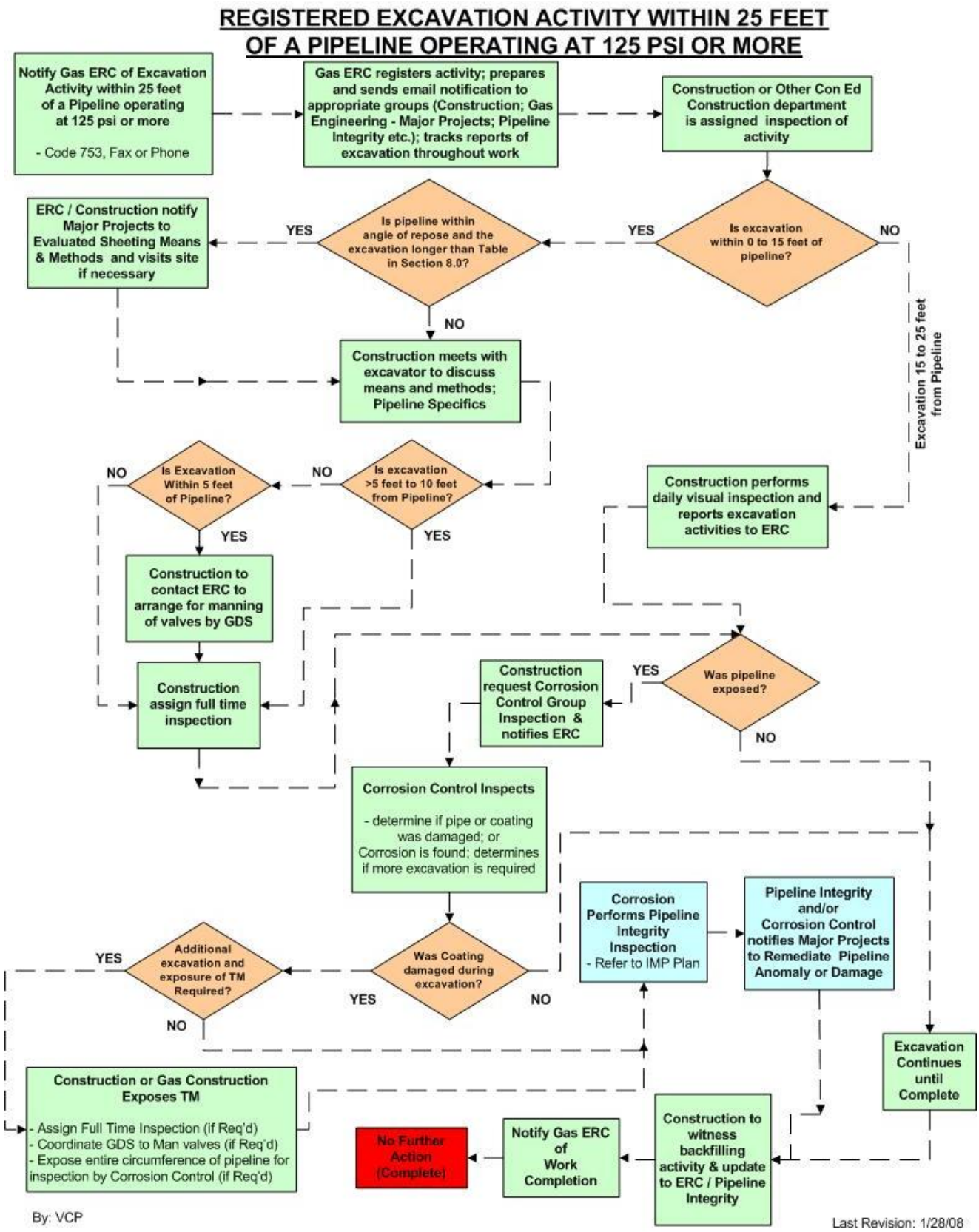
UNREGISTERED EXCAVATION ACTIVITY WITHIN 25 FEET OF PIPELINE OPERATING AT 125 PSIG OR MORE



By: VCP

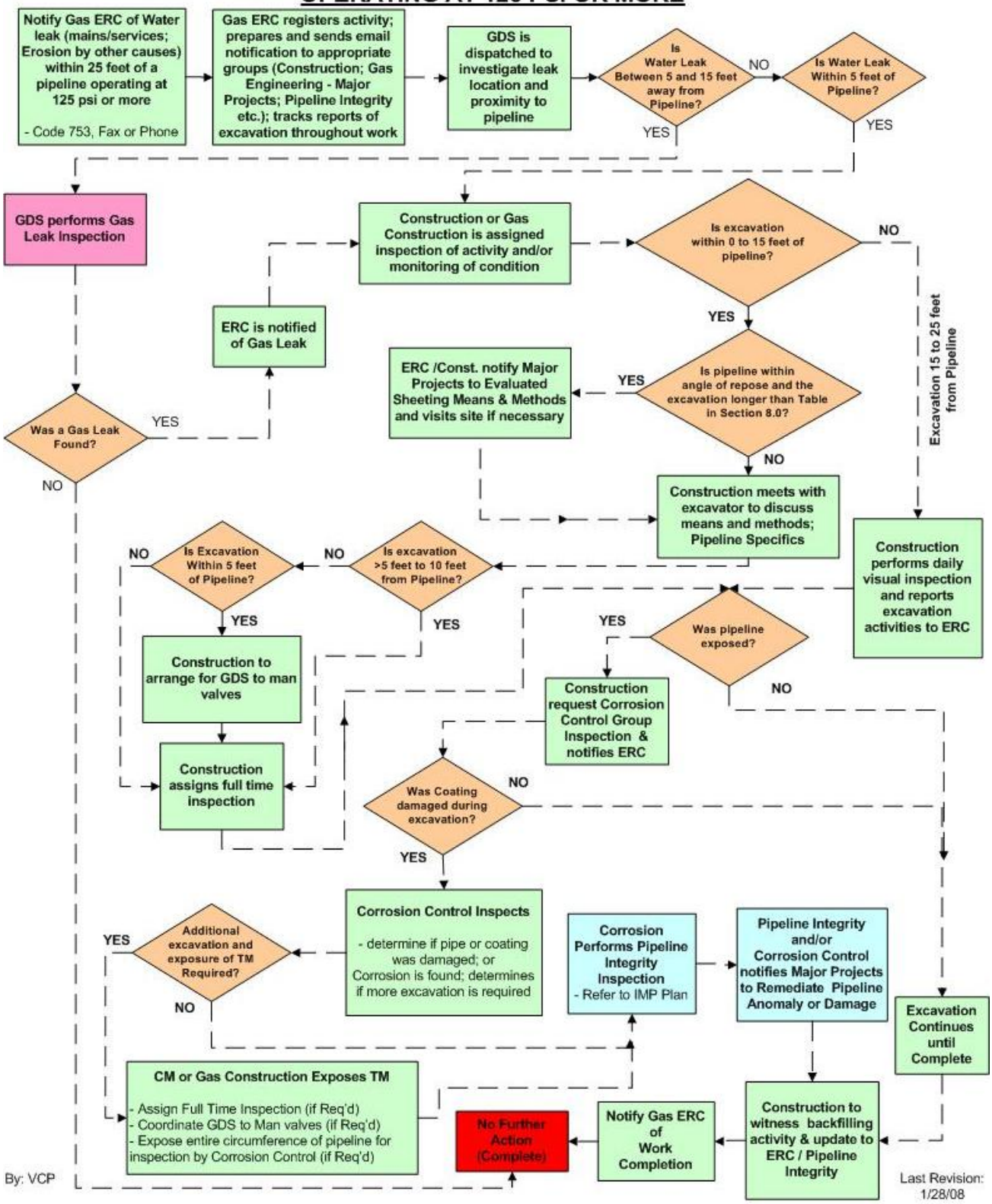
Last Revision: 1/28/08

PROCESS FLOW DIAGRAMS



PROCESS FLOW DIAGRAMS

WATER LEAKS WITHIN 25 FEET OF PIPELINE OPERATING AT 125 PSI OR MORE



ATTACHMENT C

ACTIVITY HAZARD ANALYSIS

PARSONS

Activity Hazards Analysis

Activities- Field

AHA No. 001

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 001	**Date:** March 7, 2007	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D - Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Chmura	**Date:** March 7, 2007
	Superintendent/Competent Person	**Reviewed by:**	**Date:**
Work Operation: Field Activities		**Approved by:**	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Outdoor, Physical Activity	Heat Stress ▪ Prickly Heat (Heat rash) ▪ Heat Cramps ▪ Heat Exhaustion ▪ Heat Fatigue ▪ Heat Collapse ▪ Heat Stroke	▪ Adjust work schedules. ▪ Mandate work slowdowns as needed. ▪ Perform work during cooler hours of the day if possible or at night if adequate lighting can be provided. ▪ Provide shelter (air-conditioned, if possible) or shaded areas to protect personnel during rest periods. ▪ Maintain worker's body fluids at normal levels. ▪ Train workers to recognize the symptoms of heat related illness	▪ Monitor workers physical conditions ▪ Monitor outside temperature versus worker activity.
Outdoor activities	Cold Related Injuries Frostbite Hypothermia	▪ Educate workers to recognize the symptoms of frostbite and hypothermia. ▪ Identify and limit known risk factors. ▪ Warm clothes and boots. ▪ Assure the availability of enclosed, heated environment on or adjacent to the site. ▪ Assure the availability of dry changes of clothing. ▪ Assure the availability of warm drinks. ▪ Educate workers concerning restricted visibility associated with winter clothing (e.g., hoods restricting peripheral vision).	▪ Monitor workers physical conditions ▪ Monitor outside temperature versus worker activity. Start (oral) temperature recording at the job site: ▪ At the Field Team Leader's discretion when suspicion is based on changes in a worker's performance or mental status. ▪ At a worker's request. ▪ As a screening measure whenever any one worker on the site develops

			hypothermia.
	Rain	▪ Have proper PPE (i.e. rain gear, footwear, etc) available. Be aware of slip hazards, puddles, etc.	
	Sunshine	▪ Have sunscreen available for ultraviolet protection. Have water for dehydration.	
	Snow	▪ Have warm clothes available for cold temperatures.	
	Lightning	▪ Do not begin or continue work until lightning subsides for 20 minutes.	
	High winds, dust storm	▪ Wear goggles if dust/debris is visible.	
	Pollen	▪ Take medication (i.e. anti-histamine), in consultation with doctor, to minimize allergic reaction to pollen. Wear dust mask, if necessary.	
	Icy Conditions	▪ Salt/sand icy surfaces as appropriate. ▪ Workers will be aware of potentially slippery surfaces and wear proper footwear.	
	Slips, Trips, Falls	▪ Workers will be aware of potentially slippery surfaces and tripping hazards. ▪ Work slowly during transit. Jumping, running, and horseplay are prohibited. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Clean up all spills immediately. ▪ Personnel will notify the SSO of any unsafe conditions	
	Worker injury (slips, trips, and falls) due to uneven site surface	▪ Worker visual inspection (attention) to walking/working surface. ▪ Wearing appropriate safety footwear properly (such as boots with ankle support, laces tied, proper soles,etc.).	
	Biological Hazards (ticks, bees, mosquitoes, snakes, etc.)	▪ Personnel will be aware of potential exposure to biological hazards. ▪ Wear appropriate clothing (hat, long-sleeve shirt, long pants,	

		gloves, boots etc.) and insect repellant.	
	Site Hazards Material Exposure	▪ Training and safety awareness of potential exposure to contaminates at the site. ▪ Training of all personnel decontamination procedures (if appropriate to visit). ▪ Appropriate PPE will be worn dependent on site conditions and actions levels. (if appropriate to visit) ▪ Must sign off on health and safety plan. ▪ Visitor will be escorted around site by a 40 hour trained individual unless cleared with the SSO.	
	Insects, rodents, animals, etc.	▪ Wear Tyvek coveralls. Apply bug repellant spray or lotion to exposed skin.	
	Vegetation	▪ Create a clear path or route with mechanical equipment, whenever possible. Wear appropriate PPE for the vegetation (i.e. leather gloves, Carhart coveralls and face shield for vegetation that could cause cuts/punctures and/or is higher than waist level.	

Training Requirements:

Visitors will report to the Site Safety Officer who will give a short health and safety orientation and require sign off on the PSP. The SSO will determine if the visitor can access the site based on verification of 40-hour training or 8 hour Supervisor training or if the visitor(s) will need to be escorted by a 40-hour trained individual onsite.

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to initial 40-hour, 8 hour Supervisor and annual 8-hour refresher training.

Medical qualification, training and fit testing must be received on an annual basis for individuals that wear a respirator. If an individual wears a respirator more than 30 days per year, or they are exposed at or above the Permissible Exposure Limit (PEL) of chemical for more than 30 days in a year, then they must participate in a Medical Surveillance Program as required by 29 CFR 1910.120 (f).

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Site Visit or Site Walk

AHA No. 002

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 002	**Date:** March 8, 2007	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Chmura	**Date:** March 8, 2007
	Superintendent/Competent Person	**Reviewed by:**	**Date:**
Work Operation: Site Visit or Site Walk		**Approved by:**	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Site visit/walk	Slips, Trips, Falls	▪ Workers will be aware of potentially slippery surfaces and tripping hazards. ▪ Work slowly during transit. Jumping, running, and horseplay are prohibited. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Clean up all spills immediately. ▪ Personnel will notify the SSO of any unsafe conditions	▪ Inspect job site and staging area and identify any concerns. ▪ Inspect job site daily.
	Rain	▪ Have proper PPE (i.e. rain gear, footwear, etc) available. Be aware of slip hazards, puddles, etc.	
	Sunshine	▪ Have sunscreen available for ultraviolet protection. Have water for dehydration.	
	Snow	▪ Have warm clothes available for cold temperatures.	
	Lightning	▪ Do not begin or continue work until lightning subsides for 20 minutes.	
	High winds, dust storm	▪ Wear goggles if dust/debris is visible.	
	Icy Conditions	▪ Salt/sand icy surfaces as appropriate. ▪ Workers will be aware of potentially slippery surfaces and	

		wear proper footwear.	
	Site Traffic	▪ Be aware of moving equipment/vehicles onsite. ▪ Make eye contact with equipment/vehicle operators prior to moving into their path or reach of moving parts.	
	Cold and Heat Stress	▪ Visitors will dress accordingly to prevent injuries from extreme heat, or cold. ▪ SSO will monitor for cold/heat stress symptoms.	
	Biological Hazards (ticks, bees, mosquitoes, snakes, etc.)	▪ Personnel will be aware of potential exposure to biological hazards. ▪ Wear appropriate clothing (hat, long-sleeve shirt, long pants, gloves, boots etc.) and insect repellant.	
	Site Hazards Material Exposure	▪ Training and safety awareness of potential exposure to contaminates at the site. ▪ Training of all personnel decontamination procedures (if appropriate to visit). ▪ Appropriate PPE will be worn dependent on site conditions and actions levels. (if appropriate to visit) ▪ Must sign off on health and safety plan. ▪ Visitor will be escorted around site by a 40 hour trained individual unless cleared with the SSO.	

Training Requirements:

Visitors will report to the Site Safety Officer who will give a short health and safety orientation and require sign off on the PSP. The SSO will determine if the visitor can access the site based on verification of 40-hour training or 8 hour Supervisor training or if the visitor(s) will need to be escorted by a 40-hour trained individual onsite.

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to initial 40-hour, 8 hour Supervisor and annual 8-hour refresher training.

Medical qualification, training and fit testing must be received on an annual basis for individuals that wear a respirator. If an individual wears a respirator more than 30 days per year, or they are exposed at or above the Permissible Exposure Limit (PEL) of chemical for more than 30 days in a year, then they must participate in a Medical Surveillance Program as required by 29 CFR 1910.120 (f).

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Operation- Motor Vehicle

AHA No. 003

Project Name & Number: PA-VIC	**AHA No.** 0001	**Date:** 4/27/05	**New:** No
Location: Pennsylvania Regional Offices	**Contractor:** Parsons		**Revised:** 05/22/08
Required Personal Protective Equipment: Wear seat belt at all times; make sure that clothing will not interfere with driving. Use headlights at all times.		**Analysis by:** Region Mgrs	**Date:** 04/2008
	Superintendent/Competent Person	**Reviewed by:** John Ott	**Date:** 05/22/08
Work Task/Activity: Operating a Motor Vehicle		**Approved by:** Greg Beck	**Date:** 05/29/08

Job Step	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Accessing in/out of a vehicle	Back strain	▪ Entering - place your buttocks in the vehicle seat first and then move your legs into the vehicle. ▪ Adjusting Seat – if the vehicle has power/electric seats, then adjust the seat position prior to entering the vehicle. If no power/electric seats, then adjust seat position only while facing forward when sitting in seat, and before securing seatbelt. ▪ Exiting – move your legs out of the vehicle first.	
	Knee strain	▪ Entering – if a vehicle has running boards, then step onto the running board with your left foot first while placing your left hand on the door arm rest and right hand on the steering wheel. Place your right foot into the vehicle and sit on the seat before positioning yourself in front of the steering wheel. ▪ Exiting – move your legs out of the vehicle so that your left foot is placed on the running board first. Place your left hand on the door arm rest and right hand on the steering wheel before placing your right foot onto the ground.	
	Struck against	▪ Note the position of the driver's seat and the distance between the seat and the dashboard or steering wheel to allow access into the vehicle without striking knee/leg. Adjust seat as necessary as stated above.	

	Slip/fall	▪ Be aware of "black ice" that forms on pavement when the snow melts into water during the day time due to the sun or warmer temperatures, and turns into ice when the sun goes down or temperatures drop below 37 F.	
Backing up a Vehicle	Personnel Injury/ Property Damage	▪ Physically check behind the vehicle for people, animals or objects (i.e. toys) before backing up. ▪ Look behind while backing and check side view mirrors. ▪ Use a spotter whenever possible, or if view is obstructed.	
Driving to/from a work location	Vehicle Accident/ Property Damage	▪ Complete the ParsonsU safety modules on Defensive Driving ▪ Follow the Smith System "Five Keys to Space Cushion Driving" – Aim High in Steering, Get the Big Picture, Keep Your Eyes Moving, Leave Yourself an Out and Make Sure They See You. ▪ Complete vehicle inspection before driving and check for proper equipment/supplies. Keep windows, mirrors and eye glasses clean. ▪ Adjust seat position and mirrors to reduce the "blind spot" and increase visibility of surroundings. ▪ Plan your travel route and check maps for directions, discuss with colleagues or use a GPS system. **Note:** Follow all manufacturer safety recommendations when using any GPS device, such as using voice guidance, and entering destination data only when the vehicle is stopped. ▪ Look ahead for driving hazards and plan a strategy to avoid the hazard. Give yourself plenty of lead time (approx. 15 seconds) when approaching vehicles and objects, position yourself in traffic to minimize risk and leave enough space to react safely. ▪ Keep your eyes on the move - check side view and rear view mirrors every 5-8 seconds. Be alert for signs of other distracted or aggressive drivers. ▪ Follow the 4-second rule for maintaining a safe distance when following other vehicles. Before changing lanes, look over each shoulder briefly to check the "blind spot". Make sure other drivers see you – avoid "blind spots", establish eye contact and use lights or horn to increase visibility. ▪ Wear sun glasses to reduce sun glare, as needed. Remove sun	▪ Complete vehicle inspections as per Parsons Vehicle Safety Policy (i.e. daily, weekly, monthly, annual, etc). ▪ Inspect fluid levels, air pressure in tires, wiper blade condition, adjust mirrors and seat positions appropriately, watch fuel level and fill up fuel tank when level is below half. ▪ All company vehicles shall have a safety inspection performed as required by the State the vehicle is registered in (i.e. annually, biannually, etc), or by a certified inspection station annually if an inspection is not required by the State the vehicle is registered in. ▪ Follow vehicle maintenance schedule in accordance with manufacturer's recommendations to reduce the potential of a

		glasses when driving in tunnels, after dusk or with overcast skies (i.e. cloudy). ▪ Properly secure and/or stow materials, tools and equipment inside and outside vehicles (i.e. trunk, pick up) to prevent shifting or falling off of vehicle.	mechanical failure or breakdown while driving.
Driving to/from a work location (cont'd)	Vehicle Accident/ Property Damage	▪ Whenever possible, select parking spaces that will allow the vehicle to pull forward in the parking space to increase visibility when pulling out of the space, or back into a parking space.	
	Smoke/Fire (engine compartment)	▪ Pull over to the side of the road in a safe location. ▪ Turn off engine. ▪ Exit the vehicle and stand a safe distance away from the vehicle and other vehicle traffic. ▪ Call for assistance as appropriate (i.e. "911", AAA) ▪ Do not open the hood of the vehicle until the smoke has dissipated and there is a fire extinguisher available.	▪ Check engine temperature gauge to determine if engine is overheating. ▪ Look under the vehicle for signs or leaking fluids.
	Foreign Body (eye)	▪ Drive with the vehicle windows in the up position, whenever possible. ▪ Keep dust/debris free from air vents.	
	Unfamiliar vehicle	▪ Drive at reduced speeds with the vehicle until the driver is familiar / comfortable with the handling ability of the vehicle.	
	Weather /Road conditions	▪ Check road and weather conditions prior to driving. ▪ Be prepared to adjust driving habits/speed, if road conditions change for the worse (i.e. rain, snow, fog, etc). ▪ Be aware of "black ice" that forms on pavement when the snow melts into water during the day time due to the sun or warmer temperatures, and turns into ice when the sun goes down or temperatures drop below 37 F. ▪ Do not use cruise control in the rain, snow, ice or other conditions that can create a slippery road surface. ▪ Travel during daylight hours, whenever possible. ▪ Give yourself plenty of time to allow for delays due to road construction, work zones, accidents or other unforeseen circumstances. ▪ Apply Rain-X or other similar product to windshield to reduce	▪ Check the tire tread depth and reduce normal driving speed in adverse weather conditions when the tire tread depth is nearing the end of service life.

		the effect of rain and splashed water onto the windshield. ▪ Using headlights or driving lights at all times is recommended, but required when driving during inclement weather, when windshield wipers are in use, or traveling through a road construction zone.	
Driving to/from a work location (cont'd)	Distractions	o Stop driving a vehicle, regardless of the speed or location (i.e. 5 mph or on a private road), when the potential of being distracted exists. ▪ Drivers are prohibited from using communication devices (i.e. cell phones, PDA, etc) while operating any motor vehicle. ▪ Avoid performing other tasks that take away your focus while driving (i.e. reading directions/map or newspaper, eating food, writing, looking at passengers while talking, improper use of GPS) - pull over to the side of the road in a safe location.	
	Fatigue/Falling asleep	▪ Get adequate rest prior to driving. ▪ Pull over and rest/take a micro break (i.e. 15 minute power nap), if experiencing signs/symptoms of fatigue or drowsiness. ▪ Share driving duties with another person. ▪ Do not take medications that could cause drowsiness.	▪ Read and follow instructions/warnings when taking prescription or over the counter medications.
	Medical Condition (i.e. heart attack, seizure, etc)	▪ Follow habits (i.e. proper diet, exercise, sleep, etc) for maintaining good health and visit your personal physician as appropriate. ▪ Consider enrolling in the Parsons Wellness for Life Program.	
	Impairment	▪ Do not take medications that could cause impairment to judgment. ▪ A zero tolerance for alcohol consumption prior to and during driving must be maintained. ▪ A zero tolerance for using controlled substances prior to and during driving must be maintained.	▪ Read and follow instructions/warnings when taking prescription or over the counter medications.

	Flat tire/blowout	▪ Drive with two hands on the steering for increased control in the event of an unexpected tire blowout. ▪ Find a safe place to pull over to the side of the road. Do not park on the shoulder of a busy highway. ▪ Do not attempt to change a flat tire without the proper training and physical ability/fitness. Call "911", AAA and/or your supervisor for assistance as appropriate. ▪ Install "donut" spare tire on the rear of vehicle. If flat tire is on the front, move a normal sized rear tire to the front.	▪ Check air pressure of spare tire. ▪ Know the location and use of the jack and lug wrench. ▪ Make sure the ground is firm and level, the parking break is applied and wheels chocked before changing a tire.

Training Requirements:

All drivers are required to have a current valid driver's license for the type of vehicle being operated (i.e. Commercial Drivers License). All vehicles must have the required State vehicle registration and/or inspection documents. It is company policy that all wireless device use, whether "hand-held" or "hands free", ***is prohibited*** while driving any vehicle at any time as follows: for business use *at any time*; or for *personal use* during business hours; and as defined by law.

All employees operating a company vehicle, rental vehicle or personal vehicle for company business are required to familiarize themselves with the contents of this AHA before operating a vehicle.

PARSONS

Activity Hazards Analysis

Operation- Heavy Equipment or Machinery

AHA 004

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 004	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
Work Operation: Operation of Heavy Equipment or Machinery	**Superintendent/Competent Person:** TBD	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
		Approved by:	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Motorized Equipment Operation	Equipment Maintenance	▪ The equipment must be maintained in a proper functioning condition. ▪ All motors must be shut off and electrical, mechanical and hydraulic components locked when making repairs. ▪ Safety shut off system must be tested daily and not disabled. ▪ Bleed off pressure on hydraulic lines before undoing fittings. ▪ Do not leave tools or parts loose on the equipment after maintenance has been performed.	▪ Follow the maintenance manual recommended procedures for each piece of equipment.
	General Use	▪ All equipment must be inspected daily prior to use. ▪ Equipment must be operated and maintained in accordance to manufacturer's guidelines. ▪ Any equipment that is unattended must be immobilized and secured against accidental movement. ▪ All heavy equipment will have a back up alarm ▪ Drill rigs and other machinery with exposed moving parts	

		must be equipped with an operational emergency stop device. Drillers and geologists must be aware of the location of this device. This device must be tested prior to job initiation and periodically thereafter. The driller and helper shall not simultaneously handle augers unless there is a standby person to activate the emergency stop; ▪ The driller must never leave the controls while the tools are rotating unless all personnel are kept clear of rotating equipment; ▪ A remote sampling device must be used to sample drill cuttings if the tools are rotating or if the tools are readily capable of rotating. Samplers must not reach into or near the rotating equipment; ▪ Drillers, helpers and geologists must secure all loose clothing when in the vicinity of drilling operations; ▪ Only equipment that has been approved by the manufacturer may be used in conjunction with site equipment and specifically to attach sections of drilling tools together. Pins that protrude excessively from augers shall not be allowed; ▪ No person shall climb the drill mast while tools are rotating; and ▪ No person shall climb the drill mast without the use of ANSI-approved fall protection (approved belts, lanyards and a fall protection slide rail) or portable ladder that meets the requirements of OSHA standards.	
	Fire Hazard	▪ All motors must be shut off during refueling. • Smoking in the vicinity of the drilling rig is not permitted. • An A-B-C fire extinguisher must be maintained on the drilling rig and associated motorized equipment. • Fuel containers will not be stored within 10' of the drilling rig motor. • Fuel will be stored in UL approved safety containers with contents clearly label.	

	Operation of Motorized Equipment	▪ Operators of motorized equipment will be trained in the proper operation of that apparatus.	
	Tip Over	▪ Equipment will be shut off and stabilized accordingly. ▪ Visual inspection of access route to sampling areas for soft spots, holes, rocks, etc. ▪ Operator Training ▪ Rollover protection (cab or equivalent)	
	Struck By Pinch Points	▪ All personnel will be aware of moving machinery and parts and wear appropriate PPE when near machinery (e.g., hard hat, safety glasses, gloves etc.). ▪ Keep observers back from active operations. Get operator's attention before approaching.	
	Noise Exposure	▪ Hearing protection will be worn in hazardous noise areas or working around heavy machinery or equipment. ▪ Wear earplugs when noise level from equipment exceeds 85 decibels (dBA) averaged over an eight-hour day.	

Training Requirements:

All personnel engaged in the operation of heavy equipment and machinery will have knowledge and experience in working with and operating the equipment. All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Fueling-Motor Vehicle

AHA No. 005

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 005	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
	Superintendent/Competent Person	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
Work Operation: Fueling of motor vehicle		**Approved by:**	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Fueling the vehicle	Overflow/Spills of fuel on to pavement.	▪ Ensure that fuel pumps have a UL listed automatic closing valve. ▪ Follow distributors instructions on pump. ▪ Use approved safety containers. ▪ Be aware of capacity of fuel tank/container. ▪ Do not "squeeze in" extra gasoline to fill up tank. ▪ Inform gas station attendant of fuel spill.	▪ Follow operations manual maintenance and inspection procedures for each piece of equipment used on site.
	Explosion	▪ Follow distributors instructions on pump. ▪ Ensure that all fuel is in approved safety containers. ▪ No smoking or open flame with in 50 feet. ▪ Equipment/Motors that use flammable fuel shall be shut down during fueling, servicing, or maintenance. ▪ Turn cell phones off during fueling of vehicle.	
	Spill on clothing	▪ Workers should be aware of capacity of fuel tank. ▪ Wear gloves while fueling. ▪ Change clothing if saturated with fuel.	

Training Requirements:

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Fueling-Heavy Equipment and Machinery

AHA No. 006

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 006	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
	Superintendent/Competent Person	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
Work Operation: Fueling of equipment and machinery		**Approved by:**	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Fueling the equipment	Overflow/Spills of fuel on to pavement	▪ Ensure that fuel pumps have a UL listed automatic closing valve. ▪ Be aware of capacity of fuel tank. ▪ Do not "squeeze in" extra fuel to fill up tank. ▪ Have berms or absorbent pads available. ▪ All fluid containing vehicles and equipment involved on the project site (except for properly parked personal vehicles) spotted on non-impervious surfaces (e.g., soil, bluestone, etc) will be parked over full length/width of vehicle equipment polyethylene sheeting	▪ Follow operations manual maintenance and inspection procedures for each piece of equipment used on site.
	Explosion	▪ Ensure that all fuel is in approved safety containers. ▪ No smoking or open flame with in 50 feet. ▪ Equipment/Motors that use flammable fuel shall be shut down during fueling, servicing, or maintenance. ▪ Turn cell phones off during refueling vehicle. ▪ Ensure that all heavy equipment has a fire extinguisher and that the fire extinguisher is readily accessible.	▪ The fire extinguishers must be inspected and approved at specific intervals.

	Spill on clothing	▪ Workers should be aware of capacity of fuel tank. ▪ Wear gloves while fueling. ▪ Change clothing if saturated with fuel.	
	Site Location	▪ Provide refueling driver with directions to site and accessible route to equipment/machinery. ▪ Ensure that there is road (gravel, mats) for refueling truck to drive/park on.	
	Hazardous Site contamination	▪ Decontaminate equipment/machinery prior to refueling and remove from exclusion zone. ▪ Decontaminate refueling truck if contact with potential contaminated material. ▪ Provide training/awareness to driver, escort on site if need be.	

Training Requirements:

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Sampling- Soil

AHA 007

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 007	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
Work Operation: Soil Sampling- (e.g., split spoon drilling etc.)	**Superintendent/Competent Person:** TBD	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
		Approved by:	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Soil Sampling	▪ Inhalation of contaminated dust ▪ Inhalation of volatile contaminants ▪ Ingestion of contaminants ▪ Skin/eye contact with contaminated materials	▪ If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. ▪ Wash eyes with large amounts of water. ▪ If a person breathes in a large amount of organic vapor, move the exposed person to fresh air. Perform artificial respiration if breathing stops. ▪ Obtain medical treatment for all of these situations as required. ▪ Wear appropriate safety equipment (i.e., goggles, gloves, and boots) as appropriate for reducing risk of contamination.	
	Pinch Points/Overhead equipment	▪ All personnel will be aware of moving machinery and parts and wear appropriate PPE when near machinery (e.g., hard hat, safety glasses, gloves etc.). ▪ Keep observers back from active operations. Get operator's attention before approaching.	

	Noise Exposure	▪ Hearing protection will be worn in hazardous noise areas or working around heavy machinery or equipment. ▪ Wear earplugs when noise level from equipment exceeds 85 decibels (dBA) averaged over an eight-hour day.	
General Chemical Exposure	Chemical exposure to chlorinated hydrocarbons, petroleum hydrocarbons	▪ Monitoring to determine exposure and action levels	
		▪ Dust control measures such as wetting down of soil	
		▪ Wear proper PPE – inner glove and nitrile outer glove, Tyvek, and respirator (if necessary)	
		▪ Follow proper decontamination procedures when leaving the "exclusion zone"	
		▪ Practice good personal hygiene; wash up before eating, eat or drink in designated clean areas	
		▪ Eyewash bottle or station to treat eye irritation	
		▪ Training	
General Worker Activities	Worker injury (slips, trips, and falls) due to uneven site surface	▪ Worker visual inspection (attention) to walking/working surface	
		▪ Wearing appropriate safety footwear properly (such as boots with ankle support, laces ties, proper soles, etc.)	
		▪ Training	
Mobilization of drill rig or excavator	Vehicle equipment accidents (rollover) due to uneven site surface	▪ Visual inspection of access route to sampling areas for soft spots, holes, rocks, etc.	
		▪ Operator training	
		▪ Rollover protection (cab or equivalent)	
	Vehicle equipment accidents due to overhead power lines and structures	▪ Visual inspection of access route	

		▪ Operator training	
	Open Holes from excavation	▪ Use barricades around excavation (as required)	
	Underground utilities	▪ Call Dig Safely New York One Call Center to have utility companies check site.	
	Pinch hazards of equipment	▪ Review Standard Operating Procedures (SOP) for equipment	
		▪ No loose clothing or jewelry while operating equipment	
	Flying objects	▪ Wear appropriate PPE (such as safety glasses and hard hats. Goggles if a splash hazard. Face shield for more severe exposure.	
Procuring sample from excavator bucket and placing in sample container	Struck by overhead hazards	▪ Wear hard hat	
		▪ Pay attention to equipment operator (equipment operator must pay attention to you too!)	
		▪ Do not position your body between equipment and a fixed point if possible	
		▪ Be in communication with each other (radio, hand signals or verbal communication)	
Field Testing	Exposure to analytical chemicals	▪ Follow SOP with field kit or field instrument for handling analytical chemicals or instrument	
Packing samples for off-site shipment to lab	Accidental breakage of glass bottles	▪ Wear cut-resistant gloved during packaging of glass bottles	
		▪ Training	
	Chemical Exposure	▪ Wear necessary PPE (see potential chemical exposure section above and/or field kit SOP)	
		▪ Immediate clean-up of spills	
Backfilling Excavation	Worker engulfment (when hole is large enough to enter)	▪ Check excavation prior to backfilling	

De-mobilization of drill rig	Uneven site surface (rollover)	▪ Visual inspection of access route to sampling areas for soft spots, holes, rocks, etc.	
		▪ Operator training	
		▪ Rollover protection (cab or equivalent)	
	Vehicle equipment accidents due to overhead power lines and structures	▪ Visual inspection of access route	
		▪ Operator training	
	Equipment Contamination	▪ Decontamination (see HASP)	
		▪	

Training Requirements:

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to initial 40-hour, 8 hour Supervisor and annual 8-hour refresher training.

Medical qualification, training and fit testing must be received on an annual basis for individuals that wear a respirator. If an individual wears a respirator more than 30 days per year, or they are exposed at or above the Permissible Exposure Limit (PEL) of chemical for more than 30 days in a year, then them must participate in a Medical Surveillance Program as required by 29 CFR 1910.120 (f).

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Sampling- Processing

AHA 08

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 08	**Date:** October 25, 2007	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** T. Drachenberg	**Date:** December 5, 2005
Work Operation: Soil Sampling- (e.g., split spoon drilling etc.)	**Superintendent/Competent Person:** TBD	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
		Approved by:	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Packing sample for off-site shipment to lab	Accidental breakage of glass bottles	▪ Wear cut-resistant gloves during packaging of glass bottles. ▪ Immediate clean-up of spills.	
	Back Injury, muscle strain/stress	▪ Personnel will utilize proper lifting techniques or ask for help with moving/lifting objects.	
	Hazardous Material Exposure	▪ Training and safety awareness of potential exposure to contaminates at the site and decontamination procedure. ▪ Appropriate PPE will be worn (e.g., safety glasses, gloves, etc.). ▪ Personnel will follow decontamination procedure. ▪ Screen for COCs with PID and mercury meter analyzer over samples and in workers breathing zone. ▪ Ventilate work area with fans or vents	

	Slips, Trips, Falls	▪ Workers will be aware of potentially slippery surfaces and tripping hazards. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Personnel will clean up all spills immediately. ▪ Personnel will notify the SSO of any unsafe conditions	
	Heat and Cold Stress	▪ The SSO will implement the cold/heat stress control program as appropriate to conditions. ▪ SSO will monitor workers for heat/cold stress symptoms.	
	Eye Injury	▪ PPE (safety glasses, etc.) will be worn.	

Training Requirements:

All personnel shipping hazardous materials will have appropriate DOT training.

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to initial 40-hour, 8 hour Supervisor and annual 8-hour refresher training.

Medical qualification, training and fit testing must be received on an annual basis for individuals that wear a respirator. If an individual wears a respirator more than 30 days per year, or they are exposed at or above the Permissible Exposure Limit (PEL) of chemical for more than 30 days in a year, then them must participate in a Medical Surveillance Program as required by 29 CFR 1910.120 (f).

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Decontamination- Large Equipment

AHA 09

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 09	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses/goggles and face shield, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
Work Operation: Equipment Decontamination	**Superintendent/Competent Person:** TBD	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
		Approved by:	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Process items through decontamination in accordance with the PSP	Site Hazardous Material Exposure	▪ Training and safety awareness of potential exposure to contaminates at the site and decontamination procedure. ▪ Appropriate PPE will be worn. ▪ Personnel will follow decontamination procedure ▪ All equipment brought on site will come to the site free of contamination. Decontamination of previously (off-site) contaminated equipment on site is prohibited.	
	Slips, Trips, Falls	▪ Workers will be aware of potentially slippery surfaces and tripping hazards. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Personnel will clean up all spills immediately. ▪ Personnel will notify the SSO of any unsafe conditions.	
	Heat and Cold Stress	▪ The SSO will implement the cold/heat stress control	

		program as appropriate to conditions.	
	Eye Injury	▪ PPE (safety glasses, etc.) will be worn.	
Hot Water High Pressure Spray/Steam Clean	Hot Water Burns	▪ Prior to decontamination of large equipment, personnel will ensure that all other workers are outside of the decontamination areas. ▪ Personnel will wear appropriate PPE (e.g. gloves, tyvek, splash goggles, etc.). ▪ Face shield and safety glasses/goggles are required when using a pressure washer	
	Icing of Equipment	▪ Visually inspect equipment following decontamination to identify ice building that may be present in joints/moving parts of the equipment.	
	Icy Conditions	▪ Salt/sand icy surfaces that may be created in and around the decontamination areas as appropriate.	
	Spill/Leak of contaminated Water	▪ Decontamination area will be designed to collect all contaminated wash/rinse water and to prevent the spread of run off. ▪ Berms and absorbent pads will be available for use in controlling spills.	

Training Requirements:

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to initial 40-hour, 8 hour Supervisor and annual 8-hour refresher training.

Medical qualification, training and fit testing must be received on an annual basis for individuals that wear a respirator. If an individual wears a respirator more than 30 days per year, or they are exposed at or above the Permissible Exposure Limit (PEL) of chemical for more than 30 days in a year, then them must participate in a Medical Surveillance Program as required by 29 CFR 1910.120 (f).

Activity Hazards Analysis

Decontamination- Large Equipment

AHA 09

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Decontamination- Personnel

AHA 010

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 010	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
Work Operation: Personnel Decontamination	**Superintendent/Competent Person:** TBD	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
		Approved by:	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Decontaminate personnel exiting from the Exclusion zone	General	▪ Personnel should dress in suitable safety equipment to reduce exposure. ▪ Personnel will follow decontamination procedure ▪ Collect rinse water and dispose of per appropriate standard operating procedures. ▪ Follow decontamination procedures.	
	Site Hazardous Material Exposure	▪ Training and safety awareness of potential exposure to chemicals of concern at the site and decontamination procedure. Review chemicals of concern. ▪ Appropriate PPE will be worn (e.g. tyvek, nitrile gloves, safety glass, etc.).	
	Slips, Trips, Falls	▪ Chairs or stools will be available for sitting/balancing while removing PPE. ▪ Workers will be aware of potentially slippery surfaces and	

		tripping hazards. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Clean up all spills immediately. ▪ Personnel will notify the SSO of any unsafe conditions.	
	Heat and Cold Stress	▪ The SSO will implement the cold/heat stress control program as appropriate to conditions.	
	Icy Conditions	▪ Salt/sand icy surfaces that may be created in and around the decontamination areas as appropriate.	
	Eye Injury	▪ PPE (safety glasses, splash goggles) will be worn.	

Training Requirements:

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to, initial 40-hour, 8-hour Supervisor and annual 8-hour refresher.

Medical qualification, training and fit-testing must be received on an annual basis for individuals that wear a respirator. If an individual wears a respirator more than 30 days per year, or they are exposed at or above the Permissible Exposure Limit (PEL) of a chemical for more than 30 days in a year, then they must participate in a Medical Surveillance Program as required by 29 CFR 1910.120(f)

All assigned employees working at potentially contaminated sites are required to familiarize themselves with this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Decontamination- Portable Tools

AHA 011

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 011	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
Work Operation: Tool Decontamination	**Superintendent/Competent Person:** TBD	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
		Approved by:	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
General	Site Hazardous Material Exposure	▪ Training and safety awareness of potential exposure to contaminates at the site and decontamination procedures. ▪ Appropriate PPE will be worn (e.g., gloves, splash goggles, Tyvek, etc.). ▪ Personnel will follow decontamination procedures. ▪ All tools brought on site will come to the site free of contamination. Decontamination of previously (off-site) contaminated equipment on site is prohibited.	
	Eye Injury	▪ PPE (safety glass, etc.) will be worn.	
	Slips, Trips, Falls	▪ Workers will be aware of potentially slippery surfaces and tripping hazards. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Personnel will clean up all spills immediately.	

		▪ Personnel will notify the SSO of any unsafe conditions.	
Remove gross contamination with brush.	Damaging equipment or tools	▪ To clean instrumentation: follow manufacturer's instructions.	
Place in decontamination bucket or rinse with decontamination solution	Spill/leakage	▪ Workers will have berms or spill absorbent pads nearby to prevent the spread of contaminated water. ▪ Decontamination area will be designed to minimize exposure and maintain spill containment.	
Clean with wash solution	Chemical reaction with wash solution	▪ A fire extinguisher will be located in an accessible location on site. ▪ Review the chemicals of concern and use appropriate wash solution.	
Rinse with water	Contamination remains	▪ Personnel will repeat proper decontamination procedure.	
	Icy Conditions	▪ Salt/sand icy surfaces that may be created in and around the decontamination areas as appropriate.	
	Icing of Equipment	▪ Visually inspect equipment following decontamination to identify ice building that may be present in joints/moving parts of the equipment.	

Training Requirements:

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to initial 40-hour, 8-hour Supervisor and annual 8-hour refresher training.

Medical qualification, training and fit testing must be received on an annual basis for individuals that wear a respirator. If an individual wears a respirator more than 30 days per year, or they are exposed at or above the Permissible Exposure Limit (PEL) of chemical for more than 30 days in a year, then them must participate in a Medical Surveillance Program as required by 29 CFR 1910.120 (f).

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Sampling – Groundwater (not likely to be required)

AHA 014

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 014	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** S. Blauvelt	**Date:** December 7, 2005
	Superintendent/Competent Person	**Reviewed by:** J. O'Loughlin	**Date:** December 8, 2005
Work Operation: Sampling Groundwater		**Approved by:**	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Groundwater Sampling	▪ Inhalation of volatile contaminants ▪ Ingestion of contaminants ▪ Skin/eye contact with contaminated water	▪ If exposure to contaminated materials occurs, promptly wash contaminated skin using soap or mild detergent and water. ▪ Wash eyes with large amounts of water. ▪ If a person breathes in a large amount of organic vapor, move the exposed person to fresh air. Perform artificial respiration if breathing stops. ▪ Keep the affected person warm and at rest. Obtain medical treatment for all of these situations as required. ▪ Wear appropriate safety equipment (i.e., goggles, gloves, and boots, tyvek) as appropriate for reducing risk of contamination.	
	Pinch Points/Overhead equipment	▪ All personnel will be aware of moving machinery and parts and wear appropriate PPE when near machinery (e.g., hard hat, safety glasses, gloves etc.). ▪ Keep observers back from active operations. Get operator's attention before approaching.	
	Noise Exposure	▪ Hearing protection will be worn in hazardous noise areas or working around heavy machinery or equipment.	

		▪ Wear earplugs when noise level from equipment exceeds 85 decibels (dBA) averaged over an eight-hour day.	
General Chemical Exposure	Chemical exposure to NAPL	▪ Monitoring to determine exposure and action levels	
		▪ Wear proper PPE – inner glove and nitrile outer glove, Tyvek, and respirator (if necessary)	
		▪ Follow proper decontamination procedures when leaving the "exclusion zone"	
		▪ Practice good personal hygiene; wash up before eating, eat or drink in designated clean areas	
		▪ Eyewash bottle or station to treat eye irritation	
		▪ Training	
Field Testing	Exposure to analytical chemicals	▪ Follow SOP with field kit or field instrument for handling analytical chemicals or instrument	
Packing samples for off-site shipment to lab	Accidental breakage of glass bottles	▪ Wear cut-resistant gloved during packaging of glass bottles	
		▪ Training	
	Chemical Exposure	▪ Wear necessary PPE (see potential chemical exposure section above and/or field kit SOP)	
		▪ Immediate clean-up of spills	
	Equipment Contamination	▪ Decontamination (see HASP)	

PARSONS

Activity Hazards Analysis

Geophysical Investigation

AHA 015

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 015	**Date:** December 7, 2005	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment:	Level D- Long pants, safety glasses, hard hat, steel-toed boots, gloves (task dependent)	**Analysis by:** A. Merget	**Date:** November 25, 2008
	Superintendent/Competent Person	**Reviewed by:** D. Martoccia	**Date:** November 25, 2008
Work Operation: Geophysical Investigation		**Approved by:**	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Geophysical Investigation Survey	▪ Slips, Trips, Falls	▪ Workers will be aware of potentially slippery surfaces and tripping hazards. ▪ Work slowly during transit. Jumping, running, and horseplay are prohibited. ▪ Workers will keep all areas clean and free of debris to deter any unnecessary trips and falls. ▪ Clean up all spills immediately. ▪ Personnel will notify the SSO of any unsafe conditions	Inspect job site and staging area and identify any concerns. Inspect job site daily.
	▪ Rain	▪ Have proper PPE (i.e. rain gear, footwear, etc) available. Be aware of slip hazards, puddles, etc.	
	▪ Sunshine	▪ Have sunscreen available for ultraviolet protection. Have water for dehydration.	
	▪ Snow	▪ Have warm clothes available for cold temperatures.	
	▪ Lightning	▪ Do not begin or continue work until lightning subsides for 20 minutes.	
	▪ High winds, dust storm	▪ Wear goggles if dust/debris is visible.	
	▪ Icy Conditions	▪ Salt/sand icy surfaces as appropriate.	

		▪ Workers will be aware of potentially slippery surfaces and wear proper footwear.	
	Site Traffic	▪ Be aware of moving equipment/vehicles onsite. ▪ Make eye contact with equipment/vehicle operators prior to moving into their path or reach of moving parts. ▪ Work area protection using hazard tape, traffic cones, signs and barricades to alert drivers and pedestrians of the work area. ▪ Use of a trained flagger when diverting traffic.	
	Cold and Heat Stress	Visitors will dress accordingly to prevent injuries from extreme heat, or cold. SSO will monitor for cold/heat stress symptoms.	
	Biological Hazards (ticks, bees, mosquitoes, snakes, etc.)	Personnel will be aware of potential exposure to biological hazards. Wear appropriate clothing (hat, long-sleeve shirt, long pants, gloves, boots etc.) and insect repellant.	
	Site Hazards Material Exposure	▪ Site walk through prior to work if uncertain of site layout and equipment. Purpose of inspection is to identify any potential site hazards in the area where work will be. Facility Manager will determine if his/her presence during work is required. ▪ Training and safety awareness of potential exposure to contaminates at the site. ▪ Training of all personnel decontamination procedures (if necessary). ▪ Appropriate PPE will be worn dependent on site conditions and actions levels. ▪ Must sign off on health and safety plan. ▪ Previously unidentified hazards will be brought to the attention of the Con Edison representative immediately.	
	Lack of communication	Prior to commencement of daily activities, methods of communication will be discussed. Personnel will have access to a cell phone or other means of communication.	

		The activities for the day will be discussed and understood prior to daily start up with review of safety issues.	

Training Requirements:

Visitors will report to the Site Safety Officer (SSO) who will give a short health and safety orientation and require sign off on the PSP. The SSO will determine if the visitor can access the site based on verification of 40-hour training or 8 hour Supervisor training or if the visitor(s) will need to be escorted by a 40-hour trained individual onsite.

All personnel engaged in hazardous substance removal or other activities that expose or potentially expose them to hazardous substances or health hazards shall receive appropriate training as required by 29 CFR 1910.120(e), including, but not limited to initial 40-hour, 8 hour Supervisor and annual 8-hour refresher training.

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity.

PARSONS

Activity Hazards Analysis

Utility Clearance Keyholing

AHA 016

Project Name & Number: Con Edison Former Hunts Point Manufactured Gas Plant Halleck Street Sidewalk Remedial Action	**AHA No.** 16	**Date:** 7/7/09	**New:** Yes
Location: Halleck Street, Bronx, New York	**Contractor:** Parsons		**Revised:**
Required Personal Protective Equipment: Hard Hat, Safety Glasses/Face Shield, Hearing Protection, Safety Shoes, Dielectric Work Gloves, Leather Work Gloves, Traffic Vest (if working near vehicles)		**Analysis by:** M. Vetter	**Date:** 7/7/09
	Superintendent/Competent Person	**Reviewed by:Shane Blauvelt**	**Date:7/7/09**
Work Operation: Hand Clearing		**Approved by:**	**Date:**

Work Activity	Potential Hazards	Preventive or Corrective Measures	Inspection Requirements
Load tools and travel to site	1. Strains 2. Pinches 3. Traffic Accidents	1. Use proper lifting techniques 2. Wear gloves 3. Inspect vehicle before driving. Check for fire extinguisher and first aid kit. Drive defensively.	1. Complete vehicle inspection checklist

PARSONS

Activity Hazards Analysis

Utility Clearance Keyholing

AHA 016

Site set-up	1. Hazardous site conditions 2. Traffic Hazards 3. Slips, trips, and falls. 4. Explosion, electrocution, utility damage from underground utilities.	1. Review scope of work prior to start of activities. Conduct site reconnaissance by walking site to become aware of marked utilities; other site activities; slip, trip, and fall hazards; methods of ingress and egress; and emergency evacuation routes and gathering locations. Review weather conditions. 2. Wear highly visible clothing when adjacent to traffic/construction vehicles. Set-up work zone away from traffic, if possible. Use traffic cones, caution tape, and signage to mark out work zone. Follow applicable traffic patterns. Use spotter when backing up vehicles. 3. Maintain good housekeeping procedures. Store tolls neatly away from work zone. Keep hoses and tools out of pedestrian traffic areas. 4. Confirm Digsafe NY, NJ One Call or other appropriate locaters have been called and have responded to mark-out request. Identify utility markings	1. Complete Parsons Pre-Drill Protocol forms

PARSONS

Activity Hazards Analysis

Utility Clearance Keyholing

AHA 016

Use of hand tools	1. Cuts and bruises from use of tools 2. Explosion, electrocution, utility damage from underground utilities.	1. Wear proper PPE. Use the proper tools in the manner they were designed for. 2. . Identify all above ground electrical devices and possible electrical supplies. Use extreme caution and work slowly when the location of underground utilities are suspected or unknown near the excavation area. Prior to drilling, clear location to at least 5ft below ground surface. Look for signs of previous excavation work (i.e. sand bedding, tracer or warning tapes, saw cuts, and patched asphalt). Ensure hand tools have electrically non-conductive handles and/or workers wear 1kV dielectric gloves under leather work gloves.	1. Document equipment inspection prior to use. 2. Ensure dielectric gloves are tested and stamped with expiration date. 3. Check capacity of electric lines in vicinity. If working adjacent to electric lines exceeding 1,000 volts, higher rated dielectric protection and/or possible other control measures will be required

PARSONS

Activity Hazards Analysis

Utility Clearance Keyholing

AHA 016

Air knife use	1. Equipment set-up 2. Cuts, bruises, burns from high air pressure. 3. Striking by air hose or connector 4. Striking by blowing debris 5. Hearing loss 6. Explosion, electrocution, utility damage from underground utilities. 7. Entrapment in excavation	1. Secure equipment shall with chokes to prevent equipment from rolling out of place. Workers shall stand clear of equipment at all times. The equipment shall be set up on stable solid flat ground surface to prevent tip overs. 2. Only trained personnel shall operate the unit. Do not point air nozzle at body or other people. Delineate work zone so that high pressure dissipates before leaving the work area. Use two hands to operate air nozzle. 2. Check that all mechanical hose connections are secure. Make sure all manual connections are "positive locked" and have safety cables properly attached. 3. Delineate work zone to minimize possible contact by others. Check that deflector is in place on the air nozzle. Wear safety glasses and full face shield. Use ground cover over excavation to prevent flying debris. 4. Wear hearing protection 5. See above for use of hand tools. 6. Keep arms and legs out of excavation to avoid possible cave-ins of large debris that may pinch or entrap body parts.	1. Document equipment inspection prior to use, including all connections. 2. Ensure dielectric gloves are tested and stamped with expiration date. 3. Check capacity of electric lines in vicinity. If working adjacent to electric lines exceeding 1,000 volts, higher rated dielectric protection and/or possible other control measures will be required

Activity Hazards Analysis

Utility Clearance Keyholing

AHA 016

Soil vacuuming	1. Equipment set-up 2. Cuts, bruises, burns from high suction. 3. Contacting others with suction hose. 4. Hearing Loss 5. Explosion, electrocution, utility damage from underground utilities. 6. Entrapment in excavation	1. See above for air knife use. 2. Only trained personnel shall operate the unit. Avoid contact with open end of suction hose. Do not attempt to unclog hose while vacuum is applies. Shut down vacuum and depressurize hose with shut-off valve before removing clogs. Use two hands to operation suction hose. 3. Delineate work zone to minimize possible contact by others. 4. Wear hearing protection 5. See above for use of hand tools. 6. See above for air knife use.	1. Document equipment inspection prior to use, including all connections and valves. 2. Ensure dielectric gloves are tested and stamped with expiration date. 3. Check capacity of electric lines in vicinity. If working adjacent to electric lines exceeding 1,000 volts, higher rated dielectric protection and/or possible other control measures will be required

Training Requirements:

All assigned employees are required to familiarize themselves with the contents of this AHA before starting a work activity and review it with their Supervisor during their Daily Safety Huddle.

ATTACHMENT D

MATERIAL SAFETY DATA SHEETS