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# REMEDIAL ACTION WORK PLAN

For

**546 WEST 44th STREET  
New York, New York**

**NYC VCP Project No. 14CVCP162M  
NYCOER Project No. 13EH-N396M**

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**August 9, 2013  
170229701**

# **REMEDIAL ACTION WORK PLAN**

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## LIST OF ACRONYMS

<b>Acronym</b>	<b>Definition</b>
AST	Aboveground Storage Tank
CAMP	Community Air Monitoring Plan
C&D	Construction & Demolition
CEQR	City Environmental Quality Review
CFR	Code of Federal Regulations
CHASP	Construction Health and Safety Plan
CO	Certificate of Occupancy
CPC	City Planning Commission
DSNY	Department of Sanitation
"E"	E-Designation
EAS	Environmental Assessment Statement
EIS	Environmental Impact Statement
ESA	Environmental Site Assessment
EC/IC	Engineering Control and Institutional Control
ELAP	Environmental Laboratory Accreditation Program
FDNY	New York City Fire Department
GPR	Ground Penetrating Radar
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations Emergency Response
IDW	Investigation Derived Waste
Notice - NNO	Notice of No Objection
Notice - NTP	Notice To Proceed
Notice - NOS	Notice Of Satisfaction
Notice - FNOS	Final Notice of Satisfaction
NYC BSA	New York City Board of Standards and Appeals
NYC DCP	New York City Department of City Planning
NYC DEP	New York City Department of Environmental Protection
NYC DOB	New York City Department of Buildings
NYC DOF	New York City Department of Finance
NYC HPD	New York City Housing Preservation and Development
NYCRR	New York Codes Rules and Regulations

NYC OER	New York City Office of Environmental Remediation
NYS DEC	New York State Department of Environmental Conservation
NYS DEC DER	New York State Department of Environmental Conservation Division of Environmental Remediation
NYS DEC PBS	New York State Department of Environmental Conservation Petroleum Bulk Storage
NYS DOH	New York State Department of Health
NYS DOT	New York State Department of Transportation
OSHA	United States Occupational Health and Safety Administration
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PID	Photo Ionization Detector
PM	Particulate Matter
QEP	Qualified Environmental Professional
RA	Register Architect
RAWP	Remedial Action Work Plan
RCA	Recycled Concrete Aggregate
RAR	Remedial Action Report
RD	Restrictive Declaration
RI	Remedial Investigation
SCOs	Soil Cleanup Objectives
SCG	Standards, Criteria and Guidance
SMP	Site Management Plan
SPDES	State Pollutant Discharge Elimination System
SSDS	Sub-Slab Depressurization System
SVOCs	Semi-Volatile Organic Compounds
USCS	Unified Soil Classification System
USGS	United States Geological Survey
UST	Underground Storage Tank
TAL	Target Analyte List
TCL	Target Compound List
TCO	Temporary Certificate of Occupancy
VB	Vapor Barrier

VOCs	Volatile Organic Compounds
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## CERTIFICATION

I, Joel B. Landes, am a Professional Engineer licensed in the State of New York. I have primary direct responsibility for implementation of the remedial action for the 546 West 44th Street Site (NYCOER Site No. 14CVCP162M). I certify that this Hazardous Materials Remedial Action Work Plan (RAWP) has a plan for handling, transport and disposal of soil, fill, fluids and other materials removed from the property in accordance with applicable City, State and Federal laws and regulations. Importation of all soil, fill and other material from off-Site will be in accordance with all applicable City, State and Federal laws and requirements. This RAWP has provisions to control nuisances during the remediation and all invasive work, including dust and odor suppression.

Joel B. Landes  
Name

076348  
NYS PE License Number

*Joel B. Landes*  
Signature

8/8/13  
Date



## **EXECUTIVE SUMMARY**

CREF 546 West 44<sup>th</sup> Street, LLC has applied to enroll in the New York City Voluntary Brownfield Cleanup Program (NYC VCP) to investigate and remediate a 27,615-square foot Site located at 546 West 44<sup>th</sup> Street in Manhattan, New York. A Remedial Investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP). The remedial action described in this document achieves the remedial objectives, complies with applicable environmental standards, criteria and guidance, and conforms with applicable laws and regulations.

### **Site Location and Current Usage**

The Site is located at 546 West 44<sup>th</sup> Street, New York, New York and is in the West Clinton section of Manhattan. The Site is identified as Block 1072, Lot 50 on the New York City Tax Map. The Site has an area of approximately 27,615 square feet (sq ft) and is bounded by West 44<sup>th</sup> Street to the north, a six-story building under construction to the east, West 43<sup>rd</sup> Street to the south, and a seven-story industrial building to the west. A Site location map is provided as Figure 1.

Currently, the Site is used as a parking lot and is improved with a two-story garage building with a basement in the southwestern portion of the Site and an asphalt-paved parking lot over the remainder of the Site.

### **Summary of Proposed Redevelopment Plan**

The development project will include two 14-story residential towers fronting West 43<sup>rd</sup> Street and West 44<sup>th</sup> Street, developed as a single building and connected at the cellar level, with a landscaped area at cellar grade, a landscaped area at sidewalk grade, and a covered breezeway at sidewalk grade between the two proposed buildings. The proposed development plan is provided as Figure 2. The current zoning designation is R-9 according to the New York City Department of City Planning (DCP) zoning maps. The proposed use of multifamily residential (Zoning Use Group 2) is consistent with existing zoning for the property. The proposed development will include a total of 220,924 square feet of floor area as defined by the

NYC Zoning Resolution. The development will provide a minimum of 20% of its floor area for Inclusionary Housing.

The proposed construction requires the demolition of existing on-site structures. The two proposed buildings will share an approximately 25,500 square-foot cellar with the top of the foundation slab at approximately elevation<sup>1</sup> (el.) 2.7, which corresponds to depths of approximately 15 feet below sidewalk grade in the northern building and approximately 13 feet below sidewalk grade in the southern building. The excavation will extend to approximately el. 0.4 to accommodate sub-base material (i.e. gravel, concrete, etc.) below the 16-inch foundation slab. Excavation for the elevator pits and 42-inch structural mat (core) in the center of each building will continue to approximately el. -2.2. Pile cap and foundation elements excavation will extend up to approximately el. -1.7. The cellar will not be constructed in the northeastern portion of the Site due to shallow bedrock in this area; therefore, excavation in this area will extend to approximately el. 13.0, which corresponds to a depth of approximately 4 feet below sidewalk grade, to accommodate sub-base material and the landscaped area. The cellar use will include: tenant storage areas; mechanical rooms; tenant amenities; and a landscaped area between the two buildings. Development plans are provided as Appendix 1.

Approximately 12,000 to 15,000 tons (8,000 to 10,000 cubic yards) of soil and historic fill is estimated to be excavated and disposed off-site during development. Dewatering is anticipated during excavation and foundation construction activities at the Site since the bottom of the cellar slab will be below the groundwater elevations measured during the RI and on July 18, 2013.

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<sup>1</sup> Datum is Borough President of Manhattan Datum (BPMD), which is 2.75 feet above mean sea level at Sandy Hook New Jersey as defined by the United States Geologic Survey (USGS NGVD 1929).

## **Summary of the Remedy**

The proposed remedial action achieves protection of public health and the environment for the intended use of the property. The proposed remedial action achieves all of the remedial action objectives established for the project and addresses applicable standards, criterion, and guidance; is effective in both the short-term and long-term and reduces mobility, toxicity, and volume of contaminants; is cost-effective and implementable; and uses standard methods that are well established in the industry. The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP citizen participation activities according to an approved Citizen Participation Plan.
2. Performance of air monitoring in accordance with the Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-specific Soil Cleanup Objectives (SCOs) for contaminants of concern.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs, and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding Track 4 Site-specific SCOs. Excavation will include approximately 4 feet of excavation in the slab-on-grade and grade-level landscaped portions of the Site and approximately 17 to 18 feet of excavation for construction of the cellar.
6. Dewatering in compliance with all city, state, and federal laws and regulations.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a photoionization detector (PID).
8. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials.

9. Transportation and off-site disposal of soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities.
10. Removal of underground storage tanks (USTs) and closure of petroleum spills, if encountered, in compliance with applicable local, State and Federal laws and regulations.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Installation of a waterproofing/vapor barrier system (with a minimum thickness of 20 mils) as per manufacturer's specifications beneath the building slabs and along subsurface sidewalls.
14. Construction and maintenance of an engineered composite cover consisting of concrete or asphalt pavement, building slab, and two feet of certified clean fill/top soil imported from an OER-approved source with an underlying demarcation barrier for soil-capped areas to prevent human exposure to residual soil/fill remaining at the Site.
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Maintenance of records as described in this RAWP, including waste disposal manifests, clean fill/top soil sampling results, and appropriate health and safety forms and documentation.

18. Submission of a Remedial Action Report (RAR) that describes remedial activities, certifies remedial requirements were achieved, describes engineering controls (ECs) and institutional controls (ICs) implemented at the Site, and lists deviations from this RAWP, if applicable.
19. Submission of an approved Site Management Plan (SMP) in the RAR for long-term management of residual historic fill, including plans for inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.
20. Continued registration of the property with an E-designation for site management; establishment of ECs and ICs, and a requirement that management of these controls must be in compliance with an approved SMP. ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

## COMMUNITY PROTECTION STATEMENT

The New York City Office of Environmental Remediation (OER) created the New York City Voluntary Cleanup Program (NYC VCP) to provide governmental oversight for the cleanup of contaminated property in NYC. This Remedial Action Work Plan (“cleanup plan” or RAWP) describes the findings of prior environmental studies, that show the location of contamination at the site, and describes the plans to clean up the site to protect public health and the environment.

This cleanup plan provides a very high level of protection for neighboring communities and also includes many other elements that address common community concerns, such as community air monitoring, odor, dust and noise controls, hours of operation, good housekeeping and cleanliness, truck management and routing, and opportunities for community participation. The purpose of this Community Protection Statement is to explain these community protection measures in non-technical language to simplify community review.

**Remedial Investigation and Cleanup Plan.** Under the NYC VCP, a thorough cleanup study of this property (called a remedial investigation) has been performed to identify past property usage, to sample and test soils, groundwater and soil vapor, and identify contaminant sources present on the property. The cleanup plan has been designed to address all contaminant sources that have been identified during the study of this property.

**Identification of Sensitive Land Uses.** Prior to selecting a cleanup, the neighborhood was evaluated to identify sensitive land uses nearby, such as schools, day care facilities, hospitals and residential areas. The cleanup program was then tailored to address the special conditions of this community.

**Qualitative Human Health Exposure Assessment.** An important part of the cleanup planning for the Site is the performance of a study to find all of the ways that people might come in contact with contaminants at the Site now or in the future. This study is called a Qualitative Human Health Exposure Assessment (QHHEA). A QHHEA was performed for this project. This assessment has considered all known contamination at the Site and evaluated the

potential for people to come in contact with this contamination. All identified public exposures will be addressed under this cleanup plan.

**Health and Safety Plan.** This cleanup plan includes a Construction Health and Safety Plan (CHASP) that is designed to protect community residents and on-site workers. The elements of this plan are in compliance with safety requirements of the United States Occupational Safety and Health Administration (OSHA). This plan includes many protective elements including those discussed below.

**Site Safety Coordinator.** This project has a designated Site Safety Coordinator to implement the CHASP and maintain an emergency contact sheet and protocol for management of emergencies. The Site safety coordinator is Elodie Bourbon and can be reached at 212-479-5554.

**Worker Training.** Workers participating in cleanup of contaminated material on this project are required to be trained in a 40-hour hazardous waste operators training course and to take annual refresher training. This only pertains to workers performing specific tasks including removing contaminated material and installing cleanup systems in contaminated areas.

**Community Air Monitoring Plan.** Community air monitoring will be performed during this cleanup project to ensure that the community is properly protected from contaminants, dust, and odors. Air samples will be tested in accordance with a detailed plan called the Community Air Monitoring Plan (CAMP). Results will be regularly reported to the OER. This cleanup plan also has a plan to address any unforeseen problems that might occur during the cleanup (called a 'Contingency Plan').

**Odor, Dust and Noise Control.** This cleanup plan includes actions for odor and dust control. These actions are designed to prevent off-site odor and dust nuisances and includes steps to be taken if nuisances are detected. Generally, dust is managed by application of physical covers and by water sprays by the contractor. Odors are controlled by the contractor by limiting the area of open excavations, physical covers, spray foams and by a series of other actions (called operational measures). The project is also required to comply with NYC noise control standards. If you observe problems in these areas, please contact the on-site Project

Manager, Elodie Bourbon at 212-479-5554 or the NYC Office of Environmental Remediation Project Manager Hannah Moore at 212-442-6372.

**Quality Assurance.** This cleanup plan requires that evidence be provided to illustrate that all cleanup work required under the plan has been completed properly. This evidence will be summarized in the final report, called the Remedial Action Report (RAR). This report will be submitted to the OER and will be thoroughly reviewed.

**Storm-Water Management.** To limit the potential for soil erosion and discharge, this cleanup plan has provisions for storm-water management. The main elements of the storm-water management include physical barriers such as tarp covers and erosion fencing, and a program for frequent inspection.

**Hours of Operation.** The hours for operation of cleanup will comply with the NYC Department of Buildings (DOB) construction code requirements or according to specific variances issued by that agency. For this cleanup project, the hours of operation are 7:00 a.m to 6:00 p.m, Monday through Friday.

**Signage.** While the cleanup is in progress, a placard will be prominently posted at the main entrance of the property with a laminated project Fact Sheet that states that the project is in the NYC VCP, provides project contact names and numbers, and locations where project documents can be viewed.

**Complaint Management.** The contractor performing this cleanup is required to address all complaints. If you have any complaints, you can call the facility Project Manager (to be determined), the OER Project Manager Hannah Moore at 212-442-6372, or call 311 and mention that the Site is in the NYC VCP.

**Utility Mark-outs.** To promote safety during excavation in this cleanup, the contractor is required to first identify all utilities and must perform all excavation and construction work in compliance with NYC DOB regulations.

**Soil and Liquid Disposal.** All soil and liquid material removed from the Site as part of the cleanup will be transported and disposed of in accordance with all applicable City, State, and Federal regulations and required permits will be obtained.

**Soil Chemical Testing and Screening.** All excavations will be supervised by a trained and properly qualified environmental professional. In addition to extensive sampling and chemical testing of soils on the Site, excavated soil will be screened continuously using hand-held instruments, by sight, and by smell to ensure proper material handling and management, and community protection.

**Stockpile Management.** Soil stockpiles will be kept covered with tarps to prevent dust, odors and erosion. Stockpiles will be frequently inspected. Damaged tarp covers will be promptly replaced. Stockpiles will be protected with silt fences. Hay bales will be used, as needed to protect storm water catch basins and other discharge points.

**Trucks and Covers.** Loaded trucks leaving the Site will be covered in compliance with applicable laws and regulations to prevent dust and odor. Trucks will be properly recorded in logs and records and placarded in compliance with applicable City, State and Federal laws, including those of the New York State Department of Transportation (NYS DOT). If loads contain wet material that can leak, truck liners will be used. All transport of materials will be performed by licensed truckers and in compliance with all laws and regulations.

**Imported Material.** All fill materials proposed to be brought onto the Site will comply with rules outlined in this cleanup plan and will be inspected and approved by a qualified worker located on-site. Waste materials will not be brought onto the Site. Trucks entering the Site with imported clean materials will be covered in compliance with applicable laws and regulations.

**Equipment Decontamination.** All equipment used for cleanup work will be inspected and washed, if needed, before it leaves the Site. Trucks will be cleaned at a truck inspection station on the property before leaving the Site.

**Housekeeping.** Locations where trucks enter or leave the Site will be inspected every day and cleaned regularly to ensure that they are free of dirt and other materials from the Site.

**Truck Routing.** Truck routes have been selected to: (a) limit transport through residential areas and past sensitive nearby properties; (b) maximize use of city-mapped truck routes; (c) limit total distance to major highways; (d) promote safety in entry to highways; (e) promote overall safety in trucking; and (f) minimize off-Site line-ups (queuing) of trucks entering the property. Operators of loaded trucks leaving the Site will be instructed not to stop or idle in the local neighborhood.

**Final Report.** The results of all cleanup work will be fully documented in a final report (called a Remedial Action Report) that will be available for you to review in the public document repositories located at the New York Public Library for the Performing Arts, Dorothy and Lewis Cullman Center located at 40 Lincoln Center Plaza in Manhattan, New York.

**Long-Term Site Management.** If long-term protection is required after the cleanup is complete, the property owner will be required to comply with an ongoing Site Management Plan (SMP) that calls for continued inspection of protective controls, such as Site covers. The SMP will be evaluated and approved by the OER. Requirements that the property owner must comply with are defined in the property's deed or established through a city environmental designation. A certification of continued protectiveness of the cleanup will be required from time to time to show that the approved cleanup is still effective.

# REMEDIAL ACTION WORK PLAN

## 1.0 SITE BACKGROUND

CREF 546 West 44th Street, LLC is being enrolled in the New York City Voluntary Cleanup Program (NYC VCP) to investigate and remediate a property located at 546 West 44<sup>th</sup> Street in the West Clinton section of Manhattan, New York (the "Site"). A remedial investigation (RI) was performed to compile and evaluate data and information necessary to develop this Remedial Action Work Plan (RAWP) in a manner that will render the Site protective of public health and the environment consistent with the contemplated end use.

This RAWP establishes remedial action objectives, provides a remedial alternatives analysis that includes consideration of a permanent cleanup, and provides a description of the selected remedial action. The remedial action described in this document provides for the protection of public health and the environment, complies with applicable environmental standards, criteria and guidance and applicable laws and regulations.

In addition, this RAWP satisfies the Remedial Action Plan requirement of the Hazardous Materials E-Designation Program, which is needed to obtain a Notice to Proceed. An E-Designation for Hazardous Materials (E-268) was placed on the Site by the New York City Department of City Planning (DCP) as part of the January 3, 2011, West Clinton rezoning action (CEQR number 11DCP068M). This project has been assigned OER VCP Project No. 14CVCP162M.

### 1.1 Site Location and Current Usage

The Site is located in the West Clinton section of Manhattan, New York and is identified as Block 1072 and Lot 50 on the New York City Tax Map. The Site is approximately 27,615 square feet and is bounded by West 44th Street to the north, a six-story building under construction to the to the east, West 43rd Street to the south, and a seven-story industrial building to the west. Currently, the Site is used as a parking lot and is improved with a two-story garage building with a basement in the southwestern portion of the Site and an asphalt-paved parking lot over the remainder of the Site. A site location plan is included as Figure 1.

## **1.2 Proposed Redevelopment Plan**

The development project will include two 14-story residential towers fronting West 43rd Street and West 44th Street, connected at the cellar level, with a landscaped area at cellar grade, a landscaped area at sidewalk grade and a covered breezeway at sidewalk grade between the two proposed buildings. The proposed development plan is provided as Figure 2.

The current zoning designation is R-9 according to the New York City Department of City Planning (DCP) zoning maps. The proposed use of multifamily residential (Zoning Use Group 2) is consistent with existing zoning for the property. The proposed development will include a total of 220,924 square feet of floor area as defined by the NYC Zoning Resolution. The development will provide a minimum of 20% of its floor area for Inclusionary Housing.

The proposed construction requires the demolition of existing on-site structures. The two proposed buildings will share an approximately 25,500 square-foot cellar with the top of the foundation slab at approximately elevation<sup>1</sup> (el.) 2.7, which corresponds to depths of approximately 15 feet below sidewalk grade in the northern building and approximately 13 feet below sidewalk grade in the southern building. The excavation will extend to approximately el. 0.4 to accommodate sub-base material (i.e. gravel, concrete, etc.) below the 16-inch foundation slab. Excavation for the elevator pits and 42-inch structural mat (core) in the center of each building will continue to approximately el. -2.2. Pile cap and foundation elements excavation will extend up to approximately el. -1.7. The cellar will not be constructed in the northeastern portion of the Site due to shallow bedrock in this area; therefore, excavation in this area will extend to approximately el. 13.0, which corresponds to a depth of approximately 4 feet below sidewalk grade, to accommodate sub-base material and the landscaped area. The cellar uses will include tenant storage areas; mechanical rooms; tenant amenities, including a gym, a club

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<sup>1</sup> Datum is Borough President of Manhattan Datum (BPMD), which is 2.75 feet above mean sea level at Sandy Hook New Jersey as defined by the United States Geologic Survey (USGS NGVD 1929).

room, a game room, a screening room, and a demo kitchen/private dining room; and a landscaped area between the two buildings.

Approximately 12,000 to 15,000 tons (8,000 to 10,000 cubic yards) of soil and historic fill is anticipated to be excavated and disposed off-site to accommodate the proposed development. Development plans are provided as Appendix 1. Dewatering is anticipated during excavation and foundation construction activities at the Site since the bottom of the cellar slab will be below the groundwater elevations measured during the RI and on July 18, 2013.

### 1.3 Description of Surrounding Property

The Site is located in an urban setting that is characterized by manufacturing, residential, and commercial buildings. Surrounding property usage is summarized in the below table:

<b>Direction</b>	<b>Adjacent Properties</b>	<b>Surrounding Properties</b>
North	West 44 <sup>th</sup> Street, on the other side of which are multi-story residential buildings	Multi-story residential buildings with ground-level commercial space and commercial buildings
South	West 43 <sup>rd</sup> Street, on the other side of which are multi-story residential buildings	Multi-story residential buildings with ground-level commercial space
East	One six-story building currently under construction (Public School: Beacon High School)	Multi-story residential buildings with ground-level commercial space
West	One seven-story commercial building occupied by Manhattan Mini Storage	Multi-story residential buildings with ground-level commercial space, parking lots, and manufacturing buildings

Land use within a half mile of the Site is highly urbanized and includes residential and commercial buildings, an Amtrak easement, the sub-grade Lincoln Tunnel, cross streets, park land, day care centers, and school facilities. The nearest ecological receptor is the Hudson River, approximately 0.27 miles west of the Site. The nearest sensitive receptor is immediately

adjoining the Site to the east, Beacon High School, which is a public school currently under construction. The surrounding land usage and sensitive environmental receptors are identified on Figure 3.

#### **1.4 Previous Investigations and Remedial Investigation**

A remedial investigation (RI) was performed and the results are documented in a companion document called "Remedial Investigation Report, 546 West 44<sup>th</sup> Street", dated July 2013 (RIR). This section summarizes the findings of all previous environmental investigations and Appendix 2 includes copies of the reports.

#### **Summary of Past Uses of Site and Areas of Concern**

According to a Phase I Environmental Site Assessment (ESA), prepared by IVI Assessment Services, Inc. (IVI) and dated October 2012, the Site was developed prior to 1890 with low-rise commercial buildings. By 1911, the Site was used as a stone yard on the Northern portion of the Site and for dwellings and commercial spaces including a scene painter, a wagon house, a factory, and a laundry facility on the remainder of the Site. The existing 2-story garage building was constructed in 1920 and has been the only on-site structure since at least 1980. The Site was occupied by the following auto-related uses since circa 1968:

- Auto repair facility (circa 1968 to circa 1977);
- Trucking business, which consisted of truck parking and a truck repair facility (circa 1977 to circa 1987); and
- Parking garage and paved parking (circa 1987 to present).

The surrounding area has been primarily occupied by various commercial, industrial and manufacturing entities. Surrounding properties to the west included a candy manufacturing facility and a storage facility. Properties to the north included a parking lot, a taxi terminal, and a metal works facility. Properties to the south included a fire engine company, low rise residential dwellings with street level retail space, a film laboratory, and The Armory Apartments. Properties to the east included a garage, a five-story residential dwelling, factories, and a NYC Public Library. Multiple fuel oil and gasoline storage tanks were noted in

historical Sanborn Maps and State Petroleum Bulk Storage listings on properties in the surrounding area.

The Areas of Concern (AOCs) for the Site identified during previous investigations are:

1. Potential On-Site petroleum underground storage tank (UST);
2. Historic urban fill material;
3. Historic site use;
4. Open spill (NYSDEC Spill No. 1103225) located adjacent and cross-gradient to the Site; and
5. Historic use of adjoining and surrounding properties.

### **Summary of the Work Performed at the Site**

Previous investigations included the following scope of work:

1. As part of the Limited Phase II ESA prepared by IVI and dated November 2012:
  - a. six soil borings were advanced; two soil samples collected from selected soil borings were analyzed for volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), metals pesticides, and polychlorinated biphenyls (PCBs) and two soil samples collected from selected soil borings were analyzed for VOCs and PAHs.
  - b. two groundwater samples were collected and analyzed for VOCs and PAHs.
  - c. two sub-slab soil vapor samples and two indoor air samples were collected and analyzed for VOCs.
2. As part of the Soil Composition Letter investigation prepared by Environmental Consulting & Management Services, Inc. (ECMS) and dated December 4, 2012:
  - a. eight soil borings were advanced and eight soil samples were collected and analyzed for VOCs and semi-volatile organic compounds (SVOCs) (CP-51 list only).

To supplement existing Site data, Langan performed a RI between April 29 and May 1, 2013, that included the following scope of work:

1. Conducted a geophysical survey to identify physical obstructions and subsurface utilities and structures;
2. Installed and screened seven soil borings (B7 through B13) across the Site and collected 11 soil samples for laboratory analysis from the soil borings to evaluate soil quality;
3. Installed four groundwater monitoring wells across the Site to evaluate groundwater depth and flow direction and collected one groundwater sample (because of poor well recovery at other wells) for laboratory analysis to evaluate groundwater quality;
4. Installed five soil vapor probes throughout the Site and collected one ambient air and five soil vapor samples for laboratory analysis.

Langan also performed a Waste Characterization study on July 1 and 2, 2013, that included the advancement of 22 soil borings across the proposed areas to be excavated during redevelopment. Langan collected 36 grab soil samples and 12 composite soil samples, including 11 composite samples collected from the historic fill and one composite sample collected from the native soil, to assist the contractor in obtaining approval from disposal materials for acceptance of site materials

### **Summary of Environmental Findings at the Site**

1. Surface elevation of the Site ranges from approximately el. 16.0 to 17.7.
2. Depth to weathered bedrock/bedrock is approximately 1 to 34 feet below sidewalk grade. Bedrock is shallow in the northeastern portion of the Site and dips to the west and south.
3. The stratigraphy of the Site, from the surface down, consists of approximately 1 to 20 feet of historic urban fill material underlain by bedrock (in the northeast) or by sand, silt, and bedrock (in the northwest and southwest).

4. Groundwater was measured during the RI at elevations ranging from el. 0.52 to 4.39 (12.7 to 16.5 feet below sidewalk grade). Groundwater at the Site appears to be perched above the varying bedrock interface in many areas of the Site with true groundwater located between approximately 15 and 16.5 feet below sidewalk grade (based on the groundwater measurements obtained from two surveyed geotechnical observation wells). Inferred groundwater flow is generally to the south based on previous investigations conducted by Langan at the adjoining city block to the north of the Site.
5. Soil/fill samples collected and analyzed as a part of the 2013 RI were compared to Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR) Part 375 Unrestricted Use Soil Cleanup Objectives (SCOs) and Restricted-Residential Use SCOs.
  - a. Soil/fill samples showed no VOCs above Track 1 Unrestricted Use SCOs. The only chlorinated-VOC detected was tetrachloroethene (PCE), which was detected only at trace levels (maximum 0.0018 parts per million [ppm]).
  - b. Concentrations of one pesticide, dieldrin, and one PCB, aroclor 1260, exceeded Unrestricted Use SCOs in one surficial fill material sample but were below Track 2 Restricted Residential Use SCOs. No other PCBs or pesticides were detected and the Site history does not indicate use of pesticides or PCB-containing equipment.
  - c. Seven SVOCs, all polycyclic aromatic hydrocarbons (PAHs) which are commonly identified in historic fill material, were detected above Track 1 Unrestricted Use SCOs in three of eleven fill samples. Of these PAHs, benzo(a)anthracene (maximum 5.2 ppm), benzo(a)pyrene (maximum 3.7 ppm), benzo(b)fluoranthene (maximum 3.7 ppm), chrysene (maximum 6.5 ppm), dibenzo(a,h)anthracene (maximum 0.57 ppm), and indeno(1,2,3-cd)pyrene (maximum 1.5 ppm) were also detected above Track 2 Restricted Residential Use SCOs.

- d. Nine metals were detected above Track 1 Unrestricted Use SCOs in seven of eleven samples. Of these metals, arsenic (maximum 44 ppm), barium (maximum 560 ppm), lead (maximum 820 ppm), and mercury (maximum 1.2 ppm) were also identified above Track 2 Restricted Residential Use SCOs. These results are consistent with results from historic fill sites throughout New York City.
6. Based on the results of the waste characterization study conducted in July 2013, soil to be excavated from the Site will be considered regulated, non-hazardous solid waste.
7. Only one groundwater sample was collected in the southwestern portion of the Site during the RI because of poor well recovery at the other locations (likely because most wells were installed in perched groundwater). Results were compared to applicable groundwater quality standards (GQSs), which are the New York City Department of Environmental Conservation (NYSDEC) Division of Water Technical and Operational Guidance Series 1.1.1 Ambient Water Quality Standards for groundwater class GA.
  - a. The groundwater sample collected during the RI showed two metals, magnesium (62,600 micrograms per liter [ $\mu\text{g/L}$ ] – filtered sample) and manganese (1,647  $\mu\text{g/L}$  – filtered sample), above the GQSs in the groundwater sample. Three VOCs, acetone (1.1  $\mu\text{g/L}$ ), chloroform (0.79  $\mu\text{g/L}$ ), and PCE (0.5  $\mu\text{g/L}$ ) were detected in the groundwater sample but at concentrations below GQSs. SVOCs, PCBs, and pesticides were not detected in the groundwater sample.
8. Soil vapor samples collected during the RI identified chlorinated and petroleum-related VOCs at generally low-to-moderate concentrations. Petroleum-related VOCs were detected at generally low concentrations and included benzene (max 15.5 micrograms per cubic meter [ $\mu\text{g/m}^3$ ]), toluene (max 45.2  $\mu\text{g/m}^3$ ), ethylbenzene (maximum 15.5  $\mu\text{g/m}^3$ ), and xylenes (max 152.1  $\mu\text{g/m}^3$ ). The chlorinated VOC, PCE, was identified in five of six soil vapor samples at concentrations ranging from 4.87

to 943  $\mu\text{g}/\text{m}^3$ . The maximum concentration of PCE falls within the monitor/mitigate range established by New York State Department of Health (NYSDOH) Vapor Intrusion Matrices. Trichloroethene (TCE) was detected in two of six soil vapor samples at a maximum concentration of 6.13  $\mu\text{g}/\text{m}^3$ , which is within the monitoring range established by NYSDOH. The maximum concentrations of chlorinated VOCs were identified in the northeast corner of the existing building. PCE was also detected at trace concentrations in select soil samples and in the groundwater sample from the corresponding boring/monitoring well location, at concentrations below regulatory criteria. Contaminant concentrations in soil vapor may be attributed to the historic auto and truck repair use at the Site or to the historic uses of surrounding properties.

Data collected during the RI is sufficient to delineate the distribution of contaminants in soil, groundwater, and soil vapor at the Site.

For more detailed results, consult the RI and Waste Characterization Reports provided in Appendix 2. Based on an evaluation of the data and information from the RIR, the Waste Characterization Report, and this RAWP, disposal of hazardous waste is not suspected at this site.

## **2.0 REMEDIAL ACTION OBJECTIVES**

Based on the results of the RI and previous investigations, the following remedial action objectives (RAOs) described herein have been developed in accordance with applicable federal, state, and city regulations, and the enclosed site-specific CHASP provided in Appendix 3:

### **Soil**

- Prevent direct contact with contaminated soil.
- Prevent exposure to contaminants volatilizing from contaminated soil.
- Prevent migration of contaminants that would result in groundwater water contamination.

### **Groundwater**

- Prevent direct exposure to contaminated groundwater.
- Prevent exposure to contaminants volatilizing from contaminated groundwater.

### **Soil Vapor**

- Prevent exposure to contaminants in soil vapor.
- Prevent migration of soil vapor into dwelling and other occupied structures.

### **3.0 REMEDIAL ACTION ALTERNATIVES**

The goal of the remedy selection process is to select a remedy that is protective of human health and the environment taking into consideration the current, intended, and reasonably anticipated future use of the property. The remedy selection process begins by establishing RAOs for media in which chemical constituents were found in exceedance of applicable standards, criteria and guidance values (SCG). A remedy is then developed based on the following ten criteria:

1. Protection of human health and the environment;
2. Compliance with SCGs;
3. Short-term effectiveness and impacts;
4. Long-term effectiveness and permanence;
5. Reduction of toxicity, mobility, or volume of contaminated material;
6. Implementability;
7. Cost effectiveness;
8. Community Acceptance;
9. Land use; and
10. Sustainability.

The following is a detailed description of the alternatives analysis and remedy selection to address impacted media at the Site. As required, a minimum of two remedial alternatives (including a scenario achieving Track 1 Unrestricted Use SCOs) are evaluated, as follows:

#### **Alternative 1**

Alternative 1 would include the following remedial actions:

- Establishment of Track 1 Unrestricted Use SCOs.
- Removal of all soil/fill exceeding NYSDEC Part 375 Track 1 Unrestricted Use SCOs throughout the Site and confirmation that Unrestricted Use SCOs have been achieved with post-excavation endpoint sampling. Remedial excavation would be required to bedrock at approximately 1.5 to 10 feet bgs (el. 15.5 to 7) in the eastern portion of the Site and to a depth of approximately 20 ft bgs (el. -3.5) in the

northwestern portion of the Site to remove all soil/fill with concentrations exceeding Unrestricted Use SCOs. The remedial excavation requires extensive excavation and dewatering beyond that currently planned as part of development. If soil and fill containing analytes at concentrations above Track 1 Unrestricted Use SCOs were still present at the base of the excavation, additional excavation would be performed to ensure complete removal of soil that does not meet Track 1 Unrestricted Use SCOs.

- As part of new development, installation of a waterproofing membrane beneath the foundation and behind all sidewalls to grade to prevent soil vapor intrusion into the new buildings.
- As part of new development, placement of a final cover consisting of a combination of concrete slabs and two feet of clean soil in landscaped areas over the entire Site.

## **Alternative 2**

Alternative 2 would include the following remedial actions:

- Establishment of Track 4 Site-specific SCOs.
- Removal of soil and fill exceeding Track 4 Site-specific SCOs. Excavation for development purposes would take place to el. 13.0 (approximately 4 feet bgs) in the eastern portion of the Site and to approximately el. 0.4 (14 to 16 feet bgs) at a minimum to accommodate the cellar in the western portion of the Site. If soil/fill containing analytes at concentrations above Track 4 Site-specific SCOs were still present at the base of the excavation after removal of all soil required for development purposes, additional excavation would be performed to meet Track 4 Site-specific SCOs.
- Dewatering and discharge to the municipal sewer system after obtaining a permit to discharge to the City sewer system.

- Placement of a final composite cover system over the entire Site consisting of a combination of concrete slabs and two feet of clean soil in landscaped areas to provide a barrier to exposure to remaining soil/fill.
- Placement of a waterproofing/vapor barrier system beneath the entire building slabs (northern and southern buildings) and along subsurface cellar walls to provide waterproofing of the buildings and prevent potential accumulation of vapors within the structures.
- Establishment of use restrictions including prohibitions on the use of groundwater from the site and prohibitions on sensitive site uses, such as farming or vegetable gardening, to prevent future exposure pathways.
- Establishment of an approved Site Management Plan (SMP) to ensure long-term management of these engineering controls (ECs) and institutional controls (ICs) including the performance of periodic inspections and certification that the controls are performing as they were intended.
- Continued registration with an E-Designation by the NYC Department of City Planning (DCP) and NYC Department of Buildings (DOB) to memorialize the remedial action and the ECs and ICs required by this RAWP.

### **3.1 Threshold Criteria**

#### **Protection of Public Health and the Environment**

This criterion is an evaluation of the remedy's ability to protect public health and the environment, and an assessment of how risks posed through each existing or potential pathway of exposure are eliminated, reduced or controlled through removal, treatment, and implementation of ECs. Protection of public health and the environment must be achieved for all approved remedial actions.

Alternative 1 would be protective of human health and the environment by removing all soil/fill with exceedances of Track 1 Unrestricted Use SCOs at the Site, thus eliminating

potential for direct contact with contaminated soil/ fill once construction is complete and eliminating the risk of contamination leaching into groundwater.

Alternative 2 would achieve comparable protections of human health and the environment by removing soil/fill with contaminant concentrations above the Track 4 Site-specific SCOs as well as placement of ECs and ICs, including a composite cover system and a waterproofing/vapor barrier. The composite cover system would prevent direct contact with remaining on-Site soil/ fill. Implementing ICs, including continued registration as an e-designated property and implementation of an SMP would ensure that the composite cover system remains intact and protective. Establishment of Track 4 Site-specific SCOs would minimize the risk of contamination leaching into groundwater.

For both alternatives, potential exposure to contaminated soils or groundwater during construction would be minimized by implementing an approved Soil/Materials Management Plan and Community Air Monitoring Plan (CAMP). Potential contact with contaminated groundwater would also be minimized by implementing the approved Soil/Materials Management Plan, and groundwater use is prevented by city laws and regulations. Potential future migration of on- and off-Site soil vapors into the new buildings would be prevented by installing a waterproofing/vapor barrier membrane. As such, both alternatives would be consistent with the RAOs and would provide overall protection of public health and the environment in consideration of current and potential future land use.

### **3.2 Balancing Criteria**

#### **Compliance with Standards, Criteria, and Guidance (SCGs)**

Alternative 1 - Remediating the Site to Track 1 Unrestricted Use SCOs would ensure compliance with all applicable SCGs for soil and groundwater due to the removal of all impacted on-site materials. Compliance with SCGs for soil vapor, including potential off-Site sources of soil vapor, would be achieved by installing a waterproofing/vapor barrier membrane as part of development.

Alternative 2 would achieve compliance with the remedial goals, SCGs and RAOs for soil through removal of soil to meet Track 4 Site-specific SCOs. Compliance with SCGs for soil

vapor would also be achieved by installing a vapor barrier. An SMP would ensure that ECs and ICs remained protective for the long term. Compliance with groundwater SCGs would be achieved over the long term by excavation and removal of soil exceeding Track 4 Site-specific SCOs.

For both alternatives, focused attention on means and methods employed during the remedial action would ensure that handling and management of contaminated material would be in compliance with applicable SCGs. Both remedial alternatives comply with SCGs that involve protection of public health during the remedial action by implementing and enforcing a site-specific CHASP and CAMP. Occupational Safety and Health Administration (OSHA) requirements for on-site construction safety will also be followed by the site Contractors.

### **Short-term effectiveness and impacts**

This evaluation criterion assesses the effects of the alternative during the construction and implementation phase until remedial action objectives are met. Under this criterion, alternatives are evaluated with respect to their effects on public health and the environment during implementation of the remedial action, including protection of the community, environmental impacts, time until remedial response objectives are achieved, and protection of workers during remedial actions.

Alternative 1 - The most significant short-term adverse impacts and risks to the community would be the potential complications involved with designing support-of-excavation to allow removal of soil/fill deeper than development depth. Support of adjacent structures to accommodate extent of excavation below the proposed development depths in the northwestern portion of the Site would be very risky. In addition, increased truck traffic (approximately 575, 25-ton capacity truck trips) would be necessary to haul out the additional impacted fill and soil excavated to achieve Track 1 Unrestricted Use SCOs and to haul in the additional backfill. Truck traffic would be routed on the most direct course using major thoroughfares where possible and flaggers will be used to protect pedestrians at Site entrances and exits. The duration of the excavation period would also substantially increase leaving soils exposed for a longer time resulting in a potential increase in dust, odors, and organic vapor

from the excavation. The effects of these potential adverse impacts to the community, workers and the environment will be minimized by implementing their respective control plans.

Alternative 2 – Limiting the required excavation depths according to Track 4 Site-specific SCOs, would minimize risks and delays associated with additional excavation, adjacent building support, and extending the duration of excavation. The number of truck trips required to haul out the impacted fill and soil would be approximately 375, 25-ton capacity truck trips; approximately 35-percent of the trips required for Alternative 1. Excavation activities would be expedited compared to Alternative 1, reducing potential exposure to dust, odors, and organic vapor from the excavation and construction-related noise.

Under both remedial alternatives, dust would be controlled by the application of water spray on the haul roads, and on site, when and where needed. Controls such as slowing the pace of work, applying foam suppressant or covering portions of the excavation will be used to minimize vapors and suppress odors, as required during remediation activities. Work will be modified or stopped according to the action levels set in the CAMP.

### **Long-term effectiveness and permanence**

This evaluation criterion addresses the results of a remedial action in terms of its permanence and quantity/nature of waste or residual contamination remaining at the Site after response objectives have been met. It includes permanence of the remedial alternative, magnitude of remaining contamination, adequacy of controls including the adequacy and suitability of ECs that may be used to manage contaminant residuals that remain at the Site, and long-term reliability of ECs.

Alternative 1 – This alternative would permanently remove all contaminated soil from the Site exceeding Track 1 Unrestricted Use SCOs for soil. Removal of on-site contaminant sources would also prevent continued and future groundwater contamination. Construction of most of the slab below the water table and installation of a waterproofing/vapor barrier membrane below the building slab and up along subgrade foundation walls would prevent potential future migration of soil vapors into the new building. Therefore, the long-term effectiveness of this remedy would satisfy the objectives of this criterion.

Alternative 2 - This alternative would provide long-term effectiveness by removing contaminants above the Track 4 Site-Specific SCOs, establishing a composite cover system across the Site, installing a waterproofing/vapor barrier, establishing institutional controls including use restrictions, and establishing an SMP to ensure long-term management of ECs. Establishment of an SMP will ensure long-term effectiveness of all ECs by requiring periodic inspection and certification that these controls and use restrictions continue to be in place and are functioning as they were intended assuring that protections designed into the remedy would provide continued high level of protection in perpetuity. Therefore, the long-term effectiveness of this remedy would satisfy the objectives of this criterion.

### **Reduction of toxicity, mobility, or volume of contaminated material**

This evaluation criterion assesses the remedial alternative's use of remedial technologies that permanently and significantly reduce toxicity, mobility, or volume of contaminants as their principal element. The following is the hierarchy of source removal and control measures that are to be used to remediate a Site, ranked from most preferable to least preferable: removal and/or treatment, containment, elimination of exposure and treatment of source at the point of exposure. It is preferred to use treatment or removal to eliminate contaminants at a Site, reduce the total mass of toxic contaminants, cause irreversible reduction in contaminants mobility, or reduce of total volume of contaminated media.

Alternative 1 - This alternative would permanently reduce the toxicity, mobility, and volume of contamination since all contaminated fill/soil would be removed from the Site.

Alternative 2 - This alternative would reduce the toxicity of the contaminated Site soils by removing fill/soil from the Site above Track 4 Site-specific SCOs. The toxicity and mobility of VOC-impacted soil vapor will be addressed by the installation of the waterproofing/vapor barrier beneath the new slabs. The waterproofing/vapor barrier would mitigate potential for accumulation of vapors within the structure and preventing exposure to the public.

### **Implementability**

This evaluation criterion addresses the technical and administrative feasibility of implementing an alternative and the availability of various services and materials required during

its implementation, including technical feasibility of construction and operation, reliability of the selected technology, ease of undertaking remedial action, monitoring considerations, administrative feasibility (e.g. obtaining permits for remedial activities), and availability of services and materials.

Alternative 1 - The feasibility of implementing Alternative 1 is more challenging due to the support of excavation and adjacent structures required to remove fill next to adjacent buildings. Because excavation beyond the required development depths and extents is required, coordination with the project geotechnical and structural engineers would be necessary to alter the existing support of excavation design to support excavation up to the property boundaries. This remedy would consist mostly of excavation with standard bucket excavators of the targeted fill and soil. The feasibility of implementing this remedy is lower compared to Alternative 2 considering the costs and time associated with the support of excavation required to altering the support of excavation design, and underpinning/excavating near the property boundaries, which would rely on coordination with adjacent property owners.

Alternative 2 - The feasibility of implementing the Alternative 2 remedy is high. This alternative would consist mostly of typical support of excavation controls, excavation with standard bucket excavators of the targeted fill and soil, and standard methods of construction dewatering. This type of remediation is common in the region and experienced personnel and equipment are readily available within the New York City area.

### **Cost effectiveness**

This evaluation criterion addresses the cost of alternatives, including capital costs (such as construction costs, equipment costs, and disposal costs, engineering expenses) and site management costs (costs incurred after remedial construction is complete) necessary to ensure the continued effectiveness of a remedial action.

Alternative 1 - Based on the assumptions detailed for Alternative 1, including support of excavation, removal of all soil/fill exceeding Track 1 Unrestricted Use SCOs, dewatering, and the total remediation cost of Alternative 1 cleanup is less cost effective and is estimated at twice the cost of the Alternative 2 cleanup. As the Site will be remediated to an unrestricted-

use level, there are no operations, maintenance, or monitoring costs associated with the proposed remedy.

Alternative 2 - Based on the assumptions detailed for Alternative 2, including support of excavation, removal of all soil/fill exceeding Site-specific SCOs, dewatering, installation of a waterproofing/vapor barrier, and placement of a final composite cover system over the entire Site to provide a barrier to exposure to remaining soil/fill, the alternative provides for a protective and cost-effective remedy.

### **Community Acceptance**

This evaluation criterion addresses community opinion and support for the remedial action. Observations here will be supplemented by public comment received on the RAWP.

The overall goals of the remedial program are believed to be acceptable to the community. However, this RAWP will be subject to and undergo public review under the NYC VCP and will provide the opportunity for public input on the selected remedial actions. Any public comments related to environmental remediation will be considered by OER prior to approval of this plan.

Both remedial alternatives should be acceptable to the community because the potential exposure pathways to on-site contamination will be eliminated upon completion of the respective alternatives and respective cleanup levels will be achieved.

### **Land use**

This evaluation criterion addresses the proposed use of the property. This evaluation has considered reasonably anticipated future uses of the Site and takes into account: current use and historical and/or recent development patterns, applicable zoning laws and maps, NYS Department of State's Brownfield Opportunity Areas (BOA) pursuant to section 970-r of the general municipal law, applicable land use plans; proximity to real property currently used for residential use, and to commercial, industrial, agricultural, and/or recreational areas, environmental justice impacts, Federal or State land use designations, population growth patterns and projections, accessibility to existing infrastructure, proximity of the site to important cultural resources and natural resources, potential vulnerability of groundwater to

contamination that might emanate from the site, proximity to flood plains, geography and geology, and current Institutional Controls applicable to the Site.

The proposed redevelopment of the Site is compatible with its current zoning and is consistent with recent development patterns. The areas surrounding the site are urban and consist of predominantly, mixed residential and industrial buildings in zoning districts designated for commercial, residential and manufacturing uses. There are no areas zoned for agricultural use in the proximity of the Site. According to the NYC DCP, Manhattan is expected to experience an 18.8 percent growth between the 2000 and 2030. The proposed redevelopment of the commercial parking lots will support this population growth by contributing to the economic revitalization of Manhattan's west side and by utilizing a formerly underutilized property. The development would replace underutilized site with two modern residential buildings. The proposed development would create new employment opportunities, living space, and economic and fiscal benefits to the City and State in the form of economic revitalization and tax revenue. The Site is accessible to existing infrastructure. The proposed use will not cause or increase a disproportionate burden on the community in which the Site is located. In addition, temporary short-term project impacts are being mitigated through site management controls and truck traffic controls during remediation activities. Following remediation, the Site will meet either Track 1 Unrestricted Use SCOs or Track 4 Site-specific SCOs, which are appropriate for its planned residential use.

The Site is not in close proximity to important cultural resources, including federal or state historic or heritage sites or Native American religious sites, natural resources, waterways, wildlife refuges, wetlands, or critical habitats of endangered or threatened species. The Site is located in an urban area with limited proximity to fish or wildlife. Both alternatives would prevent any potential exposure pathways of contaminant migration affecting fish or wildlife. Municipal water supply wells are not present in New York City; therefore, groundwater from the Site cannot affect municipal water supply wells or recharge areas. The Site does not lie in a Federal Emergency Management Agency (FEMA)-designated flood plain. Both alternatives are equally protective of natural resources and cultural resources.

### **Sustainability of the Remedial Action**

This criterion evaluates the overall sustainability of the remedial action alternatives and the degree to which sustainable means are employed to implement the remedial action including those that take into consideration New York City's sustainability goals defined in PlaNYC: A Greener, Greater New York. Sustainability goals may include: maximizing the recycling and reuse of non-virgin materials; reducing the consumption of virgin and non-renewable resources; minimizing energy consumption and greenhouse gas emissions; improving energy efficiency; and promotion of the use of native vegetation and enhancing biodiversity during landscaping associated with Site development.

Alternative 1 – The overall sustainability of Alternative 1 is low considering the excavated material would likely be landfilled (no recycling and reuse of non-virgin materials) and it would require consumption of virgin material resources as imported backfill. There would also be significant energy consumption and greenhouse gas emissions associated with approximately increased truck trips for fill disposal and importation of backfill than Alternative 2.

Alternative 2 – The overall sustainability of the Alternative 2 is higher than Alternative 1. The Alternative greatly reduces the overall project energy consumption and greenhouse gas emissions associated with soil/fill excavation and trucking.

A sustainability statement for the Site is provided as Appendix 4.

## **4.0 REMEDIAL ACTION**

Remedial objectives and actions described herein have been developed in accordance with applicable federal, state, and city regulations, and the enclosed site-specific CHASP.

### **4.1 Summary of Remedial Action**

The preferred remedial action alternative is Alternative 2, the Track 4 Alternative, which achieves protection of public health and the environment for the intended use of the property. The preferred remedial action achieves all of the remedial action objectives established for the project and addresses applicable SCGs. The preferred remedial action alternative is effective in

both the short-term and long-term and reduces mobility, toxicity and volume of contaminants and uses standard methods that are well established in the industry.

The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP citizen participation activities according to an approved Citizen Participation Plan.
2. Performance of air monitoring in accordance with the CAMP for particulates and volatile organic carbon compounds.
3. Establishment of Track 4 Site-specific SCOs for contaminants of concern.
4. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
5. Excavation and removal of soil/fill exceeding Track 4 Site-specific SCOs. Excavation will include approximately 4 feet of excavation in the slab-on-grade and grade-level landscaped portions of the Site and approximately 17 to 18 feet of excavation for construction of the cellar.
6. Dewatering in compliance with all city, state, and federal laws and regulations.
7. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials.
9. Transportation and off-site disposal of soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities.

10. Removal of underground storage tanks and closure of petroleum spills, if encountered, in compliance with applicable local, State and Federal laws and regulations.
11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Installation of a waterproofing/vapor barrier system (with a minimum thickness of 20 mils) as per manufacturer's specifications beneath the building slabs and along subsurface sidewalls.
14. Construction and maintenance of an engineered composite cover consisting of concrete or asphalt pavement, building slab, and two feet of certified clean fill/top soil imported from an OER-approved source with an underlying demarcation barrier for soil-capped areas to prevent human exposure to residual soil/fill remaining at the Site.
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations.
17. Maintenance of records as described in this RAWP, including waste disposal manifests, clean fill/top soil sampling results, and appropriate health and safety forms and documentation.
18. Submission of a Remedial Action Report (RAR) that describes remedial activities, certifies remedial requirements were achieved, describes ECs and ICs implemented at the Site, and lists deviations from this RAWP, if applicable.

19. Submission of an approved SMP in the RAR for long-term management of residual historic fill, including plans for inspection and certification of ECs and ICs and reporting at a specified frequency.
20. Continued registration of the property with an E-Designation for Site management; establishment of ECs and ICs and a requirement that management of these controls must be in compliance with an approved SMP. ICs will include prohibition of the following: (1) vegetable gardening and farming; (2) use of groundwater without treatment rendering it safe for the intended use; (3) disturbance of residual contaminated material unless it is conducted in accordance with the SMP; and (4) higher level of land usage without OER-approval.

#### **4.2 Soil Cleanup Objectives and Soil/Fill Management**

Track 4 Site-specific SCOs are proposed for this project. The following Track 4 Site-specific SCOs will be used:

- Total SVOCs – 250 ppm
- Arsenic – 24 ppm
- Barium – 600 ppm
- Lead – 1,000 ppm
- Mercury – 2 ppm

Soil and materials management on-site and off-site, including excavation, handling and disposal will be conducted in accordance with the Soil/ Materials Management Plan in Appendix 5. The location of planned excavations is depicted on Figure 4. A sample non-hazardous waste manifest for soil tracking is provided as Appendix 6.

#### **Estimated Soil/Fill Removal Quantities**

Excavation will extend to approximately el. 0.4 to accommodate sub-base material (i.e. gravel, concrete, etc.) below the foundation slab. Deeper excavation will be completed to approximately el. -2.2 in the center of each building to accommodate elevator pits and the 42-

inch structural mat (core). The cellar will not be constructed in the northeastern portion of the Site due to shallow bedrock in this area; therefore, excavation in this area will extend to approximately el. 13.0, which corresponds to a depth of approximately 4 feet below sidewalk grade, to accommodate sub-base material and the landscaped area. The excavation is expected to result in removal of approximately 8,000 to 10,000 cubic yards of soil. Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action. Dewatering is anticipated during excavation and foundation construction activities at the Site because the bottom of the cellar slab will be below the groundwater elevations measured during the RI and on July 18, 2013.

### **Waste Characterization**

Preliminary waste characterization sampling was completed on July 1 and 2, 2013, and the Waste Characterization Report is available to the contractor to assist in obtaining approval from disposal materials for acceptance of site materials. Soils to be excavated were sampled and analyzed for waste characterization parameters per disposal facility general requirements at a frequency of one sample per approximately 800 to 1,000 cubic yards. Laboratory analyses included Total Compounds List (TCL) VOCs, TCL SVOCs, Total Analyte List (TAL) metals, PCBs, pesticides, herbicides, Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics including ignitability, corrosivity, reactivity, and toxicity via the Toxicity characteristic leaching procedure (TCLP) for VOCs, SVOCs, pesticides, herbicides, metals, and paint filter. Based on the results of the Waste Characterization study, soil to be excavated from the Site will be considered regulated, nonhazardous solid waste. A copy of the Waste Characterization Report is available in Appendix 2.

Additional sampling may be required based on the disposal facility ultimately selected. Prior to excavation, a waste characterization grid will be established by the contractor that will be maintained throughout excavation. Disposal facilities will be reported to OER when they are identified and prior to the start of remedial action material disposal.

### **Contingency for Potential VOC-Impacted Soil**

During remedial and construction excavation activities, the soil will be continuously monitored by the Remediation Engineer's field representatives using a PID and visual and

olfactory field screening techniques to identify additional soil containing VOCs or that may otherwise not be suitable for the selected disposal facility. Based on analytical sampling showing an SCO exceedance, VOC-impacted material will be excavated and disposed off-site. Contingency endpoint samples results will document removal of this material from the Site in compliance with the hotspot endpoint sampling contingency plan outlined below.

### **Contingency for Potential Hazardous Soil**

There is currently no known hazardous material at the Site; however, should hazardous material be identified during additional waste characterization sampling or other remedial activities, the hazardous material will be delineated and removed. Hazardous material will not be reused on-site and will be transported off-site and disposed at a facility certified to accept the material. Contingency endpoint samples will be collected to document removal of this material from the Site in compliance with the hotspot endpoint sampling contingency plan outlined below.

### **End-Point Sampling**

Pre-remediation end-point samples were collected during the RI, and review of analytical data did not identify contaminant concentrations above the Site-specific SCOs at development depths in the western portion of the Site. In addition, no visual, olfactory or instrumental (PID) evidence of environmental impacts were observed during sampling.

End-point samples are not planned in areas where bedrock or groundwater is encountered before development depth during excavation activities. To evaluate attainment of Track 4 Site-Specific SCOs, up to five post-excavation confirmation soil samples will be collected promptly following materials removal from the development excavation depths at the Site. The samples will be analyzed for SVOCs and Metals (arsenic, barium, lead, and mercury only). Proposed end-point sample locations are shown on Figure 5.

If hotspots are encountered during the site activities, remedial performance end-point sampling frequency will consist of the following:

1. For excavations less than 20 feet in total perimeter, at least one bottom sample and one sidewall sample biased in the direction of surface runoff.

2. For excavations 20 to 300 feet in perimeter:
  - a. For surface removals, one sample from the top of each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
  - b. For subsurface removals, one sample from each sidewall for every 30 linear feet of sidewall and one sample from the excavation bottom for every 900 square feet of bottom area.
3. For sampling of volatile organics, bottom samples should be taken within 24 hours of excavation, and should be taken from the zero to six-inch interval at the excavation floor. Samples taken after 24 hours should be taken at six to twelve inches below the excavation floor.
4. For contaminated soil removal, post remediation soil samples for laboratory analysis should be taken immediately after contaminated soil removal. If the excavation is enlarged horizontally, additional soil samples will be taken pursuant to bullets 1-3 above.

Post-remediation end-point sample locations and depth will be biased towards the areas and depths of highest contamination identified during previous sampling episodes unless field indicators such as field instrument measurements or visual contamination identified during the remedial action indicate that other locations and depths may be more heavily contaminated. In all cases, post-remediation samples should be biased toward locations and depths of the highest expected contamination.

A New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified labs will be used for all confirmation and hotspot end-point sample analyses. Labs performing confirmation and end-point sample analyses will be reported in the RAR. The RAR will provide a tabular and map summary of all confirmation and end-point sample results and will include all data including non-detects and applicable standards and/or guidance values. End-point samples will be analyzed for compounds consistent with the

identified hotspot. Soil analytical methods may include (depending on the nature of the hot spot):

- VOCs by EPA Method 8260;
- SVOCs by EPA Method 8270;
- TAL metals by EPA 6000/7000 series; and
- Pesticides/PCBs by EPA Method 8081/8082.

If either light non-aqueous petroleum liquids (LNAPL) and/or dense non-aqueous petroleum liquids (DNAPL) are detected, appropriate samples will be collected for characterization and “finger print analysis” and required regulatory reporting (i.e. NYSDEC spills hotline) will be performed.

#### **Quality Assurance/Quality Control**

Quality Assurance/Quality Control (QA/QC) samples will include one duplicate soil sample per 20 samples. Sufficient field and laboratory trip blanks will be analyzed to assess sampling and laboratory artifacts.

#### **Import and Reuse of Soils**

Import of soils onto the property and reuse of soils already onsite will be performed in conformance with the Soil/Materials Management Plan in Appendix 5. The building foundation will cover the excavation area and importation of soil is expected to be minimal. Two landscaped areas, one at cellar grade to the west and one at sidewalk grade to the east, are proposed between the two proposed buildings. The total amount of soil needed for the landscaped areas is not determined yet; however, a minimum of approximately 550 cubic yard of clean soil/top soil will be imported to the Site and placed in the landscaped areas as the two-foot clean soil cap. Import of clean soil/top soil used in the top two feet of landscaped areas shall meet the lesser of NYSDEC Subpart 375-6 Restricted Residential Use SCOs and Groundwater Protection SCOs. In landscaped areas with the two-foot clean soil layer, a demarcation layer (i.e., orange snow fencing) shall be placed between the residual site material and the new two-foot clean layer.

Reuse of soil at the Site is allowed below the two feet clean soil/top soil cap given there are no observable indication of contamination (e.g., petroleum staining and odor), the material meets geotechnical requirements, there are no exceedances of the Track 4 Site-specific SCOs, and reuse complies with 6 NYCRR Part 360.

### **4.3 Engineering Controls**

ECs will be employed in the remedial action to address residual contamination remaining at the site. The Site has two primary EC Systems. These are:

- Installation of a composite cover system consisting of concrete building slabs and two foot of clean fill/top soil over landscaped areas; and
- Installation of a waterproofing/vapor barrier system (with a minimum thickness of 20-mil) under both buildings.

#### **Composite Cover System**

Exposure to residual soil/fill will be prevented by an engineered, composite cover system to be built on the Site. The composite cover system will be comprised of:

1. Concrete building slabs: The majority of the site is planned to be capped with impervious hard surface cover consisting of an 8-inch concrete slab-on-grade in the northeastern portion of the Site and a 16-inch slab throughout the cellar.
2. Two-foot thick clean cover over all open landscaped areas over any residual site soil/fill. Two landscaped areas, one at cellar grade to the west and one at sidewalk grade to the east, with an approximate combined area of 7,000 square feet, are planned for the central portion of the Site between the two proposed buildings. The landscaped areas will be capped with a minimum of two feet of clean fill/top soil or gravel and will be imported from an approved facility/source. For clean soil or top soil, it will be segregated at the source or facility. Qualified environmental personnel will collect representative soil samples at a frequency of one sample for every 250 cubic yards, analyze the samples for TCL VOCs, SVOCs, Pesticides/PCBs and TAL Metals by an NYSDOH ELAP-certified laboratory. The clean fill or top soil will not be transported to the Site until it is confirmed that the import criteria are met. The clean fill or top soil

will not be comprised of any construction and demolition debris. A highly visible demarcation barrier (i.e., orange construction fence or equivalent) will be installed beneath the two feet of clean fill or top soil barrier and on top of the residual impacted soil. Figure 6 shows the location of each cover-type.

The composite cover system is a permanent engineering control for the Site. The system will be inspected and reported at specified intervals as required by this RAWP and the SMP. A Soil/Materials Management Plan will be included in the RAR and will outline the procedures to be followed in the event that the composite cover system and underlying residual soil/fill is disturbed after the remedial action is complete. Maintenance of this composite cover system will be described in the SMP in the RAR.

#### **Soil Vapor Mitigation System – Waterproofing/Vapor Barrier**

To prevent potential infiltration of soil vapors into the buildings, a waterproofing/vapor barrier will be installed between the concrete basement slabs and underlying sub-grade layer, extending along the four walls of the basement structure from the base of the excavation to surface grade level, as well as beneath the slab-on-grade areas. The waterproofing/vapor barrier system will have a minimum thickness of 20 mils. As-built waterproofing/vapor barrier drawings, photographs (maximum of two photos per page) of the installation process, PE/RA certified letter (on company letterhead) from primary contractor responsible for installation oversight and field inspections, and a copy of the manufacturers certificate of warranty will be submitted with the RAR. The proposed waterproofing/vapor barrier will be manufactured by Grace Construction Products and will consist of Preprufe 300R<sup>®</sup>, Preprufe 160<sup>®</sup>, Florprufe 120<sup>®</sup>, and Bituthene<sup>®</sup> 3000/4000. Design diagrams, specifications, and a letter certified by the manufacturer, stating the types of waterproofing and vapor barrier products to be installed for the project are provided in Appendix 7. The Remedial Engineer will oversee implementation and document operations of the waterproofing/vapor barrier installation.

Based on the groundwater elevation at LB-4 (OW), which is located within the area of the proposed southern building, groundwater elevation ranges from approximately el. 2.85 to 3.51. The bottom of the proposed 16-inch thick cellar slab is approximately at el. 1.36. The slab is below the groundwater table and soil vapor will not accumulate beneath the building slab.

#### **4.6 Contingency for Potential USTs**

Based on previous investigations, a suspected UST may be located in the northeast corner of the basement of the existing building. As a contingency, if USTs are encountered during remedial activities, they will be decommissioned in accordance with NYSDEC Spill Technology and Remediation Series (STARS) Memo #1, the appropriate Spill Prevention Operations Technology Series (SPOTS) guidance documents, and other applicable NYSDEC UST closure requirements. Once the tank and its contents are removed, post-excavation soil samples will be collected as per the NYSDEC Department of Environmental Remediation (DER) Draft DER-10 requirements. If encountered, petroleum-contaminated soils will be removed in accordance with NYSDEC rules. UST closure documentation, such as contractor affidavits, bills of lading for sludge disposal, and tank disposal receipts, will be provided as appendices in the RAR. If the bulk storage capacity of the USTs exceeds 1,100 gallons, the USTs will be registered and closed with the NYSDEC Petroleum Bulk Storage Section.

#### **4.7 Institutional Controls**

ICs have been incorporated in this remedial action to manage residual soil/fill and other media and render the Site protective of public health and the environment. Institutional Controls are listed below. Long-term employment of EC/ICs will be implemented under a site-specific SMP that will be included in the RAR.

ICs for this remedial action are:

- The property will continue to be registered with an E-Designation at the NYC DOB. The RAR will include a description of all ECs and ICs and will summarize the requirements of the SMP, which will note that the property owner and property owner's successors and assigns must comply with the approved SMP;
- Submittal of an SMP in the RAR for approval by OER that provides procedures for appropriate operation, maintenance, monitoring, inspection, reporting, and certification of ECs. The SMP will require that the property owner and property owner's successors and assigns submit to OER a periodic written statement that certifies that: (1) controls employed at the Site are unchanged from the previous certification or that any changes

to the controls were approved by OER; and, (2) nothing has occurred that impairs the ability of the controls to protect public health and environment or that constitute a violation or failure to comply with the SMP. OER retains the right to enter the Site in order to evaluate the continued maintenance of any controls. This certification shall be submitted at a frequency to be determine by OER in the SMP and will comply with RCNY §43-1407(l)(3).

- Vegetable gardens and farming on the Site are prohibited in contact with residual soil materials;
- Use of groundwater underlying the Site is prohibited without treatment rendering it safe for its intended use;
- All future activities on the Site that will disturb residual material must be conducted pursuant to the soil management provisions in an approved SMP;
- The Site will be used for residential use and will not be used for a higher level of use without prior approval by OER.

#### **4.8 Site Management Plan**

Site management is the last phase of remediation and begins with the approval of the RAR and issuance of the Notice of Completion (NOC) for the Remedial Action. The SMP describes appropriate methods and procedures to ensure implementation of all ECs and ICs that are required by the E-Designation and this RAWP. The SMP is submitted as part of the RAR but will be written in a manner that allows its use as an independent document. Site management continues until terminated in writing by OER. The property owner is responsible to ensure that all Site management responsibilities defined in the E-Designation and the SMP are implemented.

The SMP will provide a detailed description of the procedures required to manage residual soil/fill left in place following completion of the remedial action in accordance with the Voluntary Cleanup Agreement with OER. This includes a plan for: (1) implementation of EC's and ICs; (2) operation and maintenance of EC's; and (3) inspection and certification of EC's.

Site management activities, reporting, and EC/IC certification will be scheduled by OER on a periodic basis, to be established in the SMP, and will be subject to review and modification by OER. The SMP will be based on a calendar year and certification reports will be due for submission to OER by July 30 of the year following the reporting period.

#### **4.9 Qualitative Human Health Exposure Assessment**

The objective of the qualitative exposure assessment is to identify potential receptors and pathways for human exposure to the contaminants of concern (COCs) that are present at, or migrating from the Site. The identification of exposure pathways describes the route that the COC takes to travel from the source to the receptor. An identified pathway indicates that the potential for exposure exists; it does not imply that exposures actually occur.

Investigations reported in the RI Report are sufficient to complete a Qualitative Human Health Exposure Assessment (QHHEA). As part of the VCP process, a QHHEA was performed to determine whether the Site poses an existing or future health hazard to the Site's exposed or potentially exposed population. The sampling data from the RI were evaluated to determine whether there is any health risk by characterizing the exposure setting, identifying exposure pathways, and evaluating contaminant fate and transport. This QHHEA was prepared in accordance with Appendix 3B and Section 3.3 (b) 8 of the NYSDEC DER-10 Technical Guidance for Site Investigation and Remediation.

#### **Known and Potential Sources**

Known and potential sources were identified during previous investigations at the Site and include the following Recognized Environmental Conditions (RECs):

- REC 1 - Potential On-Site Petroleum UST: According to historical records, a 550-gallon UST may be present at the Site in the northeast corner of the existing building.
- REC 2 – Contaminated Historic Urban Fill Material: Previous Site investigations characterized the fill as a heterogeneous mix of fine to coarse sand, silt, gravel, and brick fragments.

- REC 3 – Historic Site Use: Use of the Site as auto and truck repair facilities (prior to 1968 through 2006) may have impacted the Site subsurface with petroleum, gasoline, solvents, or other hazardous substances that are typically used at these types of facilities.
- REC 4 – Historic Use at Adjoining and Surrounding Properties: Adjoining and surrounding properties were historically occupied by automobile service stations and a garage with petroleum bulk storage. And an open off-site NYSDEC Spill site (NYSDEC Spill No 1103225) is located adjacent to the east and cross-gradient of the Site at 521 West 43rd Street.

Based on these RECs and the RI evaluation of the RECs, the COCs are summarized below by media type:

#### Soil COCs

- SVOCs including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene,, chrysene, indeno(1,2,3-cd)pyrene, and dibenzo(a,h)anthracene exceeding Track 2 Restricted Residential SCOs.
- Metals including arsenic, barium, lead and mercury exceeding Track 2 Restricted Residential Use SCOs;
- One pesticide, dieldrin, which was detected above its Track 1 Unrestricted Use SCO but did not exceed Track 2 Restricted Residential SCOs; and
- One PCB, aroclor 1260 which was detected above its Track 1 Unrestricted Use SCO but did not exceed its Track 2 Restricted Residential SCO.

#### Groundwater COCs

- Metals including magnesium and manganese exceeding GQS.

#### Soil Vapor COCs

- Petroleum-related VOCs detected at generally low concentrations and included benzene, toluene, ethylbenzene, and xylenes; and

- Chlorinated VOCs, PCE and TCE, identified at concentrations that fall within the monitor/ mitigate range established by NYSDOH Vapor Intrusion Matrices.

### **Nature, Extent, Fate and Transport of Contaminants**

The information compiled during previous investigations has confirmed the presence of fill material across the Site from surface grade to approximate depths of 1 to 20 ft bgs. The fill material was principally composed of varying amount of sand and gravel of assorted colors, with varying amounts of silt, brick, and concrete fragments. Laboratory analytical results from the RI report identified SVOCs, metals, PCBs, and pesticides at concentrations exceeding Part 375 Unrestricted Use SCOs and SVOCs and metals exceeding the Residential Restricted Use SCOs in the historic urban fill material. Metals including magnesium and manganese were detected above GQS. Soil vapor detected chlorinated VOCs at elevated levels within the proposed southern building footprint.

### **Receptor Populations**

On-site receptors: The Site is currently used as a parking garage. Potential receptors include on-site workers, customers, and Site representatives. During redevelopment of the Site, the on-site receptors will include construction workers, site representatives, and visitors. Once the Site is redeveloped, the on-Site potential receptors will include adult and child building residents and visitors, as well as adult workers.

Off-site receptors: Potential off-site receptors include adult and child residents, students, workers, pedestrians, trespassers, and cyclists in the area.

### **Potential Points of Exposure**

Current Conditions: The potential for exposure to surficial historic fill is limited under current conditions because site is capped with concrete and/or asphalt parking and access is restricted with a chain link fence. Groundwater is marginally contaminated but is not exposed at the Site and because the site is served by the public water supply and groundwater use for potable supply is prohibited, there is no potential for exposure. Soil vapor can accumulate under garage structure but exposure is limited due to site access restrictions.

**Construction/Remedial Conditions:** Once development activities begin, construction workers will come in direct contact with surface, subsurface soils and perched groundwater, as a result of on-Site construction and excavation work. On-site construction workers potentially could ingest, inhale or have dermal contact with any exposed soil, fill, or groundwater. Similarly, off Site receptors could be exposed to dust and vapors from excavation activities. During construction, on-Site and off-Site exposure to contaminated dust will be addressed through Soil/Materials Management Plan, dust controls and through the implementation of CAMP and the CHASP.

**Proposed Future Conditions:** Under future remediated conditions, the property will be fully capped, limiting potential direct exposure to soil and groundwater remaining in place. A waterproofing/vapor barrier system will prevent exposure to potential on-site or off-site soil vapors, and because the building foundation will be below the depth of groundwater, there will be no vadose zone where vapors would accumulate beneath the building. The Site is served by a public water supply, and groundwater is not used at the Site for potable supply.

### **Potential Routes of Exposure**

An exposure pathway begins with a source and mechanism of contaminant release, resulting in the contamination of a receiving matrix (environmental medium). A complete exposure pathway also requires a point of potential contact with the contaminated matrix (i.e., exposure point), an exposure route (i.e., inhalation, ingestion, or dermal contact), and a receptor population. An exposure pathway is considered complete when all five elements of an exposure pathway are documented. A potential exposure pathway exists when any one or more of the five elements comprising an exposure pathway cannot be documented. An exposure pathway may be eliminated from further evaluation when any one of the five elements comprising an exposure pathway has not existed in the past, does not exist in the present, and will never exist in the future. Three potential primary routes exist by which chemicals can enter the body:

- Ingestion of water, fill, or soil;
- Inhalation of vapors and particulates; and

- Dermal contact with water, fill, soil, or building materials.

### **Overall Human Health Exposure Assessment**

There are no complete exposure pathways (i.e., source, route to exposure, receptor population) for the current condition or for the post-construction condition. Under current conditions, on-site exposure is limited by preventing access to the Site and limiting Site activity. After the remedial action is complete, there will be no remaining exposure pathways to identified contaminants. The waterproofing/vapor barrier will prevent the potential for vapor intrusion. The composite cover system and use restrictions will prevent contact with residual soil or groundwater and continued protection after the remedial action will be achieved by the implementation of site management including periodic inspection and certification of the performance of remedial controls. Potential post-construction use of groundwater is not considered an option because groundwater in this area of New York City is not used as a potable water source. There are no surface waters in close proximity to the Site that could be impacted or threatened.

There is a potential complete exposure pathway that requires mitigation during implementation of the remedy. The potentially exposed receptors during remedy implementation are workers on the Site and the public adjacent to the site. Complete exposure pathways will be mitigated or eliminated by proper implementation of a Soil/Materials Management Plan, CHASP, and CAMP. The CHASP specifies appropriate monitoring and controls required to mitigate/eliminate the pathway between sources and Site workers. The CAMP specifies appropriate monitoring and controls required to mitigate/eliminate the pathway between sources and the adjacent public.

## **5.0 REMEDIAL ACTION MANAGEMENT**

### **5.1 Project Organization and Oversight**

The New York State Professional Engineering responsible for overseeing implementation of this RAWP is Joel Landes, PE, Senior Associate with Langan.

### **5.2 Site Security**

Site access will be controlled by gated entrances to the fenced property.

### **5.3 Work Hours**

The hours for operation of remedial construction will be in accordance with New York City Department of Buildings construction code requirements.

### **5.4 Construction Health and Safety Plan**

The site-specific CHASP is included in Appendix 3. The Site Safety Coordinator will be reported to the OER. Remedial work performed under this RAWP will be in full compliance with applicable health and safety laws and regulations, including Site and OSHA worker safety requirements and Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements. Confined space entry, if any, will comply with OSHA requirements and industry standards and will address potential risks. The parties performing the remedial construction work will ensure that performance of work is in compliance with the CHASP and applicable laws and regulations. The CHASP pertains to work completed in accordance with the RAWP.

All field personnel involved in remedial activities involving hazardous material (defined by the Resource Conservation and Recovery Act [RCRA]) and as required by OSHA will participate in training required under 29 CFR 1910.120, including 40-hour hazardous waste operator training and annual 8-hour refresher training. The Site Safety Officer will be responsible for maintaining workers training records.

Personnel entering any exclusion zone will be trained in the provisions of the CHASP and be required to sign a CHASP acknowledgment. Site-specific training will be provided to field

personnel. Additional safety training may be added depending on the tasks performed. Emergency telephone numbers will be posted at the site location before any remedial work begins. A safety meeting will be conducted before each shift begins. Topics to be discussed include task hazards and protective measures (physical, chemical, environmental), emergency procedures, PPE levels, and other relevant safety topics. Meetings will be documented in a log book or specific form.

An emergency contact sheet with names and phone numbers is included in the CHASP. That document will define the specific project contacts for use in case of emergency.

## **5.5 Community Air Monitoring Plan**

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed during intrusive soil disturbance activities. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated media. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, and test pit excavation or trenching.

Periodic monitoring for VOCs will be performed during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, adjacent to a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the CAMP will be reported to the Contractor and OER Project Manager and included in the Daily Report.

### **VOC Monitoring, Response Levels, and Actions**

VOCs will be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during intrusive soil disturbance activities and during the

handling of contaminated or potentially contaminated media. Upwind concentrations will be used to establish background conditions. The monitoring work will be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment will be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment will be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

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

All 15-minute readings must be recorded and be available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

### **Particulate Monitoring, Response Levels, and Actions**

Particulate concentrations will be monitored continuously at the upwind and downwind Site perimeters at temporary particulate monitoring stations. The particulate monitoring will be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment will be equipped

with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

- If the downwind PM-10 particulate level is 100  $\mu\text{g}/\text{m}^3$  greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed. Work will continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150  $\mu\text{g}/\text{m}^3$  above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150  $\mu\text{g}/\text{m}^3$  above the upwind level, 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 PM-10 particulate concentration to within 150  $\mu\text{g}/\text{m}^3$  of the upwind level and in preventing visible dust migration.

All readings will be recorded, downloaded at the end of the day and made available for OER personnel to review.

## **5.6 Agency Approvals**

All permits or government approvals required for remediation and construction will be obtained prior to the start of remediation and construction. Acceptance of this RAWP by OER does not constitute satisfaction of these requirements and will not be a substitute for any required permit.

## **5.7 Site Preparation**

### **Pre-Construction Meeting**

OER will be invited to attend the pre-construction meeting at the Site with all parties involved in the remedial process prior to the start of remedial construction activities.

## **Mobilization**

Mobilization will be conducted as necessary for each phase of work at the Site. Mobilization includes field personnel orientation, equipment mobilization (including securing all sampling equipment needed for the field investigation), marking/staking sampling locations and utility mark-outs. Each field team member will attend an orientation meeting to become familiar with the general operation of the Site, health and safety requirements, and field procedures.

## **Utility Marker Layouts, Easement Layouts**

The presence of utilities and easements on the Site will be fully investigated prior to the performance of invasive work such as excavation or drilling under this plan by using, at a minimum, the One-Call System (811). Underground utilities may pose an electrocution, explosion, or other hazard during excavation or drilling activities. All invasive activities will be performed in compliance with applicable laws and regulations to assure safety. Utility companies and other responsible authorities will be contacted to locate and mark the locations, and a copy of the Markout Ticket will be retained by the contractor prior to the start of drilling, excavation or other invasive subsurface operations. Overhead utilities may also be present within the anticipated work zones. Electrical hazards associated with drilling in the vicinity of overhead utilities will be prevented by maintaining a safe distance between overhead power lines and drill rig masts.

Proper safety and protective measures pertaining to utilities and easements, and compliance with all laws and regulations will be employed during invasive and other work contemplated under this RAWP. The integrity and safety of on-site and off-site structures will be maintained during all invasive, excavation or other remedial activity performed under the RAWP.

## **Dewatering**

Dewatering is anticipated during excavation and foundation construction activities at the Site. Extracted groundwater will either be containerized for off-site disposal or be treated as necessary to meet New York City Department of Environmental Protection (NYCDEP)

requirements, and discharged to the NYCDEP sewer system. The water will be pumped to either an on-site wastewater storage tank or an on-site treatment system.

If required, the treatment system may entail a settling tank, oil/water separator, bag filters, and carbon filter vessels, respectively. The effluent from the treatment system will be discharged to the NYCDEP sewer system under a sewer discharge permit that will be obtained from the NYCDEP following the submission of information regarding the proposed treatment system. The effluent from the treatment system will be sampled as required by NYCDEP. If wastewater is to be disposed of off-site, it will be stored onsite in an approved water storage tank pending characterization and transport for proper offsite disposal.

If the excavated soil contains free liquids, it may require rendering to satisfy the moisture content requirements of the selected disposal facility. The paint filter test USEPA Method 9095 and/or visual observation may be used to determine if the excavated soil contains free liquids. The excavated soil will be rendered with stabilized soil from the excavation and/or kiln dust.

### **Equipment and Material Staging**

Equipment and materials will be stored and staged in a manner that complies with applicable laws and regulations.

### **Stabilized Construction Entrance**

Steps will be taken to ensure that trucks departing the site will not track soil, fill or debris off-site. Such actions may include use of cleaned asphalt or concrete roads or use of stone or other aggregate-based egress paths between the truck inspection station and the property exit. Measures will be taken to ensure that adjacent roadways will be kept clean of project related soils, fill and debris.

### **Truck Inspection Station**

An outbound-truck inspection station will be set up close to the Site exit. Before exiting the Site, trucks will be required to stop at the truck inspection station and will be examined for evidence of contaminated soil on the undercarriage, body, and wheels. Soil and debris will be removed. Brooms, shovels, and potable water will be utilized for the removal of soil from vehicles and equipment, as necessary.

## **5.8 Traffic Control**

Drivers of trucks leaving the Site with soil/fill will be instructed to proceed without stopping in the vicinity of the site to prevent neighborhood impacts.

## **5.9 EXTREME STORM PREPAREDNESS AND RESPONSE CONTINGENCY PLAN**

Damage from flooding or storm surge can include dislocation of soil and stockpiled materials, dislocation of site structures and construction materials and equipment, and dislocation of support of excavation structures. Damage from wind during an extreme storm event can create unsafe or unstable structures, damage safety structures and cause downed power lines creating dangerous site conditions and loss of power. In the event of emergency conditions caused by an extreme storm event, the enrollee will undertake the following steps for site preparedness prior to the event and response after the event.

### **Storm Preparedness**

Preparations in advance of an extreme storm event will include the following: containerized hazardous materials and fuels will be removed from the property; loose materials will be secured to prevent dislocation and blowing by wind or water; heavy equipment such as excavators and generators will be removed from holes, trenches and depressions on the property to high ground or removed from the property; an inventory of the property with photographs will be performed to establish conditions for the site and equipment prior to the event; stockpile covers for soil and fill will be secured by adding weights such as sandbags for added security and worn or ripped stockpile covers will be replaced with competent covers; stockpiled hazardous wastes will be removed from the property; stormwater management systems will be inspected and fortified, including, as necessary: clean and reposition silt fences, haybales; clean storm sewer filters and traps; and secure and protect pumps and hosing.

### **Storm Response**

At the conclusion of an extreme storm event, as soon as it is safe to access the property, a complete inspection of the property will be performed. A site inspection report will be submitted to OER at the completion of site inspection and after the site security is assessed. Site conditions will be compared to the inventory of site conditions and material performed

prior to the storm event and significant differences will be noted. Damage from storm conditions that result in acute public safety threats, such as downed power lines or imminent collapse of buildings, structures or equipment will be reported to public safety authorities via appropriate means such as calling 911. Petroleum spills will be reported to NYSDEC within 2 hours of identification and consistent with State regulations. Emergency and spill conditions will also be reported to OER. Public safety structures, such as construction security fences will be repaired promptly to eliminate public safety threats. Debris will be collected and removed. Dewatering will be performed in compliance with existing laws and regulations and consistent with emergency notifications, if any, from proper authorities. Eroded areas of soil including unsafe slopes will be stabilized and fortified. Dislocated materials will be collected and appropriately managed. Support of excavation structure will be inspected and fortified as necessary. Impacted stockpiles will be contained and damaged stockpile covers will be replaced. Storm-water control systems and structures will be inspected and maintained as necessary. If soil or fill materials are discharged off site to adjacent properties, property owners and OER will be notified and corrective measure plan designed to remove and clean dislocated material will be submitted to OER and implemented following approval by OER and granting of site access by the property owner. Impacted offsite areas may require characterization based on site conditions, at the discretion of OER. If onsite petroleum spills are identified, a qualified environmental professional will determine the nature and extent of the spill and report to NYSDEC's spill hotline at 800-457-7362. If the source of the spill is ongoing and can be identified, it should be stopped if this can be done safely. Potential hazards will be addressed immediately, consistent with guidance issued by NYSDEC.

### **Storm Response Reporting**

A site inspection report will be submitted to OER at the completion of site inspection. An inspection report established by OER is available on OER's website ([www.nyc.gov/oer](http://www.nyc.gov/oer)) and will be used for this purpose. Site conditions will be compared to the inventory of site conditions and material performed prior to the storm event and significant differences will be noted. The site inspection report will be sent to the OER project manager and will include the site name, address, tax block and lot, site primary and alternate contact name and phone number. Damage and soil release assessment will include: whether the project had stockpiles; whether

stockpiles were damaged; photographs of damage and notice of plan for repair; report of whether soil from the site was dislocated and whether any of the soil left the site; estimates of the volume of soil that left the site, nature of impact, and photographs; description of erosion damage; description of equipment damage; description of damage to the remedial program or the construction program, such as damage to the support of excavation; presence of onsite or offsite exposure pathways caused by the storm; presence of petroleum or other spills and status of spill reporting to NYSDEC; description of corrective actions; schedule for corrective actions. This report should be completed and submitted to OER project manager with photographs within 24 hours of the time of safe entry to the property after the storm event.

### **5.10 Spill Prevention**

In order to prevent spills from occurring at the Site, the following inspections will be performed:

- Weekly Equipment Inspections – Used to account for fluids carried on and used to operate equipment and ensure that they are not leaking. Also account for overall function of equipment to protect against malfunction during operation or handling of excavated materials;
- On-site Materials Handling – used to account for material quantity and proper methods of storage to help reduce the chance of a spill or release; and
- Safety Equipment Inspections – Used to account for the quantity, location, and working condition of safety equipment onsite. Safety equipment and supplies will be kept accessible and in good working order.

Any discrepancies or inadequacies discovered as a result of these inspections will be corrected immediately.

The following is a list of actions that should be taken in the event of a spill:

- Account for site personnel and make proper notifications;
- Evaluate the hazard(s), identify the source of the discharge, and stop the spill or leak;

- Exclude any source of ignition from the spilled material if flammable;
- Isolate and contain the spill in the smallest area possible;
- Keep personnel upwind of the spill area. Evaluate potential vapor and dust hazards, and implement appropriate suppression operations;
- At no time will personnel be allowed to come in contact with unidentified spilled materials; and
- Notify the Owner, PE, and report the spill to the NYSDEC Spill Hotline.

## **5.11 Demobilization**

Demobilization will include:

- As necessary, restoration of temporary access areas and areas that may have been disturbed to accommodate support areas (e.g., staging areas, decontamination areas, storage areas, temporary water management areas, and access area);
- Removal of sediment from erosion control measures and truck wash and disposal of materials in accordance with applicable laws and regulations;
- Equipment decontamination; and
- General refuse disposal.

Equipment will be decontaminated and demobilized at the completion of all field activities. Investigation equipment and large equipment (e.g., soil excavators) will be washed at the truck inspection station as necessary. In addition, all investigation and remediation derived waste will be appropriately disposed.

## **5.12 Reporting and Record Keeping**

### **Daily Reports**

Daily reports providing a general summary of activities for each day of active remedial work will be emailed to the OER Project Manager by the end of the following day. Those reports will include:

- Project number and statement of the activities and an update of progress made and locations of work performed;
- Quantities of material imported and exported from the Site;
- Status of on-Site soil/fill stockpiles;
- A summary of all citizen complaints, with relevant details (basis of complaint; actions taken; etc.);
- A summary of CAMP exceedances, if any;
- Photograph of notable Site conditions and activities.

The frequency of the reporting period may be revised in consultation with OER project manager based on planned project tasks. Daily email reports are not intended to be the primary mode of communication for notification to OER of emergencies (accidents, spills), requests for changes to the RAWP or other sensitive or time critical information. However, such information will be included in the daily reports. Emergency conditions and changes to the RAWP will be communicated directly to the OER project manager by personal communication. Daily reports will be included as an Appendix in the RAR.

### **Record Keeping and Photo-Documentation**

Job-site record keeping for all remedial work will be performed. These records will be maintained on-site during the project and will be available for inspection by OER staff. Representative photographs will be taken of the Site prior to any remedial activities and during major remedial activities to illustrate remedial program elements and contaminant source areas. Photographs will be submitted at the completion of the project in the RAR in digital format (i.e. jpeg files).

### **5.13 Complaint Management**

All complaints from citizens will be promptly reported to OER. Complaints will be addressed and outcomes will also be reported to OER in daily reports. Notices to OER will

include the nature of the complaint, the party providing the complaint, and the actions taken to resolve any problems.

#### **5.14 Deviations from the Remedial Action Work Plan**

All changes to the RAWP will be reported to the OER Project Manager and will be documented in daily reports and reported in the RAR. The process to be followed if there are any deviations from the RAP will include a request for approval for the change from OER noting the following:

- Reasons for deviating from the approved RAWP;
- Effect of the deviations on overall remedy; and
- Determination that the remedial action with the deviation(s) is protective of public health and the environment.

#### **5.15 Citizen Participation**

As part of this RAWP, a Community Protection Statement has been prepared, and the Citizen Participation Plan found in Appendix 8 will be implemented.

## **6.0 REMEDIAL ACTION REPORT**

An RAR will be submitted to OER following implementation of the remedial action defined in this RAWP. The RAR will document that the remedial work required under this RAWP has been completed and has been performed in compliance with this plan. The RAR will include:

- Information required by this RAWP;
- As-built drawings for all constructed remedial elements, required certifications, manifests and other written and photographic documentation of remedial work performed under this remedy;
- The SMP;
- Description of any changes in the remedial action from the elements provided in this RAWP and associated design documents;
- Tabular summary of all end point sampling results and all material characterization results, QA/QC results for end-point sampling, and other sampling and chemical analysis performed as part of the remedial action;
- Account of the source area locations and characteristics of all contaminated material removed from the Site including a map showing source areas;
- Account of the disposal destination of all contaminated material removed from the Site. Documentation associated with disposal of all material will include transportation and disposal records, and letters approving receipt of the material.
- Account of the origin and required chemical quality testing for material imported onto the Site.
- Reports and supporting material will be submitted in digital form.

## **Remedial Action Report Certification**

The following certification will appear in front of the Executive Summary of the Remedial Action Report. The certification will include the following statements:

*I, Joel B. Landes, am currently a professional engineer licensed by the State of New York. I had primary direct responsibility for implementation of the remedial program for the 546 West 44th Street Site (OER Project # 14CVCP162M).*

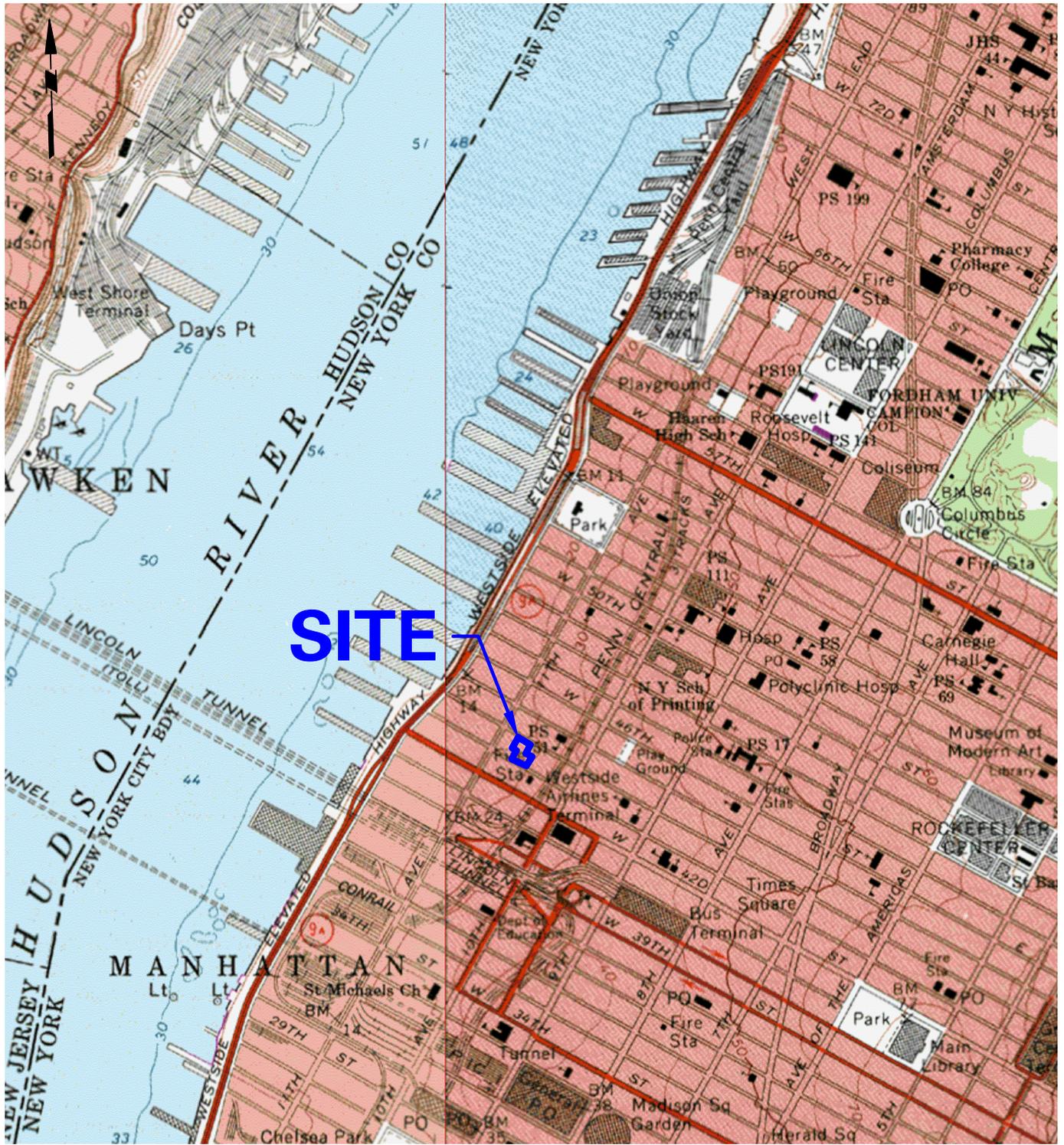
*I certify that the OER-approved Remedial Action Work Plan dated month day year and Stipulations in a letter dated month day, year; if any were implemented and that all requirements in those documents have been substantively complied with. I certify that contaminated soil, fill, liquids or other material from the property were taken to facilities licensed to accept this material in full compliance with applicable laws and regulations.*

## 7.0 SCHEDULE

The table below presents a schedule for the proposed remedial action and reporting. If the schedule for remediation and development activities changes, it will be updated and submitted to OER. Currently, a four-month remediation period is expected.

<b>Schedule Milestone</b>	<b>Weeks from Remedial Action Start</b>	<b>Duration (weeks)</b>
OER Approval of RAWP	0	-
Fact Sheet 2 to Announce Start of Remedy	0	-
Mobilization	0	2
Remedial Construction	2	16
Demobilization (Remedial)	18	2
Submit Remedial Closure Report	20	12

## FIGURES



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Langan International LLC

Collectively known as Langan

Project

**546 WEST 44th STREET**

BLOCK No. 1072, LOT No. 50  
MANHATTAN

NEW YORK

NEW YORK

Drawing Title

**SITE LOCATION  
MAP**

Project No.  
170229701

Date  
04/01/2013

Scale  
NTS

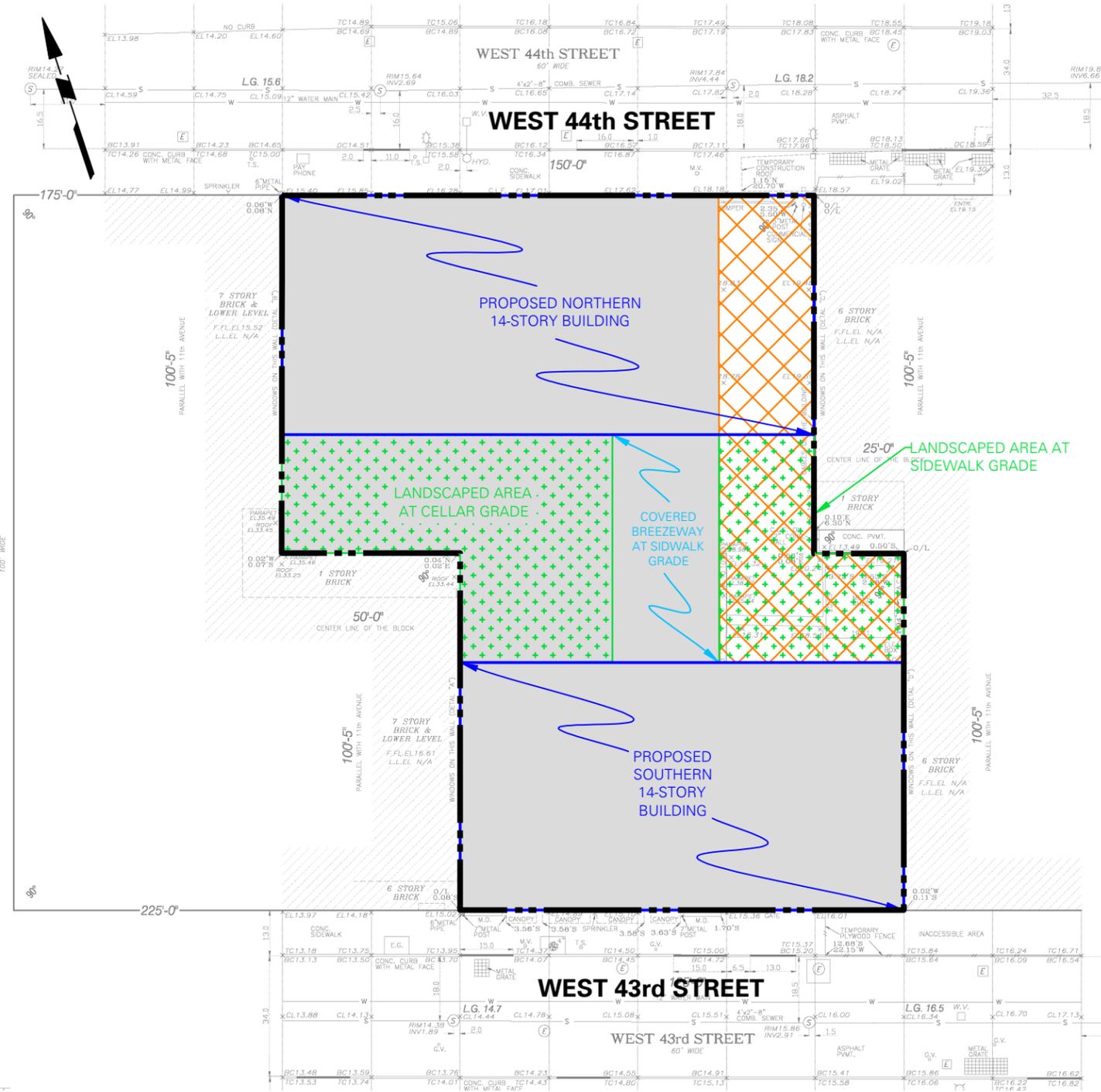
Drawn By  
EB

Submission Date

Figure No.

**1**

Sheet 1 of 6



**LEGEND:**

-  SITE BOUNDARY
-  BUILDING OUTLINE
-  PROPOSED CELLAR AREA
-  PROPOSED UNEXCAVATED AREA
-  PROPOSED LANDSCAPED AREA

**NOTES:**

1. BASE SURVEY MAP BASED ON A TOPOGRAPHIC SURVEY PREPARED BY ROGUSKI LAND SURVEY, P.C. AND DATED FEBRUARY 26, 2013.



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**546 WEST 44th STREET**

**BLOCK No. 1072, LOT No. 50**

**NEW YORK**

Drawing Title

**PROPOSED SITE DEVELOPMENT**

**NEW YORK**

Project No.  
170229701

Date  
04/01/2013

Scale  
1" = 40'

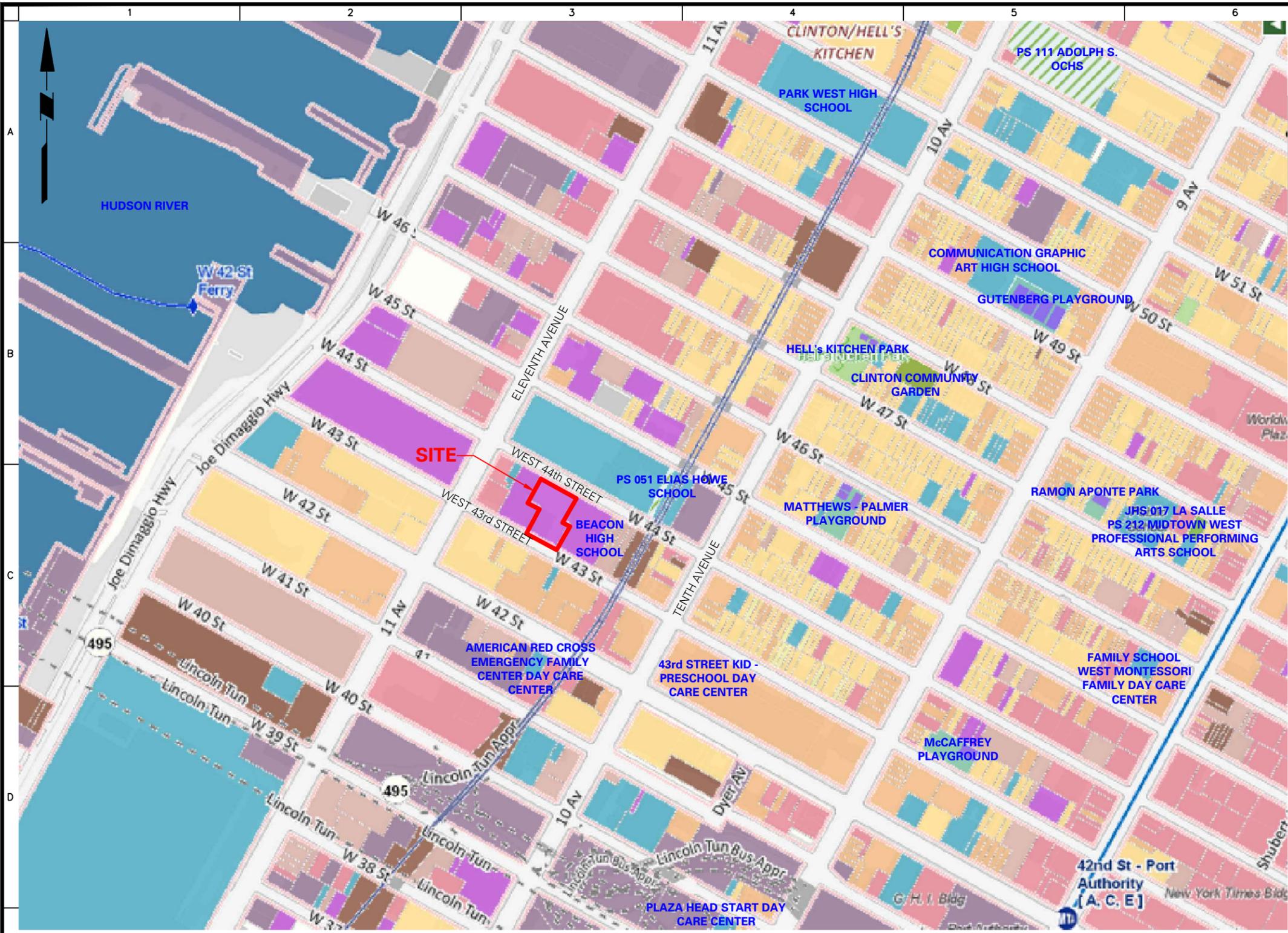
Drawn By  
EB

Submission Date

Figure No.

**2**

Sheet 2 of 6



**LEGEND:**

— SITE BOUNDARY

HUDSON RIVER SENSITIVE RECEPTORS

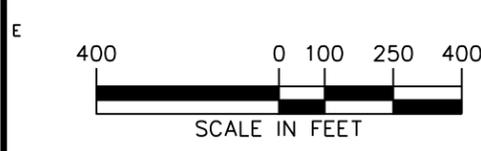
**LAND USE LEGEND**

- 1 & 2 FAMILY RESIDENTIAL
- MULTI-FAMILY RESIDENTIAL
- MIXED USE
- OPEN SPACE & OUTDOOR RECREATION
- COMMERCIAL
- INSTITUTIONS
- INDUSTRIAL
- PARKING
- TRANSPORTATION/UTILITIES
- VACANT LOTS

**NOTES**

NOTES

1. BASE MAP TAKEN FROM WWW.OASISNYC.NET



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**546 WEST 44th STREET**

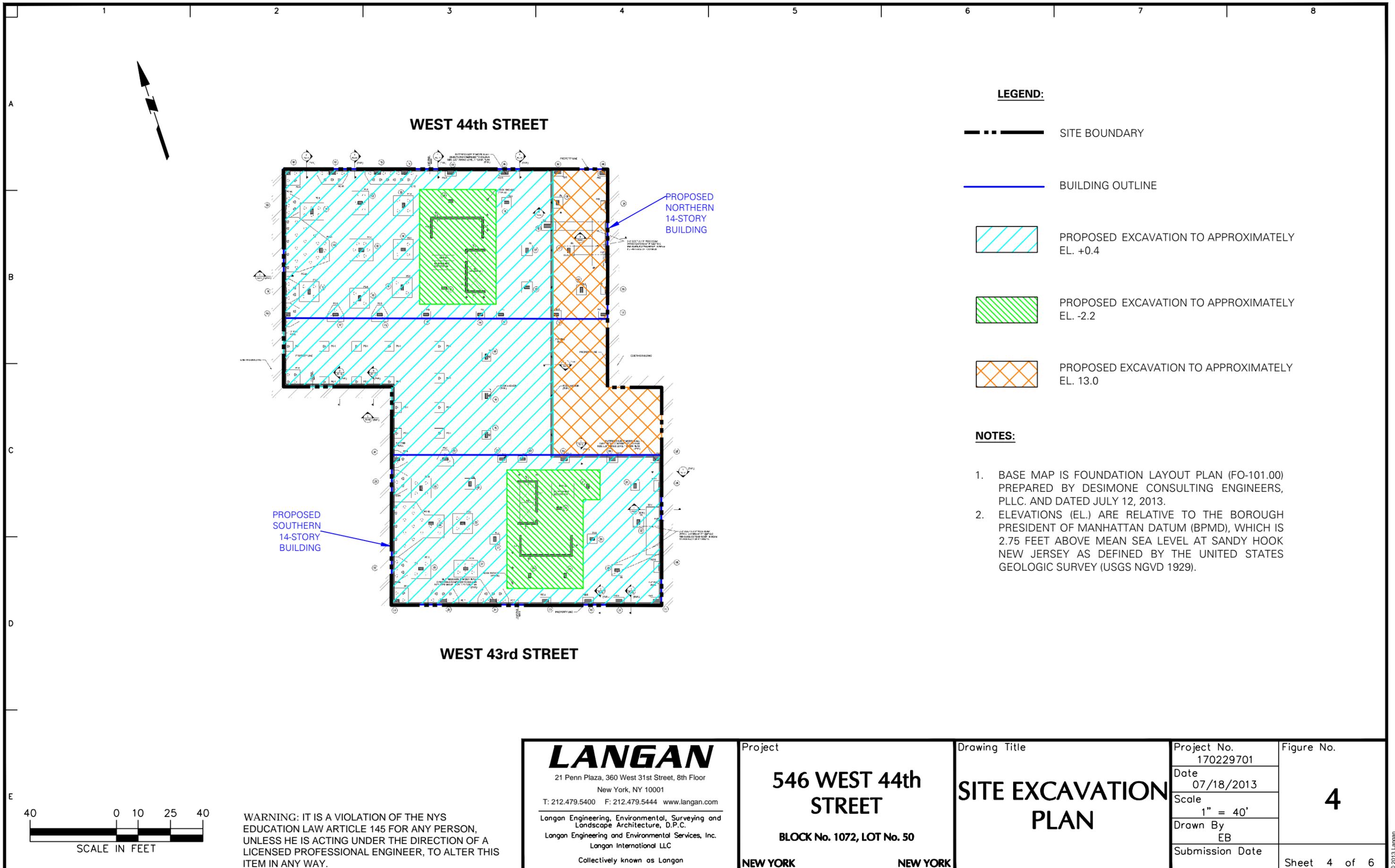
**BLOCK No. 1072, LOT No. 50**

NEW YORK NEW YORK

Drawing Title

**AREA LAND USAGE MAP**

Project No. 170229701	Figure No.
Date 05/03/2013	<b>3</b>
Scale 1" = 400'	
Drawn By EB	
Submission Date	
	Sheet 3 of 6



**LEGEND:**

-  SITE BOUNDARY
-  BUILDING OUTLINE
-  PROPOSED EXCAVATION TO APPROXIMATELY EL. +0.4
-  PROPOSED EXCAVATION TO APPROXIMATELY EL. -2.2
-  PROPOSED EXCAVATION TO APPROXIMATELY EL. 13.0

**NOTES:**

1. BASE MAP IS FOUNDATION LAYOUT PLAN (FO-101.00) PREPARED BY DESIMONE CONSULTING ENGINEERS, PLLC. AND DATED JULY 12, 2013.
2. ELEVATIONS (EL.) ARE RELATIVE TO THE BOROUGH PRESIDENT OF MANHATTAN DATUM (BPMD), WHICH IS 2.75 FEET ABOVE MEAN SEA LEVEL AT SANDY HOOK NEW JERSEY AS DEFINED BY THE UNITED STATES GEOLOGIC SURVEY (USGS NGVD 1929).

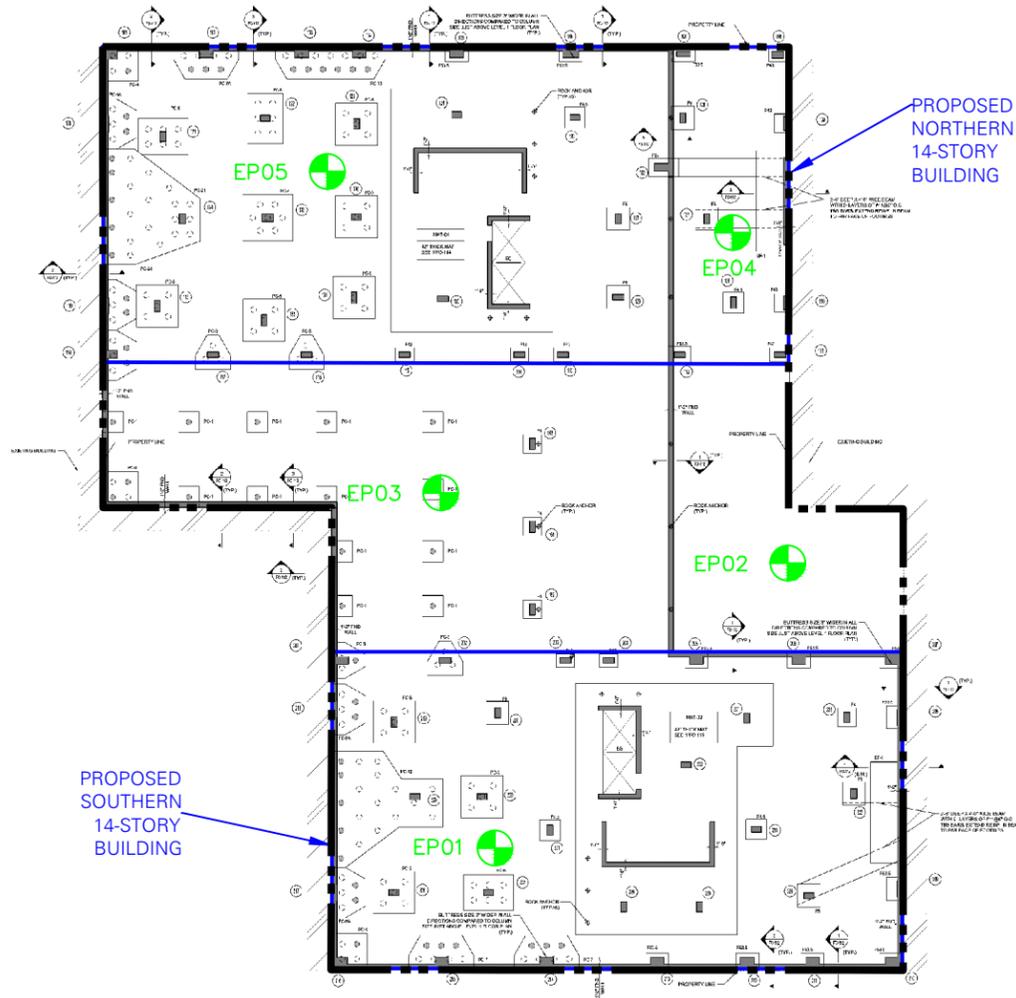


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	<p>Date 07/18/2013</p>	<p>Scale 1" = 40'</p>	<p>Drawn By EB</p>	<p>Submission Date</p>



WEST 44th STREET



PROPOSED  
SOUTHERN  
14-STORY  
BUILDING

PROPOSED  
NORTHERN  
14-STORY  
BUILDING

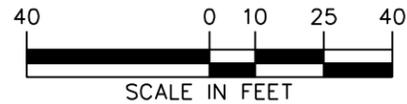
**LEGEND:**

-  SITE BOUNDARY
-  BUILDING OUTLINE
-  PROPOSED ENDPOINT SAMPLE LOCATION

**NOTES:**

1. BASE MAP IS FOUNDATION LAYOUT PLAN (FO-101.00) PREPARED BY DESIMONE CONSULTING ENGINEERS, PLLC. AND DATED JULY 12, 2013.
2. END-POINT SAMPLE LOCATIONS MAY BE CHANGED IF BEDROCK IS ENCOUNTERED AT THE BASE OF THE EXCAVATION.

WEST 43rd STREET



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Project

**546 WEST 44th  
STREET**

**BLOCK No. 1072, LOT No. 50**

**NEW YORK**

Drawing Title

**PROPOSED  
END-POINT  
SAMPLE LOCATION  
MAP**

**NEW YORK**

Project No.  
170229701

Date  
08/05/2013

Scale  
1" = 40'

Drawn By  
EB

Submission Date

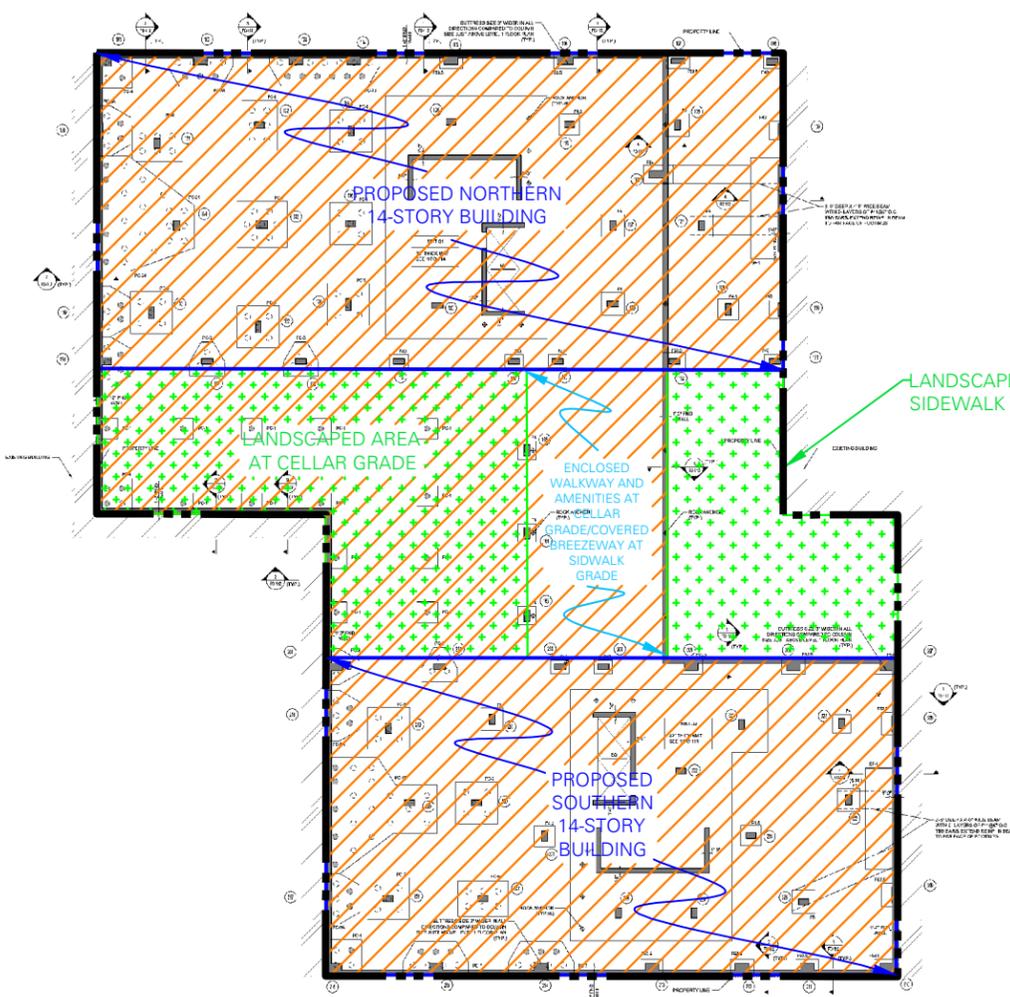
Figure No.

**5**

Sheet 5 of 6



**WEST 44th STREET**



LANDSCAPED AREA AT SIDEWALK GRADE

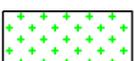
LANDSCAPED AREA AT CELLAR GRADE

ENCLOSED WALKWAY AND AMENITIES AT CELLAR GRADE COVERED BREZEWAY AT SIDEWALK GRADE

PROPOSED SOUTHERN 14-STORY BUILDING

**WEST 43rd STREET**

**LEGEND:**

-  SITE BOUNDARY
-  BUILDING OUTLINE
-  CONCRETE SLAB (IMPERVIOUS HARD COVER)
-  TWO FEET CLEAN FILL/TOP SOIL (LANDSCAPED AREAS)

**NOTES:**

1. BASE MAP IS FOUNDATION LAYOUT PLAN (FO-101.00) PREPARED BY DESIMONE CONSULTING ENGINEERS, PLLC. AND DATED JULY 12, 2013.



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**546 WEST 44th STREET**

**BLOCK No. 1072, LOT No. 50**

**NEW YORK**

Drawing Title

**COVER TYPE PLAN**

**NEW YORK**

Project No.  
170229701

Date  
07/18/2013

Scale  
1" = 40'

Drawn By  
EB

Submission Date

Figure No.

**6**

Sheet 6 of 6

**APPENDIX 1**

**PROPOSED DEVELOPMENT PLANS**

**(PROVIDED ON A CD)**

# 546 WEST 44TH STREET

## NEW YORK, NEW YORK



**546W 44**  
546 W 44TH STREET  
NEW YORK, NY

**CLIENT:**

CREF 546 West 44th Street LLC

**Representative:**  
The Patrinely Group, LLC  
52 Vanderbilt Ave, Suite 1000  
New York, NY 10017  
T 212.792.5020

**ARCHITECT:**

Cetra/CRI Architecture PLLC  
584 Broadway  
New York, New York 10012  
T 212.941.9801  
F 212.941.9440

**Structural Engineer:**

DeSimone Consulting Engineers, PLLC  
18 West 18th Street, 10th Floor  
New York, NY 10011  
T 212.532.2211  
F 212.481.6108

**M.E.P. Engineer:**

Dagher Engineering, PLLC  
29 Broadway  
New York, NY 10006  
T 212.480.2591  
F 212.480.2654

**Facade Consultant:**

Frank Seta Associates LLC  
224 West 30th Street  
New York, NY 10001  
T 212.465.1600  
F 212.465.1635

**Elevator Consultant:**

Persohn/Hahn Associates, Inc.  
494 S. Seguin Street  
New Braunfels, TX 78130  
T 830.626.3980  
F 830.626.3982

**Acoustic Consultant:**

Cerami & Associates  
404 Fifth Avenue  
New York, NY 10018  
T 212.370.1776

**Landscape Architect:**

HMWhite  
107 Grand Street, 6th Floor  
New York, NY 10013  
T 212.868.9411  
F 212.941.0422

**Geotech/Environmental Engineer:**

Langan Engineering & Environmental Services  
21 Penn Plaza, 360 West 31st Street  
New York, NY 10001  
T 212.479.5400  
F 212.479.5444

<p>John A. Cerro State of New York Registered Architect No. 018981 Cerro CRI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012</p>	<p>CREF 546 West 44th St, LLC Representative: The Patrinely Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017</p>
<p>DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011</p>	<p>Dagher Engineering, PLLC 29 Broadway New York, NY 10006</p>
<p>Langan Engineering &amp; Environmental Services 21 Penn Plaza 360 West 31st Street New York, NY 10001</p>	<p>HMWhite 107 Grand Street, 6th Fl New York, NY 10013</p>
<p>Cerami &amp; Associates, Inc. 404 Fifth Avenue New York, NY 10018</p>	<p>Frank Seta Associates LLC 224 West 30th Street New York, NY 10001</p>

DESCRIPTION	DATE
DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013



CETRARUDDY

COVER SHEET & DRAWING LIST

**T-100**

1303.00

CETRA/CRI ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 941 9801 F 212 941 9440  
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# 546W 44

546 W 44TH STREET  
NEW YORK, NY

DRAWING LIST		
Sheet Number	Sheet Name	DESIGN DEVELOPMENT - 2013.07.12
ZO-011	ZONING AREA AND DEDUCTION DIAGRAMS	
T-100	COVER SHEET & DRAWING LIST	X
G-001	DRAWING LIST	X
G-002	GENERAL NOTES, ABBREVIATIONS, SYMBOLS AND LEGEND	X
G-003	ACCESSIBILITY DIAGRAMS, BLDG DEPT. NOTES	X
G-004	PARTITION TYPE SCHEDULE	X
G-005	TYPICAL PARTITION & CEILING DETAILS	X
G-006	DOOR SCHEDULE, DOOR TYPES, HEAD, JAMB & SILL DETAILS	X
G-007	TYPICAL ROOF DETAILS	X
A-100	SITE PLAN	X
A-101	CELLAR PLAN	X
A-102	1ST FLOOR PLAN	X
A-110	CELLAR PLAN - NORTH BUILDING	X
A-111	1ST FLOOR PLAN - NORTH BUILDING	X
A-112	TYPICAL FLOOR PLAN - NORTH BUILDING	X
A-113	10TH FLOOR PLAN - NORTH BUILDING	X
A-114	11TH FLOOR PLAN - NORTH BUILDING	X
A-115	12TH FLOOR PLAN - NORTH BUILDING	X
A-116	13TH FLOOR PLAN - NORTH BUILDING	X
A-117	14TH FLOOR PLAN - NORTH BUILDING	X
A-118	ROOF PLAN - NORTH BUILDING	X
A-120	CELLAR PLAN - SOUTH BUILDING	X
A-121	1ST FLOOR PLAN - SOUTH BUILDING	X
A-122	2ND FLOOR PLAN - SOUTH BUILDING	X
A-123	TYPICAL FLOOR PLAN - SOUTH BUILDING	X
A-125	11TH FLOOR PLAN - SOUTH BUILDING	X
A-126	12TH FLOOR PLAN - SOUTH BUILDING	X
A-127	13TH FLOOR PLAN - SOUTH BUILDING	X
A-128	14TH FLOOR PLAN - SOUTH BUILDING	X
A-129	ROOF PLAN - SOUTH BUILDING	X
A-301	STREET ELEVATIONS - NORTH & SOUTH BUILDINGS	X
A-302	COURTYARD ELEVATIONS - NORTH & SOUTH BUILDINGS	X
A-303	BUILDING ELEVATION - WEST	X
A-304	BUILDING ELEVATIONS - EAST	X
A-305	BUILDING SECTION	X
A-401	TYPICAL WALL SECTIONS - NORTH BUILDING	X
A-402	TYPICAL WALL SECTIONS - SOUTH BUILDING	X
A-411	TYPICAL WALL DETAILS	X
A-501	STAIR A & B PLANS AND SECTIONS	X
A-601	BATHROOM PLANS & ELEVATIONS	X
A-611	KITCHEN PLANS & ELEVATIONS	X
FO-101	FOUNDATION PLAN	X
FO-102	CELLAR PLAN	X
FO-111	TYPICAL FOUNDATION DETAILS	X
FO-112	TYPICAL FOUNDATION DETAILS	X
FO-113	PILE CAP SECTIONS AND DETAILS	X
FO-114	FOUNDATION MAT REINFORCEMENT DETAILS	X
FO-115	FOUNDATION MAT REINFORCEMENT DETAILS	X
FO-116	FOUNDATION MAT SECTIONS	X
FO-221	TYPICAL FOUNDATION SECTION AND DETAILS	X
S-001	GENERAL NOTES AND INDEX OF DRAWINGS	X
S-201	1ST FLOOR LAYOUT PLAN	X
S-202	2ND FLOOR LAYOUT PLAN	X
S-203	3RD FLOOR LAYOUT PLAN	X
S-204	4TH-10TH FLOOR LAYOUT PLAN	X
S-211	11TH FLOOR LAYOUT PLAN	X
S-212	12TH FLOOR LAYOUT PLAN	X
S-213	13TH FLOOR LAYOUT PLAN	X
S-214	14TH FLOOR LAYOUT PLAN	X
S-215	ROOF LAYOUT PLAN	X
S-401	NORTH BUILDING COLUMN SCHEDULE	X
S-402	SOUTH BUILDING COLUMN SCHEDULE	X
S-403	COLUMN DETAILS	X
S-410	SHEAR WALL PLAN SUPPORTING GROUND FLOOR (NORTH BUILDING)	X
S-411	SHEAR WALL PLAN SUPPORTING GROUND FLOOR (SOUTH BUILDING)	X
S-451	SHEAR WALL DETAILS	X
S-452	SHEAR WALL DETAILS	X
S-501	TYPICAL CONCRETE DETAILS	X

DRAWING LIST		
Sheet Number	Sheet Name	DESIGN DEVELOPMENT - 2013.07.12
S-502	TYPICAL CONCRETE DETAILS	X
S-503	TYPICAL CONCRETE DETAILS	X
FP-500	FIRE PROTECTION RISER	X
M-100	MECHANICAL CELLAR PLAN	X
M-101	MECHANICAL 1ST FLOOR PLAN	X
M-102	MECHANICAL 2ND FLOOR PLAN	X
M-103	MECHANICAL TYPICAL FLOOR PLAN	X
M-110	MECHANICAL 10TH FLOOR PLAN	X
M-111	MECHANICAL 11TH FLOOR PLAN	X
M-112	MECHANICAL 12TH FLOOR PLAN	X
M-113	MECHANICAL 13TH FLOOR PLAN	X
M-114	MECHANICAL 14TH FLOOR PLAN	X
M-115	MECHANICAL ROOF PLAN	X
M-300	MECHANICAL SCHEDULES I	X
M-301	MECHANICAL SCHEDULES II	X
M-400	MECHANICAL DETAIL I	X
M-401	MECHANICAL DETAIL II	X
M-402	MECHANICAL DETAIL III	X
M-403	MECHANICAL DETAIL IV	X
M-500	MECHANICAL WATER RISER DIAGRAM I	X
M-501	MECHANICAL WATER RISER DIAGRAM II	X
M-600	MECHANICAL AIR RISER DIAGRAM I	X
M-601	MECHANICAL AIR RISER DIAGRAM II	X
E-001	ELECTRICAL NOTES, ABBREVIATIONS, SYMBOL LIST & DRAWING LIST	X
E-100	ELECTRICAL CELLAR PLAN	X
E-101	ELECTRICAL 1ST FLOOR PLAN	X
E-102	ELECTRICAL TYPICAL FLOOR PLAN	X
E-103	ELECTRICAL 11TH FLOOR PLAN	X
E-104	ELECTRICAL 12TH FLOOR PLAN	X
E-105	ELECTRICAL 13TH FLOOR PLAN	X
E-500	ELECTRICAL RISER DIAGRAM	X
FA-501	FIRE ALARM SOUTH TOWER RISER DIAGRAM I	X
FA-502	FIRE ALARM SOUTH TOWER RISER DIAGRAM II	X
FA-503	FIRE ALARM NORTH TOWER RISER DIAGRAM	X
SC-500	SECURITY RISER DIAGRAM	X
TC-500	TELECOM RISER DIAGRAM	X
TC-501	INTERCOM RISER DIAGRAM	X
TC-600	TELECOM DETAILS SHEET 1	X
TC-601	TELECOM DETAILS SHEET 2	X
P-001	PLUMBING NOTES, SYMBOLS, ABBREVIATION & DRAWING LIST	X
P-100	PLUMBING CELLAR PLAN	X
P-101	PLUMBING 1ST FLOOR PLAN	X
P-102	PLUMBING 2ND FLOOR PLAN	X
P-103	PLUMBING TYPICAL FLOOR PLAN	X
P-111	PLUMBING 11TH FLOOR PLAN	X
P-112	PLUMBING 12TH FLOOR PLAN	X
P-113	PLUMBING 13TH FLOOR PLAN	X
P-114	PLUMBING 14TH FLOOR PLAN	X
P-115	PLUMBING ROOF PLAN	X
P-400	PLUMBING DETAILS	X
P-500	GAS RISER DIAGRAM	X
P-501	DOMESTIC WATER RISER DIAGRAM	X
FP-001	FIRE PROTECTION NOTES, SYMBOLS, ABBREVIATION & DRAWING LIST	X
FP-100	FIRE PROTECTION CELLAR PLAN	X
FP-101	FIRE PROTECTION 1ST FLOOR PLAN	X
FP-102	FIRE PROTECTION 2ND FLOOR PLAN	X
FP-103	FIRE PROTECTION TYPICAL FLOOR PLAN	X
FP-111	FIRE PROTECTION 11TH FLOOR PLAN	X
FP-112	FIRE PROTECTION 12TH FLOOR PLAN	X
FP-113	FIRE PROTECTION 13TH FLOOR PLAN	X
FP-114	FIRE PROTECTION 14TH FLOOR PLAN	X
FP-115	FIRE PROTECTION ROOF PLAN	X
FP-400	FIRE PROTECTION DETAILS	X
FP-500	FIRE PROTECTION RISER DIAGRAM	X

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DD SUBMISSION	07.12.2013
DESCRIPTION	DATE



**CETRA RUDDY**

DRAWING LIST

**G-001**

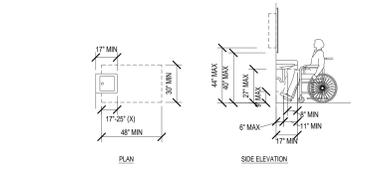
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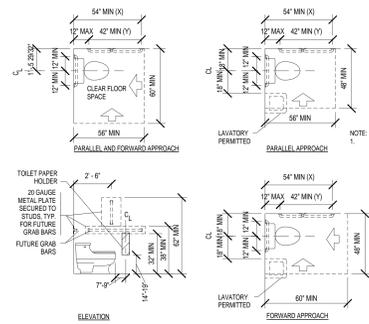
FOR BID ONLY - NOT FOR CONSTRUCTION



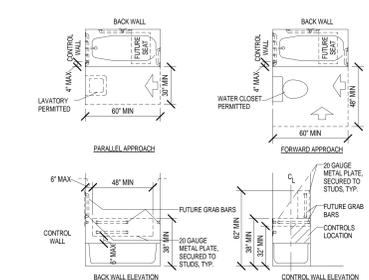
TYPE 'B' UNIT ADAPTABLE BATHROOMS



TYPE 'B' UNIT ADAPTABLE LAVATORY

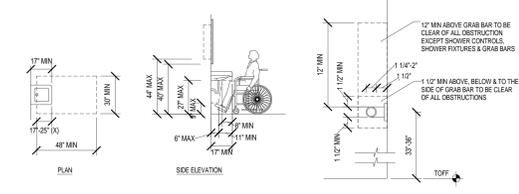


TYPE 'B' UNIT ADAPTABLE WATER CLOSET

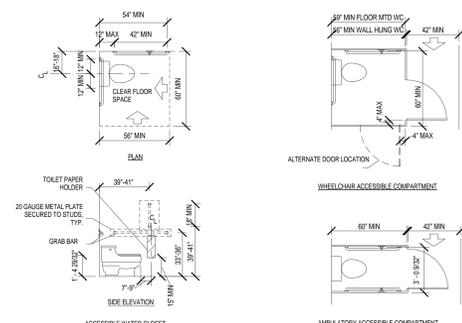


TYPE 'B' UNIT ADAPTABLE BATHTUB

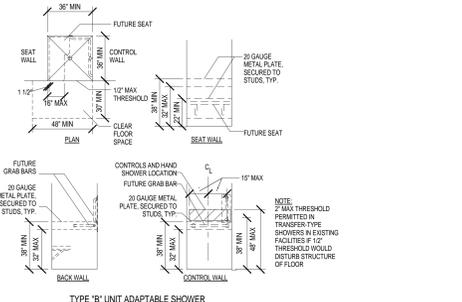
ACCESSIBLE BATHROOMS



ACCESSIBLE LAVATORY CLEARANCES



ACCESSIBLE WATER CLOSET

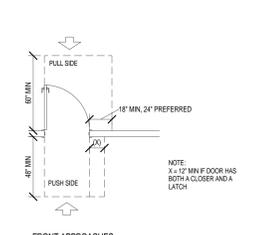


TYPE 'B' UNIT ADAPTABLE SHOWER

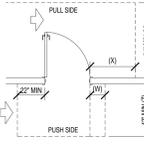
ACCESSIBILITY AND ADAPTABLE DIAGRAMS

1/4" = 1'-0"

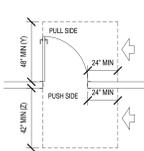
MANEUVERING CLEARANCES AT DOORS



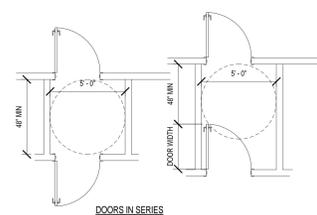
FRONT APPROACHES



HINGE-SIDE APPROACHES

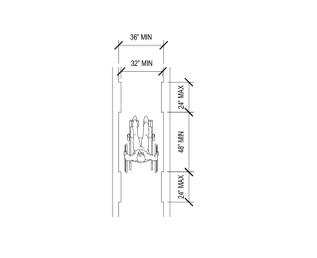


LATCH-SIDE APPROACHES



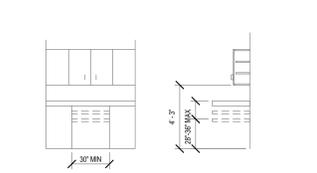
DOORS IN SERIES

ACCESSIBLE ROUTES

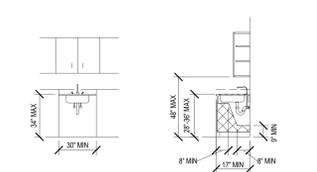


CLEAR WIDTH OF ACCESSIBLE ROUTE

TYPE 'B' UNIT ADAPTABLE KITCHENS



TYPE 'B' UNIT ADAPTABLE KITCHEN WORK SURFACE



TYPE 'B' UNIT ADAPTABLE KITCHEN SINK



TYPE 'B' UNIT ADAPTABLE KITCHEN SINK

BUILDING CODE NOTES - 79

1. ALL MATERIALS, ASSEMBLIES, FORMS AND METHODS OF CONSTRUCTION AND SERVICE EQUIPMENT SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:
  - a) THEY SHALL HAVE BEEN ACCEPTABLE PRIOR TO THE EFFECTIVE DATE OF THE CODE BY THE BOARD OF STANDARDS AND SPECIFICATIONS (B.S.) OR PUBLIC WORKS EQUIPMENT ACCEPTANCE (MEAL) OR
  - b) THEY SHALL HAVE BEEN ACCEPTED FOR USE UNDER THE PRESCRIBED TEST METHODS AS PER NYC BUILDING CODE.
2. ALL ELEVATIONS SHALL BE REFERRED TO THE BOROUGH OF MANHATTAN TOPOGRAPHICAL BUREAU DATUM WHICH IS 27.27' ABOVE MEAN SEA LEVEL AT SANDY HOOK, NJ AS ESTABLISHED BY THE U.S. COAST & GEODETIC SURVEY IN 1929. PER BC SEC. 28-104.7.A, TABLE 104.7.A.3.
3. AT LEAST 24 HOURS WRITTEN NOTICE SHALL BE GIVEN TO THE COMMISSIONER BEFORE COMMENCEMENT OF WORK AS PER BC SEC. 105.5.1. SPECIAL INSPECTION ITEMS REQUIRE 72 HOURS PRIOR WRITTEN NOTICE TO PERSONS RESPONSIBLE FOR INSPECTION AS PER BC SEC. 28-116.2.3 & PER BC SEC. 3304.3.1.
4. TEN DAYS PRIOR NOTICE SHALL BE GIVEN TO ADDING LOT OWNERS AFFECTED BY FOUNDATION, EARTHWORK OR SEDIMENTATION AS PER BC SEC. 3304.3.2.
5. AN ACCURATE AND COMPLETE FINAL SURVEY MADE BY A LICENSED SURVEYOR SHALL BE SUBMITTED AFTER COMPLETION OF THE BUILDING AS PER BC SEC. 28-118.4.
6. ALL PAVED WALKS, SURFACES AND AREAWAYS WILL BE DRAINED ADEQUATELY WITHIN THE SITE.
7. WHERE PIPES, WIRES, CONDUITS, DUCT, ETC. PASSING THROUGH FIRE RATED CONSTRUCTION SHALL HAVE SURROUNDING SPACES NOT EXCEEDING 1/2" IN WIDTH PACKED WITH FIRESTOPPING MATERIAL APPROVED BY THE CODE AND CLOSED OFF WITH CLOSE-FITTING METAL CLOSURES. DUCTWORK PENETRATION SHALL BE PROTECTED BY RATED SELF-CLOSING DEVICES. PER BC SEC. 712.3.3.
8. FIRE SEPARATIONS OR DIVISIONS SHALL COMPLY WITH BC CHAP. 5 AND TABLES 508.2 AND 508.3 AND SHALL BE CONTINUOUS THROUGH ANY CONCEALED SPACE IN FLOOR OR ROOF CONSTRUCTION.
9. SPACE OCCUPIED BY DIFFERENT TENANTS SHALL BE SEPARATED BY FIRE BARRIERS PER BC SEC. 509.9.
10. CONCEALED SPACES WITHIN PARTITIONS, WALLS FLOORS, ROOFS, STAIR, FURRING, PIPE SPACES, COLUMN ENCLOSURES ETC. SHALL BE FIRESTOPPED (EXCEPT WHERE CONCEALED SPACE IS SPRINKLERED WITH NON-COMBUSTIBLE MATERIAL THAT CAN BE SHAPED, FITTED AND PERMANENTLY SECURED IN POSITION PER BC SEC. 712 & 713).
11. FINISHED FLOORING IN ALL EXITS SHALL BE OF NON-COMBUSTIBLE MATERIAL PER BC SEC. 804.
12. ALL EXITS SHALL BE KEPT READILY ACCESSIBLE AND UNOBSTRUCTED AT ALL TIMES.
13. STAIRS SHALL HAVE HANDRAILS ON EACH SIDE. HANDRAILS SHALL PROVIDE A FINGER CLEARANCE OF 1 1/2 INCHES, AND SHALL PROJECT NOT MORE THAN 3 1/2 INCHES INTO REQUIRED STAIR WIDTH. STAIR MORE THAN 88 INCHES WIDE SHALL HAVE INTERMEDIATE HANDRAILED HEIGHT OF HANDRAIL SHALL BE BETWEEN 30 INCHES AND 34 INCHES ABOVE THE THREADED NOSING. HANDRAILS SHALL BE RETURNED TO WALLS AND POSTS AT THEIR TERMINATION. MATERIALS OF HANDRAILS SHALL HAVE A FLAME SPREAD RATING NOT EXCEEDING 150. HANDRAILS SHALL BE DESIGNED TO RESIST A SMALL TANGENTIAL APPLICATION OF A LATERAL FORCE OF 400 LBS AND VERTICAL LOAD OF 50 LBS. LOADINGS AND PLATFORMS SHALL BE ENCLOSED ON SIDES BY WALLS OR RAILINGS AT LEAST 3/4" HIGH. RISERS SHALL BE MAXIMUM 7 3/4" HIGH. TREADS MINIMUM 9 1/2" WIDE. EXCLUSIVE OF NOSING AND THE SUM OF 2 RISERS PLUS ONE TREAD EXCLUSIVE OF NOSING SHALL BE NOT LESS THAN 24 NOR MORE THAN 25 1/2.
14. TREADS & LANDINGS SHALL BE BUILT UP OR SURFACED WITH NON-SKID MATERIALS.
15. ELIMINATION OF AT LEAST 4 FEET CANDLES MEASURED AT THE FLOOR LEVEL SHALL BE MAINTAINED CONTINUOUSLY DURING CONSTRUCTION. IN EXITS AND THEIR ACCESS FACILITIES PER BC SEC. 1006.1.
16. EXIT LIGHTING SHALL BE ON CIRCUITS THAT ARE SEPARATE FROM ANY OTHER CIRCUITS. TAKEN OFF AHEAD OF MAIN SWITCH.
17. LOCATION OF EVERY EXIT ON FLOOR SHALL BE CLEARLY INDICATED BY EXIT SIGNS PLACED IF REQUIRED AT ANGLE WITH EXIT OPENING. INSTALL DIRECTIONAL SIGNS TO SERVE AS GUIDES FROM ALL PORTIONS OF THE CORRIDOR OPENING ON FLOOR PER BC SEC. 1011.1.
18. EXITS SIGNS SHALL BE INTERNALLY LIGHTED, HAVING AN INITIAL BRIGHTNESS OR LETTER OF AT LEAST 26 FEET LAMBERTS. LETTERS SHALL BE RED, THE BACKGROUND SHALL BE WHITE. LETTERS SHALL BE BLOCK LETTERING AT LEAST 1 1/2" HIGH, WITH 9/16" STROKES BACKGROUND.
19. BUILDING ENTRANCE DOORS AND OTHER EXTERIOR DOORS SHALL BE EQUIPPED WITH HEAVY DUTY LOCK SETS WITH ALUMINUM LATCH BELLS TO PREVENT THE LATCH FROM BEING MANIPULATED BY MEANS OTHER THAN A KEY PER BC SEC. 1008.4.1.
20. DOORS TO DWELLING UNITS SHALL BE EQUIPPED WITH A HEAVY DUTY LOCKSET, A DEAD BOLT OR AUXILIARY LATCH BOLT TO PREVENT MANIPULATION BY MEANS OTHER THAN A KEY. THESE DOORS SHALL ALSO BE EQUIPPED WITH A CHAIN DOOR GUARD SO AS TO PERMIT PARTIAL OPENING OF THE DOOR, AND SHALL ALSO BE EQUIPPED WITH A VIEWING DEVICE LOCATED SO AS TO ENABLE THE PERSON ON THE INSIDE TO VIEW A PERSON IMMEDIATELY OUTSIDE PER BC SEC. 1008.4.2. M.L. SEC. 11-4 & 11-5 (BC SEC. 27-204).
21. ALL OPERABLE WINDOWS SHALL BE EQUIPPED WITH SASH LOCKS DESIGNED TO BE OPERABLE FROM THE INSIDE ONLY PER BC SEC. 1008.4.3.
22. CORRIDORS AND EXITS PASSAGEWAYS SHALL HAVE A CLEAR HEIGHT OF 7'-6" FOR AT LEAST 50% OF THE FLOOR AREA WITH NO POINT LESS THAN 7 FEET IN HEIGHT. PROJECTION BELOW THE CEILING SHALL NOT OBSTRUCT FULL VIEW OF EXIT SIGNS PER BC SEC. 1008.2.
23. CONDUITS IN FIRE-RATED PARTITIONS WILL NOT EXCEED 3/4 INCH DIAMETER. OUTLETS IN SUCH PARTITIONS WILL BE BACKED UP WITH APPROVED MATERIALS.
24. NO CONDUITS, PIPES, MEDICINE CABINETS, ETC. SHALL ENCRUSH UPON FIRE RATED PARTITIONS ENCLOSED PUBLIC CORRIDORS, STAIRS, ELEVATOR SHAFTS OR VENT SHAFTS.
25. PENETRATION OF OPENINGS IN WALLS, PARTITIONS, OR FLOORS FOR PIPE SLEEVES, MEDICINE CABINETS, HANGERS, ELECTRIC DEVICES, ETC. SHALL BE PACKED, SEALED, LINED, AND OTHERWISE ISOLATED TO MAINTAIN THE REQUIRED S.T.C. RATING.
26. EXIT DOOR SHALL BE READILY OPERABLE AT ALL TIMES FROM THE SIDE FROM WHICH EGRESS IS TO BE MADE. DOORS OPENING INTO INTERIOR ENCLOSED STAIR SHALL NOT BE LOCKED FROM EITHER SIDE EXCEPT THAT DOORS MAY BE LOCKED TO PREVENT ACCESS TO THE STAIR FROM THE OUTDOORS AT THE STREET LEVEL.
27. ALL WIRE GLASS IN RATED DOORS AND WINDOWS WILL BE OF A TYPE APPROVED BY THE B.S.A.
28. ALL CLEANING OF WINDOWS WILL BE IN CONFORMITY WITH THE WINDOW CLEANING CODE.
29. PENETRATION OF OPENINGS IN WALLS, PARTITIONS, OR FLOORS FOR PIPE SLEEVES, MEDICINE CABINETS, HANGERS, ELECTRIC DEVICES, ETC. SHALL BE PACKED, SEALED, LINED, AND OTHERWISE ISOLATED TO MAINTAIN THE REQUIRED S.T.C. RATING.
30. ALL OPENINGS TO ELEVATOR SHAFTS WILL BE PROVIDED WITH DOORS HAVING 1 1/2 HOUR RATING. ALL DOORS TO BE SELF-CLOSING AND AT OPTION OF THE OWNER PROVIDED WITH VISION PANEL OF APPROVED TYPE CLEAR WIRE GLASS.
31. MASONRY MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF BC CHAP. 21. MORTAR TO BE TYPE "N".
32. THE DESIGN OF THE MASONRY UNIT IS PRECATED UPON ANALYSIS OF STRESSES AS PER RS-101 SEC. 4.
33. ALL MASONRY LOAD BEARING AND NON-LOAD BEARING WALLS TO BE BONDED IN ACCORDANCE WITH BC SEC. 2109.6.
34. THE DESIGN DETAILS AND NOTES INCLUDED HEREIN ARE IN COMPLIANCE WITH LOCAL LAW 17-1995 "EARTHQUAKE CODE".
35. THIS BUILDING IS NOT LOCATED IN A FLOOD HAZARD ZONE.
36. SINGLE OR MULTIPLE STATION SMOKE & CARBON MONOXIDE ALARMS SHALL BE INSTALLED IN OCCUPANCIES WITHIN DWELLING UNITS PER BC SEC. 308.1.1.1.
37. STAIRWAY COMMUNICATION SYSTEM TO BE PROVIDED PER BC SEC. 403.12.1
38. SMOKE PROOF EXIT ENCLOSURES TO COMPLY PER BC SEC. 403.13
39. EXIT STAIR ENCLOSURES SHALL BE CONSTRUCTED OF IMPACT RESISTANCE WALLS PER BC SEC. 403.15
40. PHOTOLUMINESCENT EXIT PATH MARKING TO BE PROVIDED PER BC SEC. 403.16
41. AUTOMATIC FIRE ALARM SYSTEM AND EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM TO BE PROVIDED PER BC SEC. 907.2.12
42. DESIGN AND CONSTRUCTION TO COMPLY WITH RODENT-PROOFING REQUIREMENT PER BC SEC. F101
43. BUILDING IS DESIGNED TO COMPLY WITH BC SEC. 1910. LL 1796 FOR SEISMIC SEPARATION. PROVIDED BY SEPARATION IN ACCORDANCE WITH TYPN 2/96.
44. CONTRACTOR TO PREPARE LANDMARK PROTECTION PLANS THAT COMPLY WITH REQUIREMENTS OF TYPN 10/88
45. ALL VERTICAL EXIT ENCLOSURE TO COMPLY WITH BC SEC. 1019

NOTES

1/2" = 1'-0"

MULTIPLE DWELLING NOTES

1. WALLS, PARTITIONS, AND FLOOR-CEILING CONSTRUCTION SEPARATING DWELLING UNITS FROM EACH OTHER OR FROM PUBLIC CORRIDORS, OR STAIRS SHALL HAVE CONCRETE TEST CYLINDER (TC-2)
2. FLOOR AND CEILING CONSTRUCTION SEPARATING DWELLING UNITS FROM EACH OTHER OR FROM PUBLIC CORRIDORS OR STAIRS SHALL HAVE A MINIMUM IMPACT NOISE RATING IN R, I, O, OR F.
3. FROM PUBLIC CORRIDORS IN ELEVATORS AS PER SECTION 208-20.03 H.M.C. AND DEPT. RULES AND REGULATIONS.
4. FROM COLLECTION ROOMS AND COMPACTOR EQUIPMENT TO COMPLY WITH SECTION C26-141.7.
5. REFUSE CHUTE HOPPER DOOR ASSEMBLY AND DOOR SHALL BE APPROVED BY B.S.A.
6. ALL OVER HOPPER DOORS SHALL BE PROVIDED AS PER CODE AND RULES.
7. ALL OPEN AREA SHALL BE DRAINED AS PER REF. STD. 16. P110.2
8. HOUSE NUMBERS WILL BE PROVIDED AS PER DEPARTMENT RULES AND REGULATIONS.

HOUSING MAINTENANCE NOTES

1. PAINTING OF PUBLIC PARTS AND WITHIN DWELLING TO COMPLY WITH SECTION D26-12.01 H.M.C.
2. PREMISES TO BE MAINTAINED AND KEPT FREE OF RODENT AND INSECT INFESTATION AS PER SECTION D26-13.03 AND D26-13.05 H.M.C.
3. RECEPTACLES FOR COLLECTION OF WASTE MATTER TO BE PROVIDED AS PER SECTION D26-14.05 H.M.C.
4. DRAINAGE OF ROOFS, COURTS AND YARDS TO COMPLY WITH SECTION D26-16.03 H. M. C.
5. PROPER ELECTRIC LIGHTING EQUIPMENT WITHIN DWELLING TO BE PROVIDED AND MAINTAINED AS PER SECTION D26-19.01, D26-19.3, D26-19.04 H.M.C.
6. PROPER ELECTRIC LIGHT TO BE PROVIDED AT OR NEAR THE FRONT ENTRANCE DOORS AND IN COMMON AREAS.
7. BOARD OF STANDARDS AND APPEALS APPROVED TYPE REEPCLES APPROXIMATELY 5 FEET ABOVE FINISHED FLOOR TO BE PROVIDED IN ENTRANCE DOORS AND DWELLING UNITS AS PER SECTION D26-01 H. M. C. AND DEPARTMENT OF RULES AND REGULATIONS.
8. KEY LOCK IN THE ENTRANCE DOOR TO EACH DWELLING UNIT WITH AT LEAST ONE KEY TO BE PROVIDED BY OWNERS AS PER SECTION D26-20.5 H. M. C.
9. APPROVED TYPE MAIL RECEPTACLES AND DIRECTORY OF PERSONS LIVING IN DWELLING TO BE PROVIDED AS PER SECTION D26-20.01 H. M. C. AND DEPARTMENT OF POST OFFICE DEPARTMENT.
10. PROPER FLOOR SIGNS TO BE PROVIDED IN PUBLIC HALL NEAR STAIRS AND ELEVATOR AND WITHIN STAIR ENCLOSURES AS PER SECTION D26-21.08 H. M. C. AND DEPARTMENT OF RULES AND REGULATIONS.
11. PROPER STREET NUMBERS TO BE PROVIDED IN FRONT OF THE DWELLING AS PER SECTION D26-21 H. M. C. AND RULES AND REGULATIONS OF THE BOROUGH PRESIDENT.
12. ALL COMBUSTIBLE MATERIALS WITHIN ONE FOOT OF COOKING APPARATUS TO BE PROPERLY FIRE RETARDED AND MINIMUM 2 FOOT CLEARANCE MAINTAINED ABOVE COOKING SURFACE. COMBUSTIBLE MATERIAL BETWEEN 2 FEET AND 3 FEET ABOVE EXPOSED COOKING SURFACE TO BE FIRE RETARDED. SECTION D26-32.05 H. M. C. AND DEPARTMENT OF RULES AND REGULATIONS.
13. INTERCOM OR BELL AND BUZZER SYSTEM TO BE INSTALLED AS PER SECTION C26-604.4 (20 D).

NOISE CONTROL NOTES

1. INTERIOR WALLS, PARTITIONS, FLOOR CEILING CONSTRUCTION AND MECHANICAL EQUIPMENT SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SUB-ARTICLE 1008.1 TO PROVIDE MINIMUM PROTECTION FOR EACH DWELLING UNIT FROM EXTRANEOUS NOISE EMANATING FROM OTHER DWELLING UNITS AND FROM MECHANICAL EQUIPMENT IN ADDITION EXTERIOR MECHANICAL EQUIPMENT SHALL CONFORM TO THE NOISE REDUCTION REQUIREMENTS OF SUB-ARTICLE 1008.1.
2. WALLS, PARTITIONS, FLOORS AND CEILING CONSTRUCTION TO HAVE MIN. STC RATING OF 50 FOR AIRBORNE NOISE AND 35 STC RATING REQUIRED FOR APARTMENT ENTRANCE DOORS. C26-1208.2.
3. DUCTS SERVING DWELLING UNITS SHALL BE LINED WITH DUCT LINING FOR AT LEAST 20 FEET, UPSTREAM OF THE EXHAUST FAN INTAKE. OTHERWISE, AN APPROVED SOUND ATTENUATING DEVICE SHALL BE INSTALLED THEREIN. DUCT LINING SHALL CONFORM TO THE REQUIREMENTS OF ARTICLE 19 BLDG. CODE. ALL TOILET EXHAUST DUCTS SHALL BE LINED WITH DUCT LINING FOR AT LEAST 20 FEET, UPSTREAM OF THE EXHAUST FAN INTAKE. OTHERWISE, AN APPROVED SOUND ATTENUATING DEVICE SHALL BE INSTALLED THEREIN.
4. MECHANICAL VENTILATION PLANS WILL BE FILED WITH THE DEPARTMENT OF BLDGS.
5. ROOF SHALL BE COVERED WITH A "ROOF COVERINGS MEETING THE REQUIREMENTS OF RS-6 "ROOF COVERING CLASSIFICATIONS" OR RS-10 ASTM E-1098-95 "STANDARD METHODS OF FIRE TESTS OF ROOF COVERINGS".

GENERAL NOTES

1. PROVIDE SPRINKLER IN TRASH CHUTE AT EVERY OTHER FLOOR. SEE MEP DRAWINGS
2. SEE DRAWING AXXX FOR TRASH CHUTE PLANS, SECTIONS & DETAILS.
3. ALL EXTERIOR MASONRY WALL WILL BE LAD UPON ONE PART PORTLAND CEMENT, ONE PART LIME, AND SIX PARTS SAND. ALL JOINTS THOROUGHLY FILLED IN. ALL MORTAR TO COMPLY WITH TABLE F.S. 10 1-2 BUILDING CODE. ALL BRICK SHALL BE GRADE SW TYPE F. B. S. CONTRACTOR TO FILE FORMS 108 & 10.

ENERGY CONSERVATION CONSTRUCTION OF NEW YORK STATE NOTES

- TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL JUDGMENT, THESE PLANS AND SPECIFICATIONS ARE IN COMPLIANCE WITH THE 2007 ENERGY CONSERVATION CONSTRUCTION CODE OF NEW YORK STATE, REFER TO CHAPTERS 405 AND 406 FOR ADDITIONAL COMPLIANCE NOTES AND CALCULATIONS.
- ITEMS TO CONFORM TO THE NY STATE ENERGY CONSERVATION CONSTRUCTION CODE INCLUDE:
1. "U" VALUES OF THE ENVELOPE SUBSYSTEM
  2. DESIGN INSIDE AIR TEMPERATURE OF EACH ROOM THAT IS TO BE HEATED AND/OR COOLED
  3. DESIGN HEAT LOSS AND/OR GAIN THROUGH EACH EXTERIOR FACADE IN BTUHR.
  4. "R" VALUES OF INSULATION MATERIALS.
  5. SIZE AND TYPE OF APPARATUS AND EQUIPMENT AND SYSTEM CONTROLS AND OTHER PERTINENT DATA TO DATA TO INDICATE CONFORMANCE WITH THE REQUIREMENTS OF THE CODE.
  6. ELECTRICAL LIGHTING AND POWER DESIGN DATA.
  7. ALL NECESSARY APPROVALS FOR ELECTRICAL WORK TO BE OBTAINED FROM THE BUREAU OF GAS & ELECTRICITY.
  8. THE BUILDING THAT IS DESIGNED TO BE BOTH HEATED AND COOLED SHALL MEET THE MORE STRINGENT OF THE HEATING OR COOLING REQUIREMENTS FOR THE EXTERIOR ENVELOPE.
  9. THE DESIGN SHALL NOT CREATE CONDITIONS OF ACCELERATED DETEIORATION FROM MOISTURE CONDENSATION.
  10. WHEN A BUILDING HOUSES MORE THAN ONE OCCUPANCY, THE MAJOR USE SHALL BE CONSIDERED THE BUILDING OCCUPANCY.
  11. FOR MECHANICAL SUPPLY AND EXHAUST VENTILATION SYSTEMS, THE OUTDOORS AIR QUALITY TO BE USED AS THE BASIS FOR CALCULATION OF THE HEATING AND COOLING LOADS SHALL BE THOSE REQUIREMENTS OF THE APPLICABLE HEALTH OR LIFE SAFETY CODE OR, IN THE ABSENCE OF SUCH REQUIREMENTS, SHALL BE BASED ON GENERALLY ACCEPTED STANDARDS.

ITEMS SUBJECT TO SPECIAL INSPECTION

1. FIRESTOP, DRAFTSTOP, AND FIREBLOCK SYSTEMS	BC 1704.25
2. CONCRETE TEST CYLINDER (TC-2)	BC 1905.6
3. CONCRETE DESIGN MIX (TC-3)	BC 1904.4
4. CONCRETE (CAST-IN-PLACE)	BC 1903.5
5. ENERGY CODE COMPLIANCE (TRB)	BC 1704.8
6. PILE FOUNDATION & DRILLED PIER INSTALLATION (TR5)	BC 1704.7.1
7. FIRE RESISTIVE RATED CONSTRUCTION	BC 105.3.4
8. SOILS - SITE PREPARATION	BC 1704.19, BC 3304.4.1
9. SOILS - INVESTIGATION (BORINGS/TEST PITS) (TR4)	BC 105.3.4
10. EXCAVATION - SHEETING, SHORING & BRACING	BC 1704.19, BC 3304.4.1
11. FOUNDATION & FOUNDATION INSPECTION	BC 105.3.4
12. MASONRY	BC 1704.5
13. SPRAYED FIRE RESISTANT MATERIALS	BC 1704.11
14. STRUCTURAL STEEL - ERECTION AND BOLTING	BC 1704.3.2, BC 1704.3.3
15. STRUCTURAL SAFETY - STRUCTURAL STABILITY	BC 1704.19
16. STRUCTURAL COLD - FORMED STEEL	BC 1704.3.4
17. STRUCTURAL STEEL - WELDING	BC 1704.3.1
18. WALL PANELS, CURTAIN WALLS AND VENEERS	BC 1704.10
19. SMOKE CONTROLS	BC 1704.14
20. MECHANICAL SYSTEMS	BC 1704.15

LIST OF ITEMS TO BE FILED SEPARATELY

1. ELEVATORS
2. FIRE PROTECTION PLAN
3. BUILDERS PAVING PLAN #121183414
4. COMMERCIAL TENANT SPACE
5. SPRINKLER
6. STANDPIPE
7. FIRE ALARM
8. MARQUEE
9. EMERGENCY POWER SYSTEMS
10. SITE SAFETY PLAN

REQUIRED FIRE RESISTANCE RATING PER TABLE 601 & 602

CONSTRUCTION CLASS 1-B	BUILDING ELEMENT	RATING IN HOURS
STRUCTURAL FRAME INCLUDING COLUMNS, GIRDERS, TRUSSES	INTERIOR	2
	EXTERIOR	2
	INTERIOR	2
BEARING WALLS	EXTERIOR	2
	EXTERIOR	2
	INTERIOR	0
NONBEARING WALLS AND PARTITIONS	EXTERIOR (< 5 FT)	1
	EXTERIOR (5 FT TO < 10 FT)	1
	EXTERIOR (≥ 10 FT TO < 30 FT)	0
FLOOR CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOINTS	EXTERIOR (≥ 30 FT)	0
	EXTERIOR (≥ 30 FT)	0
	INTERIOR	0
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS AND JOINTS	EXTERIOR (≥ 30 FT)	2
	EXTERIOR (≥ 30 FT)	2
	INTERIOR	1

STRUCTURAL MEMBERS SUPPORTING A WALL = SAME AS REQUIRED FIRE RESISTANCE OF WALL SUPPORTED, BUT NOT LESS THAN RATING REQUIRED FOR MEMBER BY THE CLASS OF CONSTRUCTION

FIRE DIVISIONS AND FIRE SEPARATIONS = IN SPACES CLASSIFIED IN THE MERCANTILE OCCUPANCY, HIGHLY COMBUSTIBLE OR FLAMMABLE GOODS SHALL BE LIMITED TO SMALL QUANTITIES, OTHERWISE, SHALL MEET THE REQUIREMENTS FOR HIGH HAZARD OCCUPANCIES

ALLOWABLE BUILDING AREA AND HEIGHT (PER BC TABLE 503)	CLASS 1-B	PERMITTED	PROPOSED
AREA	UNLIMITED	4,318 MAX GSF ON ANY FLOOR	
HEIGHT/STORIES	UNLIMITED	SUBCELLAR + CELLAR + 52 STORIES + BULKHEAD	
PROPOSED HEIGHT		687'-4"	
ACCESSORY PARKING		NONE PROVIDED	

OCCUPANCY CLASSIFICATION AND OCCUPANT LOAD (PER BC 302.1, TABLE 1004.1.2)	OCCUPANCY CLASSIFICATION:	MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT:
RESIDENTIAL	R-2	200 SF GROSS WITHIN DWELLING UNITS
MERCANTILE	M	30 SF GROSS - GROUND AND BASEMENT FLOORS 60 SF GROSS - ALL OTHER FLOORS 300 SF GROSS - STOCK, STORAGE
UTILITY	ACCESSORY TO R-2	200 SF GROSS
STORAGE	ACCESSORY TO R-2	300 SF GROSS

THE PROJECT SITE IS NOT IN A FLOOD ZONE PER FIRM PANEL 0089F OF 457. SEE 20-002

THE STRUCTURAL PEER REVIEW WILL BE DONE BY LESLIE E. ROBERTSON ASSOCIATES, PE # 058672 PER B.C. 1627

546W 44

546 W 44TH STREET  
NEW YORK, NY

ARCHITECT	John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CLIENT	CREF 546 West 44th St, LLC
STRUCTURAL ENGINEER	DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	CONTRACTOR	Dagher Engineering, PLLC 29 Broadway New York, NY 10006
MECHANICAL ENGINEER	Langan Engineering & Environmental Services 21 West Plaza 360 West 31st Street New York, NY 10001	MECHANICAL CONTRACTOR	HMMWhite 107 Grand Street, 6th Fl New York, NY 10013
ELECTRICAL CONTRACTOR	Ceram & Associates, Inc. 404 Park Avenue New York, NY 10018	MECHANICAL CONTRACTOR	Frank Seta Associates LLC 124 West Street New York, NY 10001

DD SUBMISSION 07.12.2013

DESCRIPTION DATE



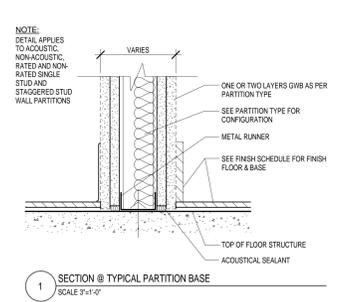
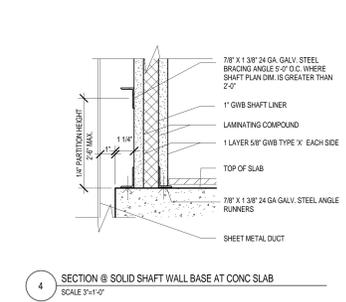
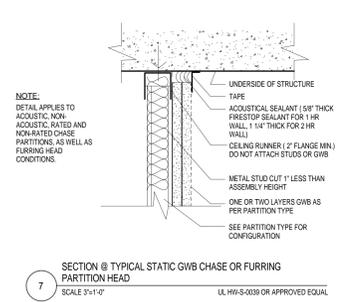
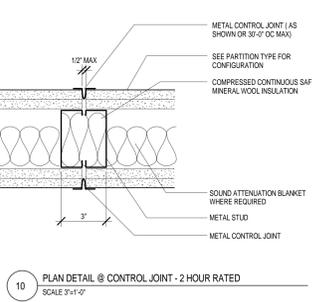
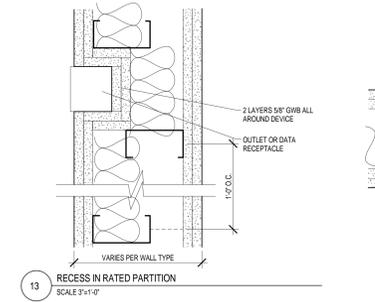
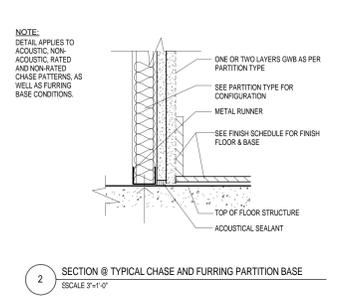
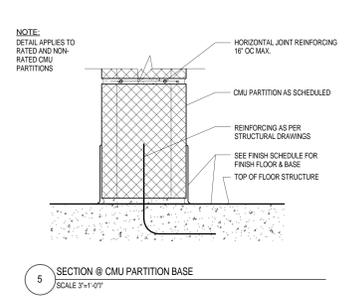
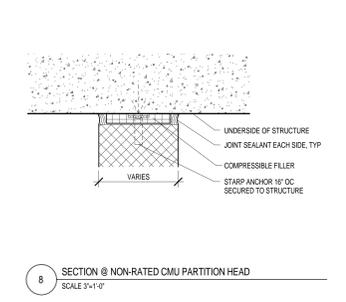
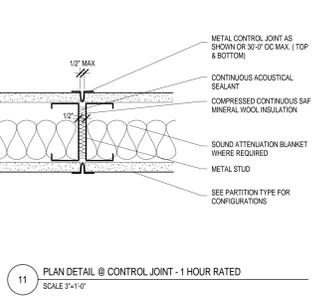
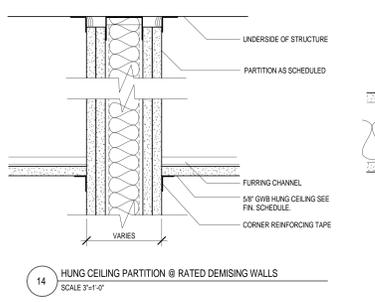
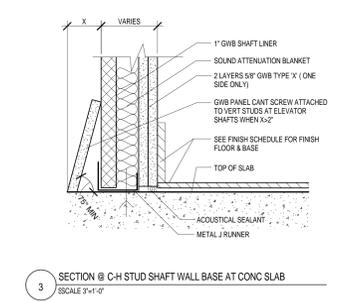
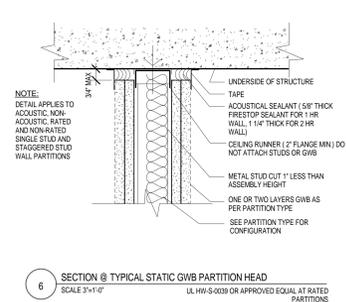
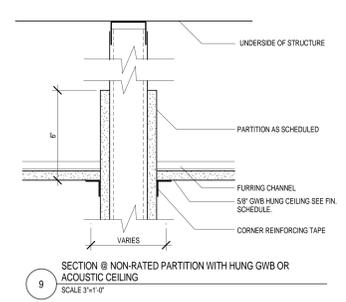
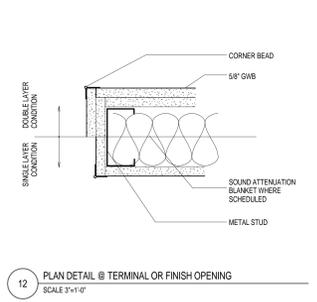
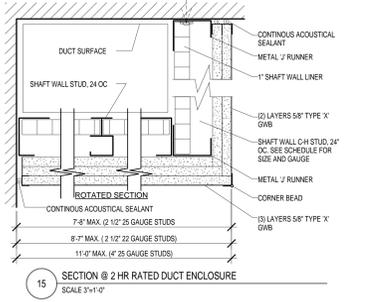
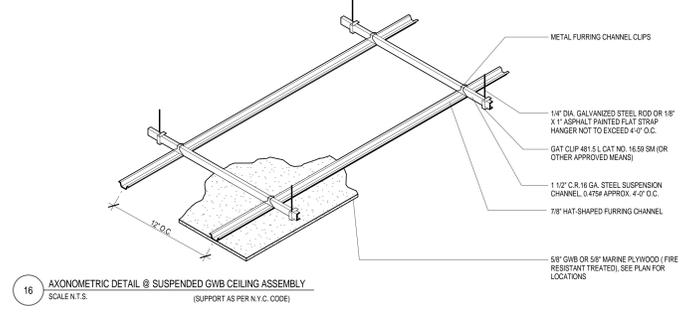
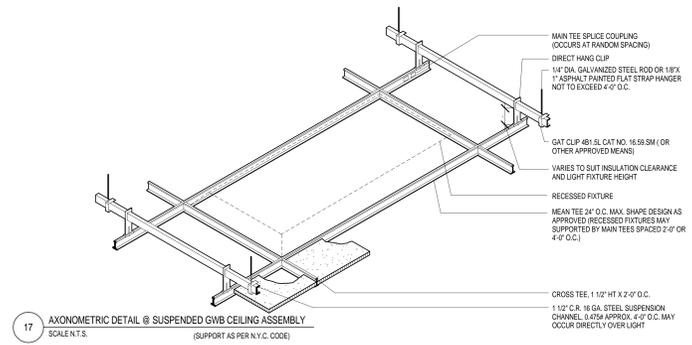
ACCESSIBILITY DIAGRAMS, BLDG DEPT. NOTES

G-003

As indicated  
1303.00

FOR BIDDING - NOT FOR CONSTRUCTION





ARCHITECT	John A. Corra State of New York Registered Architect No. 018981 Corra CRI Architect, PLLC 584 Broadway Suite 401 New York, NY 10012	CREP 546 West 44th St, LLC
REPRESENTATIVE	The Parham Group, LLC 52 Vander Ave, Suite 1000 New York, NY 10017	
ENGINEER	DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	Dagher Engineering, PLLC 29 Broadway New York, NY 10006
LANDSCAPE ARCHITECT	Langan Engineering & Environmental Services 21 Dena Place 360 West 31st Street New York, NY 10001	HMMWhite 107 Grand Street, 6th Fl New York, NY 10013
MECHANICAL ENGINEER	Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

DD SUBMISSION DESCRIPTION DATE

07.12.2013

**CETRA RUDDY**

TYPICAL PARTITION & CEILING DETAILS

**G-005**

3" = 1'-0"

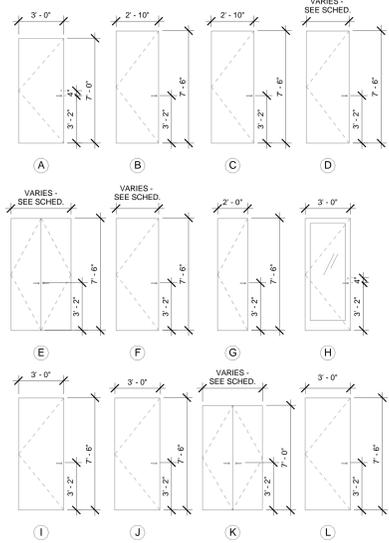
1303.00

CETRA/CR ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440  
WWW.CETARUDDY.COM

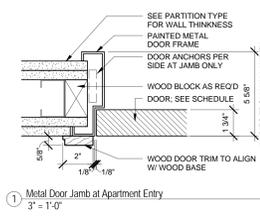
FOR BID ONLY - NOT FOR CONSTRUCTION

DOOR TAG	LOCATION	JAMB OPENING		FRAME DATA			DOOR DATA			SADDLE/THRESHOLD	HARDWARE SET	FIRE RATING (FIRC)	REMARKS
		WIDTH	HEIGHT	MATERIAL	HEAD	JAMB	FINISH	TYPE	MATERIAL				
A-01	APARTMENT ENTRY	3'-0"	7'-0"	HM			PTD	A	1 3/4"	PTD		1 1/2 HR	
A-02	APARTMENT BEDROOM	2'-10"	7'-6"	WD			PTD	B	1 3/4"	PTD			
A-03	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
A-04	APARTMENT CLOSET	2'-10"	7'-6"	WD			PTD	D	1 3/4"	PTD			
A-05	APARTMENT CLOSET	3'-6"	7'-6"	WD			PTD	E	1 3/4"	PTD			
A-06	APARTMENT CLOSET	7'-6"	7'-6"	WD			PTD	F	1 3/4"	PTD			
A-07	APARTMENT CLOSET	5'-0"	7'-6"	WD			PTD	E	1 3/4"	PTD			
A-08	APARTMENT WASHER/DRYER	2'-10"	7'-6"	WD			PTD	F	1 3/4"	PTD			
A-09	APARTMENT WASHER/DRYER	2'-4"	7'-6"	WD			PTD	F	1 3/4"	PTD			
A-10	APARTMENT WASHER/DRYER	2'-0"	7'-6"	WD			PTD	F	1 3/4"	PTD			
A-11	APARTMENT LINEN CLOSET	2'-0"	7'-6"	WD			PTD	G	1 3/4"	PTD			
A-12													
T-01	EGRESS STAIR	3'-0"	7'-6"	HM			PTD	I	1 3/4"	PTD		1 1/2 HR	
T-02	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
T-03	MECHANICAL ROOM	4'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
T-04	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
T-04	REFUSE ROOM	3'-0"	7'-6"	HM			PTD	L	1 3/4"	PTD		1 1/2 HR	
T-05	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	

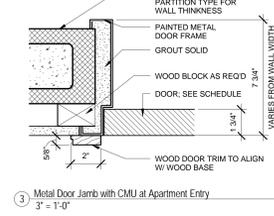
DOOR TAG	LOCATION	JAMB OPENING		FRAME DATA			DOOR DATA			SADDLE/THRESHOLD	HARDWARE SET	FIRE RATING (FIRC)	REMARKS
		WIDTH	HEIGHT	MATERIAL	HEAD	JAMB	FINISH	TYPE	MATERIAL				
001	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
002		6'-0"	9'-7 1/2"										
003	APARTMENT CLOSET	5'-0"	7'-6"	WD			PTD	E	1 3/4"	PTD			
004	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
005	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
005	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
006	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
007	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
008	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
009	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
010	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
011		6'-0"	9'-7 1/2"										
012		6'-0"	9'-7 1/2"										
013		6'-0"	9'-7 1/2"										
014	APARTMENT ENTRY	3'-0"	7'-0"	HM			PTD	A	1 3/4"	PTD		1 1/2 HR	
015	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
016	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
017	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
017	REFUSE ROOM	3'-0"	7'-6"	HM			PTD	L	1 3/4"	PTD		1 1/2 HR	
018	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
019	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
020	MECHANICAL ROOM	4'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
021	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
022	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
023	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
024	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
025	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
026	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
027	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
101		6'-0"	7'-10 1/2"										
102	EGRESS STAIR	3'-0"	7'-6"	HM			PTD	I	1 3/4"	PTD		1 1/2 HR	
103		6'-0"	7'-10 1/2"										
104		3'-0"	7'-7 1/2"										
105	EGRESS STAIR	3'-0"	7'-6"	HM			PTD	I	1 3/4"	PTD		1 1/2 HR	
106	APARTMENT ENTRY	3'-0"	7'-0"	HM			PTD	A	1 3/4"	PTD		1 1/2 HR	
107	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
108	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
109	EGRESS STAIR	3'-0"	7'-6"	HM			PTD	I	1 3/4"	PTD		1 1/2 HR	
110	MECHANICAL ROOM	3'-0"	7'-6"	HM			PTD	J	1 3/4"	PTD		1 1/2 HR	
111	MECHANICAL ROOM	5'-0"	7'-0"	HM			PTD	K	1 3/4"	PTD		1 1/2 HR	
112	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
113		6'-0"	7'-6"										
114		6'-0"	9'-5"										
115		3'-0"	7'-6"										
116		3'-0"	7'-6"										
117		6'-0"	10'-4"										
118	REFUSE ROOM	3'-0"	7'-6"	HM			PTD	L	1 3/4"	PTD		1 1/2 HR	
119	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
120	APARTMENT ENTRY	3'-0"	7'-0"	HM			PTD	A	1 3/4"	PTD		1 1/2 HR	
121	EGRESS STAIR	3'-0"	7'-6"	HM			PTD	I	1 3/4"	PTD		1 1/2 HR	
122	APARTMENT BATHROOM	2'-10"	7'-6"	WD			PTD	C	1 3/4"	PTD			
123		3'-0"	10'-11"										
124	APARTMENT ENTRY	3'-0"	7'-0"	HM			PTD	A	1 3/4"	PTD		1 1/2 HR	
125	APARTMENT ENTRY	3'-0"	7'-0"	HM			PTD	A	1 3/4"	PTD		1 1/2 HR	
126	APARTMENT ENTRY	3'-0"	7'-0"	HM			PTD	A	1 3/4"	PTD		1 1/2 HR	
127		6'-0"	10'-5"										
128		6'-0"	8'-0"										
129		3'-0"	10'-2"										



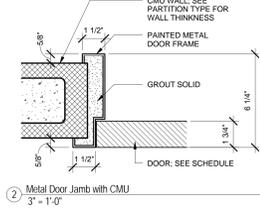
DOOR TYPES  
1/4" = 1'-0"



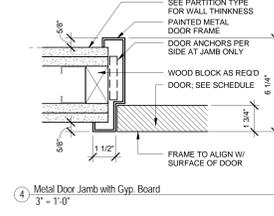
1 Metal Door Jamb at Apartment Entry  
3' = 1'-0"



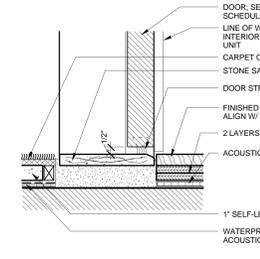
3 Metal Door Jamb with CMU at Apartment Entry  
3' = 1'-0"



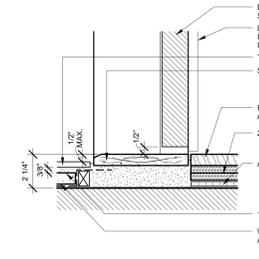
2 Metal Door Jamb with CMU  
3' = 1'-0"



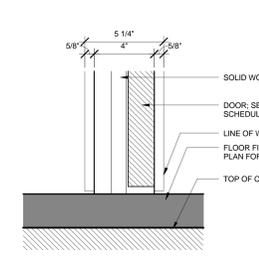
4 Metal Door Jamb with Gyp. Board  
3' = 1'-0"



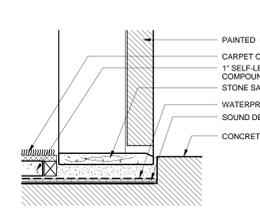
5 S1-Carpet to Wood  
3' = 1'-0"



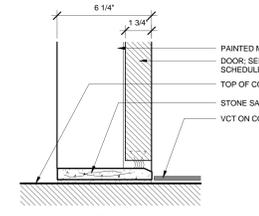
6 S2-Ceramic Tile to Wood  
3' = 1'-0"



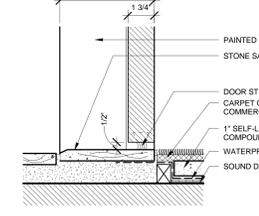
7 S3-Same Finish  
3' = 1'-0"



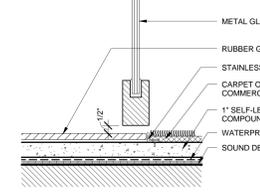
8 S5-Carpet to Egress Stair  
3' = 1'-0"



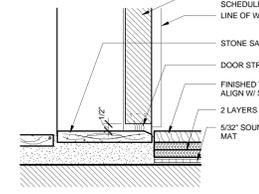
9 S6-Concrete to VCT  
3' = 1'-0"



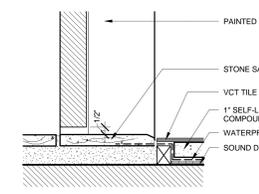
10 S7-Stone to Carpet  
3' = 1'-0"



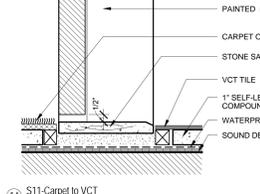
11 S8-Rubber Gym. Mat to Carpet  
3' = 1'-0"



12 S9-Stone to Wood  
3' = 1'-0"



13 S10-Stone to VCT  
3' = 1'-0"



14 S11-Carpet to VCT  
3' = 1'-0"

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Partners Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>CONSULTANTS</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>MECHANICAL CONSULTANT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>MECHANICAL CONSULTANT</b> JMMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

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07.12.2013

**CETRA** **RUDDY**

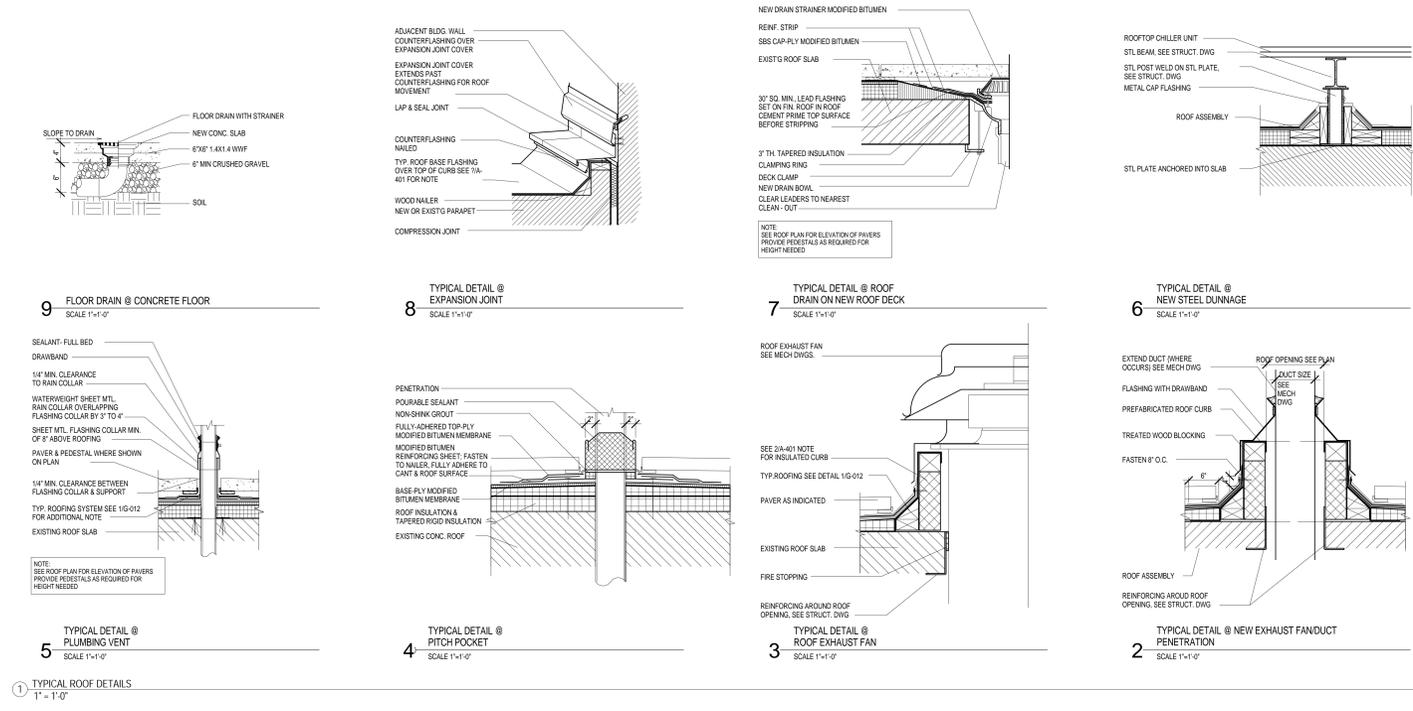
DOOR SCHEDULE, DOOR TYPES, HEAD, JAMB & SILL DETAILS

**G-006**

As Indicated

1303.00

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584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440  
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<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018881 Corra CRI Architecture, P.L.L.C. 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Pannery Group, LLC 52 Vonderli Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, P.L.L.C. 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>GEOTECHNICAL ENGINEER</b> Langan Engineering & Environmental Services 21 Dena Plaza 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACOUSTIC CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>PAVING CONSULTANT</b> Frank Seta Associates LLC 224 West 50th Street New York, NY 10001

DD SUBMISSION 07.12.2013  
DESCRIPTION DATE

**CETRA RUDDY**

TYPICAL ROOF DETAILS

**G-007**

1" = 1'-0"  
1303.00

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# 546W 44

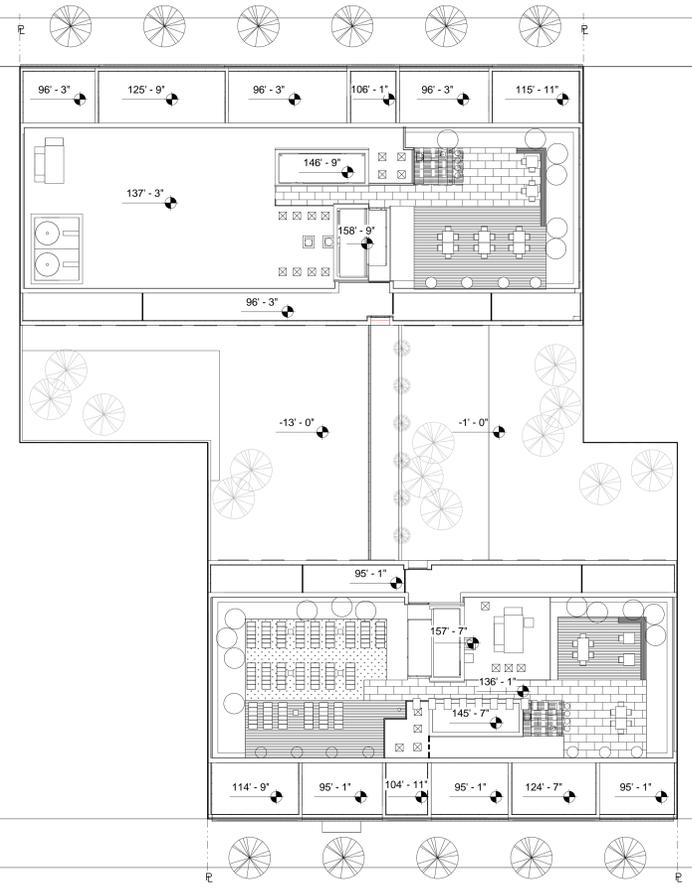
546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parnely Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>ACoustic CONSULTANT</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

11TH AVENUE

WEST 44TH STREET

WEST 43RD STREET



1 SITE PLAN - 1/16"  
1/16" = 1'-0"

DESCRIPTION	DATE
DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013



CETRA RUDDY

SITE PLAN

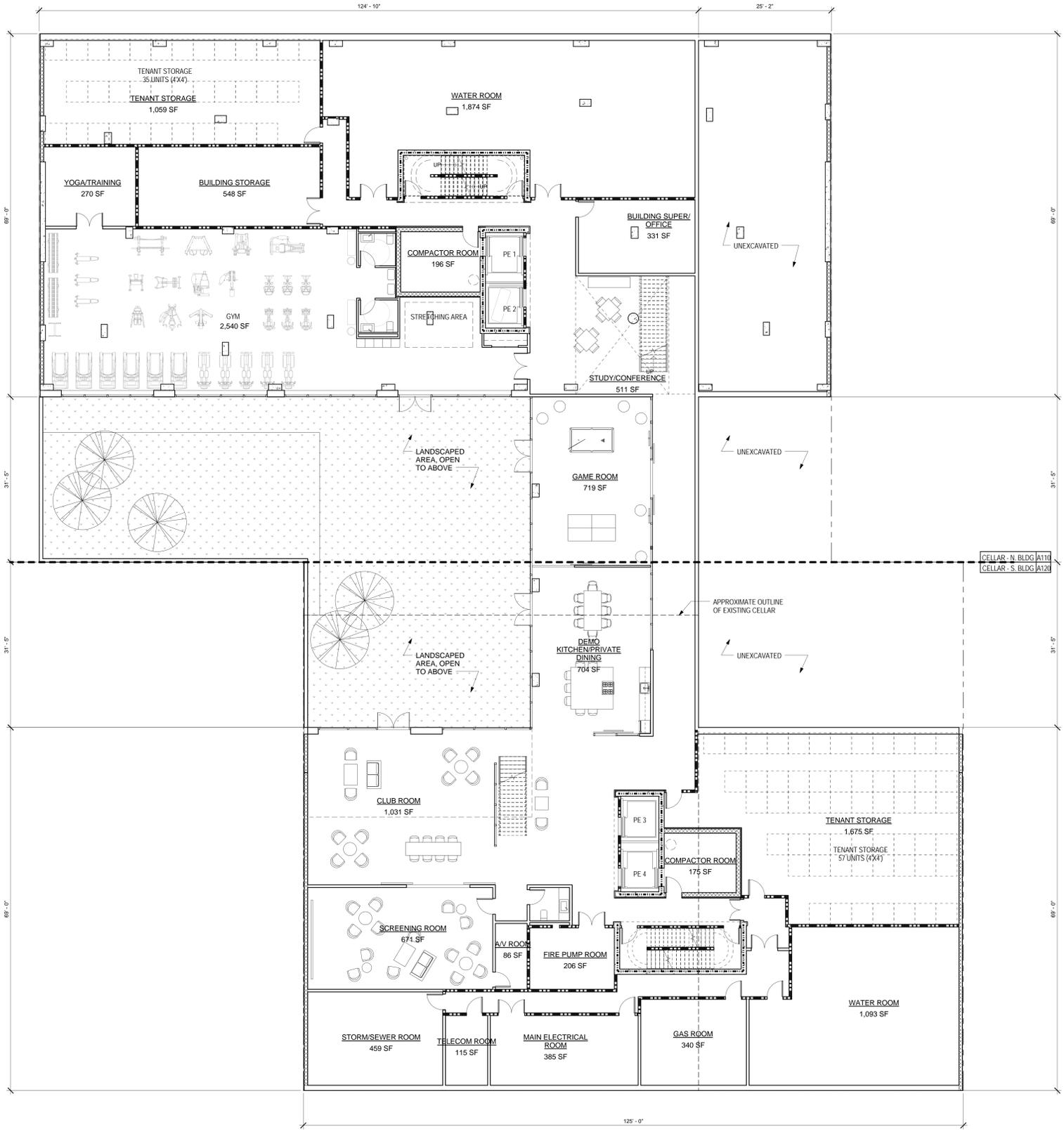
**A-100**

1/16" = 1'-0"  
1303.00  
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# 546W 44

546 W 44TH STREET  
NEW YORK, NY



1 CELLAR PLAN  
1/8" = 1'-0"

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Pannery Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>MECHANICAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL ENGINEER</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
DESCRIPTION	DATE



CELLAR PLAN

**A-101**

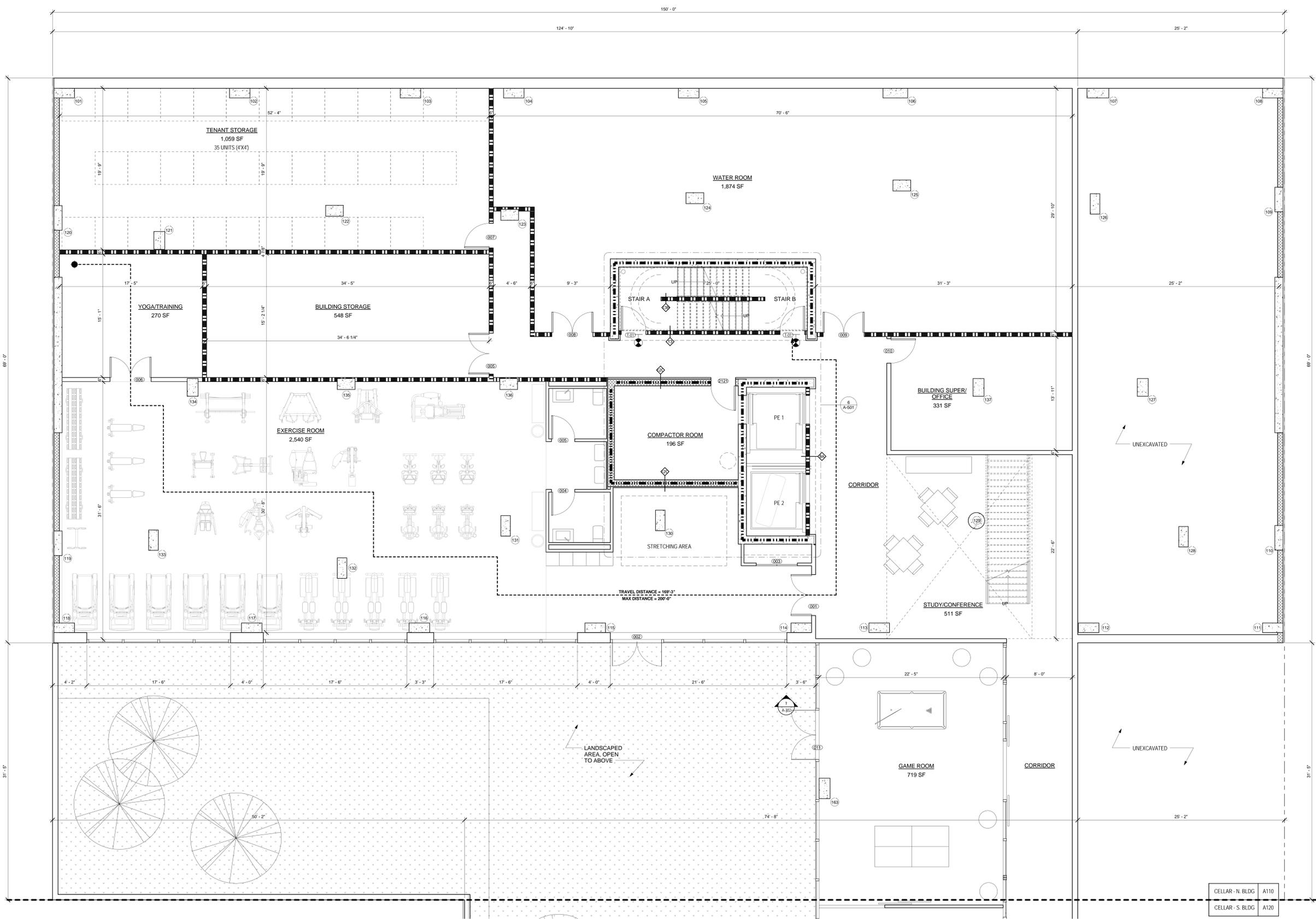
PROJECT	SCALE	DATE
546 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440	1/8" = 1'-0"	1303.00
CETRA/CR ARCHITECTURE PLLC WWW.CETRA/CR.COM		

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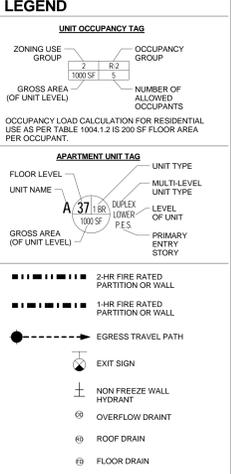
# 546W 44

546 W 44TH STREET  
NEW YORK, NY



<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10017	<b>CREF 546 West 44th St, LLC</b> Representative: The Parkway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>MECHANICAL ENGINEER</b> Langan Engineering & Environmental Services 21 Rensselaer 360 West 31st Street New York, NY 10001	<b>MECHANICAL ENGINEER</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL ENGINEER</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-200 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED.



ACCESSORY OCCUPANCY LOAD AT CELLAR-NORTH AS PER TABLE 1004.1.2

SPACE	OCCUPANCY GROUP	AREA	AREA PER OCCUPANT	OCCUPANCY
EXERCISE ROOM	R-2 ACCESSORY	2,540 SF	50	51
YOGA ROOM	R-2 ACCESSORY	270 SF	50	6
GAME ROOM	R-2 ACCESSORY	719 SF	15	50
TENANT STOR.	R-2 ACCESSORY	1,059 SF	300	4
SUPER/OFFICE	R-2 ACCESSORY	331	100	4
BLDG. STOR.	R-2 ACCESSORY	548 SF	300	2
WATER RM.	R-2 ACCESSORY	1,874 SF	300	7
COMPACTOR	R-2 ACCESSORY	209 SF	300	1
<b>TOTAL</b>				<b>125</b>

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1006.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR A	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 63 = 18.9'	44'
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 63 = 12.6'	36'	36'
STAIR B	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 62 = 18.6'	44'
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 62 = 12.4'	36'	36'

1 CELLAR PLAN - NORTH  
1/4" = 1'-0"

DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



CELLAR PLAN - NORTH BUILDING  
FF EL -12'-11" (+2.77) U.O.N.  
TOS EL -13'-0" (+2.69) U.O.N.

**A-110**

As indicated  
1303.00

# 546W 44

546 W 44TH STREET  
NEW YORK, NY

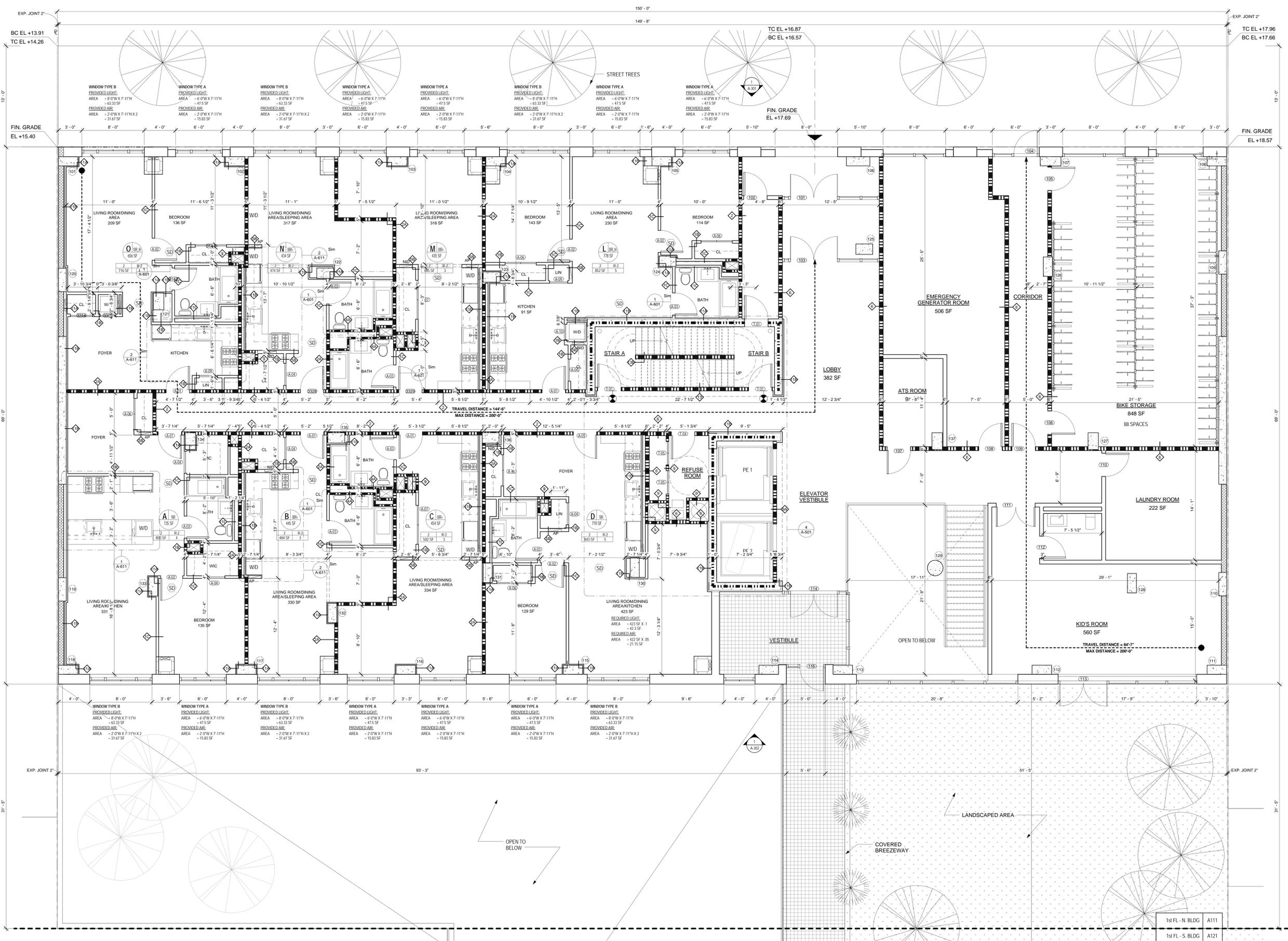
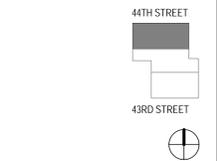
<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parkway Group, LLC 52 Vander Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 29 Broadway 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>MECHANICAL ENGINEER</b> Langan Engineering & Environmental Services 21 River Plaza 360 West 31st Street New York, NY 10001	<b>MECHANICAL ENGINEER</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ELECTRICAL ENGINEER</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>ELECTRICAL ENGINEER</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
- ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLAN, 1000 SERIES DWGS FOR LOCATIONS.
  - SEE A-100 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  - ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
  - ALL LOT-LINE WINDOWS ARE SPRINKLERED.

**LEGEND**

UNIT OCCUPANCY TAG	
ZONING USE GROUP	OCCUPANCY GROUP
GROSS AREA (OF UNIT LEVEL)	NUMBER OF ALLOWED OCCUPANTS
APARTMENT UNIT TAG	
FLOOR LEVEL	UNIT TYPE
UNIT NAME	MULTI-LEVEL UNIT TYPE
GROSS AREA (OF UNIT LEVEL)	LEVEL OF UNIT
	ENTRY P.E.S.
	PRIMARY ENTRY

■■■■ 2-HR FIRE RATED PARTITION OR WALL  
 ■■■■ 1-HR FIRE RATED PARTITION OR WALL  
 ●●●● EGRESS TRAVEL PATH  
 ⊕ EXIT SIGN  
 ⊕ NON FREEZE WALL HYDRANT  
 ⊕ OVERFLOW DRAIN  
 ⊕ ROOF DRAIN  
 ⊕ FLOOR DRAIN



1ST FLOOR PLAN - NORTH  
1/4" = 1'-0"

ACCESSORY OCCUPANCY LOAD AT 1ST FLOOR-NORTH AS PER TABLE 1004.1.2

SPACE	OCCUPANCY GROUP	AREA	AREA PER OCCUPANT	OCCUPANCY
RES LOBBY	R-2 ACCESSORY	382 SF	15	26
KID'S ROOM	R-2 ACCESSORY	560 SF	50	12
BIKE STOR.	R-2 ACCESSORY	848 SF	300	3
LAUNDRY	R-2 ACCESSORY	222 SF	50	5
ATS RM.	R-2 ACCESSORY	97 SF	300	4
EMER. GEN. RM.	R-2 ACCESSORY	506 SF	300	7
<b>TOTAL</b>				<b>67</b>

STAIR	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1006.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR A	2 HR	0.3' PER OCCUPANT = 0.3' X 49 = 13.7'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 49 = 9.8'	36"	36"
STAIR B	2 HR	0.3' PER OCCUPANT = 0.3' X 46 = 13.4'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 46 = 9.6'	36"	36"

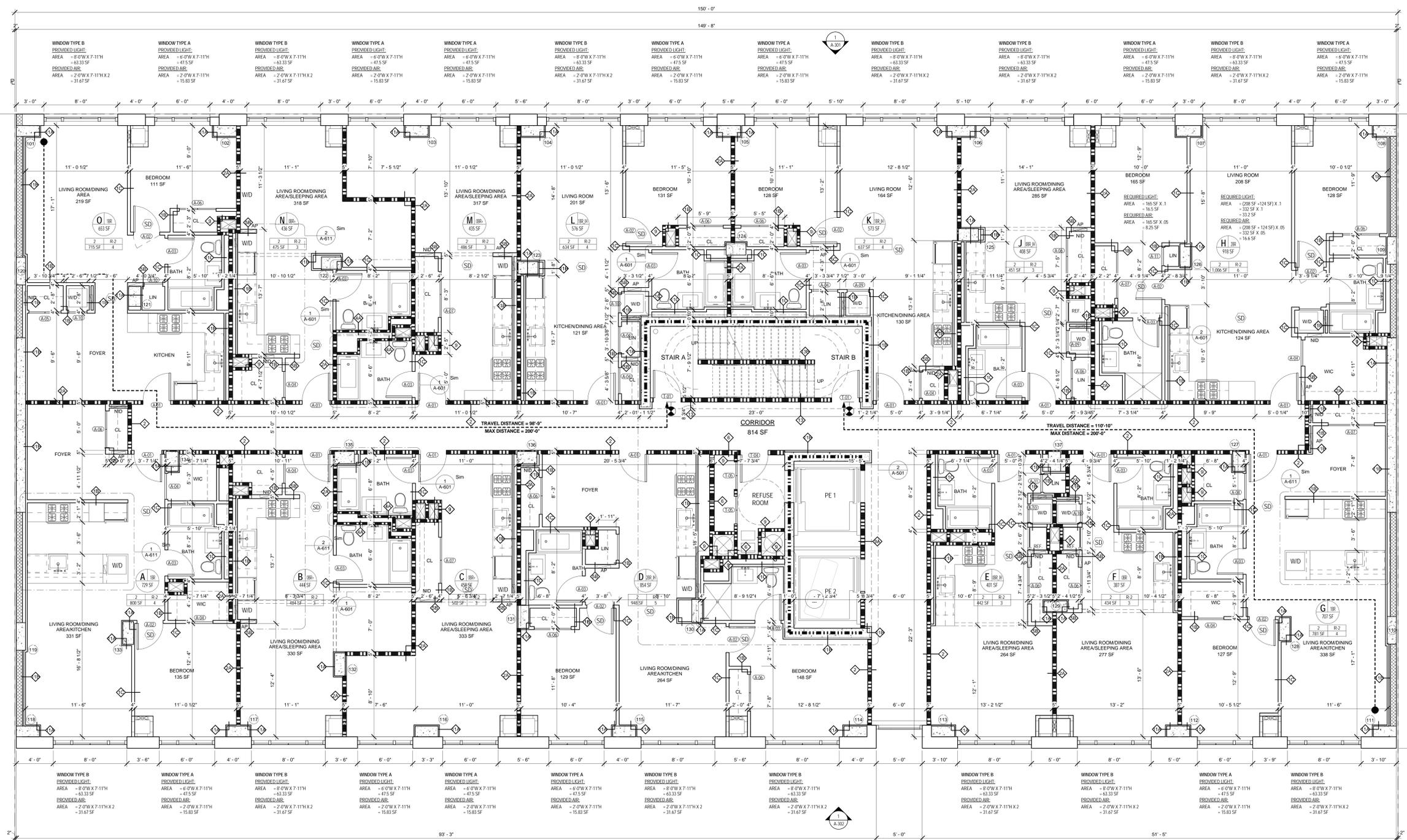
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



1ST FLOOR PLAN - NORTH BUILDING  
FF EL 2'-7" (+18.27') U.O.N.  
TOS EL 2'-6" (+18.19') U.O.N.

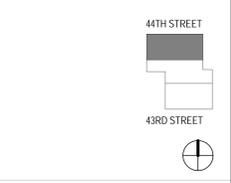
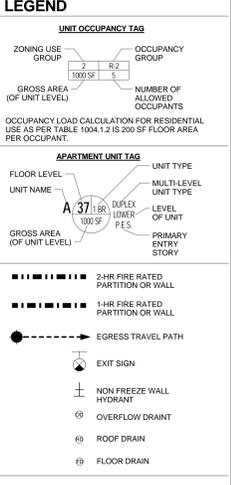
## A-111

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1303.00  
CETRA/CCI ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 P 212 841 8011 F 212 841 8440  
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<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>MECHANICAL ENGINEER</b> Langan Engineering & Environmental Services 21 River Place 360 West 31st Street New York, NY 10001	<b>MECHANICAL ENGINEER</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL ENGINEER</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLAN, FOR SERIES DWGS FOR LOCATIONS.
  2. SEE A-100 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 2-HR FIRE RATED.
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED.



1 TYPICAL FLOOR PLAN - NORTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	2 HR	0.3' PER OCCUPANT = 0.3' X 26 = 7.8'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 26 = 5.2'	36"	36"
STAIR F	2 HR	0.3' PER OCCUPANT = 0.3' X 26 = 7.8'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 26 = 5.2'	36"	36"

HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



TYPICAL FLOOR PLAN - NORTH BUILDING

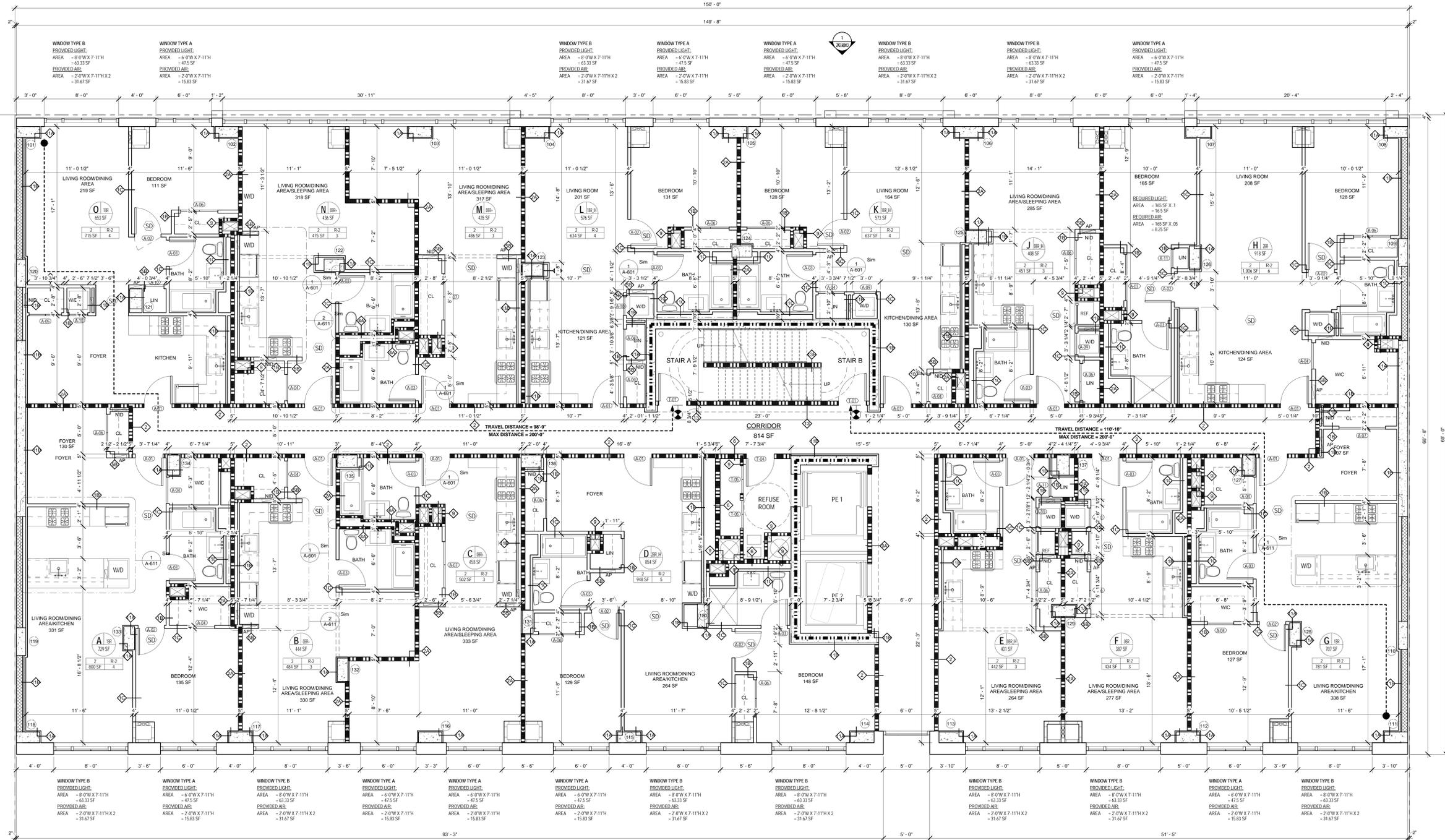
**A-112**

As indicated

1303.00

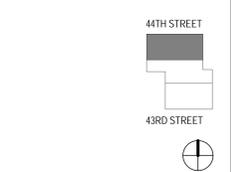
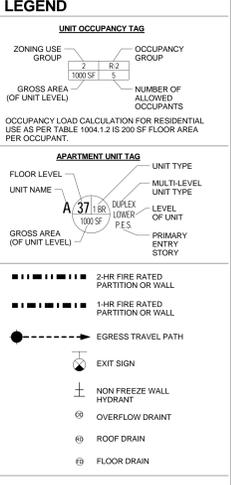
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<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 524 Broadway Suite 401 New York, NY 10012	<b>CREF 546 West 44th St, LLC</b> Representative: The Parkway Group, LLC 18 West 18th Street, 10th Fl New York, NY 10011
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>MECHANICAL ENGINEER</b> Langan Engineering & Environmental Services 21 West Plaza 360 West 31st Street New York, NY 10001	HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ELECTRICAL ENGINEER</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
- ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLAN, AND SEE DWGS FOR LOCATIONS.
  - SEE A-400 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  - ALL LOT LINE WALLS ARE 2-HR FIRE RATED.
  - ALL LOT-LINE WINDOWS ARE SPRINKLERED.



10TH FLOOR PLAN - NORTH BUILDING  
1/4" = 1'-0"

		FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 26 = 7.8'	44"	44"
DOOR		1.5 HR	0.2' PER OCCUPANT = 0.2' X 26 = 5.2'	36"	36"
STAIR F	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 26 = 7.8'	44"	44"
DOOR		1.5 HR	0.2' PER OCCUPANT = 0.2' X 26 = 5.2'	36"	36"

DD SUBMISSION	07.12.2013
DESCRIPTION	DATE



10TH FLOOR PLAN - NORTH BUILDING  
FF EL. 86'-9" (+102.43') U.O.N.  
TOS EL. 86'-8" (+102.35') U.O.N.

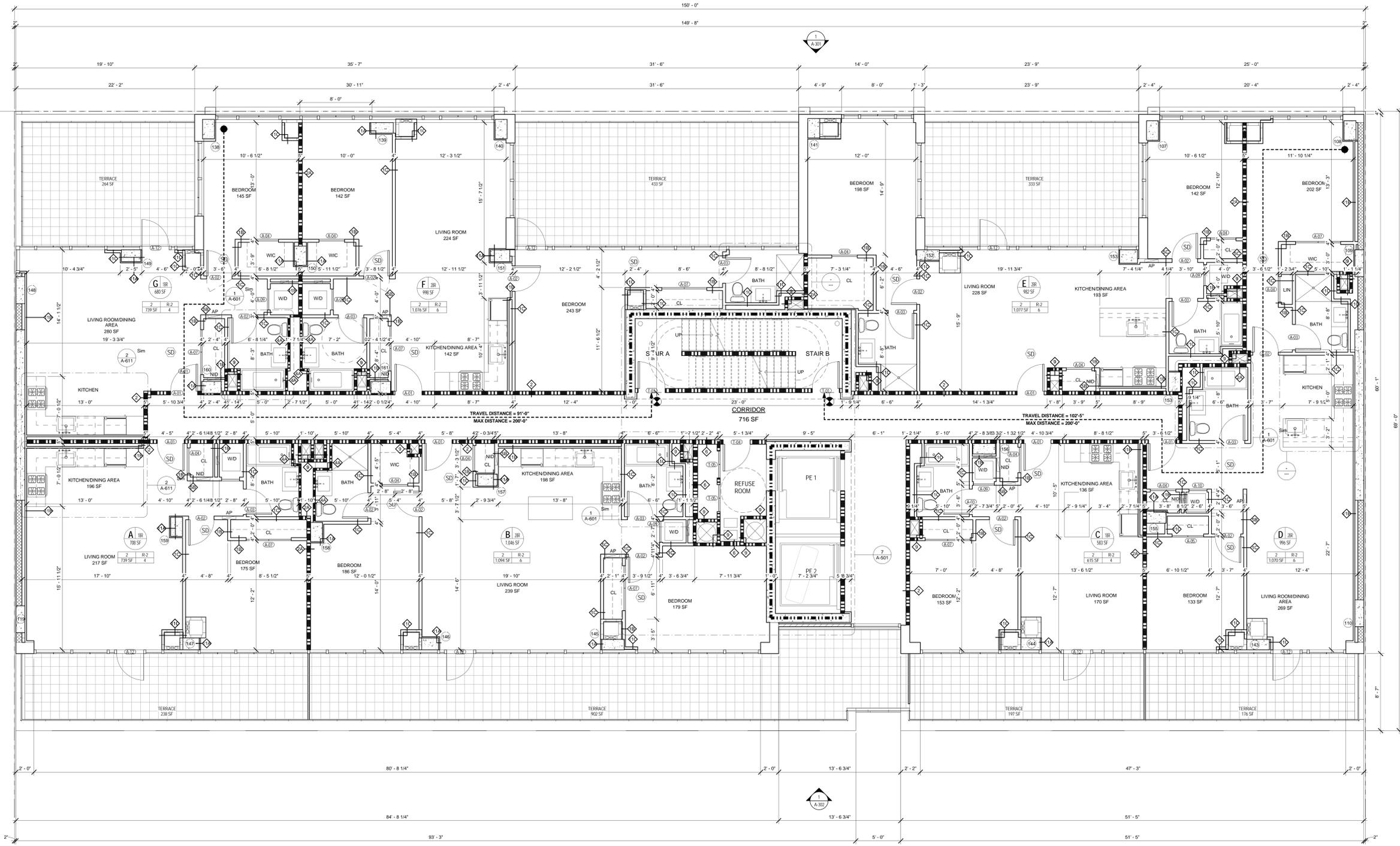
**A-113**

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<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
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- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-200 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED.

**LEGEND**

**UNIT OCCUPANCY TAG**

ZONING USE GROUP	OCCUPANCY GROUP
1000 SF	R-2
1000 SF	R-2

GROSS AREA (OF UNIT LEVEL) NUMBER OF ALLOWED OCCUPANTS

OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 200 SF FLOOR AREA PER OCCUPANT.

**APARTMENT UNIT TAG**

FLOOR LEVEL	UNIT TYPE
A-37	MULTI-LEVEL UNIT TYPE
A-37	LEVEL OF UNIT
A-37	PRIMARY ENTRY
A-37	STORY

■■■■ 2-HR FIRE RATED PARTITION OR WALL  
 ■■■■ 1-HR FIRE RATED PARTITION OR WALL  
 ●---● EGRESS TRAVEL PATH  
 ⊕ EXIT SIGN  
 ⊕ NON FREEZE WALL HYDRANT  
 ⊕ OVERFLOW DRAIN  
 ⊕ ROOF DRAIN  
 ⊕ FLOOR DRAIN



11TH FLOOR PLAN - NORTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR A	2 HR	0.3' PER OCCUPANT = 0.3' X 18 = 5.4'	44'	44'
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 18 = 3.6'	36'	36'
STAIR B	2 HR	0.3' PER OCCUPANT = 0.3' X 18 = 5.4'	44'	44'
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 18 = 3.6'	36'	36'

DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



11TH FLOOR PLAN - NORTH BUILDING  
FF EL 97'-1" (+112.77) U.O.N.  
TOS EL 97'-0" (+112.67) U.O.N.

**A-114**

As indicated

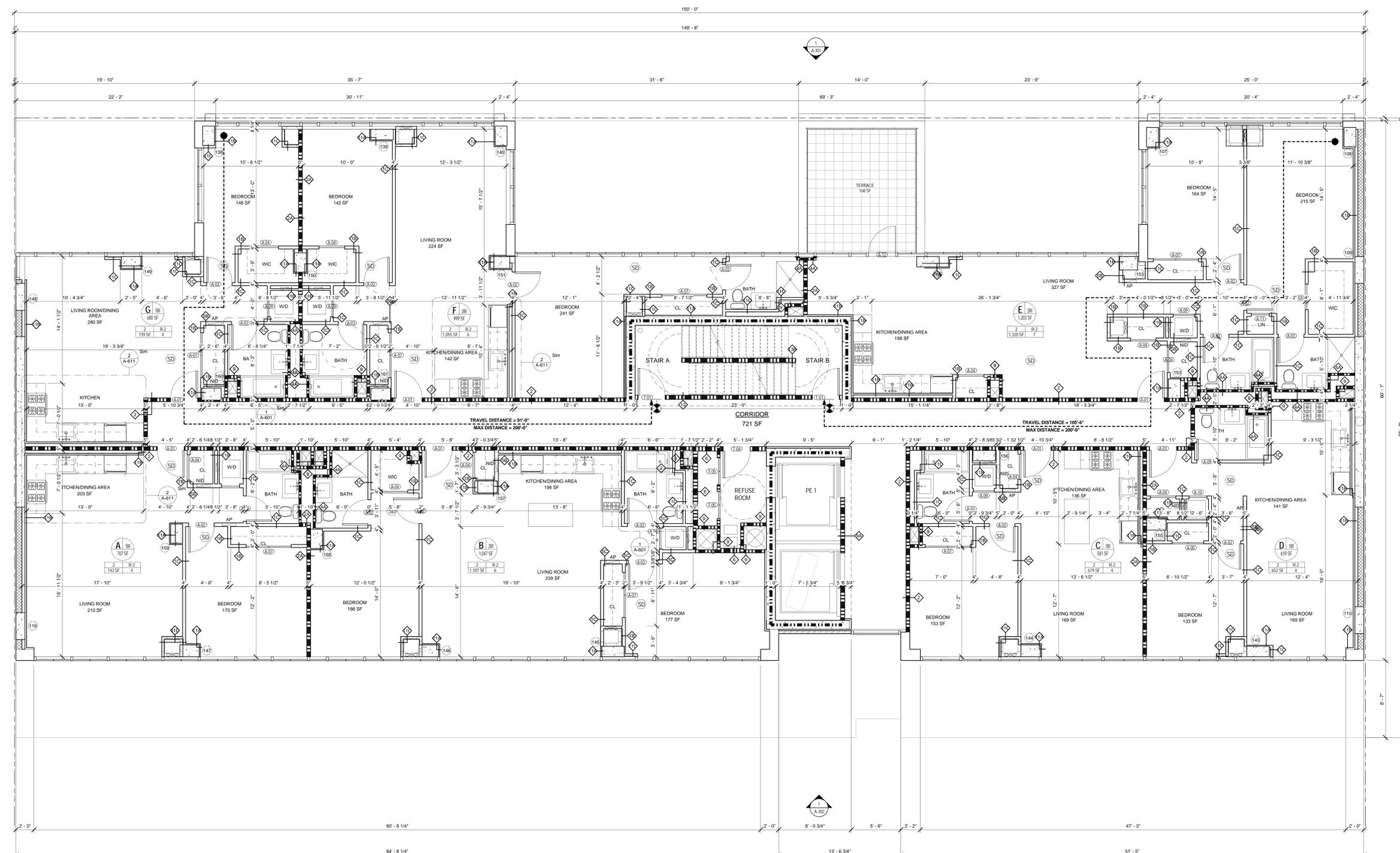
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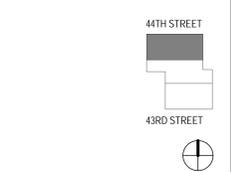
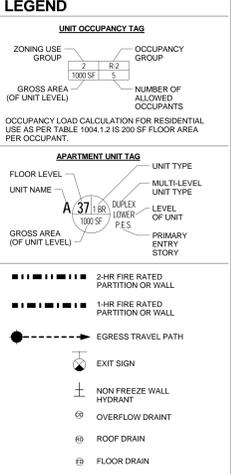
# 546W 44

546 W 44TH STREET  
NEW YORK, NY



<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREF</b> 546 West 44th St, LLC Representative: The Parkway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	Dagler Engineering, PLLC 29 Broadway New York, NY 10006
<b>LABORATORY ARCHITECT</b> Langan Engineering & Environmental Services 21 River Plaza 360 West 31st Street New York, NY 10001	HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL CONSULTANT</b> Ceram & Associates, Inc. 424 Fifth Avenue New York, NY 10018	Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 906.7. SEE REFLECTED CEILING PLANS, A-100 SERIES DWGS FOR LOCATIONS.
  2. SEE A-100 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT-LINE WALLS ARE 3-HR FIRE RATED
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED



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DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



12TH FLOOR PLAN - NORTH BUILDING  
FF EL. 106'-11" (+122.60') U.O.N.  
TOS EL. 106'-10" (+122.52') U.O.N.

**A-115**

As indicated

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1 12TH FLOOR PLAN - NORTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR A	2 HR	0.3' PER OCCUPANT = 0.3' X 18 = 5.4'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 18 = 3.6'	36"	36"
STAIR B	2 HR	0.3' PER OCCUPANT = 0.3' X 17 = 5.1'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 17 = 3.4'	36"	36"

# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parkway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>MECHANICAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 21 River Plaza 360 West 31st Street New York, NY 10001	<b>ENVIRONMENTAL ENGINEER</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>STRUCTURAL CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>STRUCTURAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

## NOTES

1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 100.7. SEE REFLECTED CEILING PLANS, A-100 SERIES DWGS FOR LOCATIONS.
2. SEE A-100 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
4. ALL LOT-LINE WINDOWS ARE SPRINKLERED.

## LEGEND

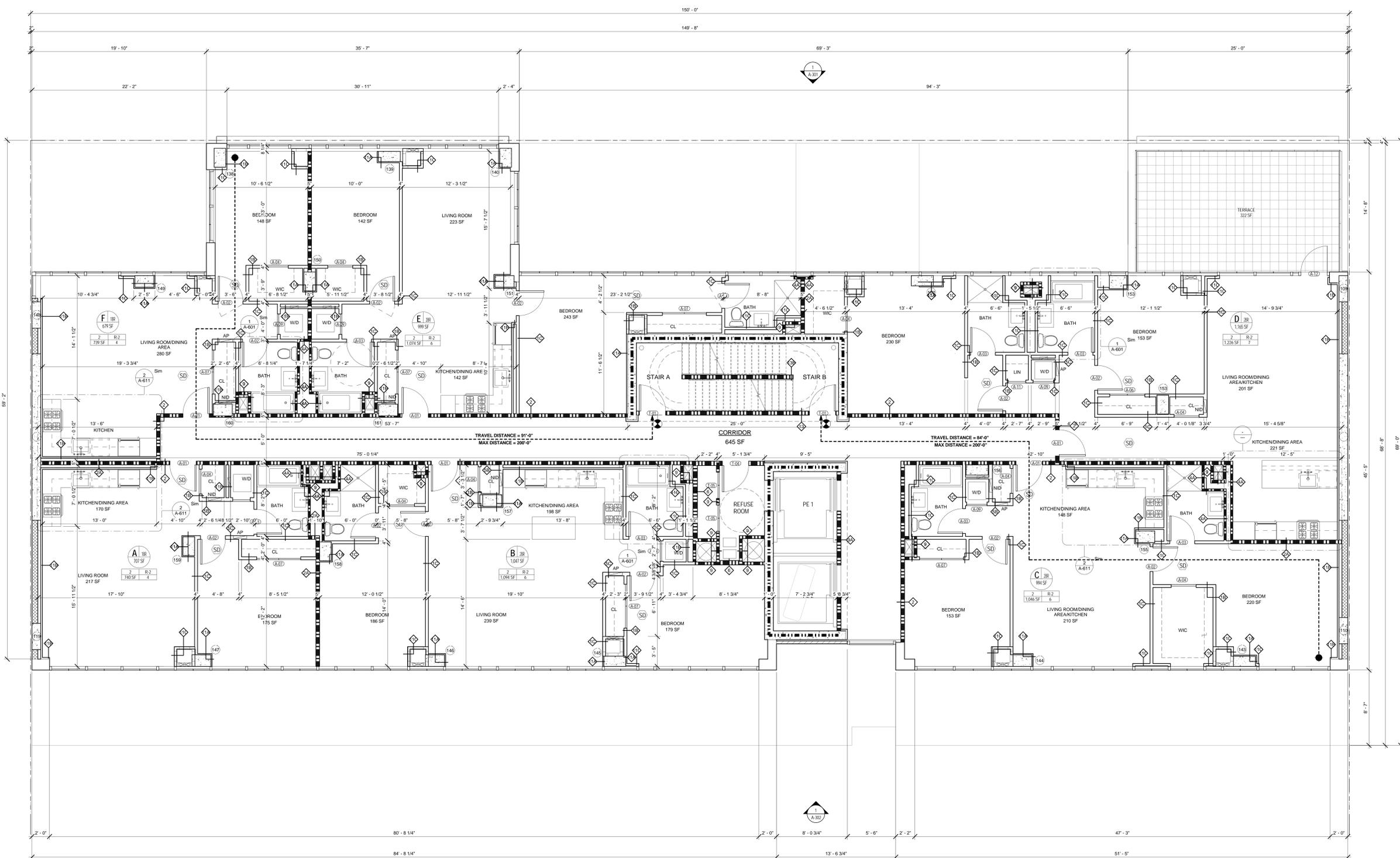
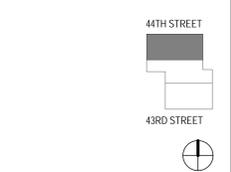
ZONING USE GROUP	OCCUPANCY GROUP
CL	R-2
1000 SF	1
GROSS AREA (OF UNIT LEVEL)	NUMBER OF ALLOWED OCCUPANTS

APARTMENT UNIT TAG	UNIT TYPE
FLOOR LEVEL	UNIT TYPE
UNIT NAME	MULTI-LEVEL UNIT TYPE
A-37	LEVEL OF UNIT
1003 SF	P.E.S.
GROSS AREA (OF UNIT LEVEL)	PRIMARY ENTRY
	STORY

- 2-HR FIRE RATED PARTITION OR WALL
- 1-HR FIRE RATED PARTITION OR WALL
- EGRESS TRAVEL PATH
- EXIT SIGN
- NON FREEZE WALL
- HYDRANT
- OVERFLOW DRAIN
- ROOF DRAIN
- FLOOR DRAIN



13TH FLOOR PLAN - NORTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR A	2 HR	0.3' PER OCCUPANT = 0.3' X 17 = 5.1'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 17 = 3.4'	36"	36"
STAIR B	2 HR	0.3' PER OCCUPANT = 0.3' X 16 = 4.8'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 16 = 3.2'	36"	36"

DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



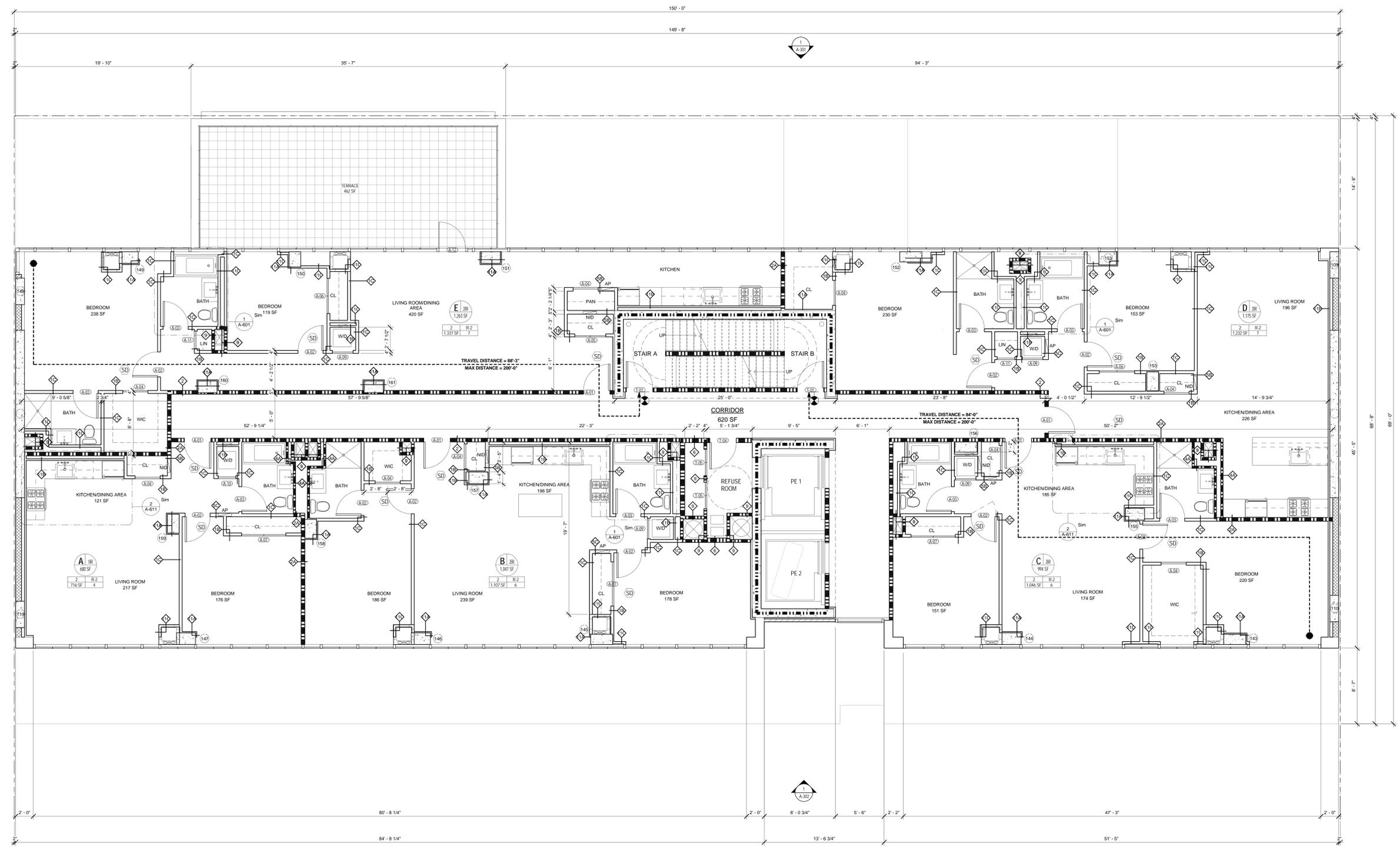
CETRA RUDDY

13TH FLOOR PLAN - NORTH BUILDING  
FF EL 116'-9" (+132.43') U.O.N.  
TOS EL 116'-8" (+132.35') U.O.N.

## A-116

As indicated  
1303.00  
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584 BROADWAY NEW YORK NY 10012 P 212 841 8011 F 212 841 8440  
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<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018881 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parkway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>MECHANICAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 19th Street, 10th Fl New York, NY 10011	<b>MECHANICAL CONTRACTOR</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>STRUCTURAL ENGINEER</b> Langan Engineering & Environmental Services 21 Ferra Plaza 360 West 31st Street New York, NY 10001	<b>STRUCTURAL CONTRACTOR</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ELECTRICAL ENGINEER</b> Ceram & Associates, Inc. 404 Fifth Avenue 30th Street New York, NY 10018	<b>ELECTRICAL CONTRACTOR</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-200 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT-LINE WALLS ARE 2-HR FIRE RATED.
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED.

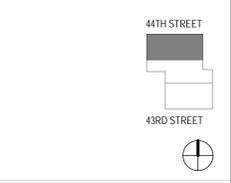
**LEGEND**

UNIT OCCUPANCY TAG	
ZONING USE GROUP	OCCUPANCY GROUP
GROSS AREA (OF UNIT LEVEL)	NUMBER OF ALLOWED OCCUPANTS

OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.

APARTMENT UNIT TAG	
FLOOR LEVEL	UNIT TYPE
UNIT NAME	MULTI-LEVEL UNIT TYPE
GROSS AREA (OF UNIT LEVEL)	LEVEL OF UNIT
	P.E.S.
	PRIMARY ENTRY
	STORY

- 2-HR FIRE RATED PARTITION OR WALL
- 1-HR FIRE RATED PARTITION OR WALL
- EGRESS TRAVEL PATH
- EXIT SIGN
- NON FREEZE WALL HYDRANT
- OVERFLOW DRAIN
- ROOF DRAIN
- FLOOR DRAIN



14TH FLOOR PLAN - NORTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR A	2 HR	0.3' PER OCCUPANT = 0.3' X 15 = 4.5'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 15 = 3.0'	36"	36"
STAIR B	2 HR	0.3' PER OCCUPANT = 0.3' X 15 = 4.5'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 15 = 3.0'	36"	36"

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DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



14TH FLOOR PLAN - NORTH BUILDING  
FF EL 126'-7" (+142.27) U.O.N.  
TOS EL 126'-6" (+142.19) U.O.N.

**A-117**

As indicated

1303.00

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# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parnely Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>MECHANICAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 West Plaza 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>STRUCTURAL CONSULTANT</b> Cerami & Associates, Inc. 404 Fifth Avenue 20th Street New York, NY 10018	<b>STRUCTURAL CONSULTANT</b> Frank Seta Associates LLC 224 West 20th Street New York, NY 10011

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-200 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 2-HR FIRE RATED
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED

**LEGEND**

**UNIT OCCUPANCY TAG**

ZONING USE GROUP	OCCUPANCY GROUP
1000 SF	1
1000 SF	2
1000 SF	3

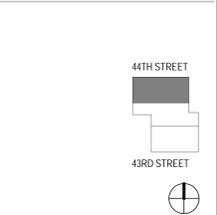
GROSS AREA (OF UNIT LEVEL)      NUMBER OF ALLOWED OCCUPANTS

OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.

**APARTMENT UNIT TAG**

FLOOR LEVEL	UNIT NAME	UNIT TYPE
A	37	DUPLEX
B	180	TOWERS
		P.E.S.
		PRIMARY ENTRY
		STORY

GROSS AREA (OF UNIT LEVEL)



DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE

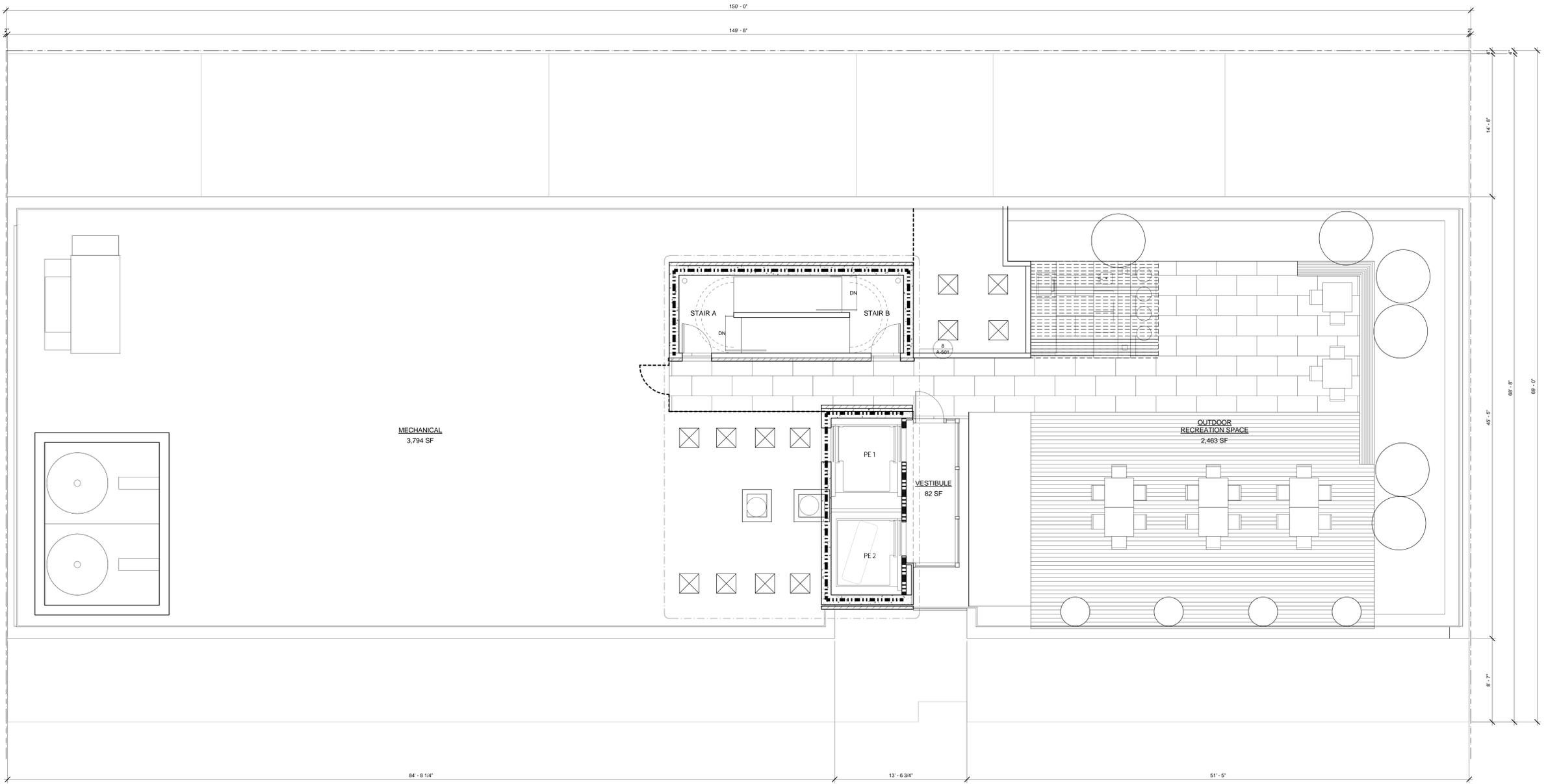


ROOF PLAN - NORTH BUILDING  
FF EL 137'-6" (+153.19') U.O.N.  
TOS EL 136'-6" (+152.19') U.O.N.

**A-118**

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ACCESSORY OCCUPANCY LOAD AT ROOF-NORTH AS PER TABLE 1004.1.2

SPACE	OCCUPANCY GROUP	AREA	AREA PER OCCUPANT	OCCUPANCY
TERRACE	R-2 ACCESSORY	2,419 SF	15	166
MECHANICAL	R-2 ACCESSORY	3,793 SF	300	13
<b>TOTAL</b>				<b>179</b>

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR A	2 HR	0.3' PER OCCUPANT = 0.3' X 180 = 54.0'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 180 = 36.0'	36"	36"
STAIR B	2 HR	0.3' PER OCCUPANT = 0.3' X 180 = 54.0'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 180 = 36.0'	36"	36"

1 ROOF PLAN - NORTH  
1/4" = 1'-0"

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# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parkway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-200 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED.

**LEGEND**

**UNIT OCCUPANCY TAG**

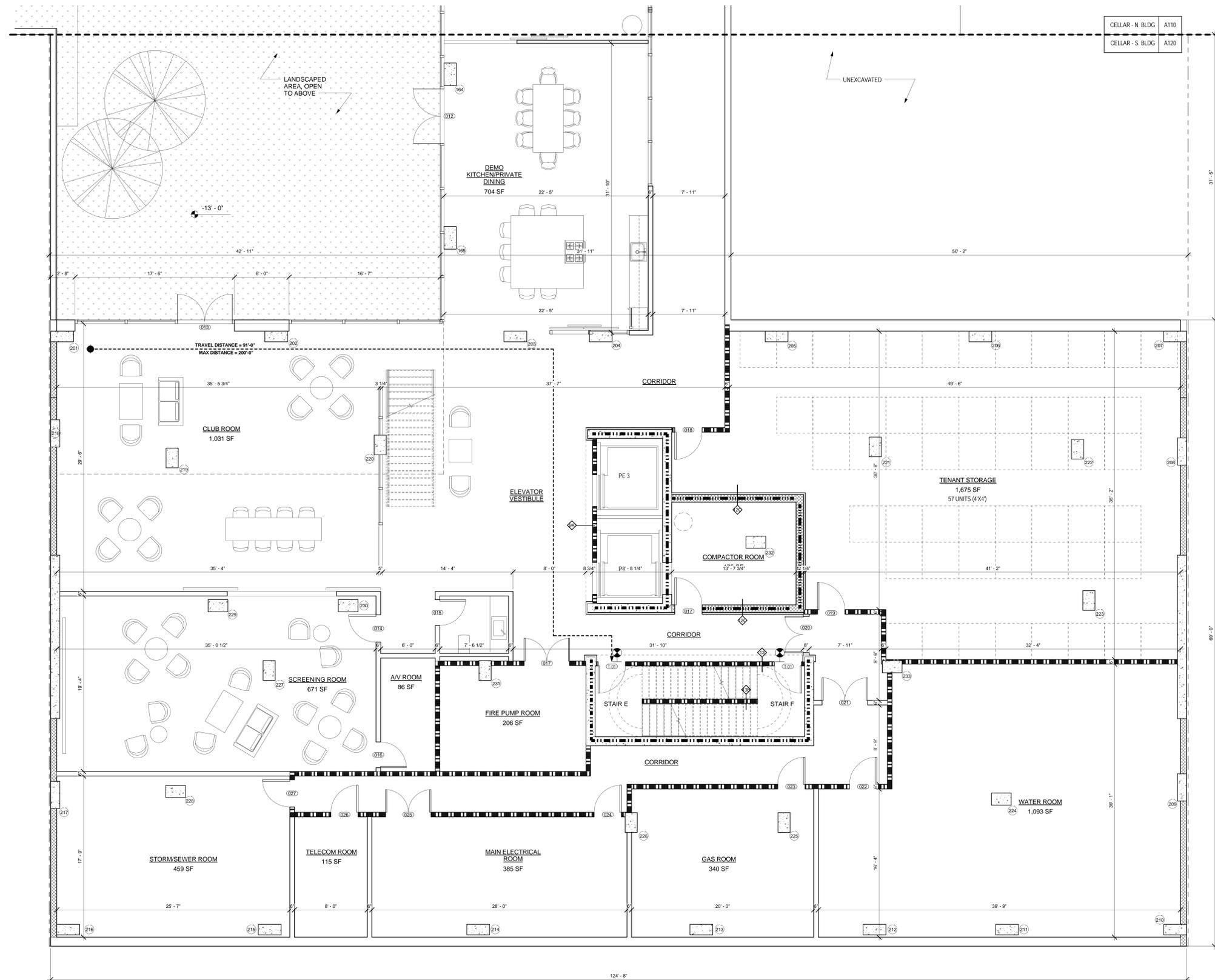
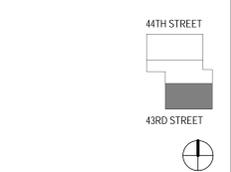
ZONING USE GROUP: R-2  
 OCCUPANCY GROUP: R-2  
 GROSS AREA (OF UNIT LEVEL): 1000 SF  
 NUMBER OF ALLOWED OCCUPANTS: 5

**APARTMENT UNIT TAG**

FLOOR LEVEL: A-37  
 UNIT NAME: 37180  
 GROSS AREA (OF UNIT LEVEL): 1000 SF

UNIT TYPE: MULTI-LEVEL  
 UNIT TYPE: LEVEL OF UNIT  
 P.E.S.: PRIMARY ENTRY STORY

■■■■ 2-HR FIRE RATED PARTITION OR WALL  
 ■■■■ 1-HR FIRE RATED PARTITION OR WALL  
 ●---● EGRESS TRAVEL PATH  
 ⊕ EXIT SIGN  
 ⊕ NON FREEZE WALL HYDRANT  
 ⊕ OVERFLOW DRAIN  
 ⊕ ROOF DRAIN  
 ⊕ FLOOR DRAIN



ACCESSORY OCCUPANCY LOAD AT CELLAR SOUTH AS PER TABLE 1004.1.2

SPACE	OCCUPANCY GROUP	AREA	AREA PER OCCUPANT	OCCUPANCY
DEMO KITCHEN	R-2 ACCESSORY	704 SF	15	47
CLUB RM	R-2 ACCESSORY	1,031 SF	15	70
SCREENING RM	R-2 ACCESSORY	671 SF	15	45
AV RM	R-2 ACCESSORY	86 SF	300	1
TENANT STOR	R-2 ACCESSORY	1,675 SF	300	6
FIRE PUMP RM	R-2 ACCESSORY	206 SF	300	1
WATER RM	R-2 ACCESSORY	1,093 SF	300	4
GAS RM	R-2 ACCESSORY	340 SF	300	2
TELECOM RM	R-2 ACCESSORY	115 SF	300	1
STORM/SEWER	R-2 ACCESSORY	459 SF	300	2
COMPACTOR RM	R-2 ACCESSORY	188 SF	300	1
<b>TOTAL</b>				<b>180</b>

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 90 = 27.0'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 90 = 18.0'	36"	36"
STAIR F	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 90 = 27.0'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 90 = 18.0'	36"	36"

1 CELLAR PLAN - SOUTH  
1/4" = 1'-0"

DESCRIPTION	DATE
DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013



CELLAR PLAN - SOUTH BUILDING  
FF EL -12'-11" (+2.77) U.O.N.  
TOS EL -13'-0" (+2.69) U.O.N.

**A-120**

As indicated  
1303.00  
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# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parham Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 21 Bore Place 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>INTERIOR ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLAN, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-400 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
  4. ALL LOT LINE WINDOWS ARE SPRINKLERED.

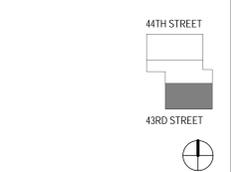
**LEGEND**

UNIT OCCUPANCY TAG	
ZONING USE GROUP	OCCUPANCY GROUP
GROSS AREA (OF UNIT LEVEL)	NUMBER OF ALLOWED OCCUPANTS

OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.

APARTMENT UNIT TAG	
FLOOR LEVEL	UNIT TYPE
UNIT NAME	MULTI-LEVEL UNIT TYPE
UNIT NO.	LEVEL OF UNIT
GROSS AREA (OF UNIT LEVEL)	P.E.S.
	PRIMARY ENTRY
	STORY

- 2-HR FIRE RATED PARTITION OR WALL
- 1-HR FIRE RATED PARTITION OR WALL
- EGRESS TRAVEL PATH
- EXIT SIGN
- NON FREEZE WALL HYDRANT
- OVERFLOW DRAIN
- ROOF DRAIN
- FLOOR DRAIN



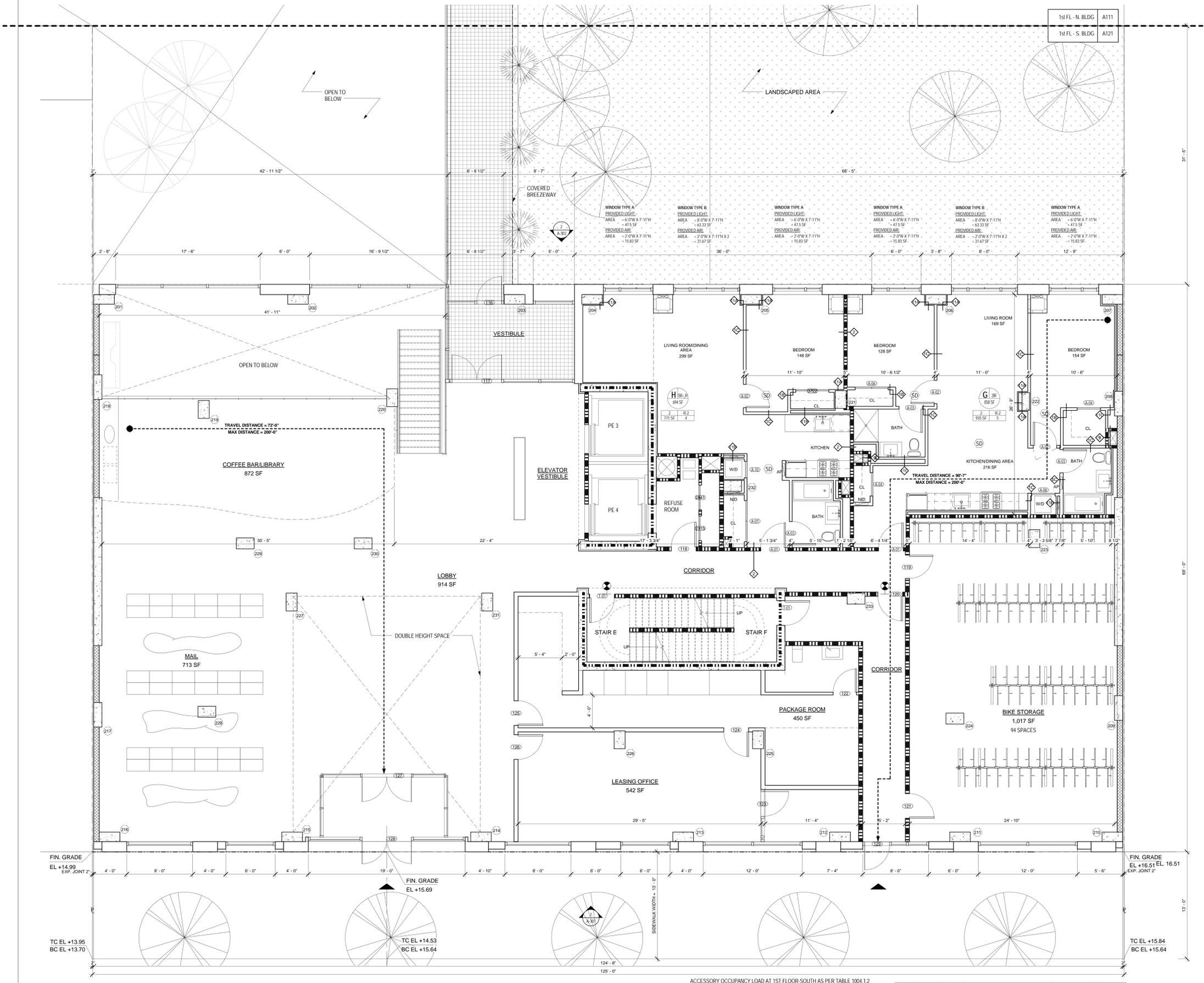
DESCRIPTION	DATE
DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013



1ST FLOOR PLAN - SOUTH BUILDING  
FF EL: 0'-1" (+15.77') U.O.N.  
TOS EL: 0'-0" (+15.69') U.O.N.

## A-121

As indicated  
1303.00  
CETRA/CR ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 P 212 841 8011 F 212 841 8440  
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1 1ST FLOOR PLAN - SOUTH  
1/4" = 1'-0"

ACCESSORY OCCUPANCY LOAD AT 1ST FLOOR-SOUTH AS PER TABLE 1004.1.2

SPACE	OCCUPANCY GROUP	AREA	AREA PER OCCUPANT	OCCUPANCY
RES. LOBBY	R-2 ACCESSORY	914 SF	15	61
MAIL	R-2 ACCESSORY	713 SF	50	15
CAFETERIA	R-2 ACCESSORY	872 SF	300	4
LEASING OFF.	R-2 ACCESSORY	542 SF	100	6
BIKE STOR.	R-2 ACCESSORY	1,017 SF	300	4
PACKAGE RM	R-2 ACCESSORY	994 SF	300	2
<b>TOTAL</b>				<b>92</b>

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 58 = 17.4'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 58 = 11.6'	36"	36"
STAIR F	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 58 = 17.4'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 58 = 11.6'	36"	36"

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architectural PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parkway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 19th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 21 River Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>STRUCTURAL CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

### NOTES

1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A AND SERIES DWGS FOR LOCATIONS.
2. SEE A-400 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
3. ALL LOT LINE WALLS ARE 2-HR FIRE RATED.
4. ALL LOT-LINE WALLS ARE SPRINKLERED.

### LEGEND

**UNIT OCCUPANCY TAG**

ZONING USE GROUP: **R-2**

OCCUPANCY GROUP: **R-2**

GROSS AREA (OF UNIT LEVEL): **1000 SF**

NUMBER OF ALLOWED OCCUPANTS: **5**

OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.

**APARTMENT UNIT TAG**

FLOOR LEVEL: **A-37**

UNIT NAME: **1180**

UNIT TYPE: **1180**

LEVEL OF UNIT: **1180**

OF UNIT: **1180**

ENTRY: **1180**

STORY: **1180**

2-HR FIRE RATED PARTITION OR WALL

1-HR FIRE RATED PARTITION OR WALL

EGRESS TRAVEL PATH

EXIT SIGN

NON FREEZE WALL HYDRANT

OVERFLOW DRAIN

ROOF DRAIN

FLOOR DRAIN



DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE

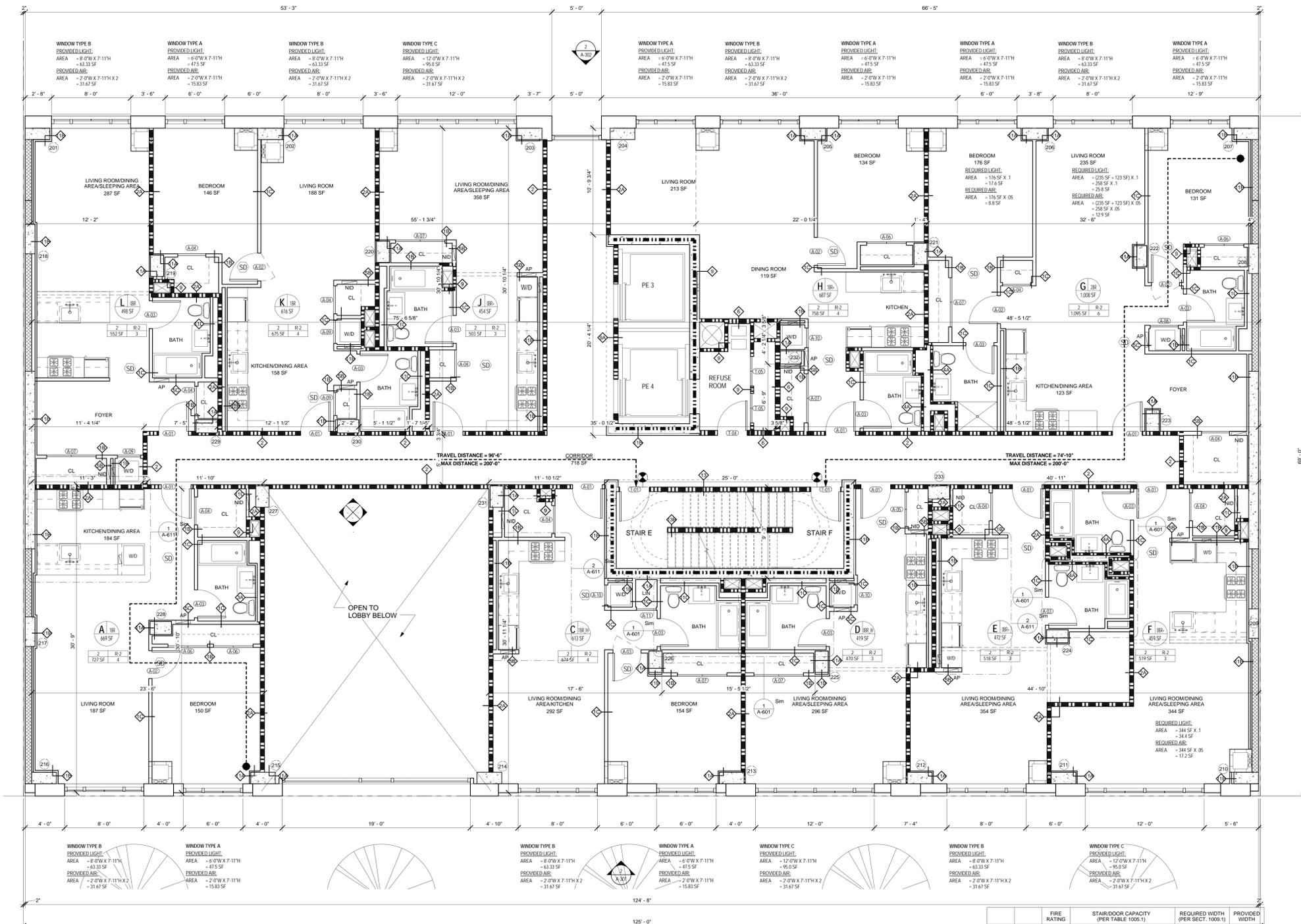


2ND FLOOR PLAN - SOUTH BUILDING  
FF EL 10'-11" (+26.60') U.O.N.  
TOS EL 10'-10" (+26.52') U.O.N.

## A-122

As indicated  
1303.00

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1 2ND FLOOR PLAN - SOUTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	2 HR	0.3' PER OCCUPANT = 0.3' X 19 = 5.7'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 19 = 3.8'	36"	36"
STAIR F	2 HR	0.3' PER OCCUPANT = 0.3' X 18 = 5.4'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 18 = 3.6'	36"	36"

# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architectural PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parkway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>MECHANICAL ENGINEER</b> Langan Engineering & Environmental Services 21 River Place 360 West 31st Street New York, NY 10001	<b>MECHANICAL ENGINEER</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL ENGINEER</b> Ceram & Associates, Inc. 424 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-000 SERIES DWGS FOR LOCATIONS.
  2. SEE A-000 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 2-HR FIRE RATED.
  4. ALL LOT-LINE WALLS ARE SPRINKLERED.

**LEGEND**

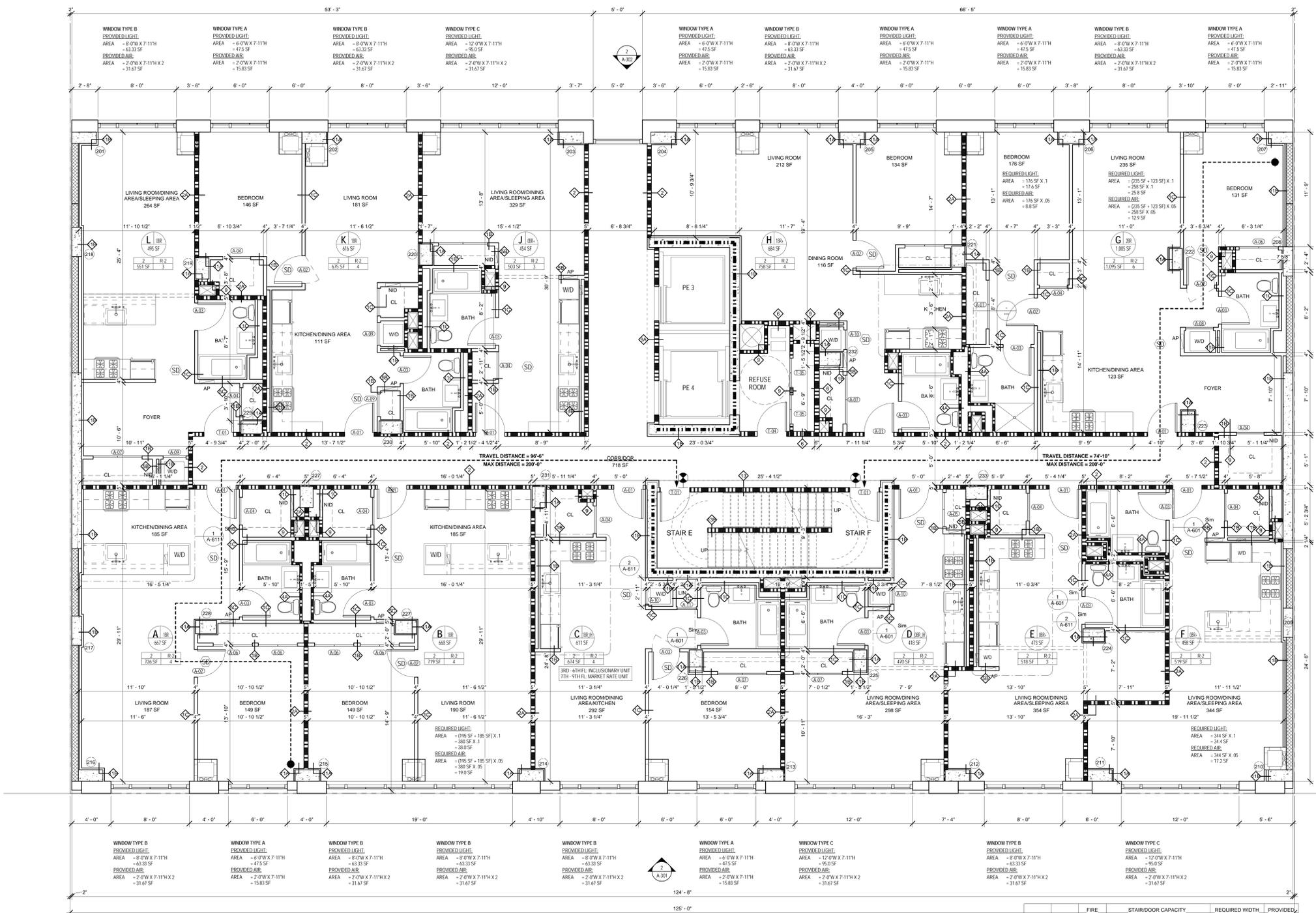
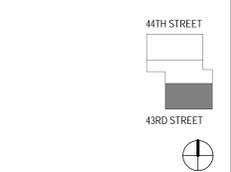
**UNIT OCCUPANCY TAG**

ZONING USE GROUP: R2C  
 OCCUPANCY GROUP: R2C  
 GROSS AREA (OF UNIT LEVEL): 1000 SF  
 NUMBER OF ALLOWED OCCUPANTS: 3

**APARTMENT UNIT TAG**

FLOOR LEVEL: 3  
 UNIT NAME: A-37  
 UNIT TYPE: DUPLEX  
 UNIT TYPE: TOWER  
 LEVEL OF UNIT: P.E.S.  
 GROSS AREA (OF UNIT LEVEL): 1000 SF  
 ENTRY: PRIMARY

■■■■ 2-HR FIRE RATED PARTITION OR WALL  
 ■■■■ 1-HR FIRE RATED PARTITION OR WALL  
 ●●●● EGRESS TRAVEL PATH  
 ⊕ EXIT SIGN  
 ⊕ NON FREEZE WALL HYDRANT  
 ⊕ OVERFLOW DRAIN  
 ⊕ ROOF DRAIN  
 ⊕ FLOOR DRAIN



1 TYPICAL FLOOR PLAN - SOUTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	2 HR	0.3' PER OCCUPANT = 0.3' X 21 = 6.3'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 21 = 4.2'	36"	36"
STAIR F	2 HR	0.3' PER OCCUPANT = 0.3' X 20 = 6.0'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 20 = 4.0'	36"	36"

DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



TYPICAL FLOOR PLAN - SOUTH BUILDING

**A-123**

As indicated  
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546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra O'Ri Architects, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parham Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 21 Bore Place 360 West 31st Street New York, NY 10001	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>INTERIOR DESIGNER</b> Ceram & Associates, Inc. 424 Fifth Avenue New York, NY 10018	<b>PLUMBING CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
- ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-1000 SERIES DWGS FOR LOCATIONS.
  - SEE A-1000 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  - ALL LOT LINE WALLS ARE 2-HR FIRE RATED.
  - ALL LOT-LINE WALLS ARE SPRINKLERED.

**LEGEND**

**UNIT OCCUPANCY TAG**

ZONING USE GROUP	OCCUPANCY GROUP
R-2	R-2
R-3	R-3
R-4	R-4
R-5	R-5

GROSS AREA (OF UNIT LEVEL)      NUMBER OF ALLOWED OCCUPANTS

OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.

**APARTMENT UNIT TAG**

FLOOR LEVEL	UNIT NAME	UNIT TYPE
A-37	180	DUPEX TOWER
A-37	181	DUPEX TOWER
A-37	182	DUPEX TOWER
A-37	183	DUPEX TOWER
A-37	184	DUPEX TOWER
A-37	185	DUPEX TOWER
A-37	186	DUPEX TOWER
A-37	187	DUPEX TOWER
A-37	188	DUPEX TOWER
A-37	189	DUPEX TOWER
A-37	190	DUPEX TOWER
A-37	191	DUPEX TOWER
A-37	192	DUPEX TOWER
A-37	193	DUPEX TOWER
A-37	194	DUPEX TOWER
A-37	195	DUPEX TOWER
A-37	196	DUPEX TOWER
A-37	197	DUPEX TOWER
A-37	198	DUPEX TOWER
A-37	199	DUPEX TOWER
A-37	200	DUPEX TOWER

GROSS AREA (OF UNIT LEVEL)      UNIT TYPE

- 2-HR FIRE RATED PARTITION OR WALL
- 1-HR FIRE RATED PARTITION OR WALL
- EGRESS TRAVEL PATH
- EXIT SIGN
- NON FREEZE WALL HYDRANT
- OVERFLOW DRAIN
- ROOF DRAIN
- FLOOR DRAIN



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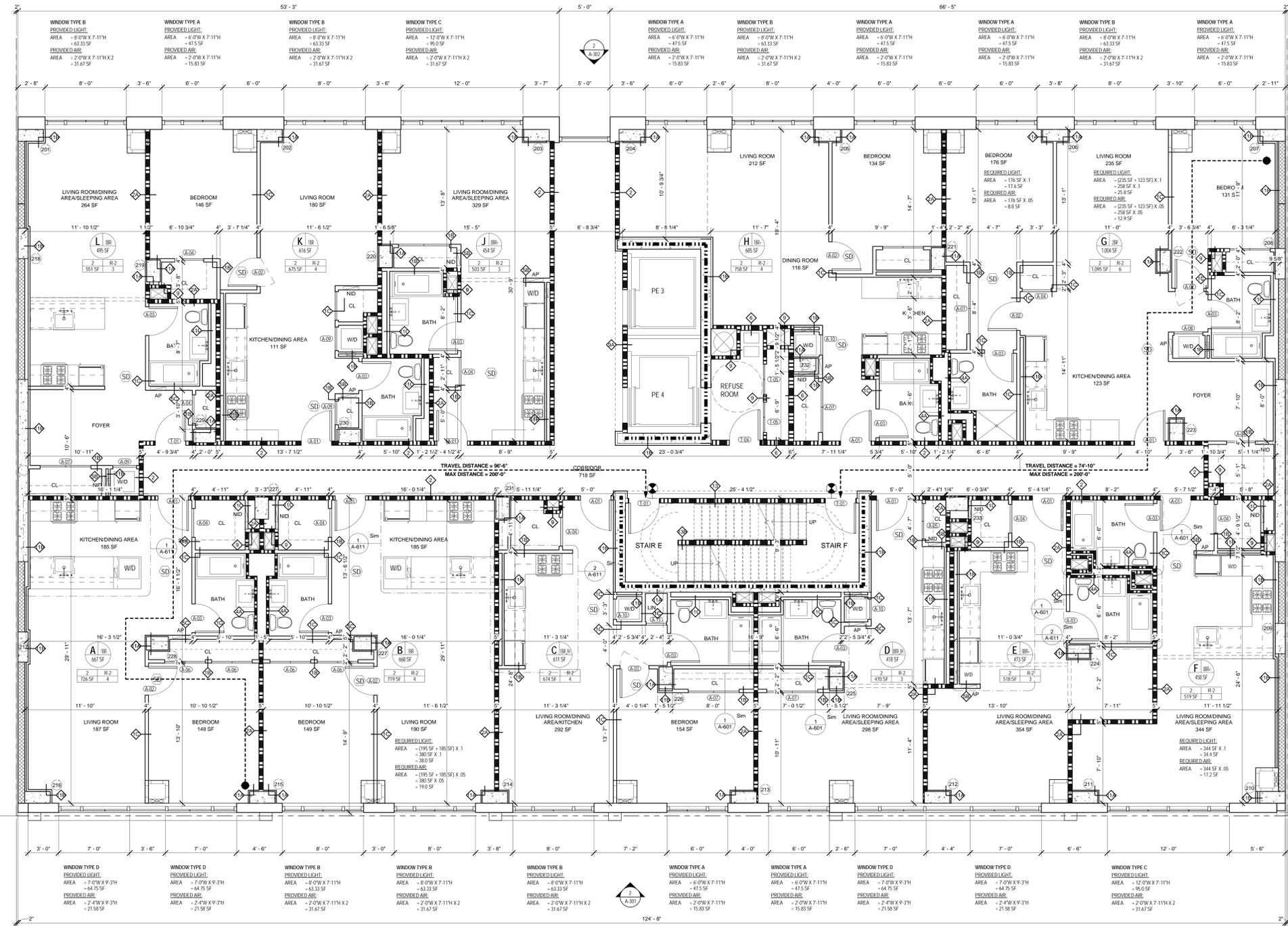
DD SUBMISSION	07.12.2013
DESCRIPTION	DATE



10TH FLOOR PLAN - SOUTH BUILDING  
FF EL 84'-3" (+99.93) U.O.N.  
TOS EL 84'-2" (+99.85) U.O.N.

## A-124

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10TH FLOOR PLAN - SOUTH BUILDING  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	2 HR	0.3' PER OCCUPANT = 0.3' X 21 = 6.3'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 21 = 4.2'	36"	36"
STAIR F	2 HR	0.3' PER OCCUPANT = 0.3' X 20 = 6.0'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 20 = 4.0'	36"	36"

# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Fairway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LABORATORY ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

## NOTES

1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 906.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
2. SEE A-400 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED
4. ALL LOT-LINE WINDOWS ARE SPRINKLERED

## LEGEND

**UNIT OCCUPANCY TAG**

ZONING USE GROUP: R-2  
OCCUPANCY GROUP: R-2  
GROSS AREA (OF UNIT LEVEL): 1000 SF  
NUMBER OF ALLOWED OCCUPANTS: 4

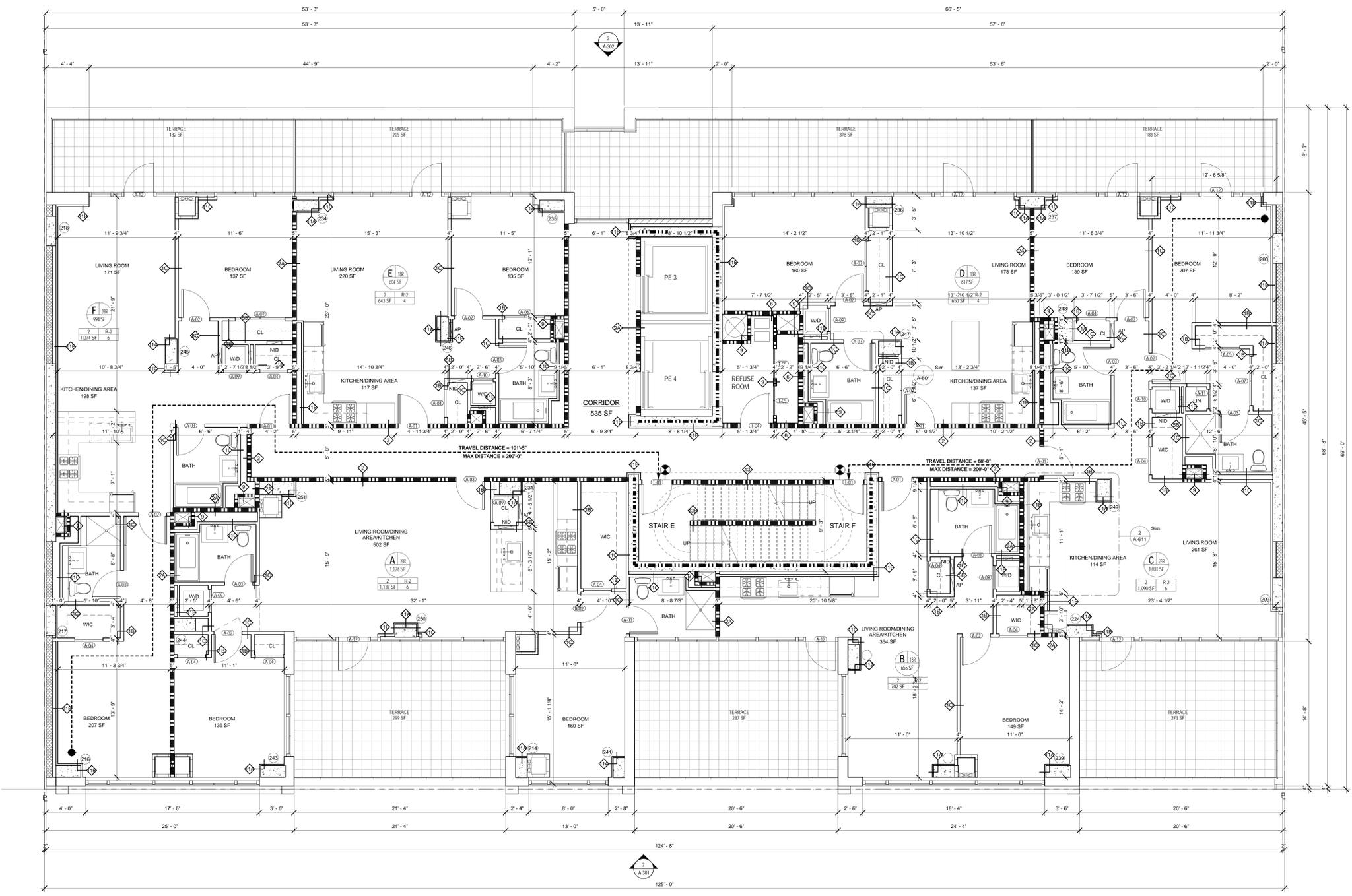
**OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.**

**APARTMENT UNIT TAG**

FLOOR LEVEL: A-37  
UNIT NAME: 3718  
GROSS AREA (OF UNIT LEVEL): 1003 SF

UNIT TYPE: MULTI-LEVEL UNIT TYPE  
LEVEL OF UNIT: TOWER  
ENTRY: PRIMARY ENTRY

2-HR FIRE RATED PARTITION OR WALL  
1-HR FIRE RATED PARTITION OR WALL  
EGRESS TRAVEL PATH  
EXIT SIGN  
NON FREEZE WALL HYDRANT  
OVERFLOW DRAIN  
ROOF DRAIN  
FLOOR DRAIN



11TH FLOOR PLAN - SOUTH  
1/4" = 1'-0"

	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 15 = 4.5'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 15 = 3.0'	36"	36"
STAIR F	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 15 = 4.5'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 15 = 3.0'	36"	36"



DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



11TH FLOOR PLAN - SOUTH BUILDING  
FF EL. 94'-7" (+110.27) U.O.N.  
TOS EL. 94'-6" (+110.19) U.O.N.

## A-125

As indicated  
1303.00  
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# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREW 546 West 44th St, LLC Representative: The Parham Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>MECHANICAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>ENVIRONMENTAL ENGINEER</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>STRUCTURAL CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>STRUCTURAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

## NOTES

1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
2. SEE A-400 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
4. ALL LOT LINE WINDOWS ARE SPRINKLERED.

## LEGEND

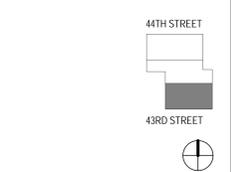
**UNIT OCCUPANCY TAG**

ZONING USE GROUP: R-2  
OCCUPANCY GROUP: R-2  
GROSS AREA (OF UNIT LEVEL): 1000 SF  
NUMBER OF ALLOWED OCCUPANTS: 2

**APARTMENT UNIT TAG**

FLOOR LEVEL: A-37  
UNIT NAME: 37180  
UNIT TYPE: DUPLEX  
LEVEL OF UNIT: 1000 SF  
OF UNIT: P.E.S.  
GROSS AREA (OF UNIT LEVEL): 1000 SF  
PRIMARY ENTRY STORY

■■■■ 2-HR FIRE RATED PARTITION OR WALL  
 ■■■■ 1-HR FIRE RATED PARTITION OR WALL  
 ●●●● EGRESS TRAVEL PATH  
 ⊕ EXIT SIGN  
 ⊕ NON FREEZE WALL HYDRANT  
 ⊕ OVERFLOW DRAIN  
 ⊕ ROOF DRAIN  
 ⊕ FLOOR DRAIN



DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



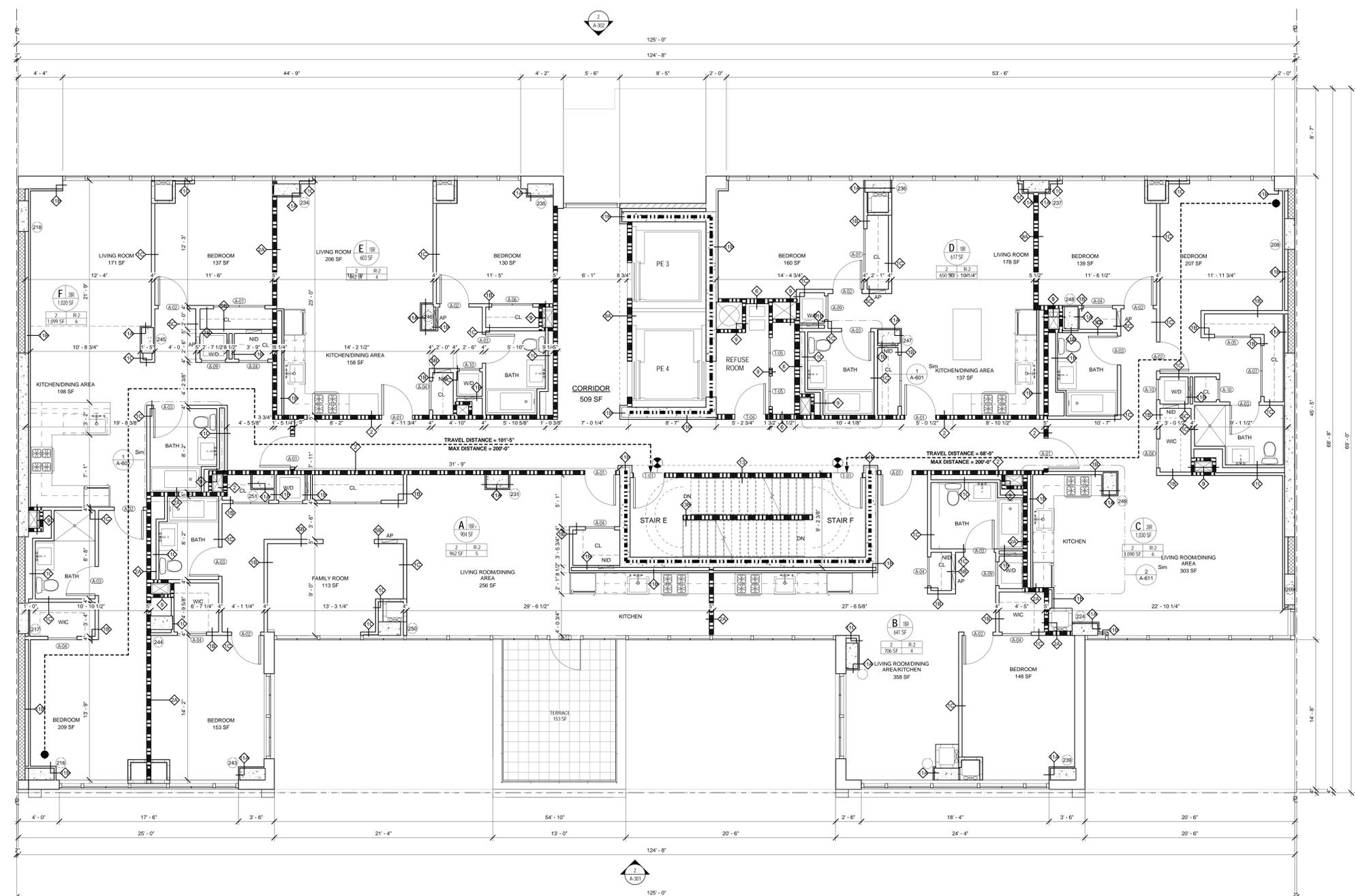
12TH FLOOR PLAN - SOUTH BUILDING  
FF EL. 104'-5" (+120.10) U.O.N.  
TOS EL. 104'-4" (+120.02) U.O.N.

**A-126**

As indicated

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	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 15 = 4.5'	44'
DOOR		1.5 HR	0.2' PER OCCUPANT = 0.2' X 15 = 3.0'	36'
STAIR F	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 14 = 4.2'	44'
DOOR		1.5 HR	0.2' PER OCCUPANT = 0.2' X 14 = 2.8'	36'

1 12TH FLOOR PLAN - SOUTH  
1/4" = 1'-0"

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# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREF 546 West 44th St, LLC</b> Representative: The Fairway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
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<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>PLUMBING CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>STRUCTURAL ENGINEER</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 908.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-400 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
  3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED.
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED.

**LEGEND**

**UNIT OCCUPANCY TAG**

ZONING USE GROUP	OCCUPANCY GROUP
2	R-2
2	R-2
1,000 SF	5

GROSS AREA (OF UNIT LEVEL)      NUMBER OF ALLOWED OCCUPANTS

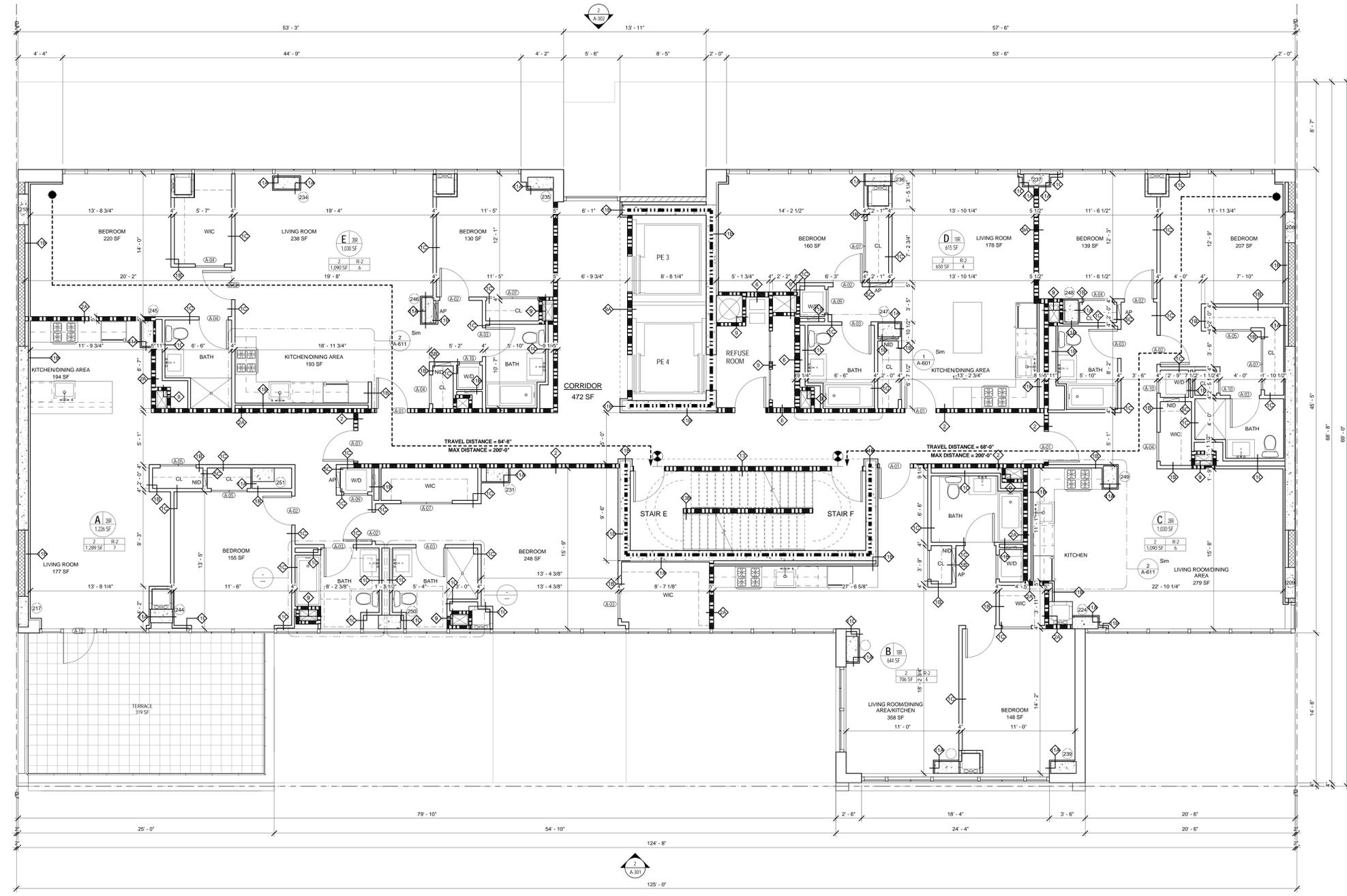
OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.

**APARTMENT UNIT TAG**

FLOOR LEVEL	UNIT TYPE
A-37	MULTI-LEVEL UNIT TYPE
1,000 SF	LEVEL OF UNIT
1,000 SF	P.E.S.
	PRIMARY ENTRY
	STORY

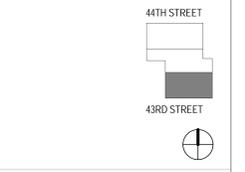
GROSS AREA (OF UNIT LEVEL)

- 2-HR FIRE RATED PARTITION OR WALL
- 1-HR FIRE RATED PARTITION OR WALL
- EGRESS TRAVEL PATH
- EXIT SIGN
- NON FREEZE WALL HYDRANT
- OVERFLOW DRAIN
- ROOF DRAIN
- FLOOR DRAIN



	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 19 = 5.7'	44'
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 19 = 3.8'	36"	36"
STAIR F	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 18 = 5.4'	44'
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 18 = 3.6'	36"	36"

13TH FLOOR PLAN - SOUTH  
1/4" = 1'-0"



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DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



13TH FLOOR PLAN - SOUTH BUILDING  
FF EL 114'-3" (+129.93') U.O.N.  
TOS EL 114'-2" (+129.85') U.O.N.

**A-127**

As indicated

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# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architectural PLLC 584 Broadway Suite 401 New York, NY 10017	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parham Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
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<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>STRUCTURAL CONSULTANT</b> Cerami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>STRUCTURAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

## NOTES

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2. SEE A-400 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS.
3. ALL LOT LINE WALLS ARE 3-HR FIRE RATED
4. ALL LOT-LINE WINDOWS ARE SPRINKLERED

## LEGEND

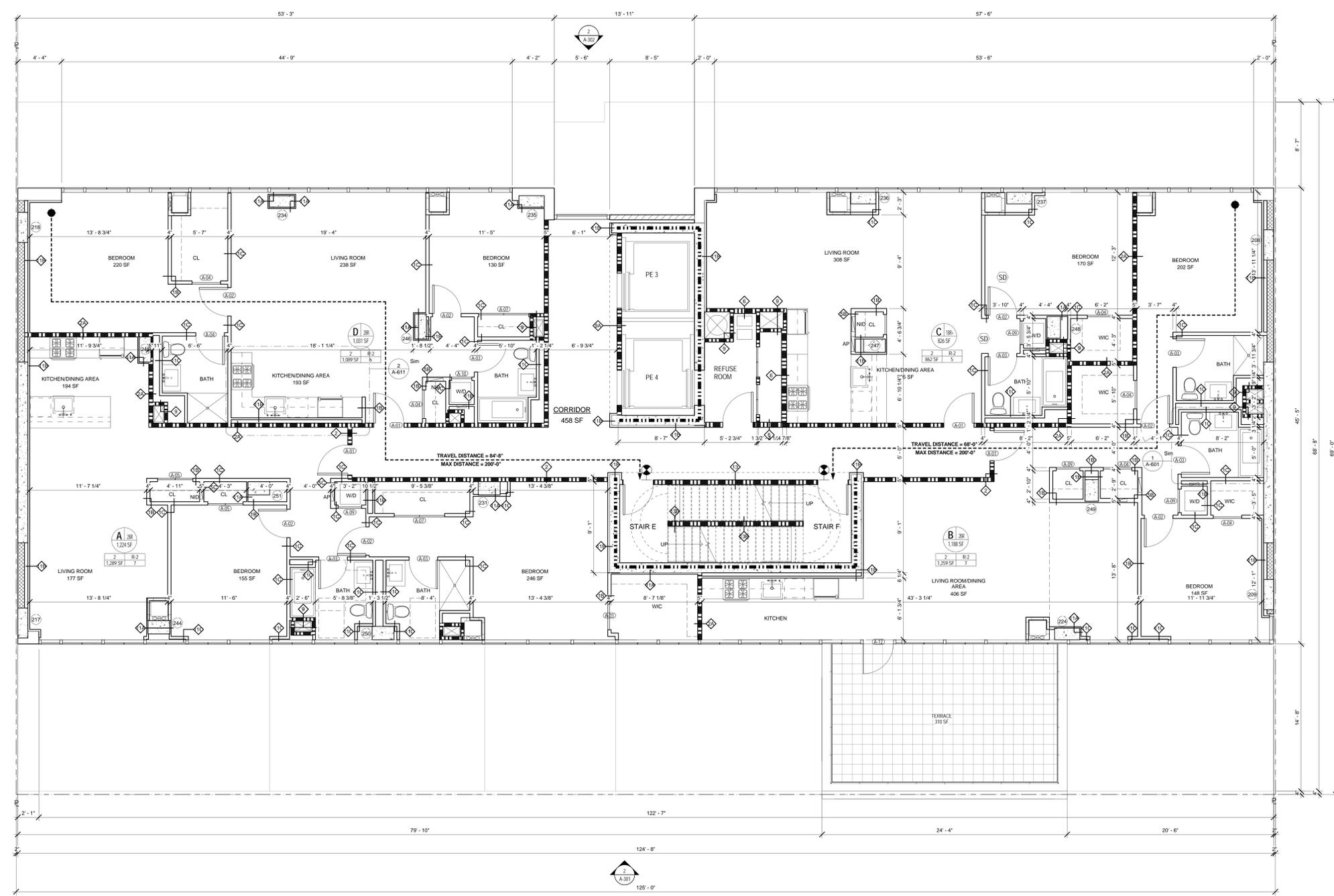
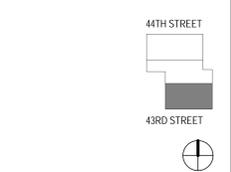
**UNIT OCCUPANCY TAG**

ZONING USE GROUP: R2  
OCCUPANCY GROUP: R2  
GROSS AREA (OF UNIT LEVEL): 1000 SF  
NUMBER OF ALLOWED OCCUPANTS: 5

**APARTMENT UNIT TAG**

FLOOR LEVEL: 14  
UNIT NAME: A-37  
UNIT TYPE: DUPLEX  
LEVEL OF UNIT: 1000 SF  
GROSS AREA (OF UNIT LEVEL): 1000 SF  
P.E.S.: PRIMARY ENTRY STORY

■■■■ 2-HR FIRE RATED PARTITION OR WALL  
 ■■■■ 1-HR FIRE RATED PARTITION OR WALL  
 ●●●● EGRESS TRAVEL PATH  
 ⊕ EXIT SIGN  
 ⊕ NON FREEZE WALL HYDRANT  
 ⊕ OVERFLOW DRAIN  
 ⊕ ROOF DRAIN  
 ⊕ FLOOR DRAIN



	FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 13 = 3.9'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 13 = 2.6'	36"	36"
STAIR F	STAIR 2 HR	0.3' PER OCCUPANT = 0.3' X 12 = 3.6'	44"	44"
DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 12 = 2.4'	36"	36"

1 14TH FLOOR PLAN - SOUTH  
1/4" = 1'-0"

FORBID ONLY - NOT FOR CONSTRUCTION

DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



14TH FLOOR PLAN - SOUTH BUILDING  
FF EL 124'-1" (+139'-7") U.O.N.  
TOS EL 124'-0" (+139'-6") U.O.N.

## A-128

As indicated  
1303.00  
CETRA/CR ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440  
WWW.CETRADUDDY.COM

# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architect, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parnsey Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>INTERIOR ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue 30th Street New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

- NOTES**
1. ALL APARTMENTS ARE PROVIDED WITH SMOKE / CARBON MONOXIDE DETECTORS, COMPLYING WITH B.C. 906.7. SEE REFLECTED CEILING PLANS, A-200 SERIES DWGS FOR LOCATIONS.
  2. SEE A-200 SERIES DWGS FOR ACCESSIBILITY COMPLIANCE IN BATHROOMS
  3. ALL LOT LINE WALLS ARE 2-HR FIRE RATED
  4. ALL LOT-LINE WINDOWS ARE SPRINKLERED

**LEGEND**

**UNIT OCCUPANCY TAG**

ZONING USE GROUP	OCCUPANCY GROUP
R-2	R-2
1000 SF	5

GROSS AREA (OF UNIT LEVEL) NUMBER OF ALLOWED OCCUPANTS

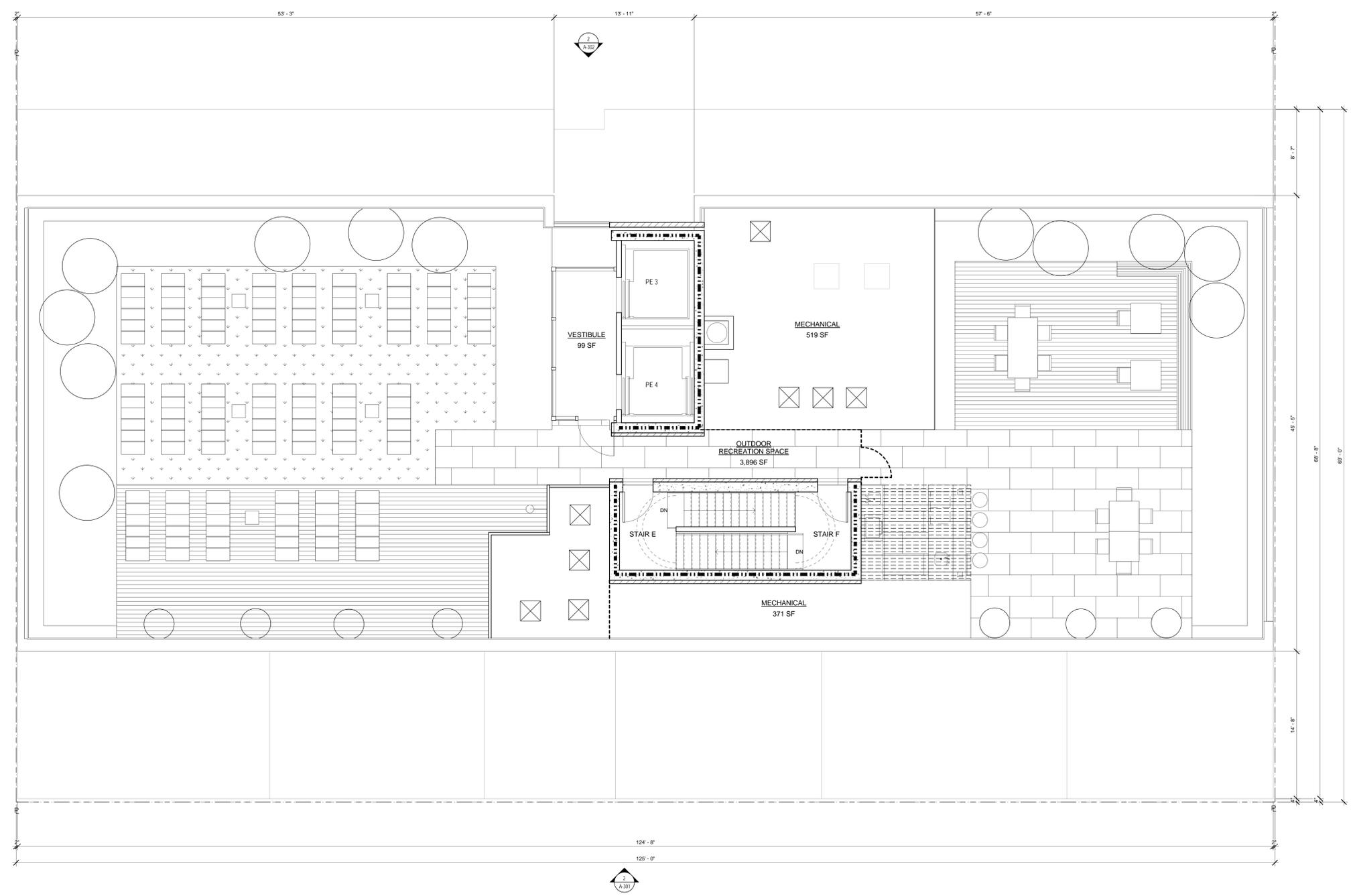
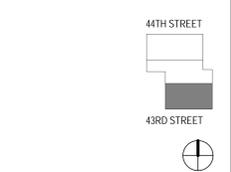
OCCUPANCY LOAD CALCULATION FOR RESIDENTIAL USE AS PER TABLE 1004.1.2 IS 200 SF FLOOR AREA PER OCCUPANT.

**APARTMENT UNIT TAG**

FLOOR LEVEL	UNIT NAME	UNIT TYPE	UNIT TYPE	LEVEL OF UNIT ENTRY
A-37	1180	DUPLEX	MULTI-LEVEL UNIT TYPE	PRIMARY ENTRY STORY
100 SF				

GROSS AREA (OF UNIT LEVEL)

- 2-HR FIRE RATED PARTITION OR WALL
- 1-HR FIRE RATED PARTITION OR WALL
- EGRESS TRAVEL PATH
- EXIT SIGN
- NON FREEZE WALL HYDRANT
- OVERFLOW DRAINT
- ROOF DRAIN
- FLOOR DRAIN



ACCESSORY OCCUPANCY LOAD AT ROOF-SOUTH AS PER TABLE 1004.1.2

SPACE	OCCUPANCY GROUP	AREA	AREA PER OCCUPANT	OCCUPANCY
TERACE	R-2 ACCESSORY	2,614 SF	15	175
MECHANICAL	R-2 ACCESSORY	2,117 SF	300	8
<b>TOTAL</b>				<b>183</b>

		FIRE RATING	STAIR/DOOR CAPACITY (PER TABLE 1005.1)	REQUIRED WIDTH (PER SECT. 1009.1)	PROVIDED WIDTH
STAIR E	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 180 = 54.0'	44"	44"
DOOR	DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 180 = 36.0'	36"	36"
STAIR F	STAIR	2 HR	0.3' PER OCCUPANT = 0.3' X 180 = 54.0'	44"	44"
DOOR	DOOR	1.5 HR	0.2' PER OCCUPANT = 0.2' X 180 = 36.0'	36"	36"

1 ROOF PLAN - SOUTH  
1/4" = 1'-0"

FOR BID ONLY - NOT FOR CONSTRUCTION

DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



ROOF PLAN - SOUTH BUILDING  
FF EL 135'-0" (+150.69') U.O.N.  
TOS EL 134'-0" (+149.69') U.O.N.

## A-129

As indicated  
1303.00

CETRA/CR ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440  
WWW.CETARUDDY.COM

# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parnsey Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>GEOTECHNICAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 424 Fifth Avenue New York, NY 10018	<b>FAçADE CONSULTANT</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

**MATERIAL LEGEND**

	BRICK TYPE A
	METAL PANEL TYPE A
	METAL PANEL TYPE B
	VISION GLASS
	SPANDREL GLASS



FOR BID ONLY - NOT FOR CONSTRUCTION

DESCRIPTION	DATE
DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013



STREET ELEVATIONS - NORTH & SOUTH BUILDINGS

**A-301**

<b>PROJECT SCALE</b> 1/8" = 1'-0" 1303.00 CETRA/CR ARCHITECTURE PLLC 584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440 WWW.CETRADUDDY.COM	<b>DATE</b> 05.03.2013
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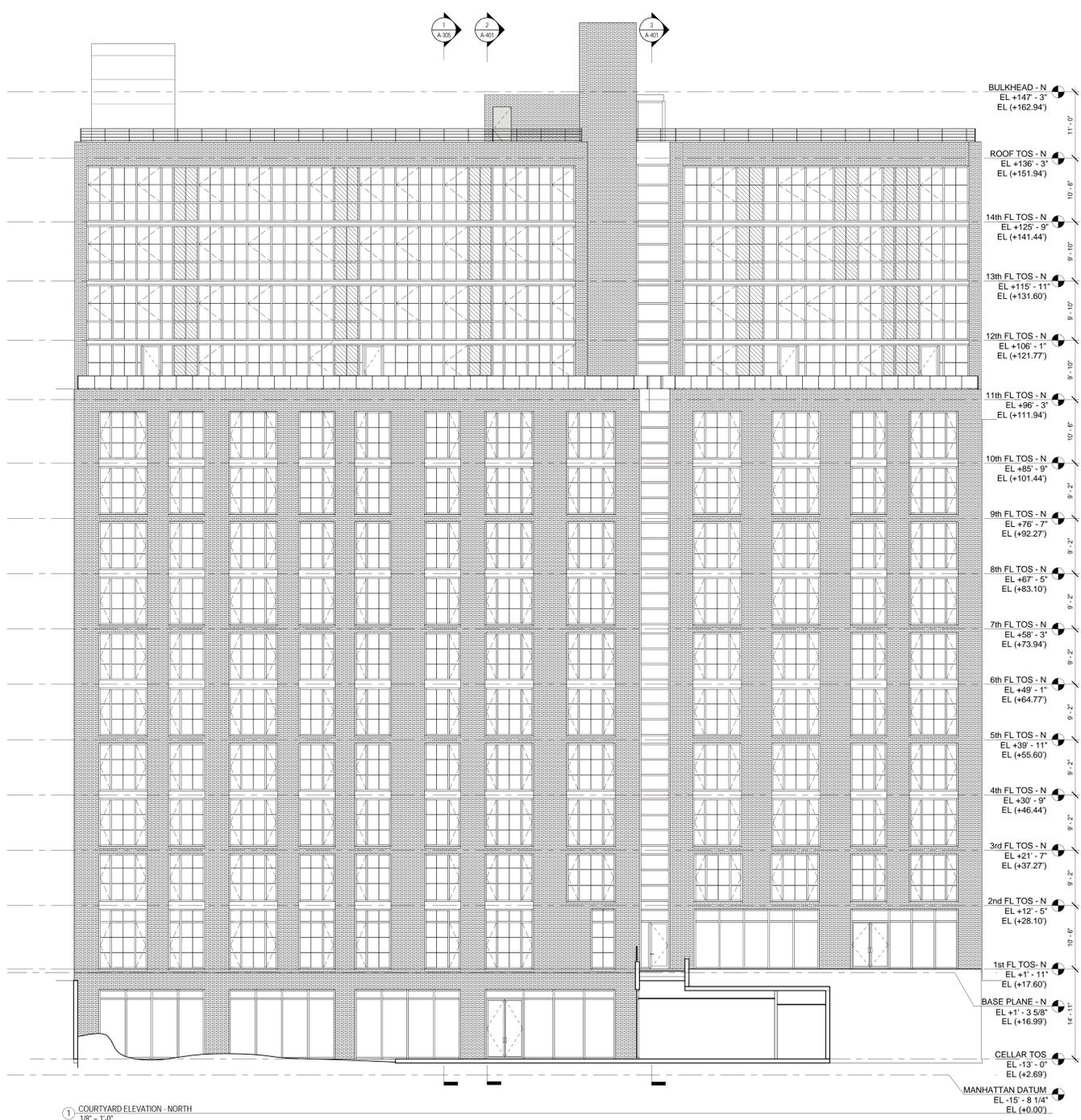
# 546W 44

546 W 44TH STREET  
NEW YORK, NY

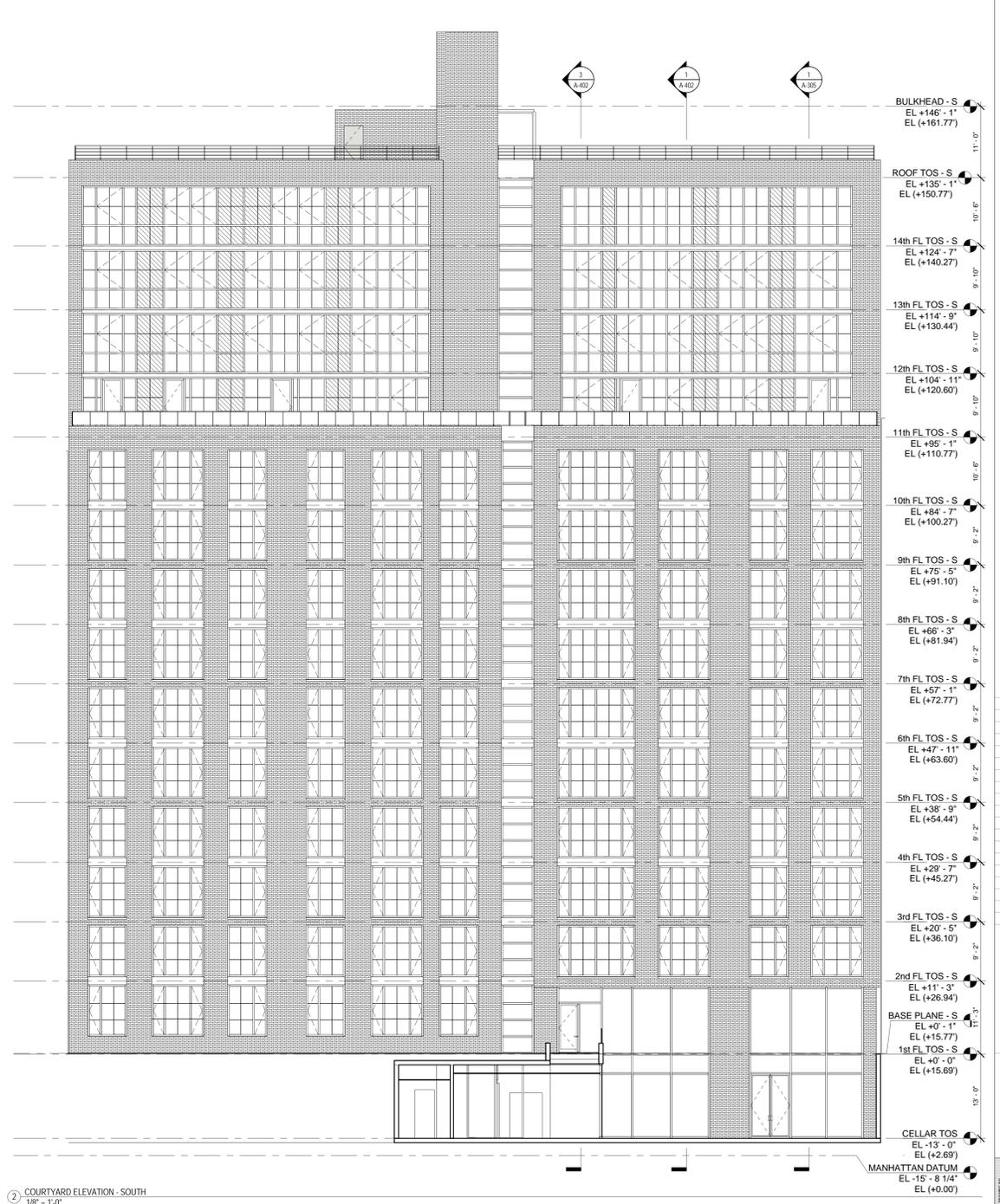
<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parneley Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>INTERIOR ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>MECHANICAL CONSULTANT</b> Ceram & Associates, Inc. 424 Fifth Avenue New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

**MATERIAL LEGEND**

	BRICK TYPE A
	METAL PANEL TYPE A
	METAL PANEL TYPE B
	VISION GLASS
	SPANDREL GLASS



1 COURTYARD ELEVATION - NORTH  
1/8" = 1'-0"



2 COURTYARD ELEVATION - SOUTH  
1/8" = 1'-0"

DESCRIPTION	DATE
DD SUBMISSION	07.12.2013
HPD SUBMISSION	06.04.2013
SCHEMATIC DESIGN	05.03.2013



COURTYARD ELEVATIONS - NORTH & SOUTH BUILDINGS

**A-302**

1/8" = 1'-0"

1303.00

CETRA/CR ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 841 8501 F 212 841 8440  
WWW.CETRADUDDY.COM

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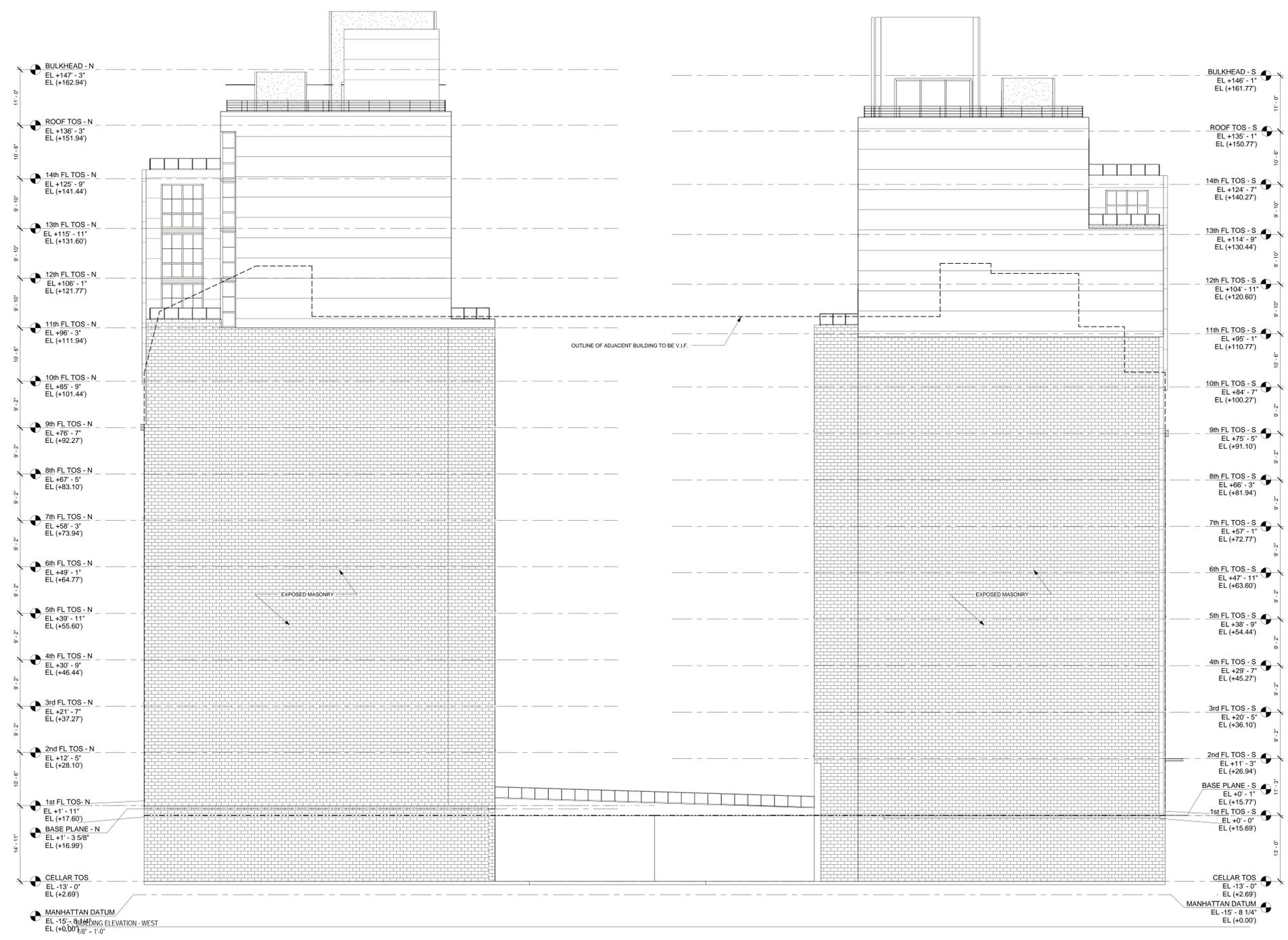
# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Rainey Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>INTERIOR ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>PAVING CONSULTANT</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001

**MATERIAL LEGEND**

- BRICK TYPE A
- METAL PANEL TYPE A
- METAL PANEL TYPE B
- VISION GLASS
- SPANDREL GLASS



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DD SUBMISSION	07.12.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



BUILDING ELEVATION - WEST

## A-303

PROJECT SCALE	1/8" = 1'-0"
DATE	1303.00
DESIGNER	CETRA/CR ARCHITECTURE PLLC
ADDRESS	584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440
WWW	WWW.CETRARUDDY.COM

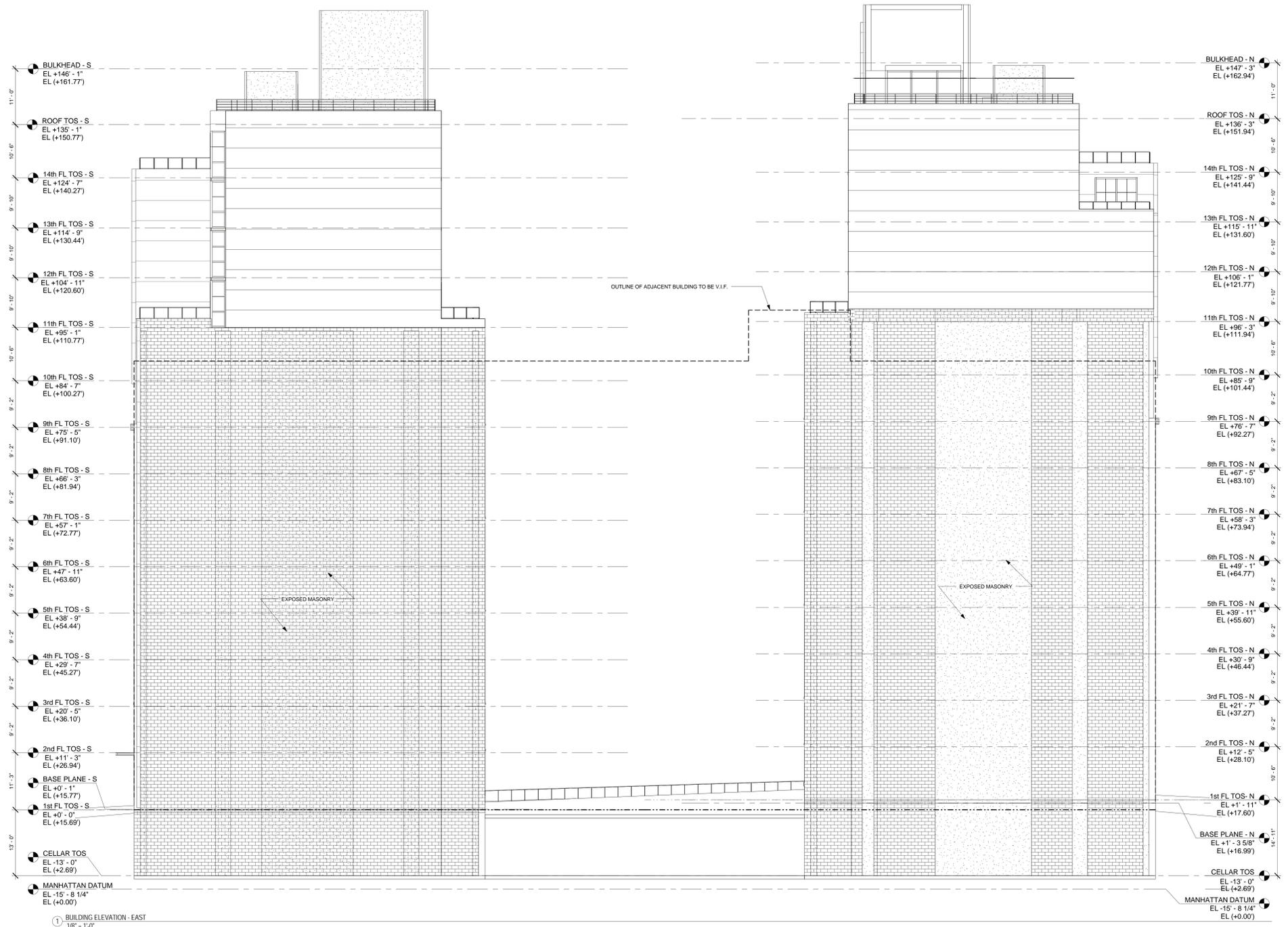
# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra CRI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parnsey Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>LANDSCAPE ARCHITECT</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>INTERIOR ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>PAINT CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

**MATERIAL LEGEND**

-  BRICK TYPE A
-  METAL PANEL TYPE A
-  METAL PANEL TYPE B
-  VISION GLASS
-  SPANDEL GLASS



FOR BID ONLY - NOT FOR CONSTRUCTION

DD SUBMISSION	07.12.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



BUILDING ELEVATIONS - EAST

## A-304

**PROJECT SCALE** 1/8" = 1'-0"

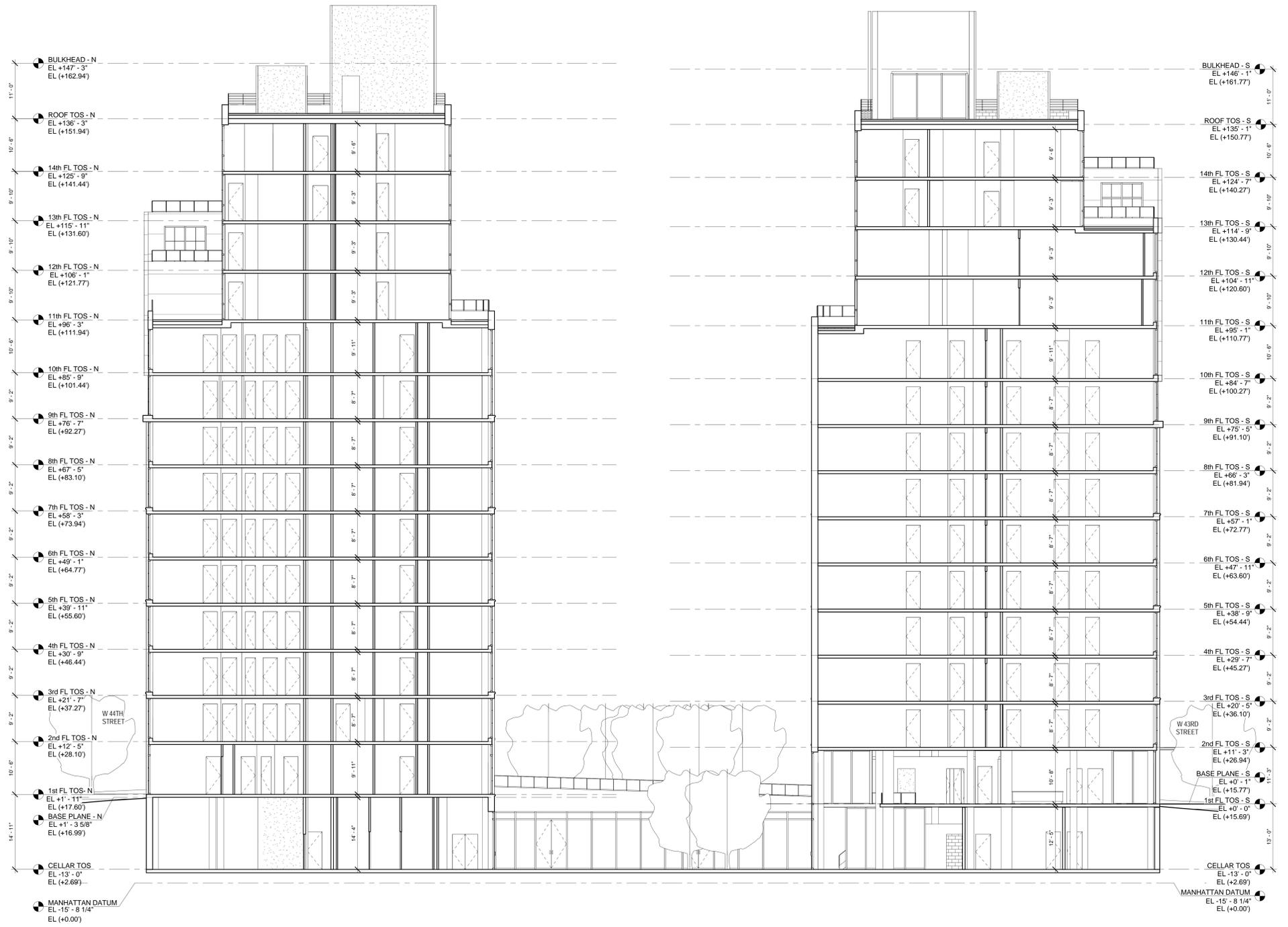
**DATE** 1303.00

**PROJECT** 546 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440  
WWW.CETRARUDDY.COM

# 546W 44

546 W 44TH STREET  
NEW YORK, NY

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parnsey Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>GEOTECHNICAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001



1 BUILDING SECTION 1  
1/8" = 1'-0"

DD SUBMISSION	07.12.2013
SCHEMATIC DESIGN	05.03.2013
DESCRIPTION	DATE



CETRA RUDDY

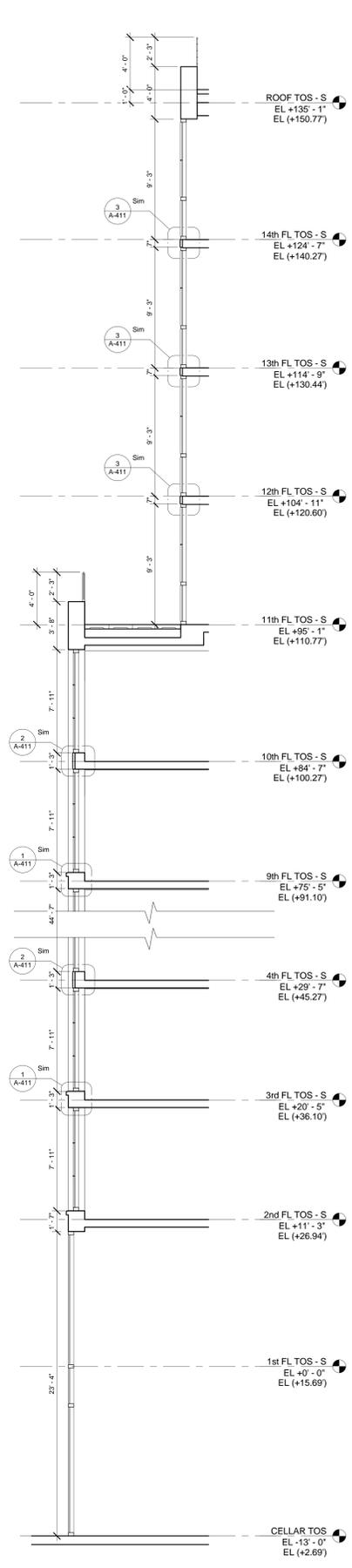
BUILDING SECTION

**A-305**

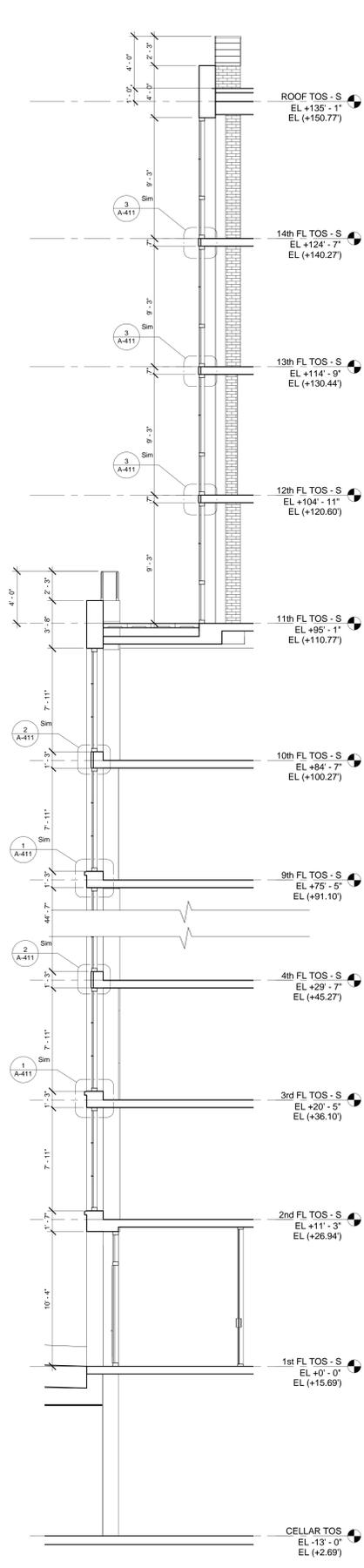
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DATE	1303.00
DESIGNED BY	CETRA/CR ARCHITECTURE PLLC
CHECKED BY	884 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440
DATE	WWW.CETARUDDY.COM

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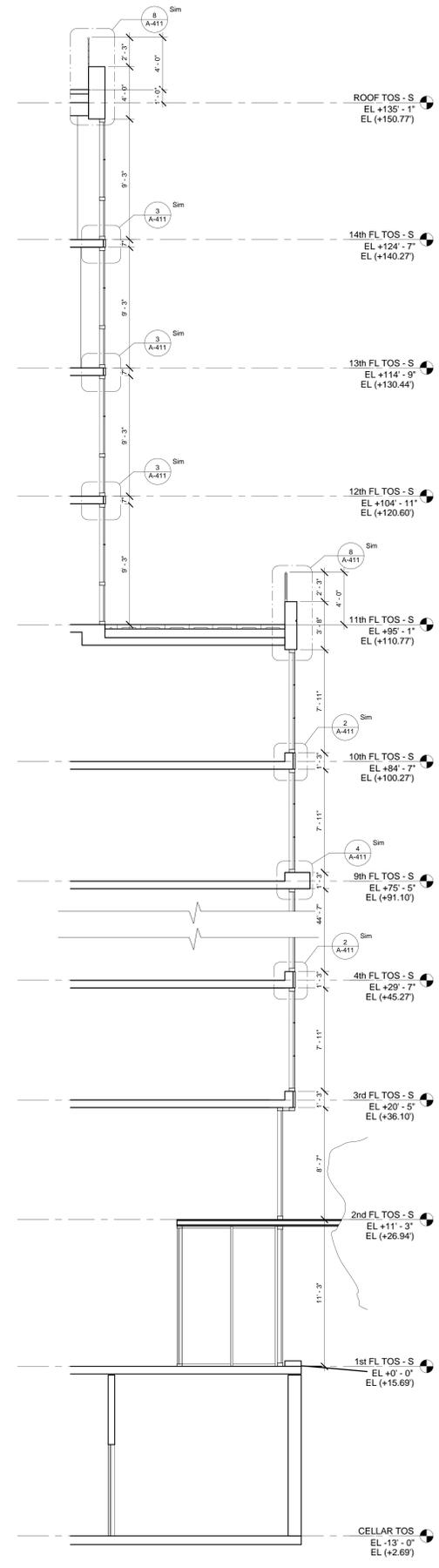




1 S BLDG WALL SECTION AT COURTYARD  
1/4" = 1'-0"



3 S BLDG WALL SECTION AT COURTYARD  
1/4" = 1'-0"



2 S BLDG WALL SECTION AT STREET  
1/4" = 1'-0"

<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREW</b> CREF 546 West 44th St, LLC Representative: The Parnely Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>GEOTECHNICAL ENGINEER</b> Langan Engineering & Environmental Services 21 Rensselaer 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>PAVEMENT CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

DD SUBMISSION 07.12.2013  
DESCRIPTION DATE



CETRA RUDDY

TYPICAL WALL SECTIONS - SOUTH  
BUILDING

**A-02**

PROJECT SCALE DRAWING  
1/4" = 1'-0"  
1303.00  
CETRA/CRU ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440  
WWW.CETRA/CRU.COM

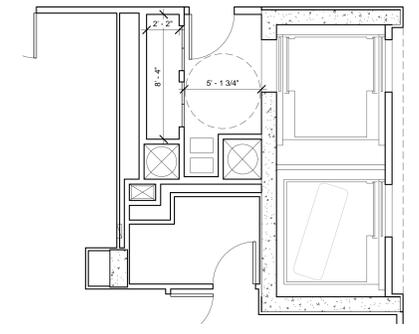
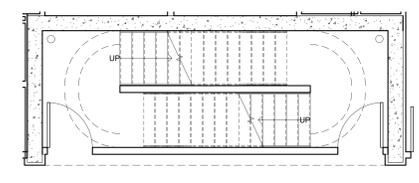
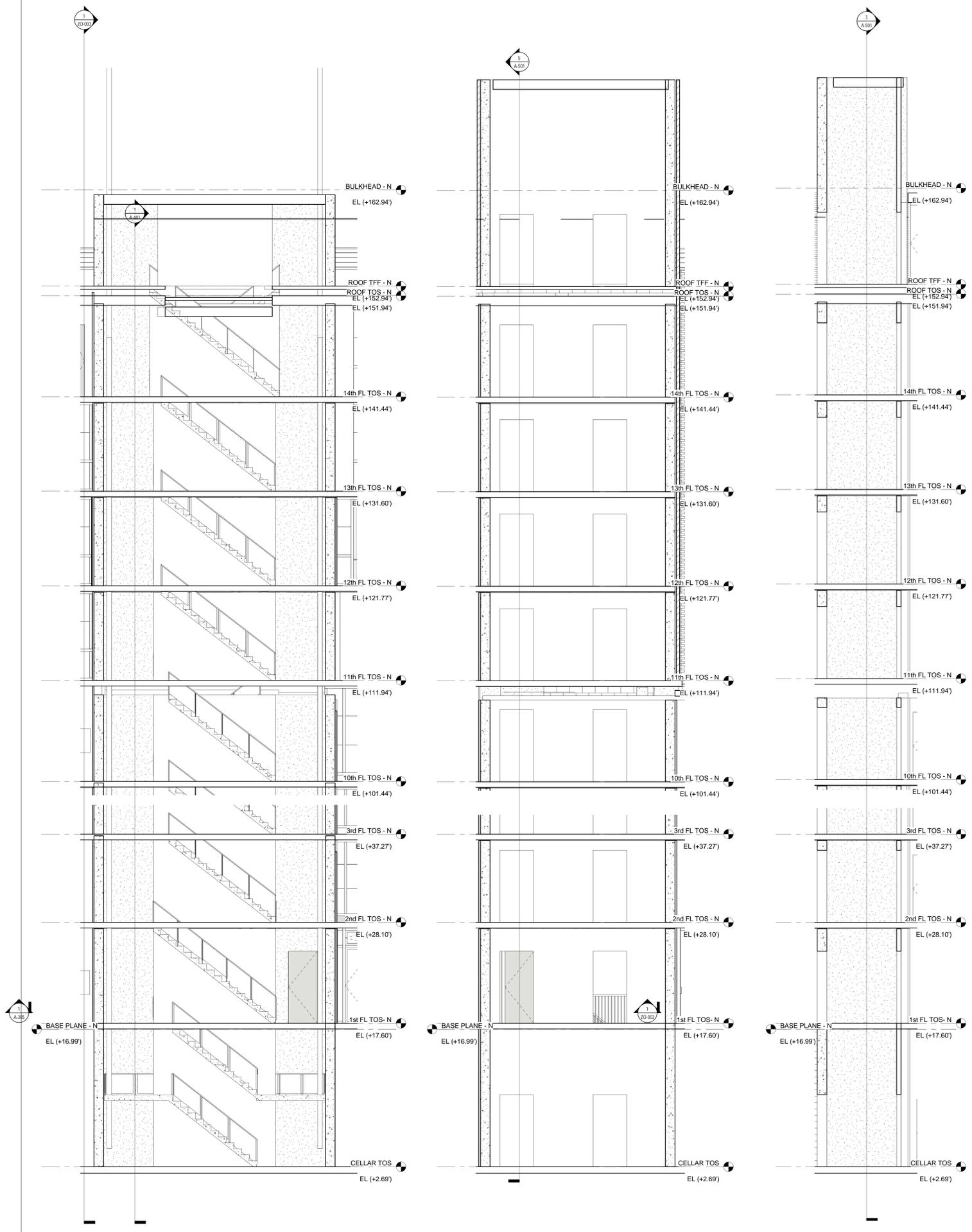
FOR BID ONLY - NOT FOR CONSTRUCTION



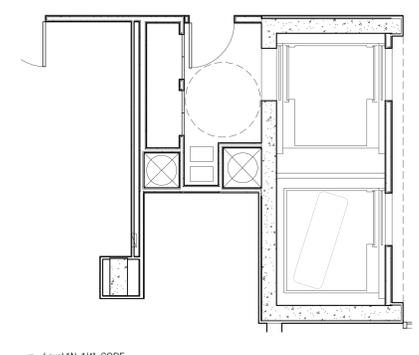
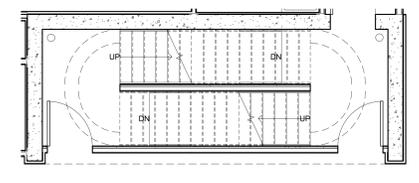
# 546W 44

546 W 44TH STREET  
NEW YORK, NY

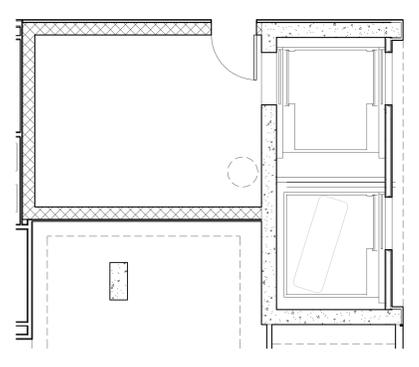
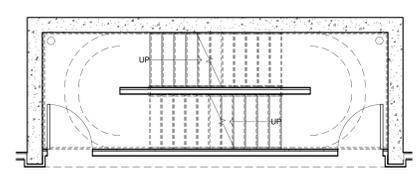
<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREF 546 West 44th St, LLC</b> Representative: The Parnely Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
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<b>MECHANICAL ENGINEER</b> Ceram & Associates, Inc. 454 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Sera Associates LLC 224 West 30th Street New York, NY 10001



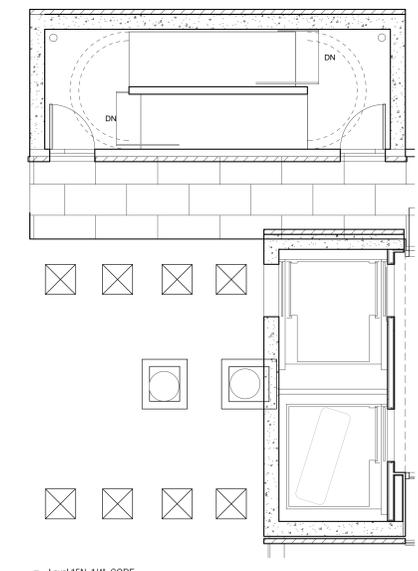
2 Level 4N, 1/4" CORE  
1/4" = 1'-0"



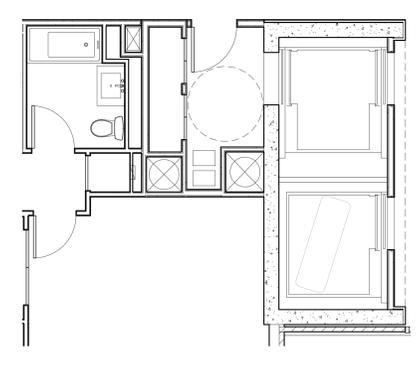
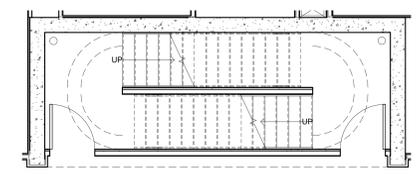
4 Level 11N, 1/4" CORE  
1/4" = 1'-0"



6 Level 11N, 1/4" CORE  
1/4" = 1'-0"



8 Level 15N, 1/4" CORE  
1/4" = 1'-0"



7 Level 11N, 1/4" CORE  
1/4" = 1'-0"

FOR BID ONLY - NOT FOR CONSTRUCTION

DD SUBMISSION	07.12.2013
DESCRIPTION	DATE



STAIR A & B PLANS AND SECTIONS

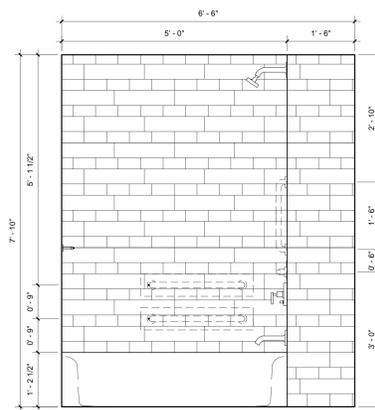
**A-501**

PROJECT	SCALE	DRAWING NO.	DATE
546 BROADWAY NEW YORK NY 10012	1/4" = 1'-0"	1303.00	07.12.2013
CETRA/CRU ARCHITECTURE PLLC 584 BROADWAY NEW YORK NY 10012 T 212 841 8011 F 212 841 8440 WWW.CETRARUDDY.COM			

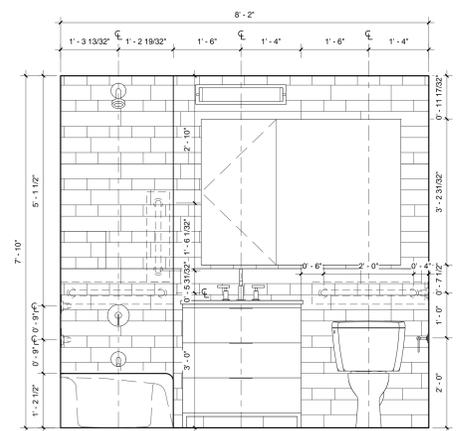
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546 W 44TH STREET  
NEW YORK, NY

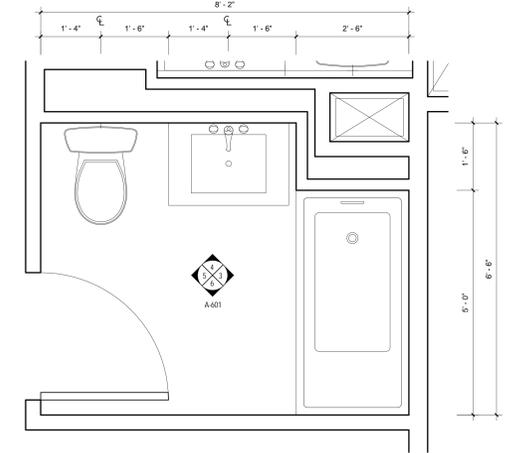
<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CREF 546 West 44th St, LLC</b> Representative: The Rainey Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>GEOTECHNICAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bena Plaza 360 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MARKET CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001



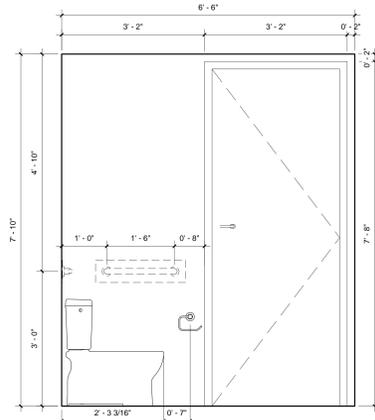
3 BATHROOM TYPE 3 ELEVATION 1  
3/4" = 1'-0"



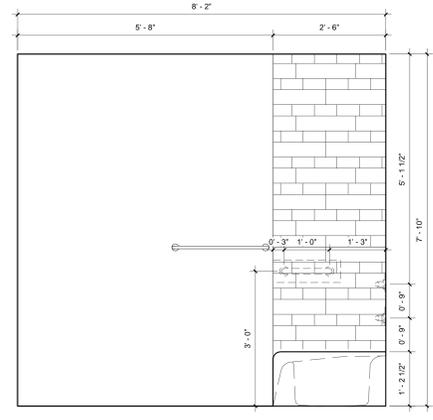
4 BATHROOM TYPE 3 ELEVATION 2  
3/4" = 1'-0"



1 BATHROOM TYPE 3 TYPE B, APPENDIX P PER NYBC 1107.2.2 SPECIFICATION A PER FHA

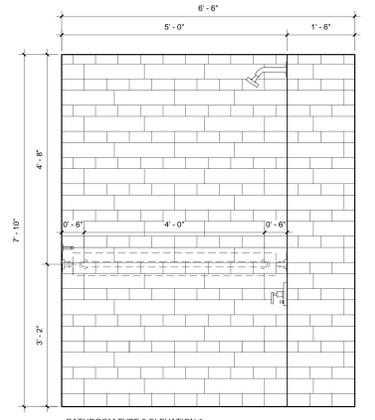


5 BATHROOM TYPE 3 ELEVATION 3  
3/4" = 1'-0"

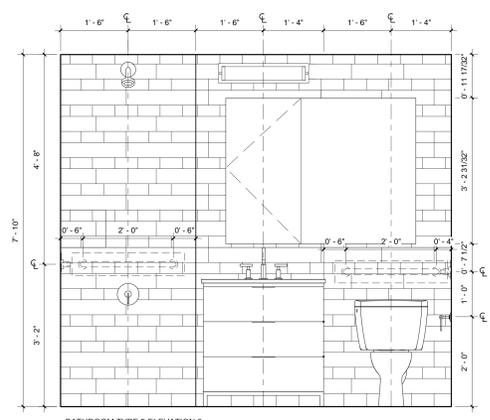


6 BATHROOM TYPE 3 ELEVATION 4  
3/4" = 1'-0"

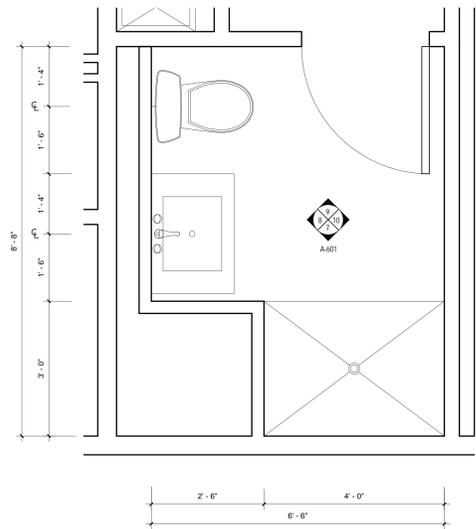
FL	UNITS	
	NORTH	SOUTH
1	B, C, L, M, N, O	
2	B, C, K, L, M, N	C, D, E, F
3	B, C, K, L, M, N	C, D, E, F
4	B, C, K, L, M, N	C, D, E, F
5	B, C, K, L, M, N	C, D, E, F
6	B, C, K, L, M, N	C, D, E, F
7	B, C, K, L, M, N	C, D, E, F
8	B, C, K, L, M, N	C, D, E, F
9	B, C, K, L, M, N	C, D, E, F
10	B, C, K, L, M, N	C, D, E, F
11	B, C, D, G	D
12	B, G	D, F
13	B, D, G	D
14	B, D, E	B



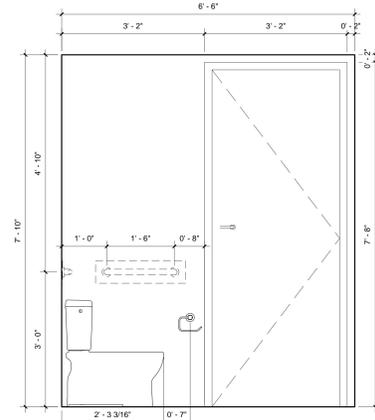
7 BATHROOM TYPE 5 ELEVATION 1  
3/4" = 1'-0"



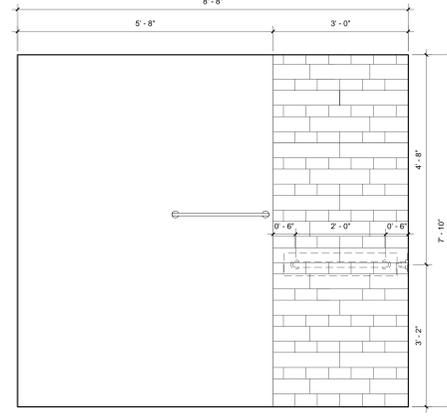
8 BATHROOM TYPE 5 ELEVATION 2  
3/4" = 1'-0"



2 BATHROOM TYPE 5 TYPE B, APPENDIX P PER NYBC 1107.2.2 SPECIFICATION B PER FHA



9 BATHROOM TYPE 5 ELEVATION 3  
3/4" = 1'-0"



10 BATHROOM TYPE 5 ELEVATION 4  
3/4" = 1'-0"

FL	UNITS	
	NORTH	SOUTH
1		
2	H	G
3	H	G
4	H	G
5	H	G
6	H	G
7	H	G
8	H	G
9	H	G
10	H	G
11	E	
12		
13	C, D	E
14	C, D	B, D

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DD SUBMISSION DESCRIPTION DATE 07.12.2013

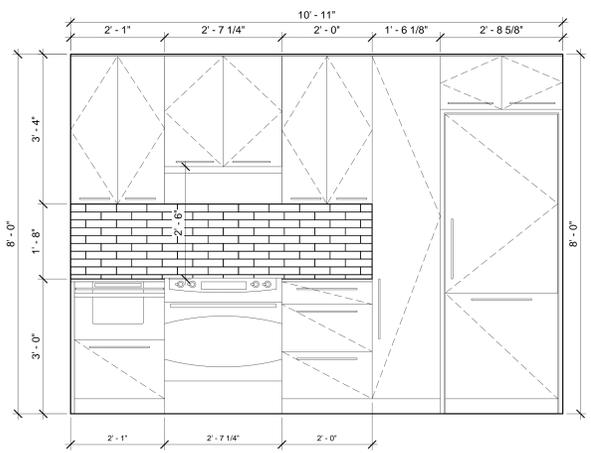


BATHROOM PLANS & ELEVATIONS

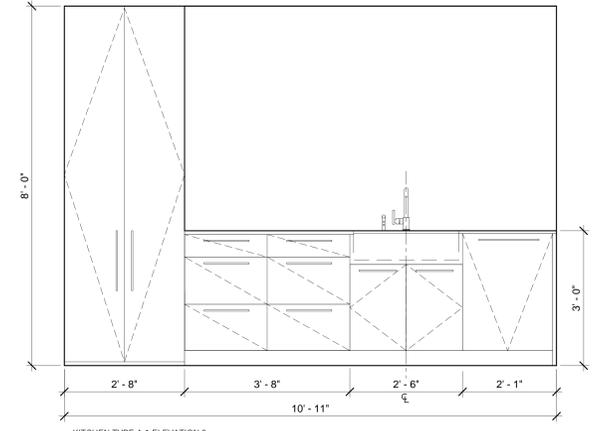
## A-601

3/4" = 1'-0"  
1303.00  
CETRA/CRU ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 841 8501 F 212 841 8440  
WWW.CETRA/CRU.COM

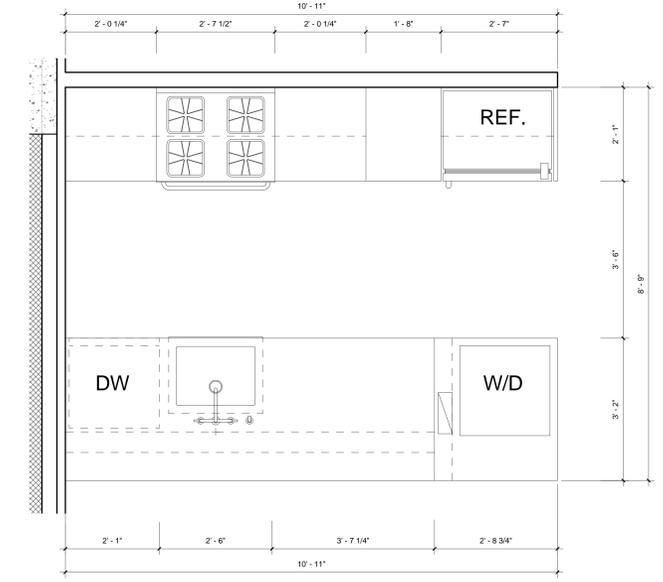
<b>ARCHITECT</b> John A. Corra State of New York Registered Architect No. 018981 Corra ORI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Parnsey Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>MECHANICAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>ELECTRICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 21 Bore Place 360 West 31st Street New York, NY 10001	<b>STRUCTURAL ENGINEER</b> HMWhite 107 Grand Street, 6th Fl New York, NY 10013
<b>ACoustic CONSULTANT</b> Ceram & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>PLUMBING CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001



3 KITCHEN TYPE A-1 ELEVATION 1  
3/4" = 1'-0"

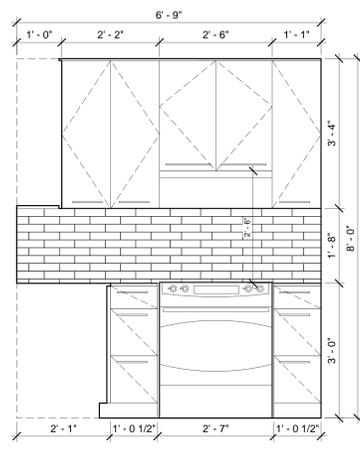


4 KITCHEN TYPE A-1 ELEVATION 2  
3/4" = 1'-0"

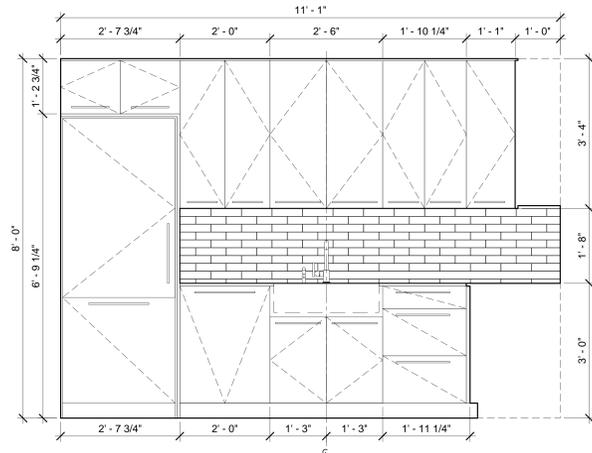


1 KITCHEN TYPE A-1  
3/4" = 1'-0"

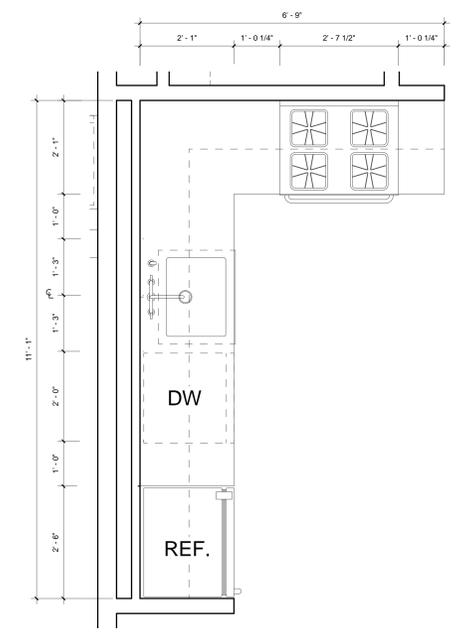
FL	UNITS	
	NORTH	SOUTH
1	A	
2	A, G	A
3	A, G	A, B
4	A, G	A, B
5	A, G	A, B
6	A, G	A, B
7	A, G	A, B
8	A, G	A, B
9	A, G	A, B
10	A, G	A, B
11		
12		
13		
14		



5 KITCHEN TYPE F-1 ELEVATION 1  
3/4" = 1'-0"



6 KITCHEN TYPE F-1 ELEVATION 2  
3/4" = 1'-0"



2 KITCHEN TYPE F-1  
3/4" = 1'-0"

FL	UNITS	
	NORTH	SOUTH
1	B, N, O	
2	B, N	C, E
3	B, N	C, E
4	B, N	C, E
5	B, N	C, E
6	B, N	C, E
7	B, N	C, E
8	B, N	C, E
9	B, N	C, E
10	B, N	C, E
11	A, G	C
12	A, F, G	C
13	A, C, F, G	C, E
14	A, C	D

DD SUBMISSION 07.12.2013  
DESCRIPTION DATE



KITCHEN PLANS & ELEVATIONS

## A-611

3/4" = 1'-0"  
1303.00  
CETRA/CR ARCHITECTURE PLLC  
584 BROADWAY NEW YORK NY 10012 T 212 841 8511 F 212 841 8440  
WWW.CETRA/CR.COM

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GENERAL NOTES:

I - CODES

- 1. BUILDING CODE OF THE CITY OF NEW YORK, INCLUDING LATEST AMENDMENTS ("2008 N.Y.C. BUILDING CODE")...

II - MATERIALS

UNLESS OTHERWISE SHOWN OR NOTED ON DRAWINGS:

- 1. STRUCTURAL STEEL: ALL ROLLED SHAPES: ALL PLATES AND CONNECTION MATERIAL: ALL TUBULAR SECTIONS: ALL PIPE SECTIONS: ANCHOR BOLTS, U.O.N.:

- 2. METAL DECK: FABRICATE FROM ASTM A611 OR ASTM A663 STEEL WITH ASTM A653 G60 GALVANIZING...

- 3. SHEAR CONNECTIONS: 3/4" DIAMETER 1/4" HEADED STUDS, U.O.N.

- 4. CAST-IN-PLACE CONCRETE: FOUNDATIONS: SLABS ON GROUND: FORMED SLABS: SLABS ON METAL DECK: COLUMNS AND WALLS: ENCASUREMENT OF STRUCTURAL STEEL:

- 5. REINFORCEMENT: DEFORMED BARS: WELDED WIRE FABRIC: WELDED DEFORMED WIRE FABRIC:

- 6. WELDING ELECTRODES: 60XX LOW HYDROGEN.

- 7. BOLDING MATERIALS: ASTM A325 OR F1552 (TWIST-OFF TYPE), OR A490, U.O.N.

- 8. LIGHT GAGE FRAMING: ASTM A583, GRADE 60 FOR 16 GAGE AND HEAVIER, GRADE 33 FOR 18 GAGE AND LIGHTER WITH G60 GALVANIZING.

III - GENERAL

- 1. NOTES, TYPICAL DETAILS AND SCHEDULES APPLY TO ALL STRUCTURAL WORK UNLESS OTHERWISE NOTED...

- 2. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE SPECIFICATIONS, ARCHITECTURAL AND MECHANICAL DRAWINGS...

- 3. DO NOT SCALE DRAWINGS TO OBTAIN DIMENSIONAL INFORMATION.

- 4. SEE ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR WATERDAMP-PROOFING AND FIREPROOFING DETAILS AND REQUIREMENTS.

- 5. TOP OF CONCRETE SLABS ARE AT FLOOR REFERENCE ELEVATIONS EXCEPT AS NOTED, FOR FLOOR REFERENCE ELEVATIONS SEE COLUMN SCHEDULE.

- 6. THESE DRAWINGS DO NOT DEFINE SCOPE OF CONTRACTS. SEE CONSTRUCTION MANAGERS FOR CONTRACT IF NO CM DOCUMENTS.

- 7. AT ALL TIMES THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONDITIONS OF THE JOBSITE INCLUDING SAFETY OF PERSONS AND PROPERTY...

- 8. SHORING, BRACING AND PROTECTION OF EXISTING AND ADJACENT STRUCTURES DURING CONSTRUCTION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR...

- 9. ALL EXISTING DIMENSIONS AND LOCATIONS OF EXISTING STRUCTURES SHOWN ON THE DRAWINGS SHALL BE VERIFIED BY FIELD MEASUREMENTS...

- 10. DRAWINGS HAVE BEEN PREPARED BASED ON AVAILABLE KNOWLEDGE OF EXISTING CONDITIONS. IF DURING DEMOLITION, EXCAVATION OR CONSTRUCTION, ACTUAL CONDITIONS ARE DISCOVERED TO DIFFER FROM THOSE INDICATED ON DRAWINGS, ENGINEER SHALL BE NOTIFIED.

- 11. A STRUCTURAL PEER REVIEW IS NOT REQUIRED FOR THIS STRUCTURE PER THE SPECIFICATIONS OF NYC BC 1627.2.

IV - FOUNDATION NOTES

- 1. FOOTINGS AND WALLS SHALL BEAR ON ROCK WITH A MINIMUM ALLOWABLE BEARING CAPACITY OF 40 TSP IN ACCORDANCE WITH THE PROJECT GEO-TECHNICAL ENGINEERING REPORT ISSUED BY LANGAN ENGINEERING & ENVIRONMENTAL SERVICES, DATED APRIL 26, 2013.

- 2. PILES TO HAVE THE FOLLOWING CAPACITIES: A. SHOWN AS 150 TONS COMPRESSION B. SHOWN AS 150 TONS COMPRESSION, 75 TONS TENSION AND 20 TONS LATERAL.

- 3. NO BACKFILL SHALL BE PLACED AGAINST FOUNDATION WALLS UNLESS SUPPORTING SLABS ARE IN PLACE AND SET OR THE WALLS ARE ADEQUATELY BRACED.

- 4. UNDERPINNING OF EXISTING ADJACENT FOUNDATIONS MAY BE REQUIRED, ALL ENGINEERING, DESIGNS AND MEANS AND METHODS OF CONSTRUCTION RELATED TO UNDERPINNING ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

- 5. DEWATERING OF THE SITE DURING CONSTRUCTION IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. PRECAUTIONS SHALL BE TAKEN BY THE CONTRACTOR NOT TO UNDERMINE EXISTING FOUNDATIONS. METHOD OF DEWATERING AND CALCULATIONS FOR THE APPROPRIATE SYSTEM ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

- 6. ALL CAISSON CAPS AND FOOTINGS ARE TO BE CENTERED ON COLUMNS ABOVE, U.O.N.

- 7. FOOTING AND MAT ELEVATIONS SHOWN ON THE DRAWINGS HAVE BEEN ESTIMATED USING THE GEOTECHNICAL REPORT. ACTUAL ELEVATIONS OF FOOTING AND MAT BOTTOMS WILL BE DETERMINED BY FIELD CONDITIONS.

- 8. PROVIDE DOWELS IN FOUNDATIONS FOR ALL WALLS, COLUMNS, AND SHEAR WALLS OF SAME NUMBER AND SIZE AS THE VERTICAL REINFORCEMENT ABOVE, U.O.N.

- 9. PROVIDE WATERSTOPS IN ALL VERTICAL CONSTRUCTION JOINTS IN BASEMENT WALLS.

- 10. SLABS ON GROUND SHALL BE PLACED ON SELECT FILL COMPACTED TO 95 PERCENT MODIFIED PROCTOR MAXIMUM DRY DENSITY (ASTM D1557).

- 11. NOTIFY THE NYC DEPARTMENT OF BUILDINGS 24 TO 48 HOURS PRIOR TO COMMENCEMENT OF EARTHWORK COMPLYING WITH THE REQUIREMENTS OF NYC BC 3304.3.1.

- 12. ALL FOUNDATIONS ARE IN COMPLIANCE WITH BC 1801 AND 1805 OF THE NYC BUILDING CODE AND ARE TO BE CONSTRUCTED FOLLOWING THE CODE REQUIREMENTS THEREIN.

V - UNDERPINNING NOTES

- 1. CONTRACTOR SHALL RETAIN THE SERVICE OF A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NEW YORK TO PREPARE SIGNED AND SEALED DESIGN DRAWINGS AND CALCULATIONS FOR ALL REQUIRED UNDERPINNING OF ADJACENT STRUCTURES...

- 2. SUBMIT COPY OF FILED DRAWINGS TO DESIGNEE FOR INFORMATION ONLY. ALL UNDERPINNING WORK SHALL BE SUBJECT TO SPECIAL INSPECTION IN ACCORDANCE WITH LOCAL CODE REQUIREMENTS.

- 3. THE FULL SCOPE OF THIS WORK IS TO BE DETERMINED BY THE CONTRACTOR BY THE REVIEW OF ALL AVAILABLE DOCUMENTATION SUCH AS SURVEYS, GEOTECHNICAL REPORTS AND THE LIKE AND BY SITE REVIEW PRIOR TO BIDDING.

- 4. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE SAFETY OF ALL EXISTING ADJACENT BUILDINGS, STRUCTURES, SIDEWALKS, VAULTS AND THE LIKE DURING AND AS A RESULT OF UNDERPINNING OPERATIONS.

VI - CONCRETE NOTES

- 1. REINFORCING STEEL SHALL HAVE A MINIMUM CLEAR COVER AS FOLLOWS, U.O.N. IN DRAWINGS:

CONCRETE POURED AGAINST EARTH ..... 3"
CONCRETE EXPOSED TO EARTH OR WEATHER: #5 OR SMALLER ..... 1 1/2" #6 OR LARGER ..... 2"

CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: COLUMNS (TIES AND MAIN REINFORCING) ..... 1 1/2" SLABS, WALLS, JOISTS #14 OR #18 BARS ..... 1 1/2" #11 OR SMALLER ..... 3/4" BEAMS (STIRRUPS AND MAIN REINF) ..... 1 1/2"

CLEAR COVER SHALL BE CLEARLY SHOWN ON ALL REBAR DETAIL DRAWINGS.

- 2. ALL REINFORCEMENT SHALL BE SECURELY HELD IN POSITION WHILE PLACING CONCRETE. IF NECESSARY, ADDITIONAL BARS SHALL BE PROVIDED BY THE CONTRACTOR TO FURNISH SUPPORT.

- 3. THE CONTRACTOR SHALL VERIFY THE DIMENSIONS AND LOCATIONS OF ALL OPENINGS, PIPE SLEEVES, ETC. AS REQUIRED BY ALL TRADES, BEFORE THE CONCRETE IS POURED...

- 4. LOCATION OF ALL CONSTRUCTION JOINTS NOT SHOWN IN DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO DETAILING OF REINFORCING...

- 5. DIMENSIONS "L" AS NOTED ON DRAWINGS SHALL BE AS FOLLOWS:

- 1. 1/4" = 5 ksi
- 2. A MINIMUM CLEAR COVER AS SHOWN IN NOTE 1 ABOVE
- 3. A MINIMUM CLEAR SPACING OF 3" BETWEEN ANY BARS
- 4. 1/4" = 60 ksi
- 5. NORMAL WEIGHT CONCRETE
- 6. FOR WALLS: CASE 1 = CLEAR SPACING 1.20d AND CLEAR COVER 1.2d CASE 2 = OTHER THAN CASE 1

- 7. STRUCTURAL STEEL CONTRACTOR TO PROVIDE DECK SUPPORT ANGLES AS REQUIRED.

- 8. FABRICATION AND ERECTION CONSIDERATIONS - THE FOLLOWING ITEMS WILL BE DEFINED AT A PRE-DETAILING CONFERENCE WITH THE STEEL CONTRACTOR:

- a) STEEL COLUMN LENGTH ADJUSTMENT FOR ELASTIC SHORTENING EFFECTS.
- b) STEEL TRUSS CAMBERING.
- c) ELEMENTS AFFECTED BY STEEL ERECTION PROCEDURE, SUCH AS MEMBER SIZES, CONNECTIONS, SPLICES, BASE PLATES, ANCHOR BOLTS, ROCK ANCHORS, ETC.
- d) ERECTION PROCEDURES AND SEQUENCES WITH REGARD TO TEMPERATURE EFFECTS.

- 9. THE CONTRACTOR SHALL PROVIDE, AT NO ADDITIONAL COST, ALL ADDITIONAL STEEL CONNECTIONS, GUYING, ETC. REQUIRED FOR ERECTION.

- 10. UNLESS SPECIFICALLY NOTED, STEEL DETAILS SHOWN ON THE DRAWINGS ARE FOR CONCEPT ONLY AND DO NOT INDICATE REQUIRED NUMBER OF BOLTS, SIZE OF WELDS, ETC.

- 11. MEMBERS MAY ONLY BE SPLICED WHERE SPECIFICALLY DETAILED ON ACCEPTED SHOP DRAWINGS.

- 12. FIELD CUTTING OF STRUCTURAL STEEL IS NOT PERMITTED EXCEPT WITH THE PRIOR APPROVAL OF THE ENGINEER.

- 13. BOLTS, NUTS AND WASHERS FOR STEEL PERMANENTLY EXPOSED TO WEATHER SHALL BE GALVANIZED. SEE SPECIFICATIONS.

- 14. OBTAIN ALL FIELD MEASUREMENTS REQUIRED FOR PROPER FABRICATION AND INSTALLATION OF WORK PRIOR TO DETAILING. PRECISE MEASUREMENTS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

- 15. STEEL DETAILER TO VISIT THE JOB SITE AS MANY TIMES AS NECESSARY TO FAMILIARIZE HIMSELF WITH THE EXISTING FIELD CONDITIONS AND OBTAIN ALL NECESSARY INFORMATION NEEDED TO COMPLETE THE JOB.

- 16. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

- 17. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

- 18. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

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- 50. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

BEAMS TABLE with columns BAR SIZE, BOTTOM BARS, OTHER BARS and rows #3, #4, #5, #6, #7, #8, #9, #10, #11.

COLUMNS TABLE with columns BAR SIZE, Ld and rows #3, #4, #5, #6, #7, #8, #9, #10, #11.

TABLE ASSUMPTIONS with numbered list 1-6 detailing cover, spacing, and case rules.

WALLS TABLE with columns BAR SIZE, VERTICAL BARS, HORIZONTAL BARS and rows #3, #4, #5, #6, #7, #8, #9, #10, #11.

SLABS / MATS TABLE with columns BAR SIZE, THICKNESS 12" OR LESS, THICKNESS GREATER THAN 12" and rows #3, #4, #5, #6, #7, #8, #9, #10, #11.

FOR: Table with columns Fc and Ld values for various bar sizes and concrete strengths.

- 6. ALL LAP SPLICES SHALL BE 1.3Ld UNLESS NOTED OTHERWISE ON DRAWINGS.
- 7. FOR LIGHTWEIGHT AGGREGATE CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.
- 8. FOR EPOXY-COATED BARS, MULTIPLY THE TABULATED VALUES BY 1.5.
- 9. COMBINATIONS OF EFFECTS DUE TO CONCRETE STRENGTH, CONCRETE WEIGHT, AND EPOXY BARS ARE CUMULATIVE. Ld SHALL BE MULTIPLIED BY EACH FACTOR TO FIND THE CORRECT VALUE.
- 10. ACI DOES NOT PERMIT LAP SPLICES OF #14 OR #18 BARS. BARS OF THIS SIZE SHALL BE COUPLED BY ACCEPTABLE MECHANICAL MEANS.
- 11. DOWEL BAR SUBSTITUTIONS SHALL BE PERMITTED PROVIDED THAT MANUFACTURER'S DATA SUPPORTS FULL TENSION SPLICES.
- 12. ALL SLEEVES AND PENETRATIONS SHALL BE PROVIDED BY THE SUB-CRACKER REQUIRING THE OPENING.
- 13. CONCRETE COLUMN LENGTH ADJUSTMENT FOR ELASTIC SHORTENING, SHRINKAGE AND CREEP EFFECTS SHALL BE DISCUSSED WITH THE CONCRETE CONTRACTOR.
- 14. CONDUIT PLACED IN CONCRETE SLABS MUST BE PLACED IN ACCORDANCE WITH THE FOLLOWING GUIDELINES: a. CONTRACTOR SHALL NOT INSTALL CONDUIT THAT IS NOT SHOWN ON MECHANICAL DRAWINGS. b. DO NOT CROSS MORE THAN ONE LAYER OF CONDUIT OVER ANOTHER IN ANY GIVEN AREA. c. PLACE CENTROID OF CONDUIT OR CONDUIT GROUP AT THE MID-HEIGHT OF THE SLAB. d. CONDUIT OR CONDUIT GROUP CAN NOT EXTEND OUTSIDE THE MIDDLE 1/2 OF THE SLAB. e. MAINTAIN A MINIMUM CLEAR SPACING BETWEEN THE CONDUIT OF 3 DIAMETERS. THIS REQUIREMENT APPLIES EXCEPT WHERE CONDUITS ACCUMULATE AT "TURN DOWNS". THE CONDITIONS AT "TURN DOWN" LOCATIONS MUST BE EVALUATED AT EACH LOCATION BY THE STRUCTURAL ENGINEER. "TURN DOWNS" CAN NOT OCCUR AT COLUMN OR BUTTRESS LOCATIONS. f. DO NOT PLACE ANY CONDUIT IN THE SLAB WITHIN 36" FROM THE EDGE OF ANY COLUMN OR WALL ABOVE OR BELOW THE SLAB. g. SLAB REINFORCEMENT MUST NOT BE MOVED, CUT, OR BENT TO ACCOMMODATE CONDUIT PLACEMENT. h. CONDUIT IS NOT TO RUN THROUGH OR WITHIN A COLUMN OR WALL. i. ALUMINUM CONDUIT SHALL NOT BE EMBEDDED IN A SLAB UNLESS IT IS EFFECTIVELY COATED.

- IF THE ABOVE REQUIREMENTS ARE ALL MET, CONDUIT LOCATIONS NEED NOT BE REVIEWED BY THE STRUCTURAL ENGINEER. ANY DEVIATIONS MUST BE SUBMITTED ON A SHOP DRAWING FOR APPROVAL BY THE STRUCTURAL ENGINEER PRIOR TO CONDUIT PLACEMENT.
- THE FOLLOWING CASES MUST BE SUBMITTED FOR REVIEW BY THE STRUCTURAL ENGINEER: a. LOCATIONS OF ANY CONDUIT LARGER THAN 2" IN OUTSIDE DIAMETER. b. LOCATIONS OF ANY BUNDLED CONDUITS.

VII - STEEL NOTES

- 1. BOLTED CONNECTIONS: BOLTS ARE TO BE A325 OR A490 SLIP CRITICAL, CLASS A FLOOR BEAM CONNECTIONS TO OTHER BEAMS OR GIRDERS CAN BE MADE WITH BEARING CONNECTIONS...

- 2. END CONNECTIONS OF FLOOR MEMBERS SHALL ACCOMMODATE END ROTATIONS OF SIMPLE, UNRESTRAINED BEAMS. FOR THIS PURPOSE, ELASTIC ACTION IN THE CONNECTION IS PERMITTED.

- 3. COPED OR CUT ENDS OF MEMBERS SHALL BE REINFORCED WHERE REQUIRED TO SUSTAIN THE SPECIFIED REACTIONS.

- 4. FABRICATE AND ERECT FLOOR MEMBERS WITH NATURAL CAMBER UP.

- 5. SHORING OF FLOOR MEMBERS TO CONTROL SLAB THICKNESS, FLOOR LEVEL AND OTHER TOLERANCES, AND CONCRETE PONDING IS THE CONTRACTOR'S OPTION. FLOORS TO BE POURED 50 AS TO MAINTAIN UNIFORM SLAB THICKNESS ACROSS TOP OF STEEL MEMBERS.

- 6. STRUCTURAL STEEL CONTRACTOR TO PROVIDE DECK SUPPORT ANGLES AS REQUIRED.

- 7. UNLESS OTHERWISE SHOWN ON DRAWINGS, SIZE OF WELDS SHALL NOT BE SMALLER THAN 1/4".

- 8. FABRICATION AND ERECTION CONSIDERATIONS - THE FOLLOWING ITEMS WILL BE DEFINED AT A PRE-DETAILING CONFERENCE WITH THE STEEL CONTRACTOR:

- a) STEEL COLUMN LENGTH ADJUSTMENT FOR ELASTIC SHORTENING EFFECTS.
- b) STEEL TRUSS CAMBERING.
- c) ELEMENTS AFFECTED BY STEEL ERECTION PROCEDURE, SUCH AS MEMBER SIZES, CONNECTIONS, SPLICES, BASE PLATES, ANCHOR BOLTS, ROCK ANCHORS, ETC.
- d) ERECTION PROCEDURES AND SEQUENCES WITH REGARD TO TEMPERATURE EFFECTS.

- 9. THE CONTRACTOR SHALL PROVIDE, AT NO ADDITIONAL COST, ALL ADDITIONAL STEEL CONNECTIONS, GUYING, ETC. REQUIRED FOR ERECTION.

- 10. UNLESS SPECIFICALLY NOTED, STEEL DETAILS SHOWN ON THE DRAWINGS ARE FOR CONCEPT ONLY AND DO NOT INDICATE REQUIRED NUMBER OF BOLTS, SIZE OF WELDS, ETC.

- 11. MEMBERS MAY ONLY BE SPLICED WHERE SPECIFICALLY DETAILED ON ACCEPTED SHOP DRAWINGS.

- 12. FIELD CUTTING OF STRUCTURAL STEEL IS NOT PERMITTED EXCEPT WITH THE PRIOR APPROVAL OF THE ENGINEER.

- 13. BOLTS, NUTS AND WASHERS FOR STEEL PERMANENTLY EXPOSED TO WEATHER SHALL BE GALVANIZED. SEE SPECIFICATIONS.

- 14. OBTAIN ALL FIELD MEASUREMENTS REQUIRED FOR PROPER FABRICATION AND INSTALLATION OF WORK PRIOR TO DETAILING. PRECISE MEASUREMENTS ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

- 15. STEEL DETAILER TO VISIT THE JOB SITE AS MANY TIMES AS NECESSARY TO FAMILIARIZE HIMSELF WITH THE EXISTING FIELD CONDITIONS AND OBTAIN ALL NECESSARY INFORMATION NEEDED TO COMPLETE THE JOB.

- 16. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

- 17. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

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- 38. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

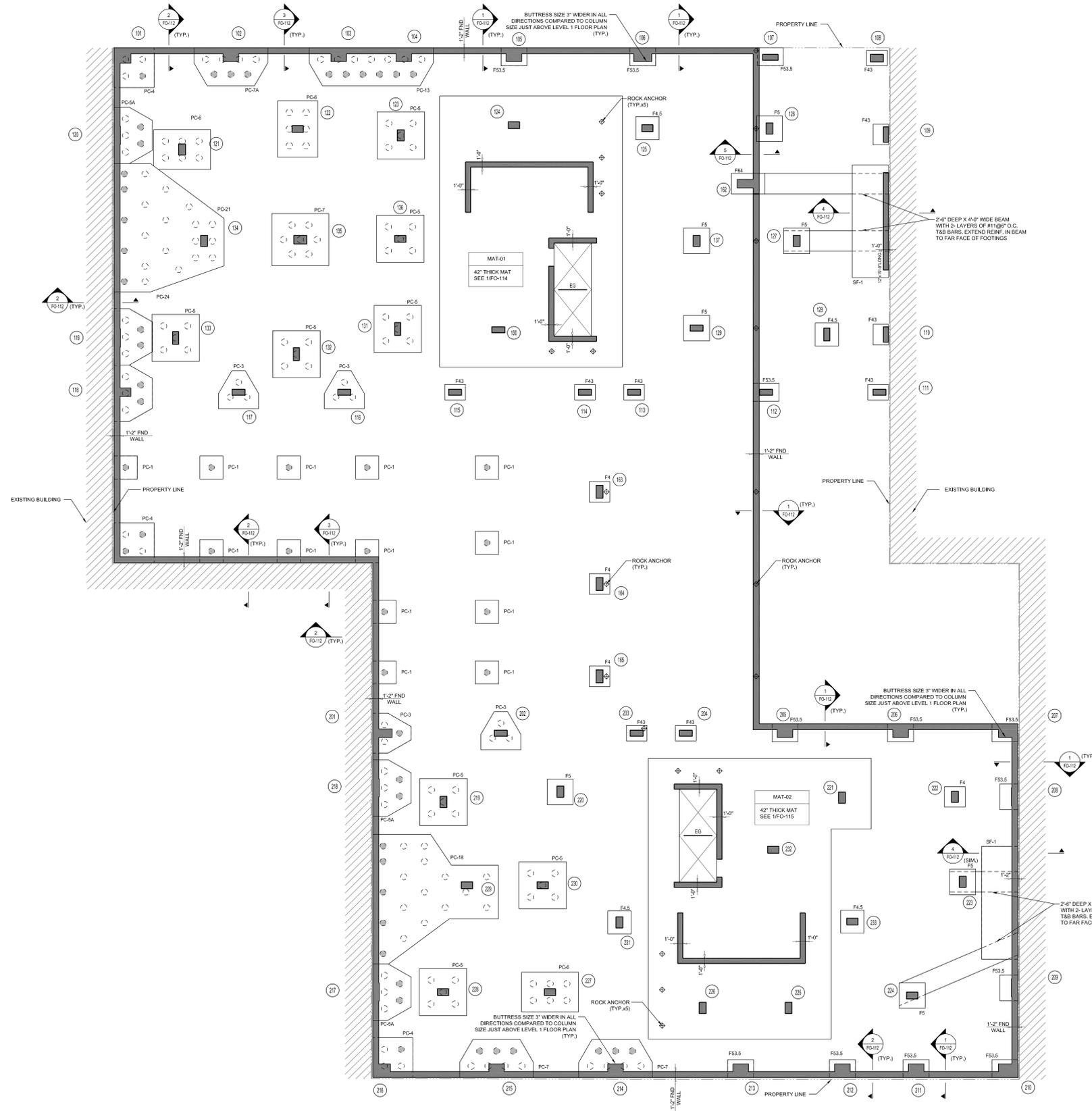
- 39. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

- 40. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REINFORCED.

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- 43. UNIFORM OPENINGS, IN FLOOR OR ROOF DECKS, LARGER THAN 6" PERPENDICULAR TO SPAN OF DECK SHALL BE REIN



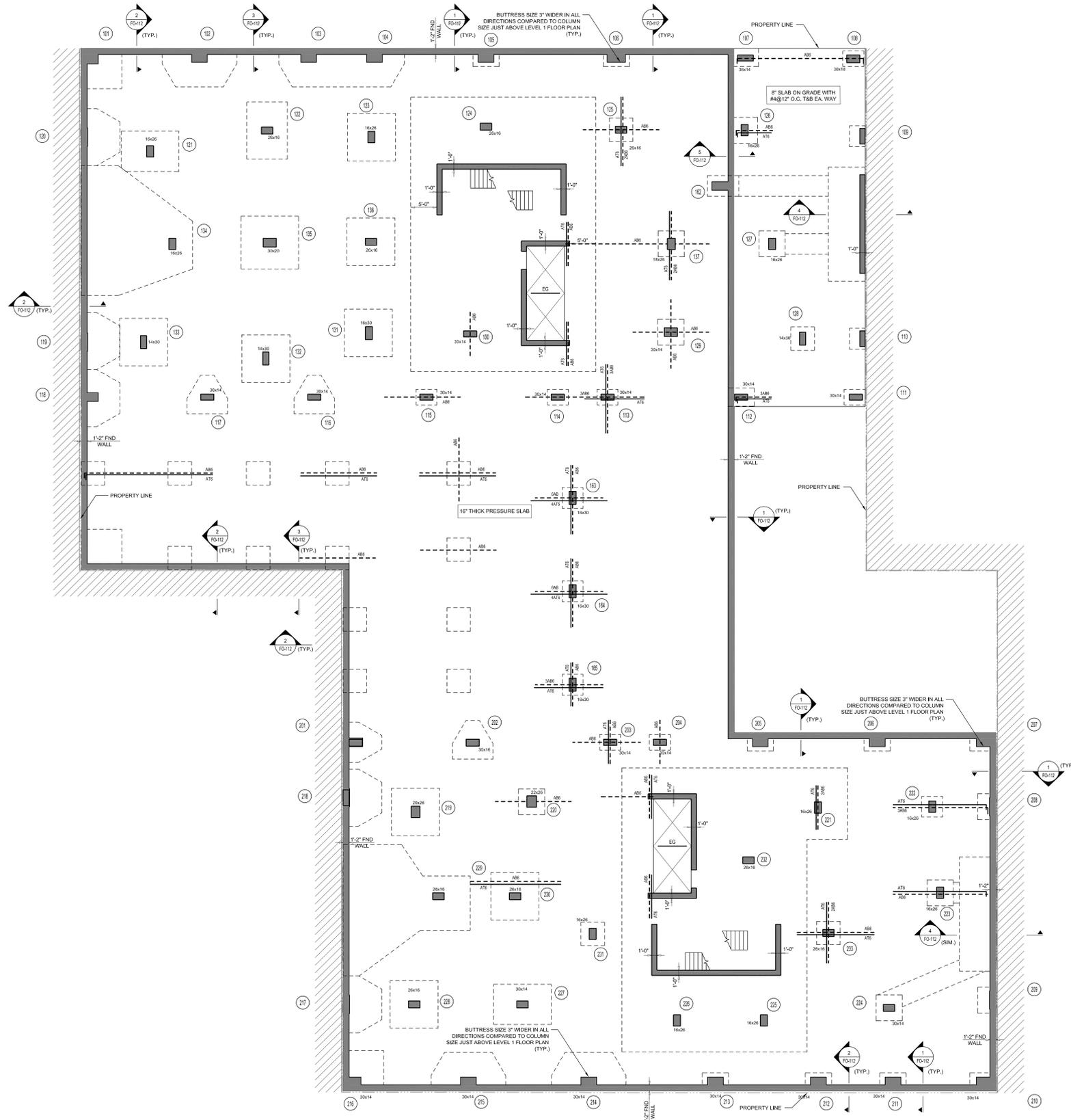
- DRAWING NOTES:**
- FOR GENERAL NOTES AND DRAWING INDEX, SEE DRAWING S-001.
  - SEE ARCHITECTURAL DRAWINGS FOR FLOOR ELEVATIONS.
  - SEE FO-110 SERIES DRAWINGS FOR FOUNDATION DETAILS.
  - SEE 500 SERIES DRAWINGS FOR TYPICAL CONCRETE SECTIONS & DETAILS.
  - ADJACENT BUILDINGS AND STRUCTURES SHOWN FOR INFORMATION ONLY. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS.
  - TOP OF FOOTING AND PILE CAP ELEVATION SHALL MATCH BOTTOM OF PRESSURE SLAB ELEVATION.
  - FOUNDATION BOTTOM MAY NEED TO BE LOWERED DUE TO UNCOVERED SOIL CONDITIONS. SEE GEO-TECHNICAL REPORT FOR ADDITIONAL INFORMATION.
  - SEE ARCHITECTURAL DRAWINGS FOR ALL NON-LOAD BEARING CMU WALL LOCATIONS.
  - FOR COLUMN SCHEDULE SEE DRAWINGS S-401 TO S-403.
  - FOR SHEAR WALL PLANS, SEE S-410 SERIES DRAWINGS.
  - PC-XX DENOTES PILE GROUP WITH PILES OF FOLLOWING CAPACITIES:
    - A. SHOWN AS  $\triangle$  150 TONS COMPRESSION
    - B. SHOWN AS  $\circ$  150 TONS COMPRESSION, 75 TONS TENSION AND 20 TONS LATERAL
  - ROCK ANCHORS WILL SAME LIFT CAPACITY CAN BE ALTERNATIVELY PROVIDED INSTEAD OF TENSION PILES.
  - CONCRETE STRENGTH OF STRUCTURE SHOWN ON PLAN SHALL BE:
    - COLUMNS 6 KSI
    - SHEAR WALLS 6 KSI
    - SLAB ON GRADE 5 KSI
    - PRESSURE SLAB 5 KSI
    - FOUNDATION WALLS 5 KSI
    - PILE CAPS 5 KSI
  - $\Phi$  INDICATES ROCK ANCHOR.

ARCHITECT John A. Calra State of New York Registered Architect No. 018861 Cetra Ruddy Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CLIENT CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vanderveer Ave, Suite 1000 New York, NY 10017
STRUCTURAL ENGINEER DeSimone Consulting Engineers, PLLC 16 West 18th Street, 10th Fl New York, NY 10011	MEP ENGINEER Dagher Engineering, PLLC 29 Broadway New York, NY 10006
ENVIRONMENTAL ENGINEER Langan Engineering & Environmental Services 21 Penn Plaza 5th Floor New York, NY 10001	LANDSCAPE ARCHITECT HMMille 107 Grand Street, 6th Fl New York, NY 10013
ARCHITECT CONSULTANT Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	ELECTRICAL ENGINEER Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

100% DESIGN DEVELOPMENT 07/12/2013	
DESCRIPTION	DATE
 CETRARUDDY	
FOUNDATION LAYOUT PLAN	
DATE	07.12.2013
SHEET	02 OF 28
<h2>FO-101.00</h2>	
PROJECT / CLIENT	P13056.00
CETRA/RUDDY ARCHITECTURE PLLC 584 BROADWAY NEW YORK NY 10012 T: 212 647 8400 F: 212 611 8440 WWW.CETRARUDDY.COM	

DeSimone Consulting Engineers - Main Building - Drawing - 100% Design Development - 07/12/2013 - 12:00PM

CetraRuddy Architecture PLLC - 584 Broadway - Drawing - 100% Design Development - 07/12/2013 - 12:00PM



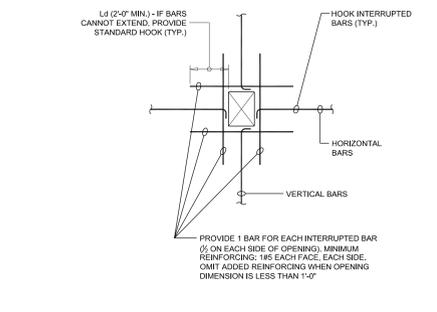
<b>ARCHITECT</b> John A. Calra State of New York Registered Architect No. 018861 Cetra/CR Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>ENVIRONMENTAL ENGINEER</b> Langan Engineering & Environmental Services 11 Penn Plaza 9th Floor New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMMille 107 Grand Street, 6th Fl New York, NY 10013
<b>ARCHITECTURAL CONSULTANT</b> Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>GENERAL CONTRACTOR</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

TOP OF SLAB/PLANK ELEVATION, U.O.N.: <b>EL. -13'-0"</b>	SLAB BASIC BOTTOM BARS EACH WAY, U.O.N.: <b>#6@12" O.C.</b>	<b>DRAWING NOTES:</b> 1. FOR GENERAL NOTES AND DRAWING INDEX, SEE DRAWING S-401. 2. SEE FO-10 SERIES DRAWINGS FOR FOUNDATION DETAILS. 3. PROVIDE #6@12" E.W. TOP AND BOTTOM TYP. IN PRESSURE SLAB. OUTERMOST LAYER OF REINFORCING RUNS EAST-WEST. SEE PLAN FOR ADDITIONAL REINFORCEMENT. 4. SEE 500 SERIES DRAWINGS FOR TYPICAL CONCRETE SECTIONS & DETAILS. 5. ADJACENT BUILDINGS AND STRUCTURES SHOWN FOR INFORMATION ONLY. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS. 6. SEE ARCHITECTURAL DRAWINGS FOR ALL NON-LOAD BEARING CMU WALL LOCATIONS. 7. FOR COLUMN SCHEDULE SEE DRAWINGS S-401 TO S-403. 8. FOR SHEAR WALL PLANS, SEE S-401 SERIES DRAWINGS.
SLAB THICKNESS, U.O.N.: <b>16"</b>	SLAB BASIC TOP BARS, EACH WAY, U.O.N.: <b>#6@12" O.C.</b>	
SLAB CONCRETE STRENGTH: <b>f<sub>c</sub> = 5 KSI</b>		

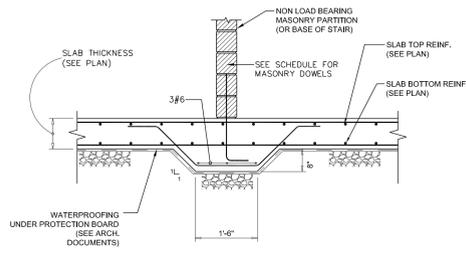
 <b>CETRA/CR</b> CELLAR LAYOUT PLAN					
DATE	07.12.2013	TITLE	CELLAR	SHEET	03 OF 28
<b>FO-102.00</b>					
SCALE	1/8"=1'-0"	DATE		PROJECT	P13056.00
CETRA/CR ARCHITECTURE PLLC 584 BROADWAY NEW YORK NY 10012 T: 212 644 8401 F: 212 644 8440 WWW.CETRA/CR.COM					

Drawing: 546 W44 Cellar - 03 of 28  
 Date: 07/12/2013  
 Project: 546 West 44th Street  
 Drawing: 546 W44 Cellar - 03 of 28

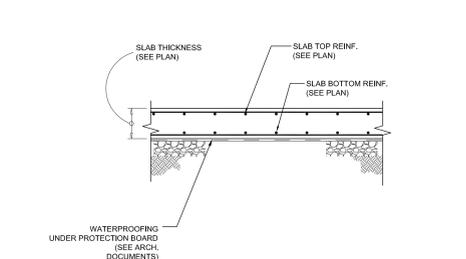
John A. Caira State of New York Registered Architect No. 018861 Caira CRI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
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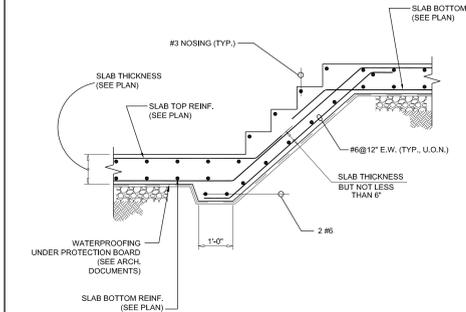
**5** TYPICAL REINFORCING DETAIL AT FOUNDATION WALL OPENING



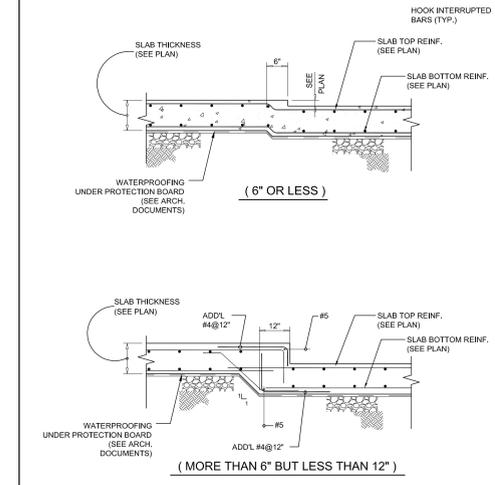
**4** TYPICAL THICKENED SLAB UNDER MASONRY PARTITION



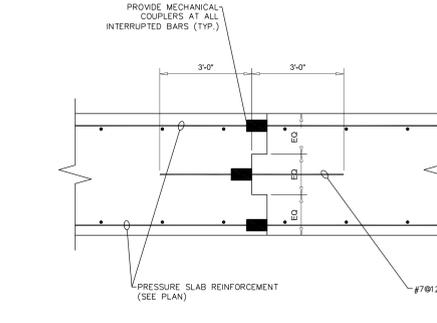
**3** TYPICAL STRUCTURAL SLAB ON GROUND DETAIL



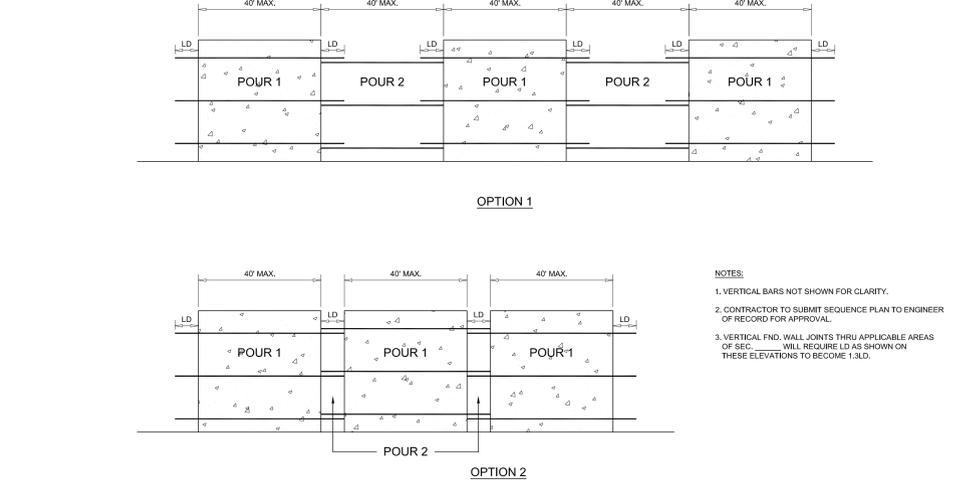
**2** TYPICAL DETAIL OF STEPS IN SLAB ON GROUND



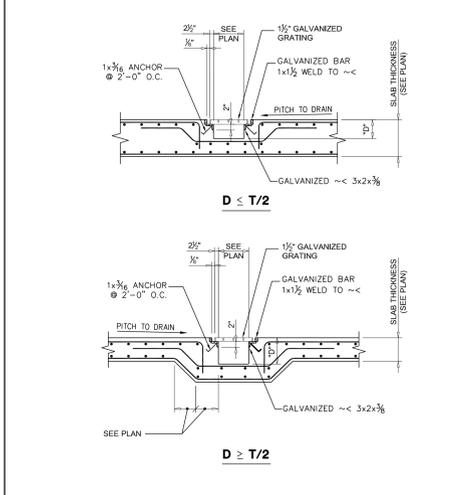
**1** TYPICAL SLAB ON GROUND DEPRESSIONS



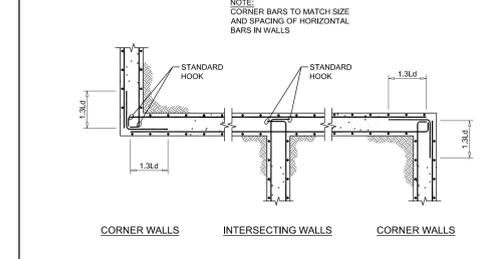
**9** TYPICAL PRESSURE SLAB CONSTRUCTION JOINT DETAIL



**8** FOUNDATION POUR SEQUENCE OPTIONS



**7** TYPICAL SECTIONS THROUGH TRENCH DRAINS ON STRUCTURAL SLAB



**6** TYPICAL REINFORCING DETAIL AT FOUNDATION WALL CORNERS

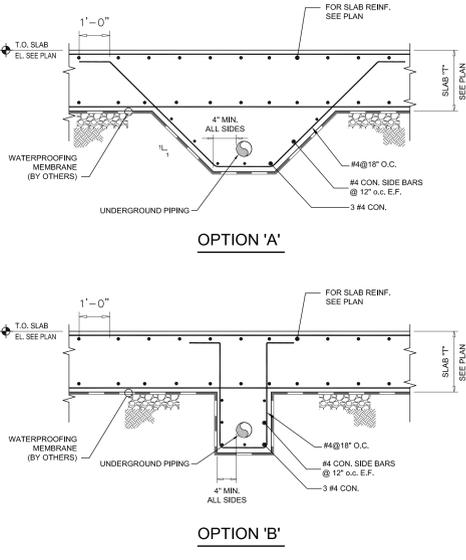
MARK	SIZE	DEPTH	BOTTOM REINFORCING EACH WAY (O.C.)	REMARKS
F4	4'-0"x4'-0"	30"	#9@6"	
F4.5	4'-6"x4'-6"	30"	#9@6"	
F5	5'-0"x5'-0"	30"	#9@6"	
F43	4'-0"x3'-0"	24"	#9@6"	
F33.5	5'-0"x3'-6"	24"	#9@6"	
F64	6'-0"x4'-0"	30"	#9@6"	

MARK	WIDTH	LENGTH	DEPTH	BOTTOM REINFORCEMENT		TOP REINFORCEMENT		REMARKS
				SHORT	LONG	SHORT	LONG	
SF-1	5'-0"	22'-0"	3'-0"	#9@12" O.C.	#7@12" O.C.	#9@12" O.C.	#7@12" O.C.	PROVIDE #5@12" O.C. SIDE BARS

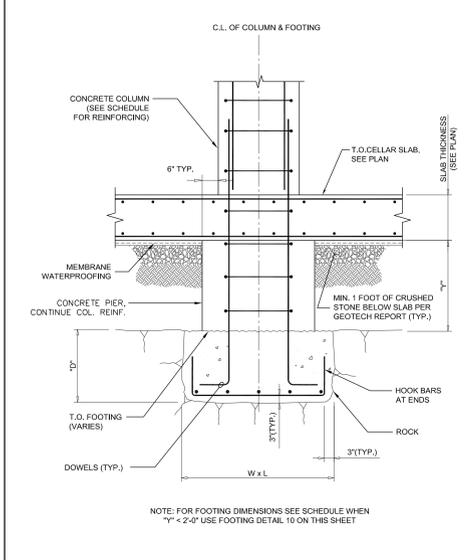
**14** FOOTING SCHEDULE

WALL THICKNESS	VERTICAL REINFORCING		HORIZONTAL REINFORCING	
	I.F.	O.F.	I.F.	O.F.
1'-0"	#9@12"	#9@12"	#5@12"	#5@12"

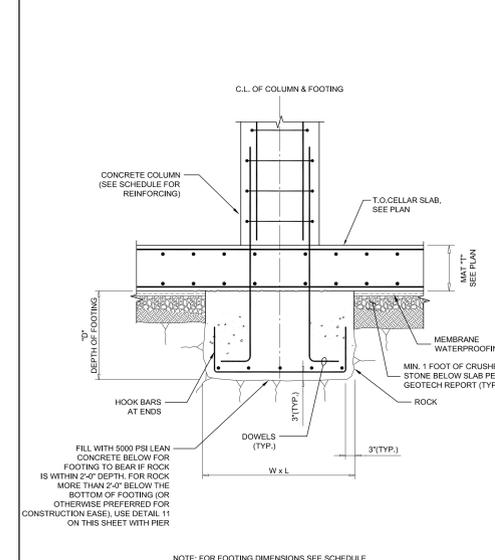
**13** FOUNDATION WALL REINFORCEMENT SCHEDULE



**12** TYPICAL UNDERGROUND PIPING ENCASEMENT DETAIL



**11** INTERIOR FOOTING WITH PIER DETAIL FOR CONCRETE COLUMN IN ROCK



**10** INTERIOR FOOTING DETAIL FOR CONCRETE COLUMN IN ROCK

100% DESIGN DEVELOPMENT 07/12/2013

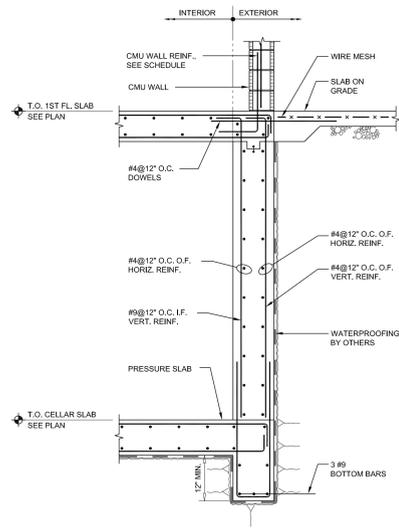
DESCRIPTION	DATE

TYPICAL FOUNDATION DETAILS

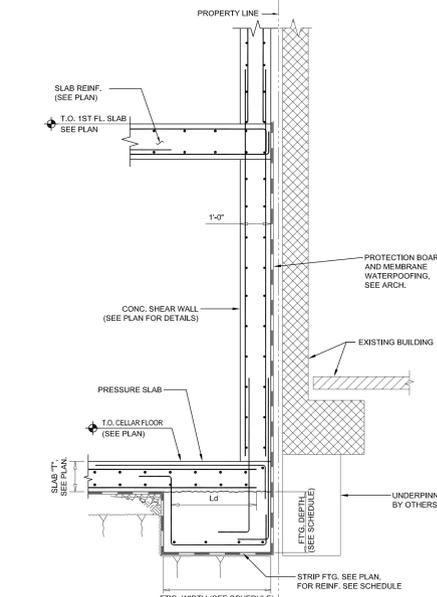
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PROJECT	AS SHOWN	SCALE	
PRICE	P13056.00	DATE	

FO-111.00

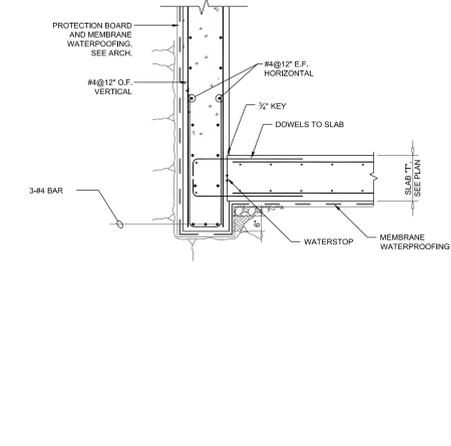
CETRA/CR ARCHITECTURE PLLC  
 184 BROADWAY NEW YORK NY 10013 T 212 841 8001 F 212 841 8440  
 WWW.CETRA/CR.COM



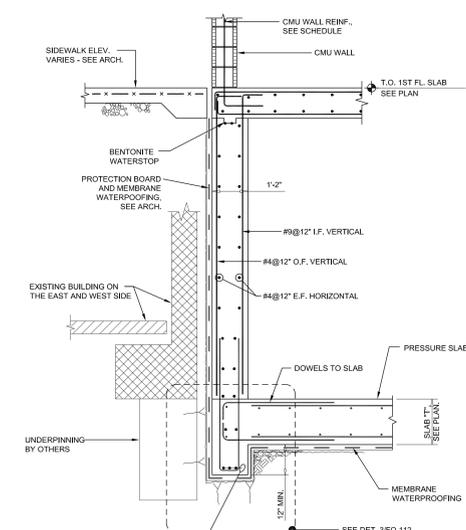
**5 FOUNDATION WALL SECTION AT INTERFACE BETWEEN INTERIOR AND EXTERIOR OF BUILDING**  
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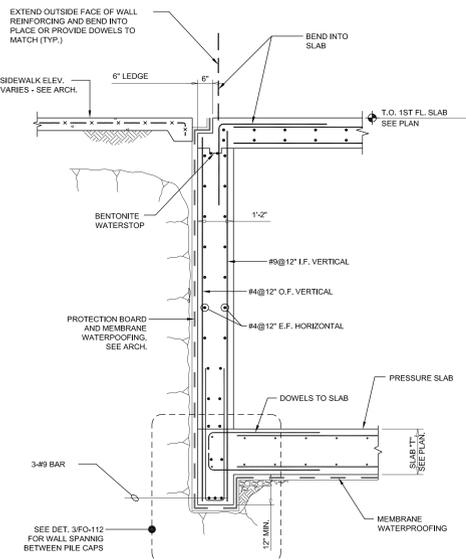
**4 SECTION**  
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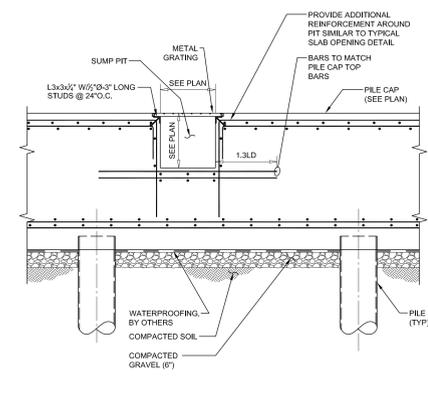
**3 BASE DETAIL FOR FOUNDATION WALL SPANNING BETWEEN PILE CAPS**  
SCALE: 1/2"=1'-0"



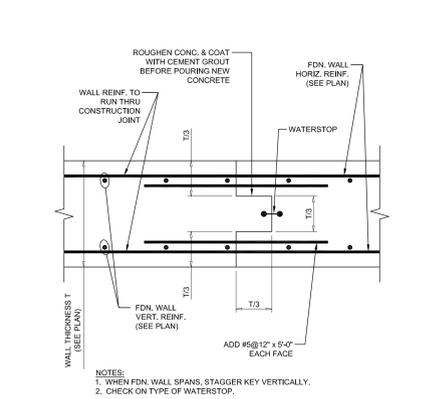
**2 TYPICAL FOUNDATION WALL SECTION WHEN ROCK IS BELOW CELLAR SLAB LEVEL**  
SCALE: N.T.S.



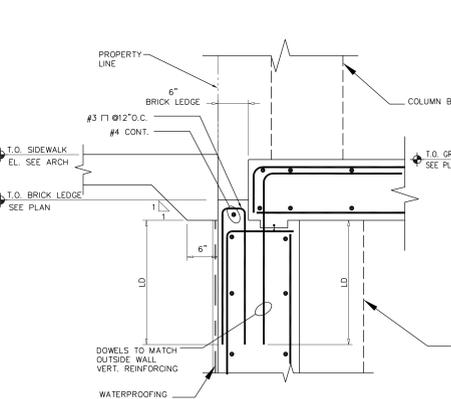
**1 TYPICAL FOUNDATION WALL SECTION WHEN ROCK HAS TO BE EXCAVATED**  
SCALE: N.T.S.



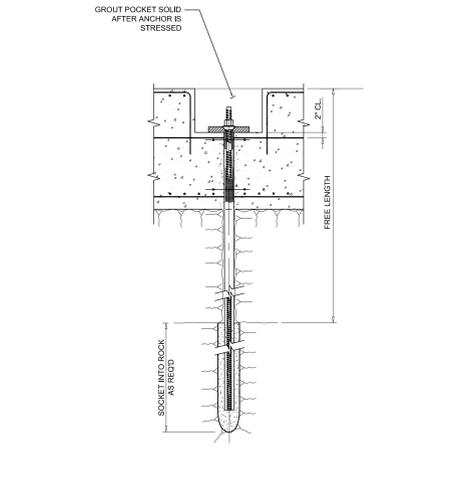
**10 TYPICAL SUMP PIT DETAIL AT SHEAR WALL CAP**  
SCALE: 1/2"=1'-0"



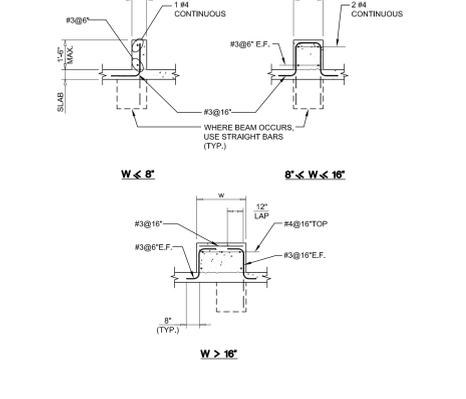
**9 TYPICAL FOUNDATION WALL CONSTRUCTION JOINT**  
SCALE: 1/2"=1'-0"



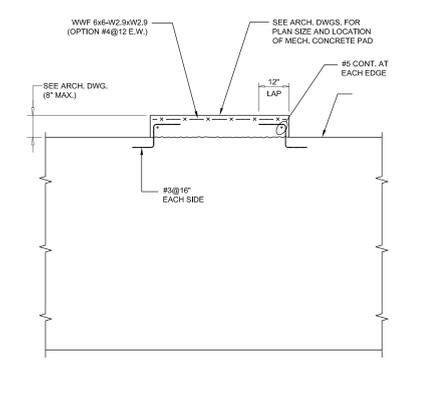
**8 TYPICAL COLUMN/BUTRESS INTERFACE AND SIDEWALK HAUNCH DETAIL**  
SCALE: 1/2"=1'-0"



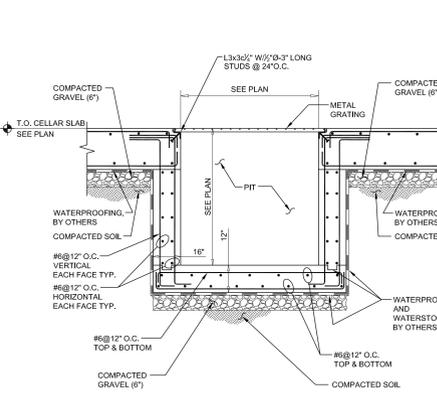
**7 TYPICAL TIE DOWN ROCK ANCHOR DETAIL**  
SCALE: N.T.S.



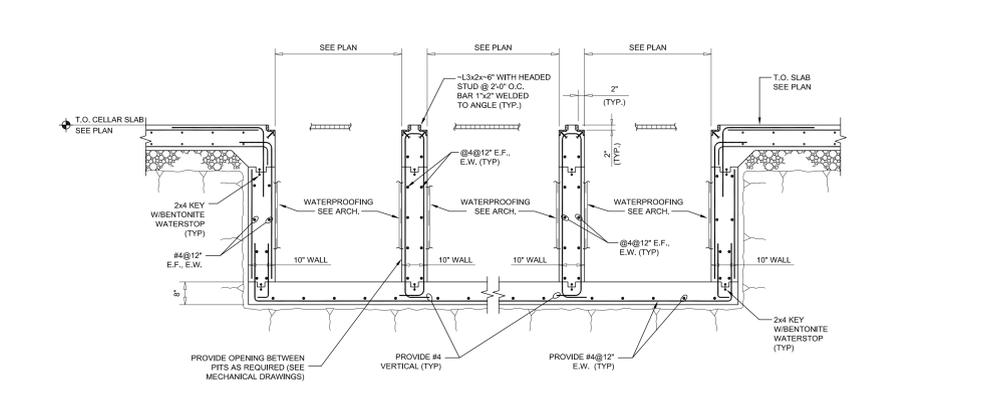
**6 TYPICAL CURB DETAIL**  
SCALE: 1/2"=1'-0"



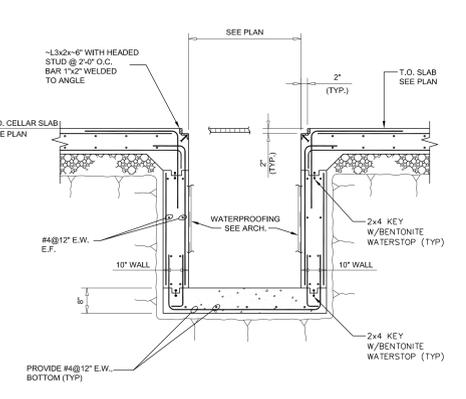
**14 TYPICAL MECHANICAL EQUIPMENT PAD ON MAT FOUNDATION**  
SCALE: 1/2"=1'-0"



**13 TYPICAL MECHANICAL PIT DETAIL ON SOIL**  
SCALE: 1/2"=1'-0"



**12 TYPICAL SECTION THROUGH MULTIPLE SUMP PITS ON ROCK**  
SCALE: 1/4"=1'-0"



**11 TYPICAL SUMP PIT DETAIL ON ROCK**  
SCALE: 1/4"=1'-0"

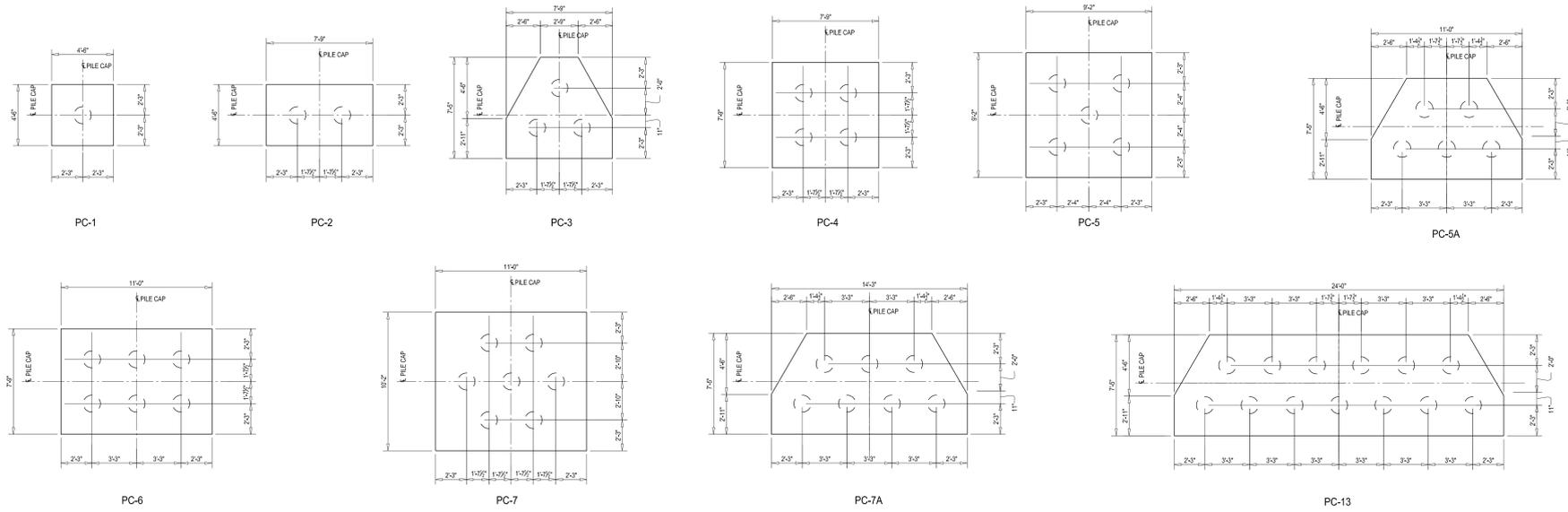
ARCHITECT John A. Calra State of New York Registered Architect No. 018851 Calra CHI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CLIENT CREF 546 West 44th St. LLC Representative: The Pathway Group, LLC 52 Vandewater Ave. Suite 1000 New York, NY 10017
ARCHITECTURAL ENGINEER DeSimone Consulting Engineers, PLLC 16 West 18th Street, 10th Fl New York, NY 10011	MECHANICAL ENGINEER Dagher Engineering, PLLC 29 Broadway New York, NY 10006
ELECTRICAL ENGINEER Langan Engineering & Environmental Services 17 Penn Plaza 560 West 31st Street New York, NY 10001	CIVIL ENGINEER HMM/ME 107 Grand Street, 6th Fl New York, NY 10013
GEOTECHNICAL ENGINEER Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	STRUCTURAL ENGINEER Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

100% DESIGN DEVELOPMENT 07/12/2013	
DESCRIPTION	DATE
<b>TYPICAL FOUNDATION DETAILS</b>	
DATE	07.12.2013
ISSUE NO.	05 OF 28
<h2>FO-112.00</h2>	
AS SHOWN	
P13056.00	
CETRA/CHI ARCHITECTURE PLLC 584 BROADWAY NEW YORK NY 10012 T 212 641 8001 F 212 641 8440 WWW.CETRA/CHI.COM	

PILE CAP SCHEDULE						
MARK (NOTE)	D'	L'	W'	LONG BARS	SHORT BARS	PILES
PC-1	4'-0"	4'-4"	4'-4"	6 #9	HOOKED 6 #9	HOOKED 1
PC-2	4'-0"	7'-0"	4'-4"	8 #9	HOOKED 6 #9	HOOKED 2
PC-3	4'-3"	SEE PILE CAP DETAIL		21 #11 TOTAL HOOKED (SPLIT 3-WAYS)		3
PC-4	4'-3"	7'-0"	7'-0"	14 #9	HOOKED 14 #9	HOOKED 4
PC-5	4'-4"	9'-2"	9'-2"	18 #9	HOOKED 18 #9	HOOKED 5
PC-5A	4'-4"	SEE PILE CAP DETAIL		7 #14	HOOKED 12 #10	HOOKED 5
PC-6	5'-0"	11'-0"	7'-0"	7 #14	HOOKED 12 #10	HOOKED 6
PC-7	6'-0"	11'-0"	10'-2"	12 #10	HOOKED 12 #10	HOOKED 7
PC-7A	6'-0"	SEE PILE CAP DETAIL		14 #14	HOOKED 14 #14	HOOKED 7
PC-13	6'-0"	SEE PILE CAP DETAIL		14 #14	HOOKED 24 #14	HOOKED 13
PC-18	4'-0"	SEE PILE CAP DETAIL		2 LAYERS #8 @ 12" O.C. TAB E.W.	HOOKED	16
PC-21	4'-0"	SEE PILE CAP DETAIL		2 LAYERS #8 @ 12" O.C. TAB E.W.	HOOKED	21

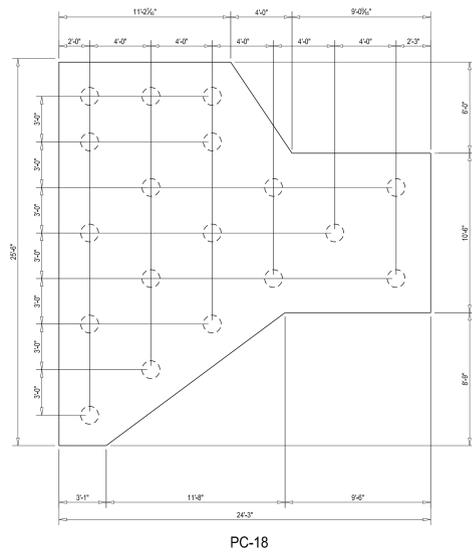
**NOTES:**

- SEE GEOTECHNICAL REPORT FOR THE PILE DESIGN RECOMMENDATIONS.
- SEE NOTES ON S200 AND PILE SPECIFICATIONS FOR REQUIREMENTS.
- GEOMETRY OF PILE CAPS SHOWN ON SCHEDULE IS BASED ON THE STEEL PIPE WITH CONCRETE FILL PILES OF SIZES LISTED IN THE GEOTECHNICAL REPORT. GEOMETRY OF PILE CAP MAY CHANGE IF DIFFERENT PILES ARE USED.
- CONCRETE STRENGTH FOR PILE CAPS SHALL BE 5000 PSI.



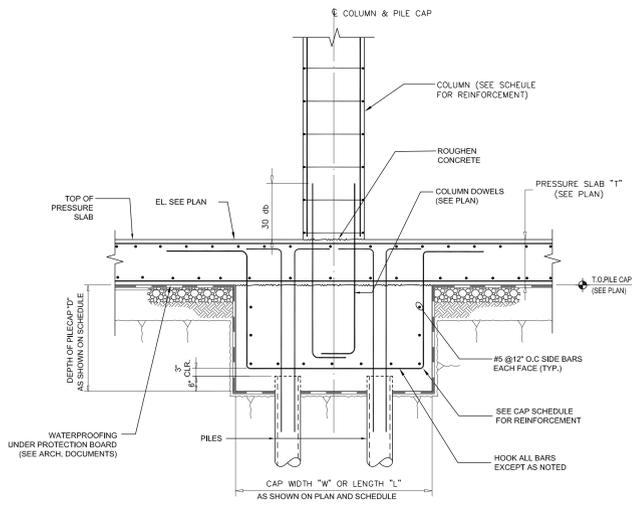
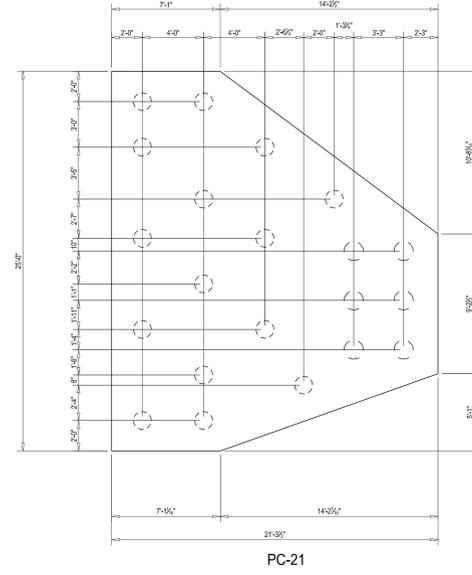
## 2 PILE CAP SCHEDULE

SCALE: N.T.S.



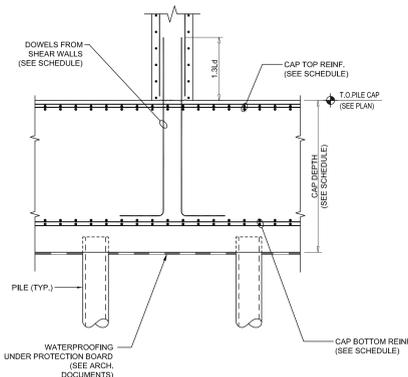
## 1 150 TON PILE CAP DETAILS

SCALE: N.T.S.



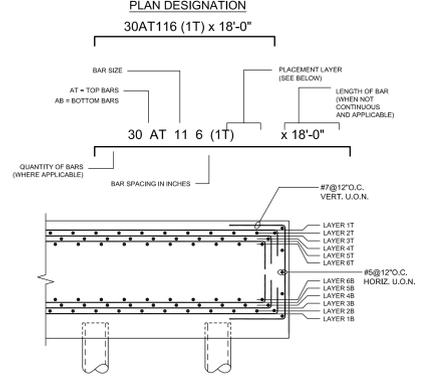
## 5 TYPICAL COLUMN PILE CAP DETAIL

SCALE: N.T.S.



## 4 TYPICAL SHEAR WALL ON PILE CAP DETAIL

SCALE: N.T.S.



**NOTES:**

- PROVIDE SPACER BARS AS REQUIRED TO ACHIEVE THE PLACEMENT LAYER HEIGHTS.
- TOTAL NUMBER OF ADDITIONAL REINFORCING BARS MUST BE DISTRIBUTED EQUALLY ON BOTH SIDES OF THE LOCATION SHOWN ON PLAN.

## 3 TYPICAL PILE CAP REINFORCEMENT LEGEND

SCALE: N.T.S.

<p>John A. Caira State of New York Registered Architect No. 018861 Caira, CRI Architecture, P.L.L.C. 584 Broadway Suite 401 New York, NY 10012</p>	<p>CREF 546 West 44th St. LLC Representative: The Pathway Group, LLC 52 Vandere Ave, Suite 1000 New York, NY 10017</p>
<p>DeSimone Consulting Engineers, P.L.L.C. 16 West 18th Street, 10th Fl New York, NY 10011</p>	<p>Dagher Engineering, PLLC 29 Broadway New York, NY 10006</p>
<p>Langan Engineering &amp; Environmental Services 21 Penn Plaza 560 West 31st Street New York, NY 10001</p>	<p>HMM/White 107 Grand Street, 6th Fl New York, NY 10013</p>
<p>Carami &amp; Associates, Inc. 404 Fifth Avenue New York, NY 10018</p>	<p>Frank Seta Associates LLC 224 West 30th Street New York, NY 10001</p>

100% DESIGN DEVELOPMENT 07/12/2013	
DESCRIPTION	DATE



## PILE CAP SECTIONS AND DETAILS

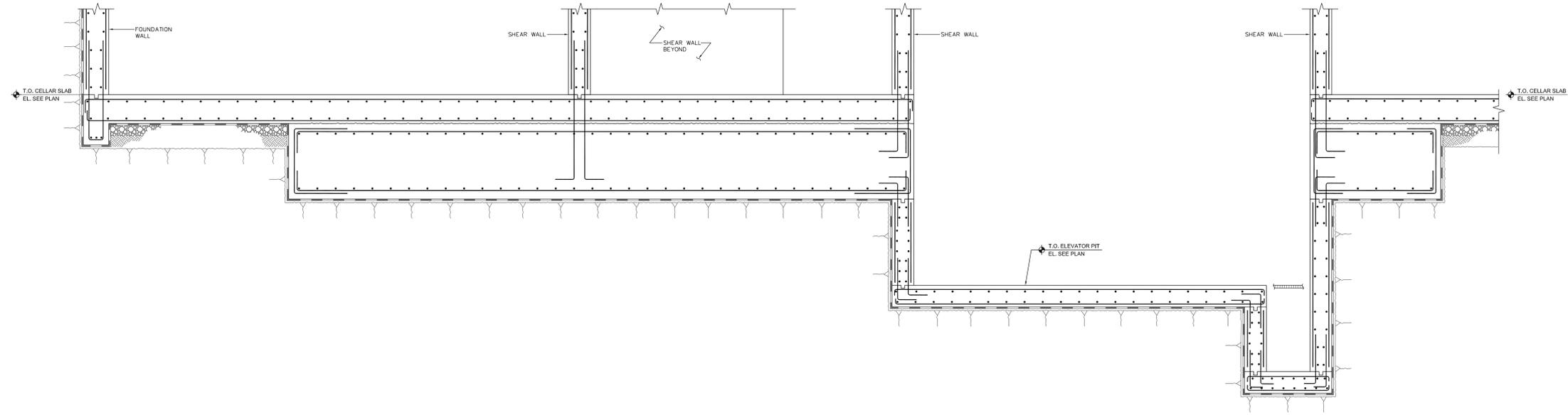
DATE	07.12.2013	REVISION	06 OF 28
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# FO-113.00

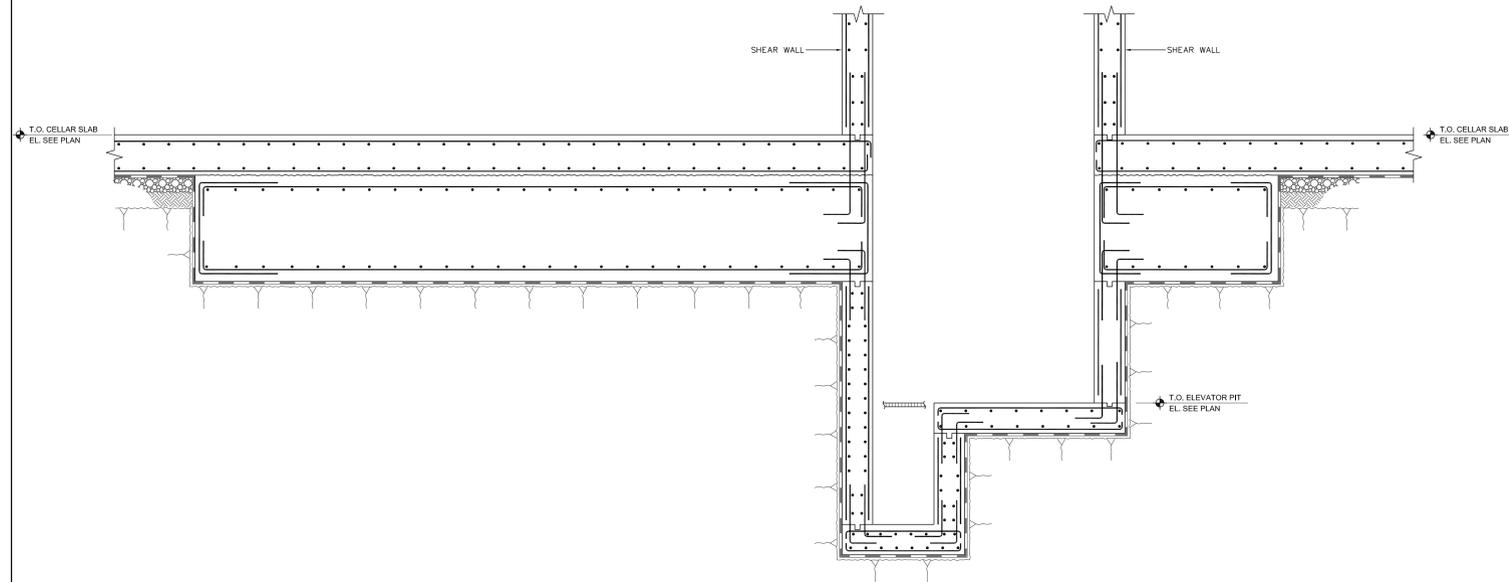
PROJECT	AS SHOWN
SCALE	P13056.00
DATE	07.12.2013
BY	CETRA/CR ARCHITECTURE PLLC
APPROVED	184 BROADWAY NEW YORK NY 10013 T 212 841 8001 F 212 841 8440 WWW.CETRAUDDY.COM







**1** MAT FOUNDATION SECTION  
SCALE: 1/2"=1'-0"



**2** MAT FOUNDATION SECTION  
SCALE: 1/2"=1'-0"

<b>ARCHITECT</b> John A. Caira State of New York Registered Architect No. 018861 Cetra/CRI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 16 West 18th Street, 10th Fl New York, NY 10011	<b>MECHANICAL ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>DISCONTINUOUS ELEMENTS ENGINEER</b> Langan Engineering & Environmental Services 21 Penn Plaza 560 West 31st Street New York, NY 10001	<b>LANDSCAPE ARCHITECT</b> HMMille 107 Grand Street, 6th Fl New York, NY 10013
<b>ASBESTOS CONSULTANT</b> Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>SEALING CONSULTANT</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

DESCRIPTION	DATE
100% DESIGN DEVELOPMENT	07/12/2013



CETRA/CRUDDY

FOUNDATION MAT  
SECTIONS

DATE	07.12.2013	SHEET	09 OF 28
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**FO-116.00**

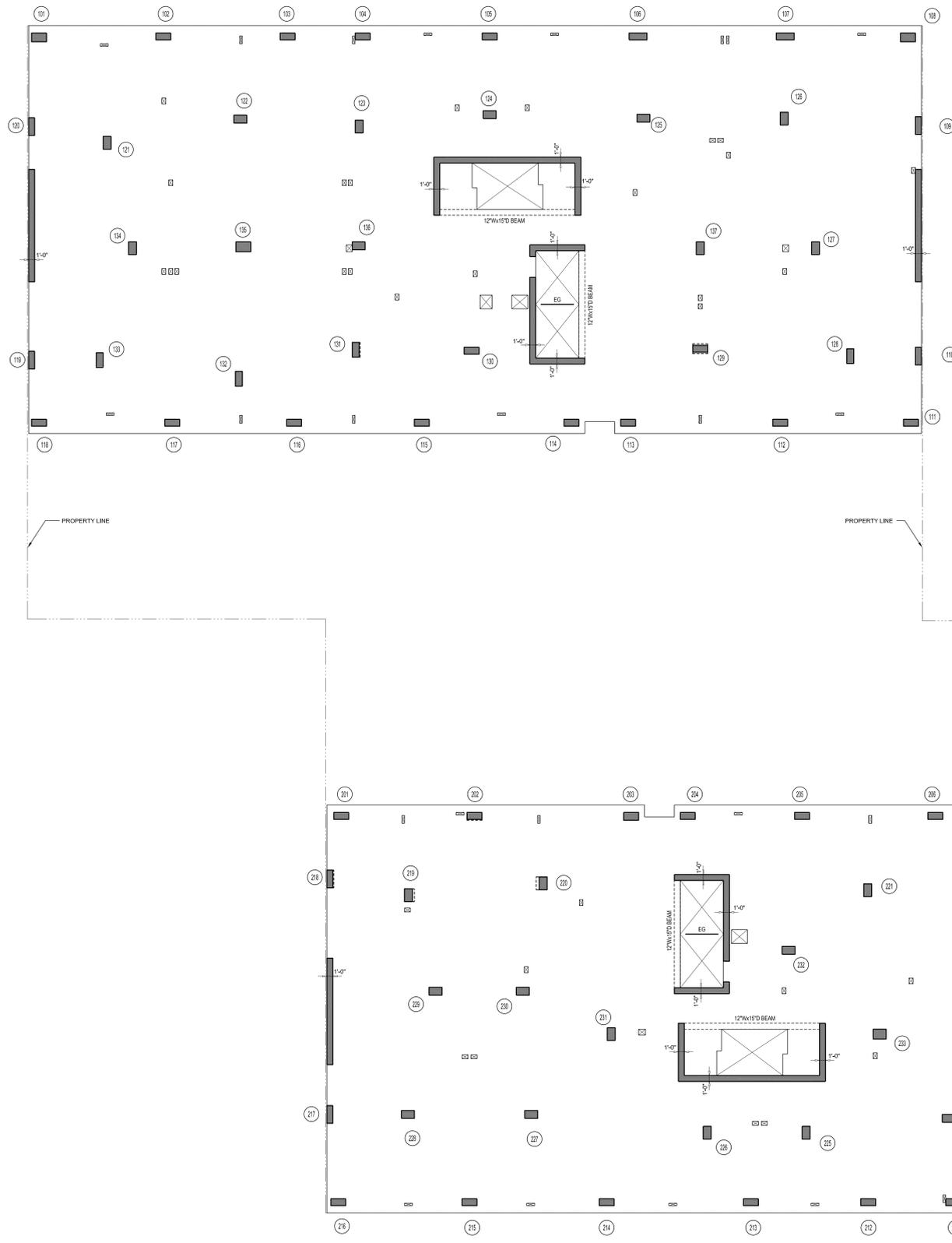
PROJECT	SCALE	DATE
P13056.00	AS SHOWN	

CETRA/CRUDDY ARCHITECTURE PLLC  
 584 BROADWAY NEW YORK, NY 10012 T: 212 644 8401 F: 212 644 8440  
 WWW.CETRA/CRUDDY.COM

P:\Projects\13056\13056-000\13056-000-10-16.dwg [Drawing - Setup] - Date: Jul 12, 2013 - 12:08PM  
 DeSimone Consulting Engineers - Maria Borneo, AIA, PE, FASAE - Drawing - 13056-000-10-16.dwg [Drawing - Setup] - Date: Jul 12, 2013 - 12:08PM



# 546 W44



<b>ARCHITECT</b> John A. Catra State of New York Registered Architect No. 018861 Catra/CR Architecture, PLLC 584 Broadway, Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Plathery Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MEP ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>DISCIPLINARY ENGINEER</b> Langan Engineering & Environmental Services 21 Penn Plaza 5th Floor New York, NY 10001	<b>LANDMARK ARCHITECT</b> HMM/White 107 Grand Street, 6th Fl New York, NY 10013
<b>ARCHITECT CONSULTANT</b> Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

100% DESIGN DEVELOPMENT 07/12/2013	
DESCRIPTION	DATE



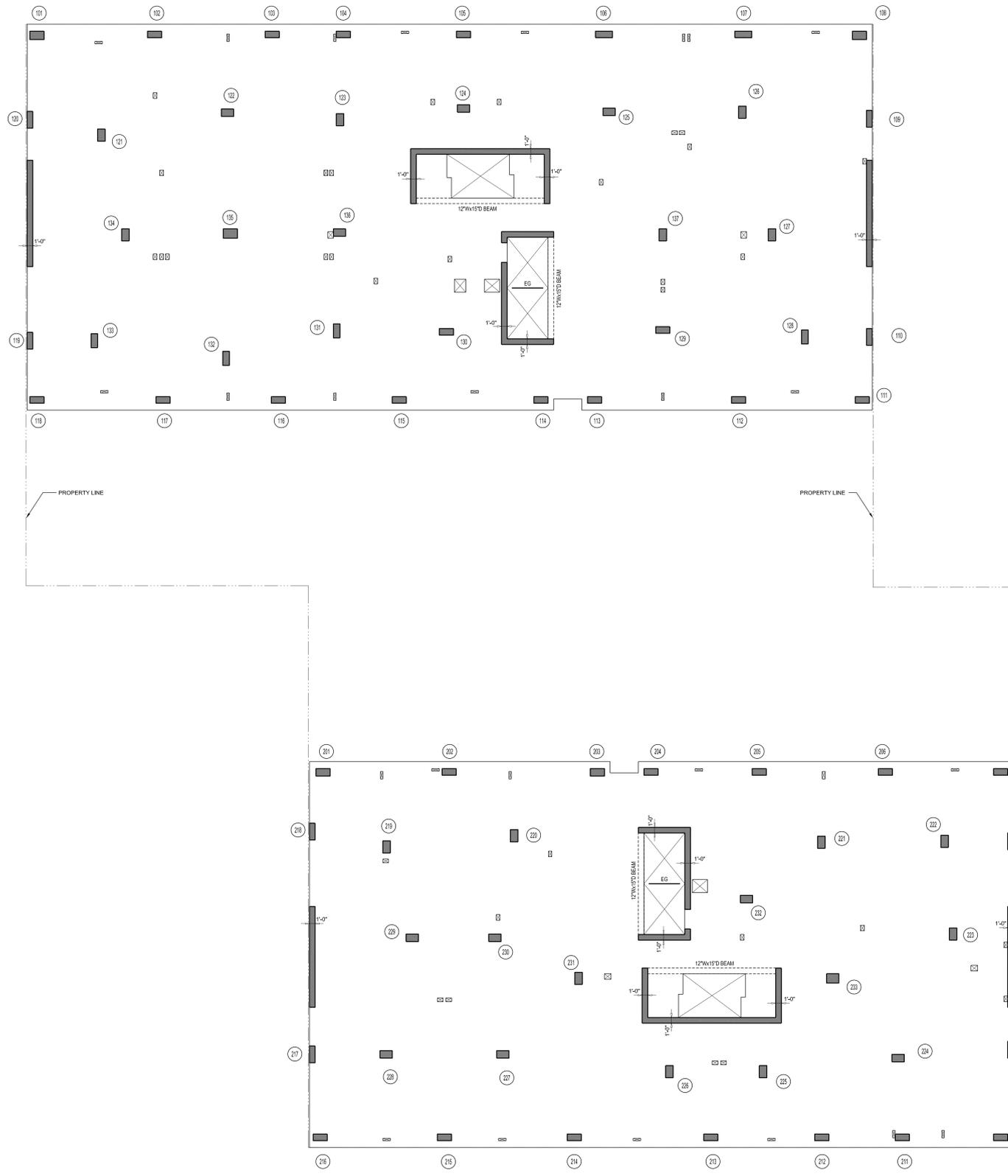
## 2ND FLOOR LAYOUT PLAN

DATE	07.12.2013	SHEET	11 OF 28
<b>S-202.00</b>			
PROJECT / SCALE	1/8"=1'-0"	DATE	
	P13056.00	ISSUED FOR PERMIT	

TOP OF SLAB ELEVATION U.O.N.:	<b>+10'-10"</b>	<b>DRAWING NOTES:</b> 1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX AND DESIGN CRITERIAL LOADS. 2. SEE 400 SERIES DWGS. FOR COLUMN SCHEDULE AND DETAILS. 3. SEE 410 SERIES DWGS. FOR SHEAR WALL LAYOUT AND REINFORCING PLANS. 4. SEE PLAN FOR COLUMN SIZES AND SHEAR WALL THICKNESS. 5. SEE PLAN FOR BEAM DIMENSIONS (WIDTH X DEPTH). 6. SEE 600 SERIES DRAWINGS FOR CONCRETE SECTIONS AND DETAILS. 7. CONTRACTOR TO LOCATE / VERIFY ALL THE SLAB OPENINGS FROM ARCHITECTURAL AND MEP DRAWINGS. 8. "T" INDICATES COLUMN TRANSFER.
SLAB THICKNESS U.O.N.:	<b>7"</b>	
CONCRETE STRENGTH- FLOOR SLABS AND BEAMS:	<b>5 KSI</b>	
CONCRETE STRENGTH- WALLS AND COLUMNS:	<b>6 KSI</b>	

DeSimone Consulting Engineers - Manual Review - Project: 546 West 44th Street - Drawing: S-202.00 - Date: July 12, 2013 - 12:09PM  
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# 546 W44



<b>ARCHITECT</b> John A. Catra State of New York Registered Architect No. 018861 Catra/CR Architecture, PLLC 584 Broadway, Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Plathery Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MEP ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>DISCIPLINARY ENGINEER</b> Langan Engineering & Environmental Services 21 Penn Plaza 5th Floor New York, NY 10001	<b>LANDMARK ARCHITECT</b> HMM/White 107 Grand Street, 6th Fl New York, NY 10013
<b>ARCHITECT CONSULTANT</b> Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

100% DESIGN DEVELOPMENT 07/12/2013

DESCRIPTION	DATE
 <b>CETRARUDDY</b>	
<b>3RD FLOOR LAYOUT PLAN</b>	
DATE	07.12.2013
SHEET	12 OF 28
<b>S-203.00</b>	
PROJECT / SCALE	1/8"=1'-0"
PROJECT / SCALE	P13056.00
CETRA/CR ARCHITECTURE PLLC 584 BROADWAY NEW YORK NY 10012 T 212 644 8001 F 212 644 8440 WWW.CETRARUDDY.COM	

TOP OF SLAB ELEVATION U.O.N.: <b>+20'-0"</b>	<b>DRAWING NOTES:</b> 1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX AND DESIGN CRITERIAL LOADS. 2. SEE 400 SERIES DWGS. FOR COLUMN SCHEDULE AND DETAILS. 3. SEE 410 SERIES DWGS. FOR SHEAR WALL LAYOUT AND REINFORCING PLANS. 4. SEE PLAN FOR COLUMN SIZES AND SHEAR WALL THICKNESS. 5. SEE PLAN FOR BEAM DIMENSIONS (WIDTH X DEPTH). 6. SEE 600 SERIES DRAWINGS FOR CONCRETE SECTIONS AND DETAILS. 7. CONTRACTOR TO LOCATE / VERIFY ALL THE SLAB OPENINGS FROM ARCHITECTURAL AND MEP DRAWINGS. 8. "T" INDICATES COLUMN TRANSFER.
SLAB THICKNESS U.O.N.: <b>7"</b>	
CONCRETE STRENGTH- FLOOR SLABS AND BEAMS: <b>5 KSI</b>	
CONCRETE STRENGTH- WALLS AND COLUMNS: <b>6 KSI</b>	

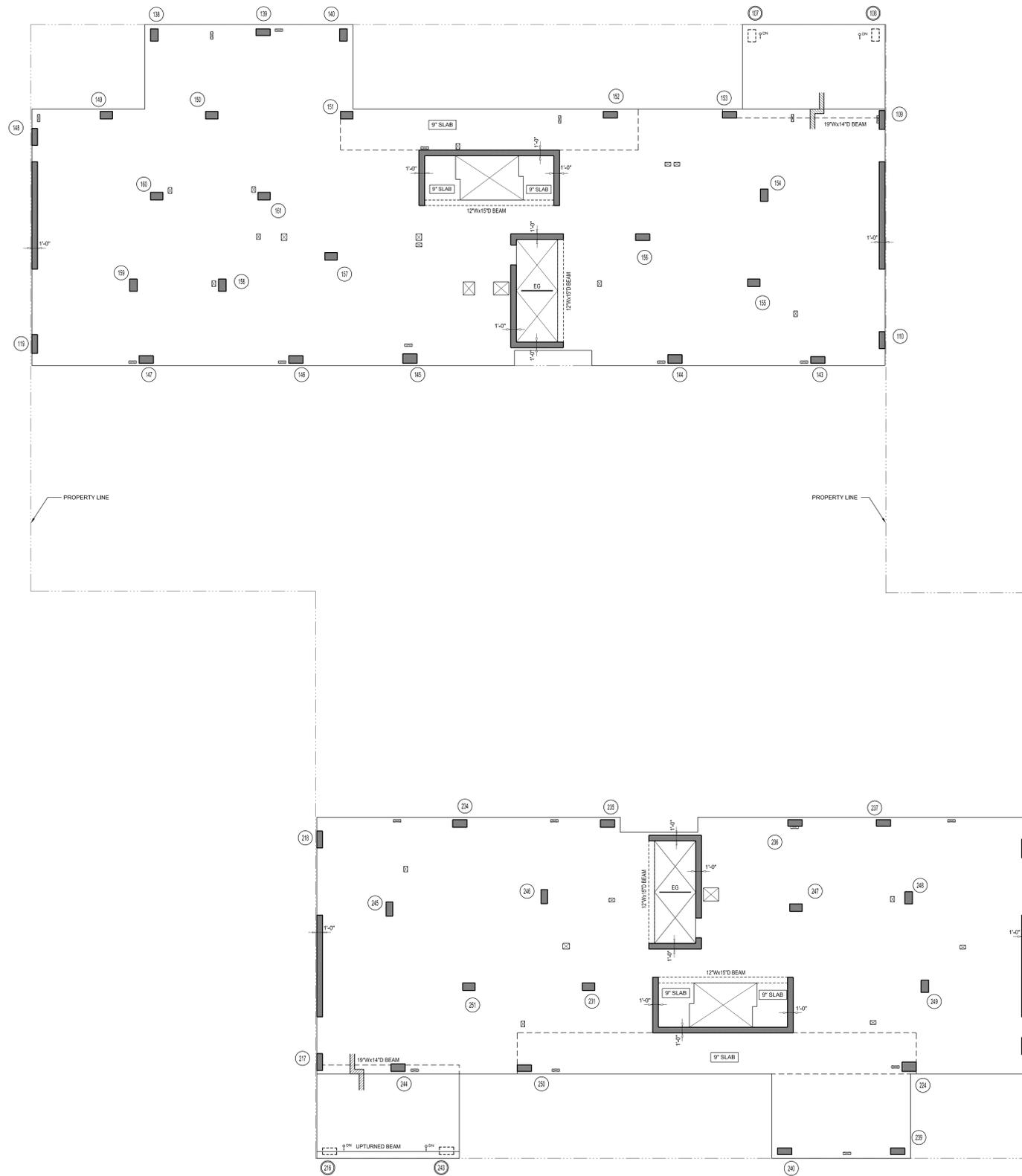
DeSimone Consulting Engineers - Manual Review, NY-174781 - Drawing of Project 13056.00 (S-203.00) [Drawing-544] - Date = July 12, 2013 - 12:09PM  
 Project Path: C:\Users\jcatra\Documents\Projects\13056.00\13056.00\DWGS\Struct\13056.00-S-203.00.dwg [Drawing-544]  
 User: jcatra







# 546 W44



<b>ARCHITECT</b> John A. Calra State of New York Registered Architect No. 018861 Calra/CR Architecture, PLLC 584 Broadway, Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vanderveer Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MEP ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>DISCIPLINARY ENGINEER</b> Langan Engineering & Environmental Services 21 Penn Plaza 560 West 31st Street New York, NY 10001	<b>LANDMARK ARCHITECT</b> HMM/White 107 Grand Street, 6th Fl New York, NY 10013
<b>ARCHITECT CONSULTANT</b> Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

100% DESIGN DEVELOPMENT 07/12/2013	DATE
DESCRIPTION	DATE



CETRARUDDY

## 13TH FLOOR LAYOUT PLAN

DATE	07.12.2013	SHEET	16 OF 28
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## S-213.00

PROJECT / SCALE	1/8"=1'-0"
DATE / PRICE	P13056.00

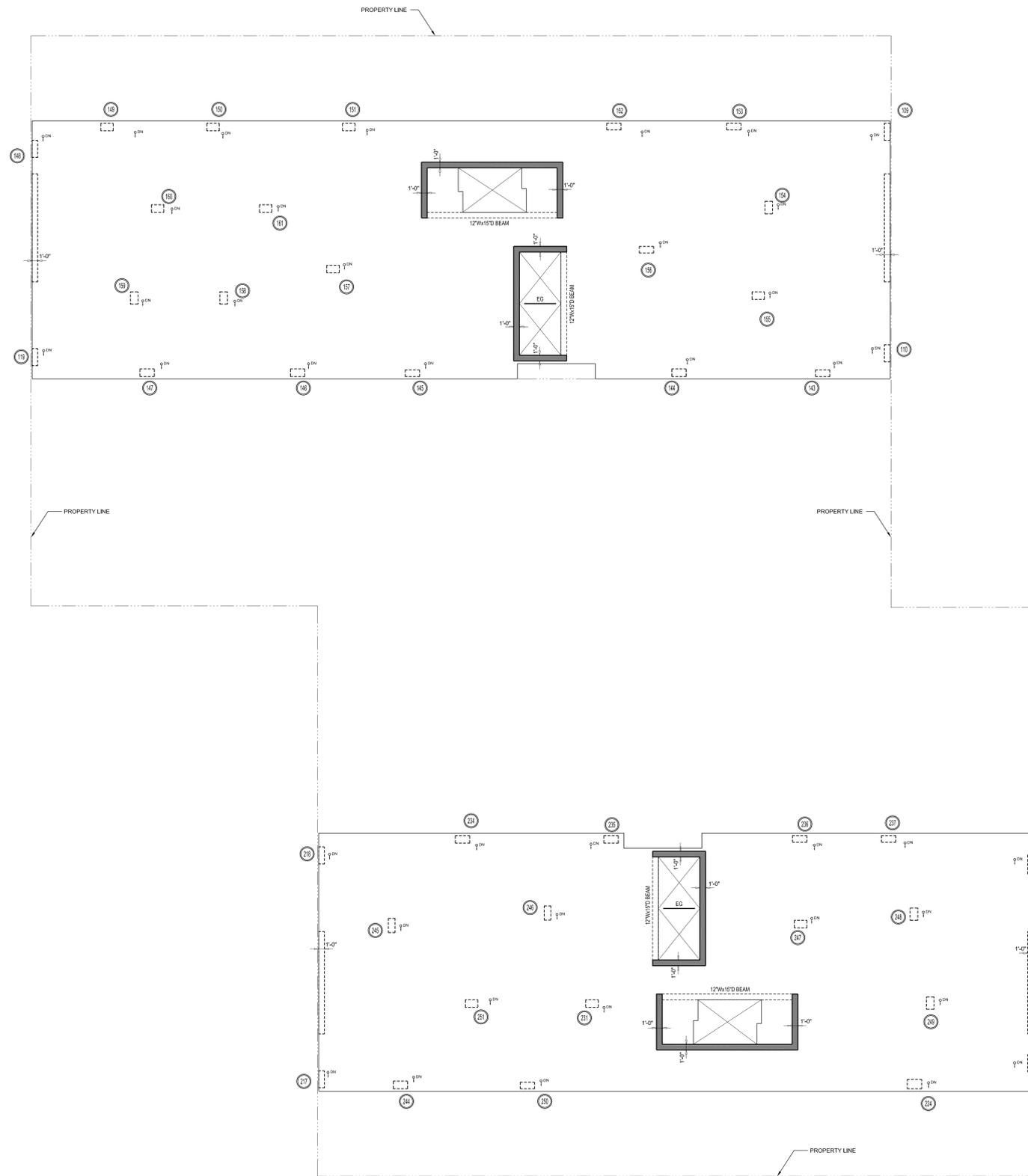
CETRA/CR ARCHITECTURE PLLC  
 584 BROADWAY NEW YORK NY 10012 T: 212 841 8400 F: 212 841 8440  
 WWW.CETRARUDDY.COM

TOP OF SLAB ELEVATION U.O.N.: <b>+114'-2"</b>	<b>DRAWING NOTES:</b> 1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX AND DESIGN CRITERIAL LOADS. 2. SEE 400 SERIES DWGS. FOR COLUMN SCHEDULE AND DETAILS. 3. SEE 410 SERIES DWGS. FOR SHEAR WALL LAYOUT AND REINFORCING PLANS. 4. SEE PLAN FOR COLUMN SIZES AND SHEAR WALL THICKNESS. 5. SEE PLAN FOR BEAM DIMENSIONS (WIDTH X DEPTH). 6. 'EG' INDICATES HSS60x41/4 ELEVATOR GUIDE RAIL SUPPORT BEAM. 7. CONTRACTOR TO LOCATE / VERIFY ALL THE SLAB OPENINGS FROM ARCHITECTURAL AND MEP DRAWINGS. 8. 'T' INDICATES COLUMN TRANSFER.
SLAB THICKNESS U.O.N.: <b>7"</b>	
CONCRETE STRENGTH- FLOOR SLABS AND BEAMS: <b>5 KSI</b>	
CONCRETE STRENGTH- WALLS AND COLUMNS: <b>5 KSI</b>	

P:\Projects\546 West 44th St\13th Floor\13056\_S-213.dwg [Drawing: S-213.00] - Date: July 12, 2013 - 12:09PM  
 DeSimone Consulting Engineers - Manual Review, NY-7/12/13 - Drawing: S-213.00  
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 DeSimone Consulting Engineers - Manual Review, NY-7/12/13 - Drawing: S-213.00



# 546 W44



<b>ARCHITECT</b> John A. Catra State of New York Registered Architect No. 018861 Catra/CR Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	<b>CLIENT</b> CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vanderveer Ave, Suite 1000 New York, NY 10017
<b>STRUCTURAL ENGINEER</b> DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	<b>MEP ENGINEER</b> Dagher Engineering, PLLC 29 Broadway New York, NY 10006
<b>DISCIPLINARY ENGINEER</b> Langan Engineering & Environmental Services 21 Penn Plaza 560 West 31st Street New York, NY 10001	<b>LANDMARK ARCHITECT</b> HMM/White 107 Grand Street, 6th Fl New York, NY 10013
<b>ARCHITECT CONSULTANT</b> Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	<b>MECHANICAL ENGINEER</b> Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

100% DESIGN DEVELOPMENT 07/12/2013	DATE
DESCRIPTION	DATE



CETRARUDDY

## ROOF LAYOUT PLAN

DATE: 07.12.2013 18 OF 28

**S-215.00**

1/8"=1'-0"  
P13056.00

CETRA/CR ARCHITECTURE PLLC  
 584 BROADWAY NEW YORK, NY 10012 T: 212 644 8401 F: 212 641 8440  
 WWW.CETRARUDDY.COM

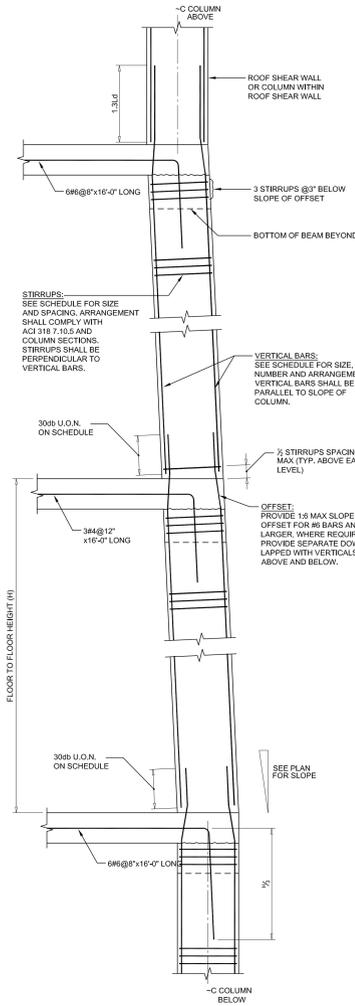
<b>TOP OF SLAB ELEVATION U.O.N.:</b>  <b>+135'-0"</b>	<b>DRAWING NOTES:</b> 1. SEE S-001 FOR GENERAL NOTES, DRAWING INDEX AND DESIGN CRITERIAL LOADS. 2. SEE 400 SERIES DWGS. FOR COLUMN SCHEDULE AND DETAILS. 3. SEE 410 SERIES DWGS. FOR SHEAR WALL LAYOUT AND REINFORCING PLANS. 4. SEE PLAN FOR COLUMN SIZES AND SHEAR WALL THICKNESS. 5. SEE PLAN FOR BEAM DIMENSIONS (WIDTH X DEPTH). 6. 'EG' INDICATES HSS6x4x1/4 ELEVATOR GUIDE RAIL SUPPORT BEAM. 7. SEE 600 SERIES DRAWINGS FOR CONCRETE SECTIONS AND DETAILS. 8. CONTRACTOR TO LOCATE / VERIFY ALL THE SLAB OPENINGS FROM ARCHITECTURAL AND MEP DRAWINGS. 9. 'T' INDICATES COLUMN TRANSFER.
<b>SLAB THICKNESS U.O.N.:</b>  <b>12"</b>	
<b>CONCRETE STRENGTH- FLOOR SLABS AND BEAMS:</b>  <b>5 KSI</b>	
<b>CONCRETE STRENGTH- WALLS AND COLUMNS:</b>  <b>5 KSI</b>	

Project: 546 West 44th Street - Drawing: S-215.00 (Roof Layout Plan) - Date: 07/12/2013 - 18 OF 28  
 File Path: C:\Users\jcatra\Documents\Projects\546 West 44th Street\Drawings\Structural\546 West 44th Street - S-215.00.dwg  
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 Plot Title: S-215.00  
 Plot Subtitle: 546 West 44th Street - Roof Layout Plan  
 Plot Author: John A. Catra  
 Plot Project: 546 West 44th Street  
 Plot Sheet: 18 OF 28  
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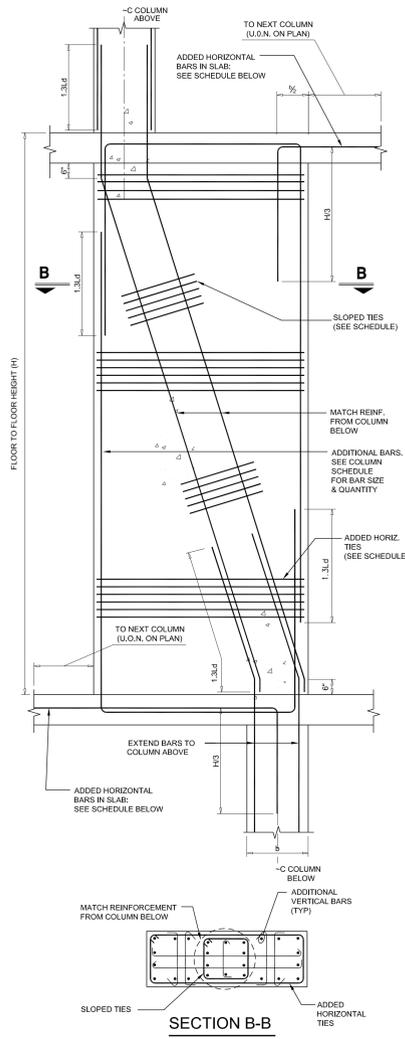




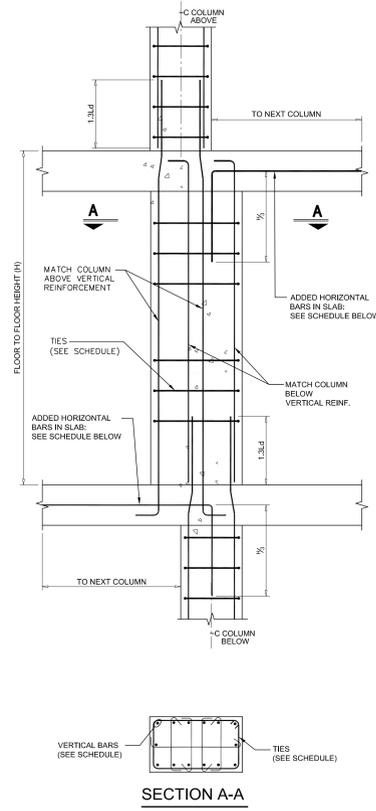
ARCHITECT	John A. Caira State of New York Registered Architect No. 018861 Caira, CRI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vandrer Ave, Suite 1000 New York, NY 10017
STRUCTURAL ENGINEER	DeSimone Consulting Engineers, PLLC 16 West 18th Street, 10th Fl New York, NY 10011	Dagher Engineering, PLLC 29 Broadway New York, NY 10006
MECHANICAL ENGINEER	Langan Engineering & Environmental Services 17 Penn Plaza 560 West 31st Street New York, NY 10001	HMM/ME 107 Grand Street, 6th Fl New York, NY 10013
ELECTRICAL ENGINEER	Carami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	Frank Seta Associates LLC 24 West 30th Street New York, NY 10001



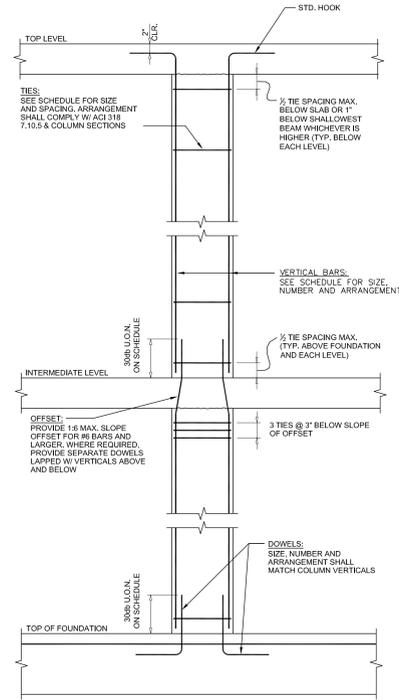
**5** COLUMN WALK DETAIL "C"  
(SLOPED COLUMN DETAIL)  
SCALE: 1/2"=1'-0"



**4** COLUMN WALK DETAIL "B"  
SCALE: 1/2"=1'-0"



**3** COLUMN WALK DETAIL "A"  
SCALE: 1/2"=1'-0"



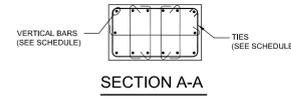
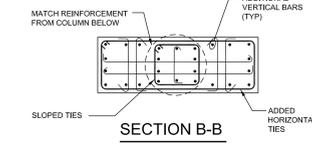
**2** TYPICAL COLUMN DETAIL  
(GRAVITY COLUMN ONLY)  
SCALE: 1/2"=1'-0"

**COLUMN SCHEDULE LEGEND**

COLUMN NUMBER	63	64	65
TOP OF COLUMN	40	72	72
CAST-IN-PLACE CONCRETE COLUMN SIZE IN INCHES (N-S x E-W)	24x24 8 #7 #3@12"	WF4x132 115 113	WF4x132 115 113
SIZE AND NUMBER OF VERTICAL BARS	24x24 8 #7 #3@12"	WF4x132 115 113	WF4x132 115 113
SIZE AND SPACING OF TIES	11.5	11.5	11.5
STEEL COLUMN SIZE	WF4x132	WF4x132	WF4x132
DEAD LOAD	103	180	180
LIVE LOAD	148	264	264
DEAD & LIVE LOADS ARE IN KIPS & CUMULATIVE	251	444	444
REFERENCE ELEVATION LINE	200	200	200
HATCH DENOTES DOUBLE HEIGHT COLUMN DO NOT SPLICE AT MID HEIGHT	200-288	200-288	200-288
HATCH DENOTES SLOPED COLUMN	288-301	288-301	288-301
TENSION LAP SPLICES REQ'D FOR VERTICAL BARS (1.3d). SEE S-001	200-288	200-288	200-288
SHADING INDICATES CONCRETE COLUMN WALKS BETWEEN FLOORS	288-301	288-301	288-301
BUTTRESS DIMENSION IN INCHES (N-S x E-W) SEE DETAIL 7/5-201	288-301	288-301	288-301
TYPICAL COLUMN	24x24 8 #7 #3@12"	WF4x132 115 113	WF4x132 115 113

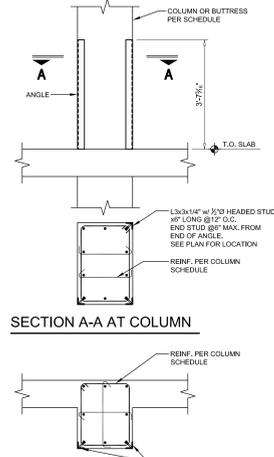
BASE PLATE MARK  
BOTTOM OF BASE PLATE ELEVATION

**1** CORNER PROTECTION AT COLUMNS  
SCALE: 1/2"=1'-0"

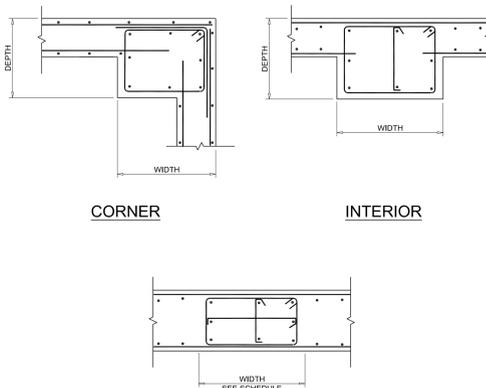


**SECTION B-B**

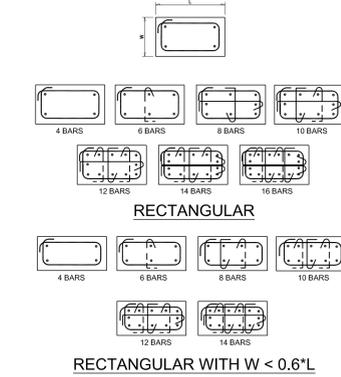
**SECTION A-A**



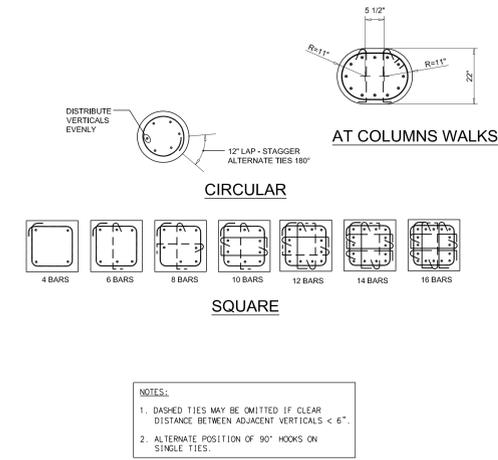
**8** CORNER PROTECTION AT COLUMNS  
SCALE: 1/2"=1'-0"



**7** TYPICAL BUTTRESS DETAILS  
SCALE: 1/2"=1'-0"



**6** TYPICAL COLUMN REINFORCEMENT DETAILS  
SCALE: 1/2"=1'-0"



**1** CORNER PROTECTION AT COLUMNS  
SCALE: 1/2"=1'-0"

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REVISION	DATE	DESCRIPTION	DATE

**CETRA RUDDY**

**COLUMN DETAILS**

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PAGE: 21 OF 28

**S-403.00**

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P13056.00

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ARCHITECT John A. Calra State of New York Registered Architect No. 018861 The Pathway Group, LLC 52 Vandere Ave, Suite 1000 New York, NY 10017	CREP 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vandere Ave, Suite 1000 New York, NY 10017
STRUCTURAL ENGINEER DeSimone Consulting Engineers, PLLC 18 West 18th Street, 10th Fl New York, NY 10011	MEP ENGINEER Dagher Engineering, PLLC 29 Broadway New York, NY 10006
ENVIRONMENTAL ENGINEER Langan Engineering & Environmental Services 21 Penn Plaza 9th Floor New York, NY 10001	HMM/White 107 Grand Street, 6th Fl New York, NY 10013
ACQUISITION CONSULTANT Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	FINANCIAL CONSULTANT Frank Seta Associates LLC 224 West 30th Street New York, NY 10001

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DESCRIPTION	DATE

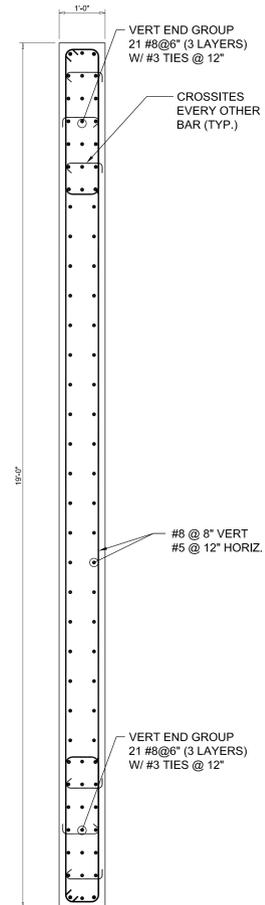
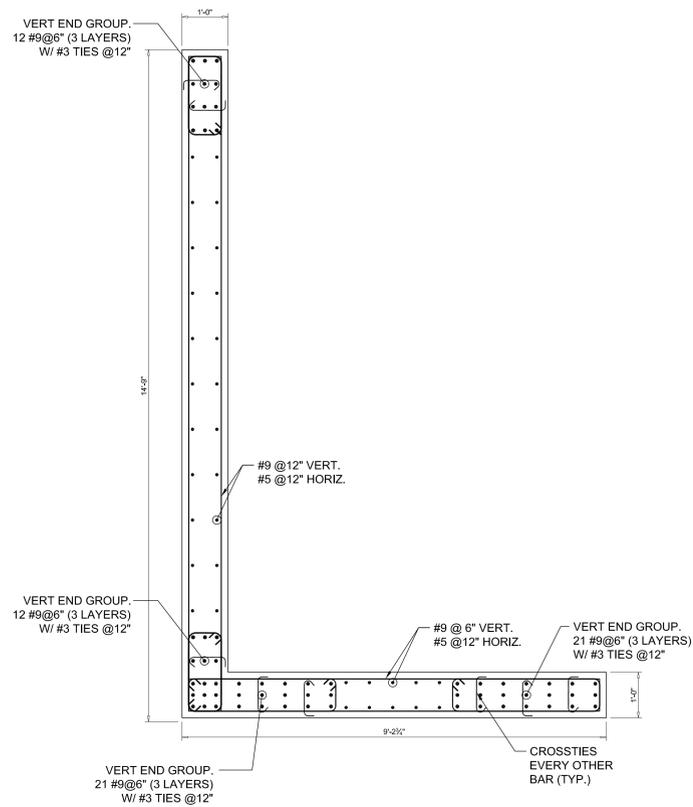
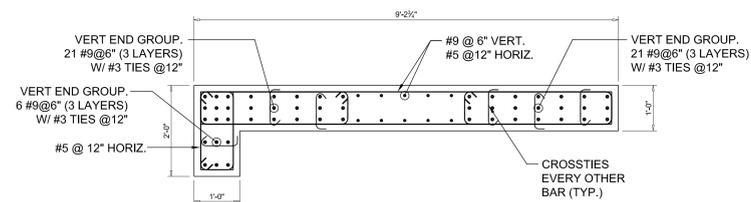
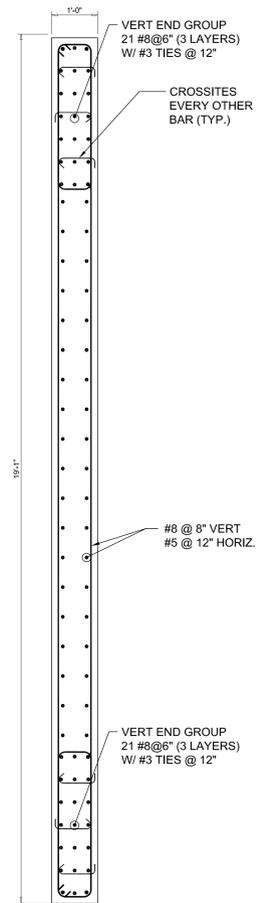
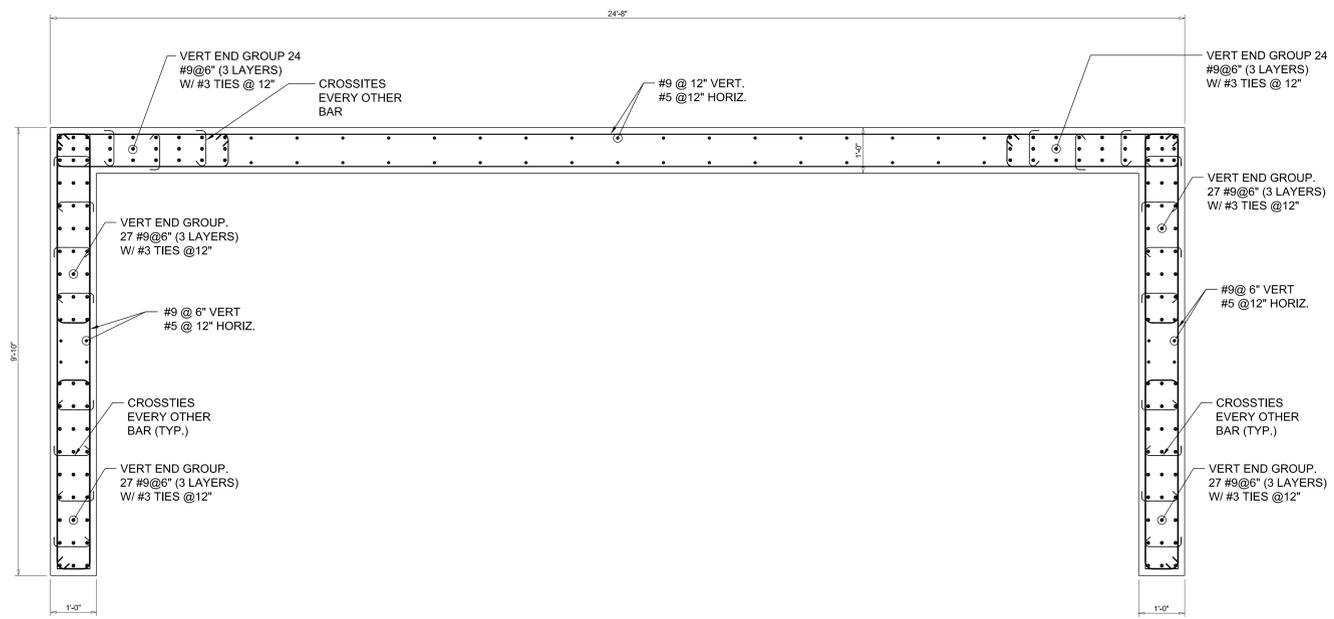
## SHEAR WALL PLAN SUPPORTING GROUND FL. (NORTH BUILDING)

DATE	07.12.2013	REVISION	22 OF 28
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# S-410.00

AS SHOWN	DATE	NO.
P13056.00		

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### 1 SHEAR WALL PLAN SUPPORTING GROUND FLOOR

3/4" = 1'-0"

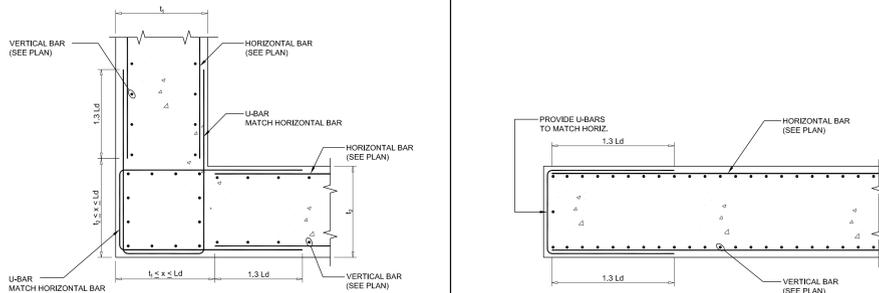
#### DRAWING NOTES:

- SEE S-401 FOR GENERAL NOTES, DRAWING INDEX, AND DESIGN CRITERIAL LOADS.
- SEE FO-100 SERIES DRAWINGS FOR FOUNDATIONS.
- SEE S-401 TO S-403 FOR COLUMN SCHEDULE AND DETAILS.
- SEE S-451 TO S-452 FOR SHEAR WALL DETAILS.
- SEE S-500 SERIES FOR TYPICAL CONCRETE SECTIONS AND DETAILS.
- ALL SHEAR WALLS SHALL BE NORMAL WT. CONCRETE WITH THE FOLLOWING COMPRESSIVE STRENGTHS:  
 SUPPORTING CELLAR - 11TH FLOOR  $f_c = 6$  KSI  $E = 4415$  KSI  
 SUPPORTING 12TH - 18R ROOF  $f_c = 5$  KSI  $E = 4030$  KSI
- ALL CROSS-TIES (---) MAY HAVE 135° / 90° HOOKS (---) PROVIDED POSITION OF 90° HOOKS IS ALTERNATED.
- L-BARS AT END OF WALLS SHALL BE SPLICED 1.3 LD WITH HORIZONTAL REINFORCEMENT.
- DETAILER TO CHECK ALL BAR CLEARANCES.
- SEE PLAN FOR SLAB ELEVATIONS AND DETAILS.
- CONTRACTOR TO LOCATE/VERIFY ALL OPENINGS THROUGH SHEAR WALLS FROM ARCH. AND MEP DRAWINGS.
- ACI DOES NOT PERMIT LAP SPLICES OF #14 OR #18 BARS. BARS OF THIS SIZE SHALL BE COUPLED BY ACCEPTABLE MECHANICAL MEANS.

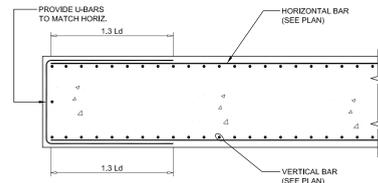




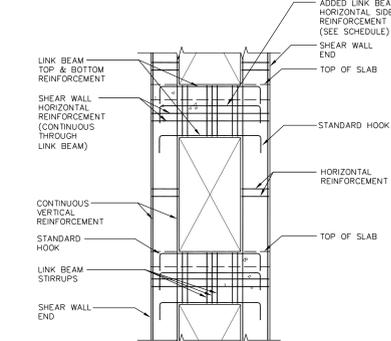
PROJECT John A. Caira State of New York Registered Architect No. 018861 Caira CR Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CLIENT CREF 546 West 44th St. LLC Representative: The Pathway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
ARCHITECT OsSimone Consulting Engineers, PLLC 16 West 18th Street, 10th Fl New York, NY 10011	MEP ENGINEER Dagher Engineering, PLLC 29 Broadway New York, NY 10006
STRUCTURAL ENGINEER Langan Engineering & Environmental Services 17 Penn Plaza 560 West 51st Street New York, NY 10001	LUMBER DESIGNER HMM/ML 107 Grand Street, 6th Fl New York, NY 10013
MECHANICAL ENGINEER Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	ELECTRICAL ENGINEER Frank Seta Associates LLC 224 West 30th Street New York, NY 10001



5 TYPICAL SHEAR WALL CORNER DETAIL

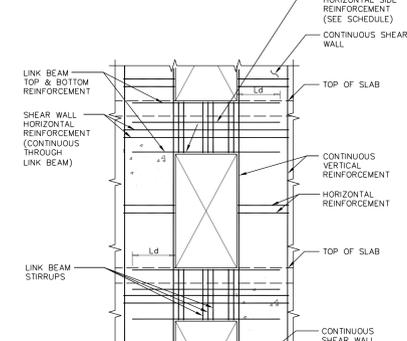


4 TYPICAL DETAIL AT END OF WALL



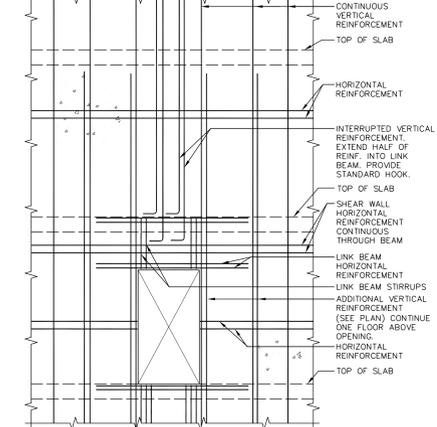
**NOTES:**  
 1. SEE SHEAR WALL DETAIL PLANS FOR REINFORCEMENT.  
 2. SEE BEAM SCHEDULE FOR LINK BEAM REINFORCEMENT.

3 TYPICAL SHEAR WALL LINK BEAM ELEVATION AT NON-CONTINUOUS WALL



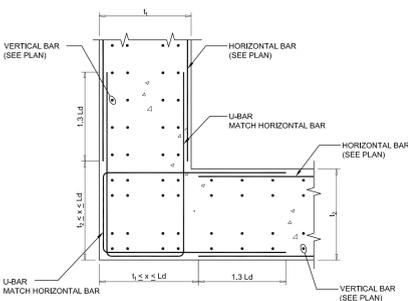
**NOTES:**  
 1. SEE SHEAR WALL DETAIL PLANS FOR REINFORCEMENT.  
 2. SEE BEAM SCHEDULE FOR LINK BEAM REINFORCEMENT.

2 TYPICAL SHEAR WALL LINK BEAM ELEVATION AT CONTINUOUS WALL

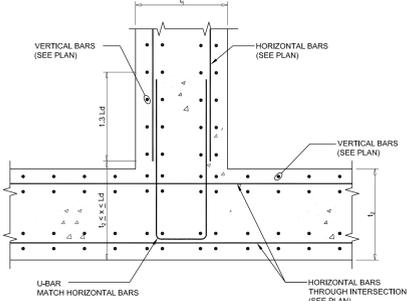


**NOTES:**  
 1. SEE SHEAR WALL DETAIL PLANS FOR REINFORCEMENT.  
 2. SEE BEAM SCHEDULE FOR LINK BEAM REINFORCEMENT.

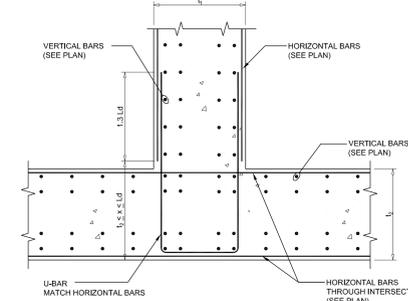
1 TYPICAL DETAIL AT OPENING IN SHEAR WALL WITH NO OPENING ABOVE



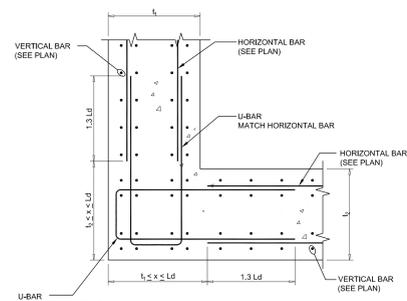
10 DETAIL AT SHEAR WALL CORNERS INSIDE HORIZONTAL BARS



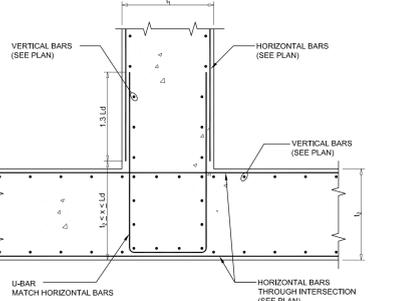
9 DETAIL AT SHEAR WALL T-JUNCTION INSIDE HORIZONTAL BARS



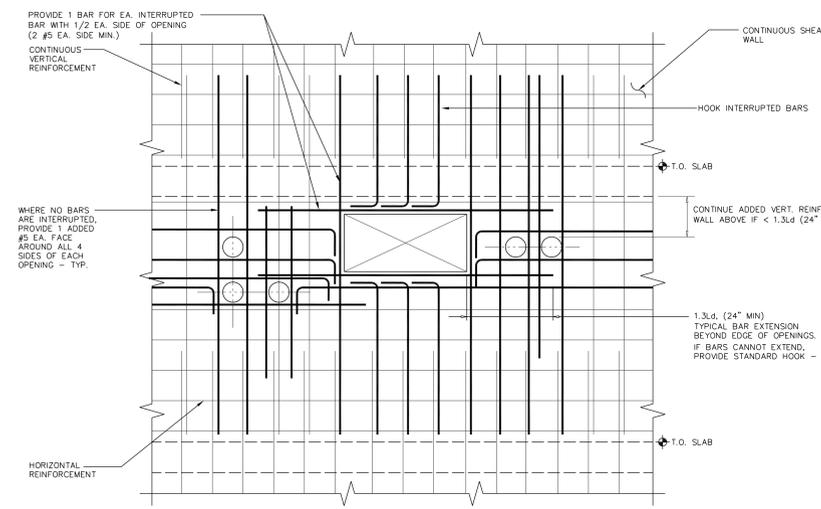
8 DETAIL AT SHEAR WALL T-JUNCTION OUTSIDE HORIZONTAL BARS



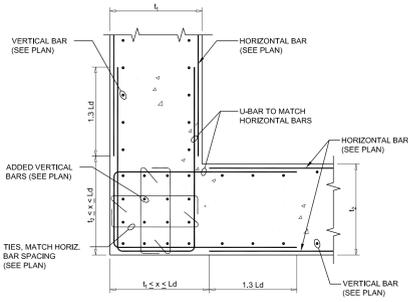
7 DETAIL AT SHEAR WALL CORNER OUTSIDE HORIZONTAL BARS



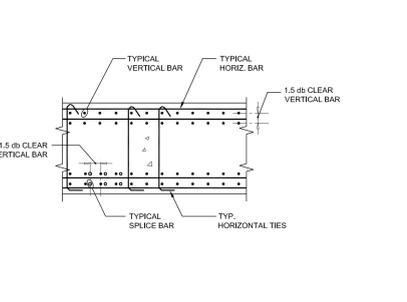
6 TYPICAL SHEAR WALL T-JUNCTION DETAIL



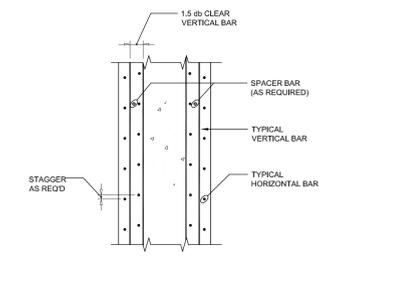
15 TYPICAL DETAIL OF REINFORCEMENT AROUND MECHANICAL OPENINGS THROUGH CONCRETE WALLS



13 SEISMIC TIED WALL DETAIL



12 PLAN THROUGH TYPICAL MULTIPLE LAYER SHEAR WALL



11 ELEVATION THROUGH TYPICAL MULTIPLE LAYER SHEAR WALL

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DESCRIPTION DATE



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SHEAR WALL DETAILS

DATE: 07.12.2013

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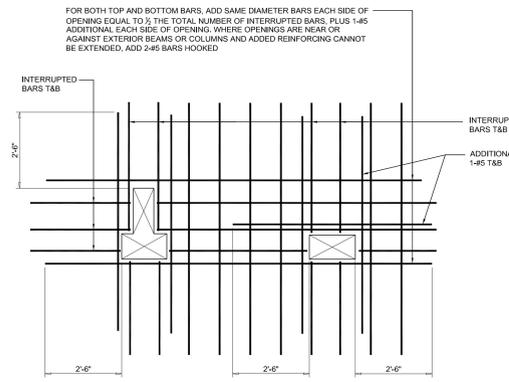
**S-452.00**

N.T.S.

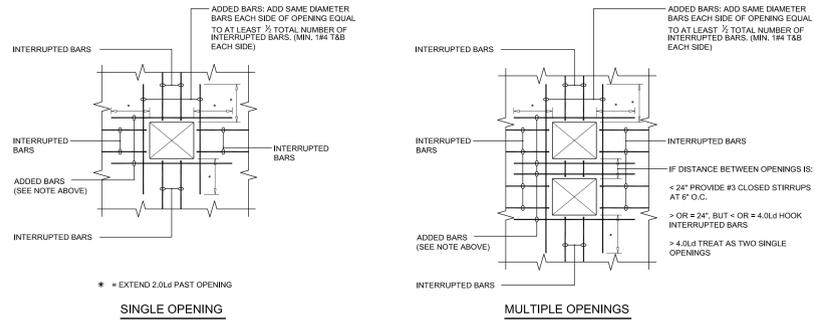
P13056.00

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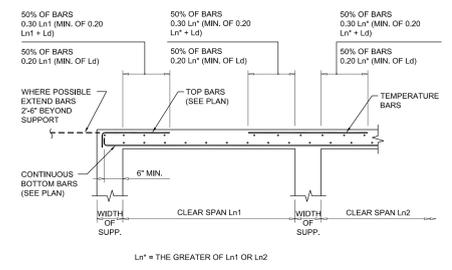
13056.00-025-S-452.00



3 TYPICAL BATHROOM OPENING DETAIL

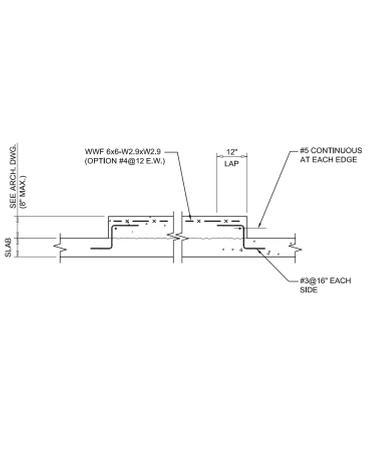


2 TYPICAL DETAIL OF REINFORCEMENT AT OPENING IN SLAB  
TYPICAL UNLESS SHOWN OTHERWISE OTHERWISE ON PLANS

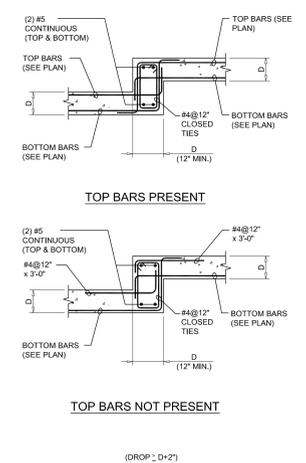


1 TYPICAL ONE-WAY CONCRETE SLAB DETAIL

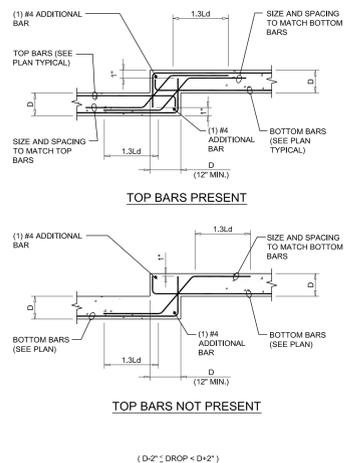
PROJECT John A. Caira State of New York Registered Architect No. 018861 Caira, CRI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CLIENT CREF 546 West 44th St. LLC Representative: The Pathway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
SPECIAL DESIGNER DeSimone Consulting Engineers, PLLC 16 West 18th Street, 10th Fl New York, NY 10011	MEP DESIGNER Dagher Engineering, PLLC 29 Broadway New York, NY 10006
STRUCTURAL DESIGNER Langan Engineering & Environmental Services 21 Penn Plaza 9th Floor New York, NY 10001	LANDSCAPE ARCHITECT HMMille 107 Grand Street, 6th Fl New York, NY 10013
ARCHITECT CONSULTANT Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	ELECTRICAL CONSULTANT Frank Seta Associates LLC 224 West 30th Street New York, NY 10001



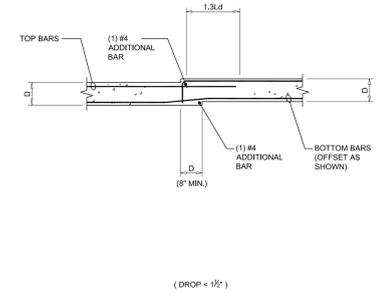
5 TYPICAL HOUSEKEEPING PAD DETAIL



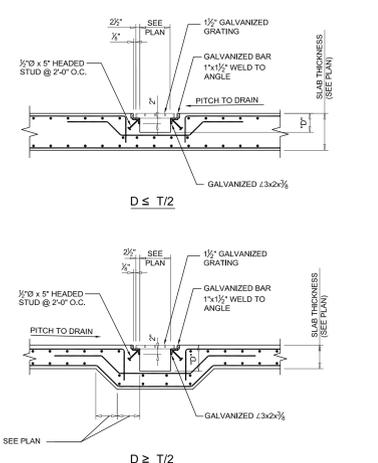
4 TYPICAL SLAB DROP DETAILS



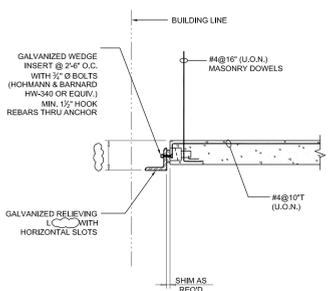
7 TYPICAL DETAIL OF CHANGE IN SLAB THICKNESS



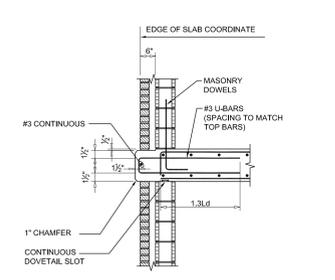
6 TYPICAL CONCRETE CURB DETAILS



10 TYPICAL SECTION AT TRENCH DRAIN



9 TYPICAL RELIEVING ANGLE AT SLAB EDGE



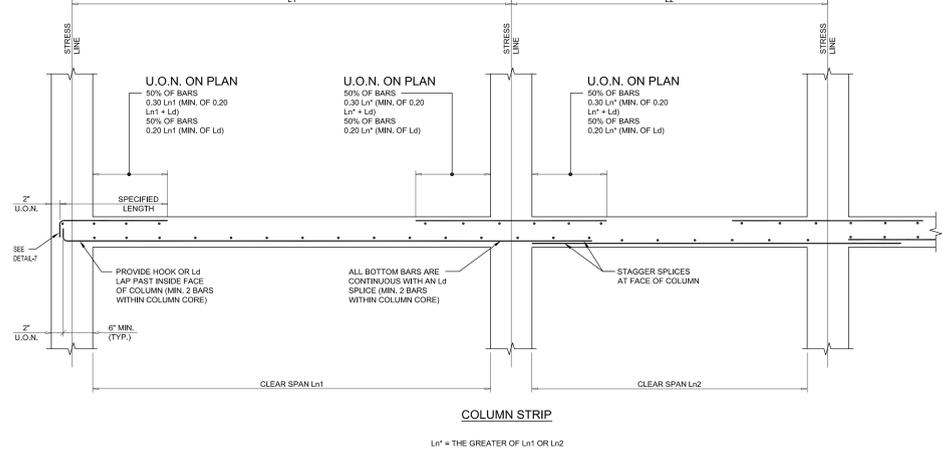
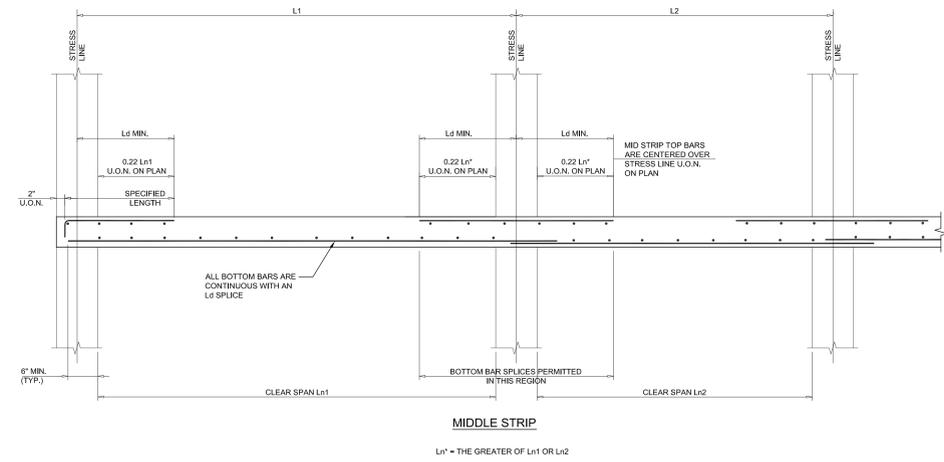
8 TYPICAL EYEBROW DETAIL

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DESCRIPTION	DATE
<b>TYPICAL CONCRETE DETAILS</b>	
DATE	26 OF 28
<h2>S-501.00</h2>	
AS SHOWN	
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DeSimone Consulting Engineers - March, Brown, NY-7/2/11 - Drawing # 546W44-02-501-00 - 5/20/14 (Drawing 546W44) - Date = July 12, 2013 - 12:19PM  
 7/12/2013 10:02:00AM 546W44-02-501-00 - 11 - 546W44



PROJECT John A. Caira State of New York Registered Architect No. 018861 Caira CRI Architecture, PLLC 584 Broadway Suite 401 New York, NY 10012	CLIENT CREF 546 West 44th St, LLC Representative: The Pathway Group, LLC 52 Vanderbilt Ave, Suite 1000 New York, NY 10017
SPECIALIST DESIGNER DeSimone Consulting Engineers, PLLC 16 West 18th Street, 10th Fl New York, NY 10011	MEP DESIGNER Dagher Engineering, PLLC 25 Broadway New York, NY 10006
STRUCTURAL DESIGNER Langan Engineering & Environmental Services 21 Penn Plaza 560 West 31st Street New York, NY 10001	LANSING ARCHITECT HMM/White 107 Grand Street, 6th Fl New York, NY 10013
ARCHITECT CONSULTANT Corami & Associates, Inc. 404 Fifth Avenue New York, NY 10018	GENERAL CONTRACTOR Frank Seta Associates LLC 224 West 30th Street New York, NY 10001



2 TYPICAL CONCRETE FLAT SLAB DETAIL

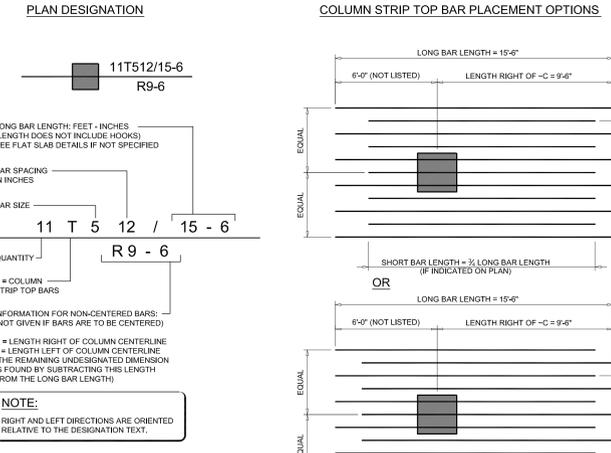
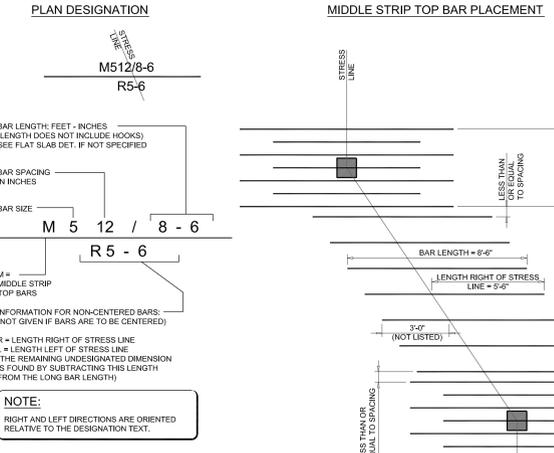
1 TYPICAL CONCRETE FLAT SLAB DETAIL

**L<sub>dh</sub> (IN INCHES)**

BAR #	f <sub>c</sub>						
	4000 psi	5000 psi	6000 psi	7000 psi	8000 psi	10000 psi	12000 psi
3	7	6	6	6	6	6	6
4	7	6	6	6	6	6	6
5	10	8	7	7	6	6	6
6	11	9	8	8	7	6	6
7	13	11	10	9	9	8	7
8	14	12	11	10	10	8	8
9	17	14	13	12	11	10	9
10	19	16	15	14	13	11	10
11	20	17	16	15	14	12	11

\* ASSUMES F<sub>y</sub> = 60 ksi

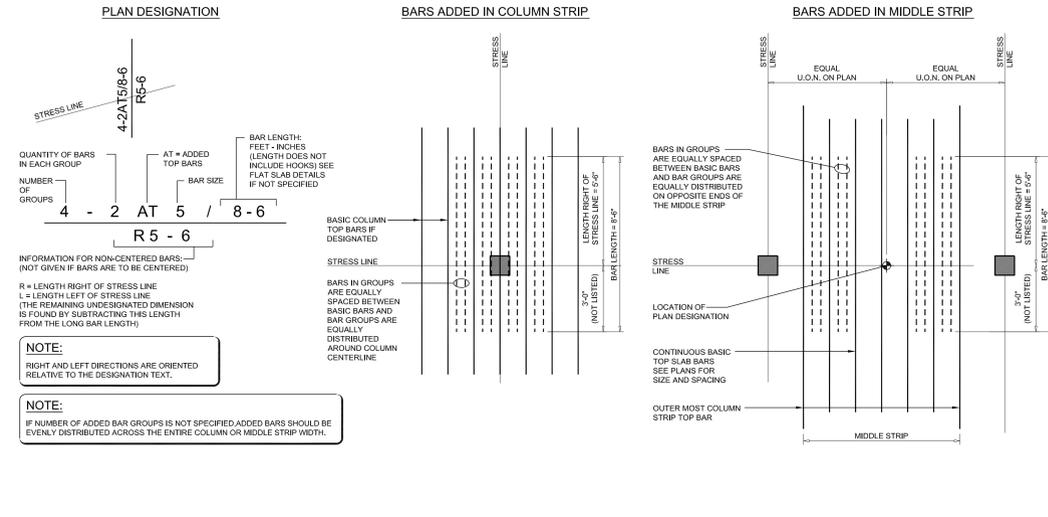
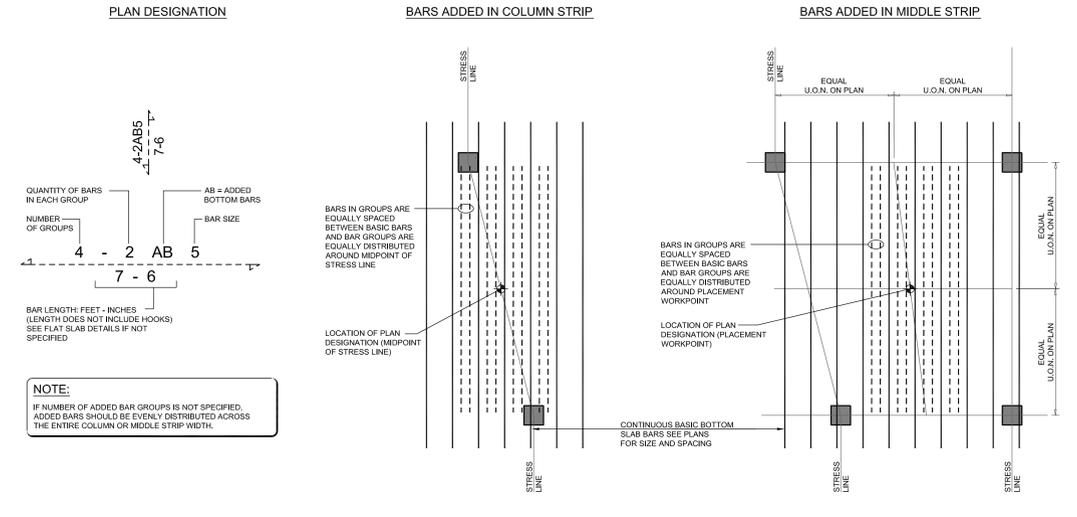
NOTES:  
 FOR LIGHT WEIGHT AGGREGATE MULTIPLY TABLE VALUES BY 1.3  
 FOR EPOXY COATED REBAR MULTIPLY TABLE VALUES BY 1.2  
 FOR F<sub>y</sub> = 75 ksi MULTIPLY TABLE VALUES BY 1.25  
 COMBINATIONS OF EFFECTS DUE TO CONCRETE DENSITY AND EPOXY COATING ARE CUMULATIVE



5 HOOK LENGTHS FOR CONNECTIONS

4 MIDDLE STRIP TOP BAR PLACEMENT

3 COLUMN STRIP TOP BAR PLACEMENT



7 ADDED BOTTOM BAR PLACEMENT

6 ADDED TOP BAR PLACEMENT

100% DESIGN DEVELOPMENT 07/12/2013

DESCRIPTION	DATE
<b>TYPICAL CONCRETE DETAILS</b>	
DATE	07.12.2013
REVISION	28 OF 28
<h2>S-503.00</h2>	
AS SHOWN	
P13056.00	
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**APPENDIX 2**

**PREVIOUS ENVIRONMENTAL REPORTS**

**(PROVIDED ON A CD)**

# **ATTACHMENT B**

Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 16.1 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth N/A		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 1	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First 12	Completion -	24 HR. -
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist B/L/in	
	+16.1		0					08:20 Start Drilling
	+15.1	GRAVEL and ASPHALT, some gray fine-medium sand [FILL]	1					
		dark reddish brown fine-coarse SAND, with brick and rock fragments, trace coal [FILL]	2					
	+13.1		3	S-1	MACROCORE	18		
		light gray and light brown medium-coarse SAND with brick, some rock and ceramic fragments [FILL]	4					
			5				0.0	
			6				0.0	
			7				0.0	
	+7.1		8	S-2	MACROCORE	20		
		light brown fine-medium SAND, some silt, trace weathered bedrock [FILL]	9				0.0	
			10				0.0	
	+5.1		11				0.0	
		dark gray fine to medium SAND, some silt, trace fine gravel (wet) [FILL]	12	S-3	MACROCORE	44		08:55- Take Sample WC01A_11-13 (VOC/TCLP VOC)
			13				0.0	
			14				0.0	
	+2.1	E.O.B. @ 14.0 ft bgs	14					
			15					
			16					
			17					
			18					
			19					
			20					

I:\LANGAN.COM\DATA\NY\DATA71\170229701\ENGINEERING DATA\ENVIRONMENTAL\GINTL OGS\546 WEST 44TH STREET LOGS.GPJ...7/18/2013 10:33:15 AM...Report: Log - LANGAN ...Template TEMPLATE.GDT

Project 546 W44th St.				Project No. 170229701			
Location New York, NY				Elevation and Datum Approx. 16.9 BPMD			
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13	
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth N/A	
Size and Type of Bit 2" Dia. Macrocore				Number of Samples Disturbed 2 Undisturbed 0 Core 0			
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.) First 13 Completion -		Core 24 HR. -	
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice	
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon			
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/ft	
	+16.9	6" ASPHALT and GRAVEL	0					
	+16.4	light-dark fine-coarse SAND, some gravel and brick, rock fragments and weathered rock [FILL]	1					
		BRICK [FILL]	2	S-1	MACROCORE	24		08:40 Start Drilling
		dark brown and light gray fine-coarse SAND, trace brick and weathered rock [FILL]	3					
		light gray fine-coarse SAND, trace brick and silt [FILL]	4					09:22 Take Sample WC01B_1-3 (TPH)
			5					
			6					09:30 Take Sample WC01B_4-6 (VOC/TCLP VOC)
			7	S-2	MACROCORE			
			8					
			9					
	+7.9	light brown fine-medium SAND with trace silt and weathered rock [FILL]	10					
			11					
			12	S-3	MACROCORE			
			13					
		light brown fine-medium SAND with trace silt and weathered rock (wet) [FILL]	13					
	+2.9	E.O.B. @ 14.0 ft bgs	14					
			15					
			16					
			17					
			18					
			19					
			20					

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Project				Project No.					
546 W44th St.				170229701					
Location				Elevation and Datum					
New York, NY				Approx. 16.75 BPMD					
Drilling Company				Date Started		Date Finished			
Aquifer Drilling & Testing				7/1/13		7/1/13			
Drilling Equipment				Completion Depth		Rock Depth			
Geoprobe 6620 DT				13 ft		13 ft			
Size and Type of Bit				Number of Samples		Disturbed			
2" Dia. Macrocore				4		0			
Casing Diameter (in)		Casing Depth (ft)		Water Level (ft.)		Core			
N/A		N/A		First		0			
Casing Hammer		Weight (lbs)		Completion		24 HR.			
N/A		N/A		-		-			
Sampler				Drilling Foreman					
Acetate Liner 5'				Chris Iodice					
Sampler Hammer				Inspecting Engineer					
N/A				Paul McMahon					
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr. resist B/Join		PID Reading (ppm)
	+16.8	dark gray / black fine-coarse SAND with gravel, trace silt, trace glass [FILL]	0						
			1						
			2	S-1	MACROCORE	24		N/A	10:40 Start Drilling PID reading could not be recorded due to PID malfunction. No odor or staining present.
			3						11:06 Take Sample WC02A_3-4 (VOC/TCLP VOC)
			4						
			5						
			6						11:15 Take Sample WC02A_1-3 (TPH)
			7						
			8	S-2	MACROCORE	30		N/A	11:20 Take Sample WC02A_5-7 (TPH)
		+8.8	light brown medium-fine SAND with some silt, weathered rock and rock fragments [FILL]	9					
			10						11:25 Take Sample WC02A_8-10 (TPH)
			11	S-3	MACROCORE	10		N/A	
		+3.8	E.O.B. @ 13.0 ft bgs	13					Refusal at 13' bgs
			14						
			15						
			16						
			17						
			18						
			19						
			20						

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Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 16.8 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth N/A		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 0	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First 13	Completion -	24 HR. -
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist B/L/in	PID Reading (ppm)	
	+16.8	6" ASPHALT and GRAVEL	0					0.0	
	+16.3	light to dark gray fine-coarse SAND, some gravel and rock fragments, trace brick [FILL]	1						09:30 Start Drilling
			2	S-1	MACROCORE	53		0.0	
			3						
			4					0.0	
			5						
			6	S-2	MACROCORE	24		0.0	
			7					0.0	
			8					0.0	
		dark brown fine-medium SAND, some coarse light brown sand, trace brick and weathered rock [FILL]	9						
			10						
	+5.8	light and reddish brown fine to medium SAND, some silt, trace weathered rock and rock fragments (wet @ 13') [FILL]	11	S-3	MACROCORE	48		0.0	
			12						
			13					0.0	
	+2.8	E.O.B. @ 14.0 ft bgs	14						
			15						
			16						
			17						
			18						
			19						
			20						

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Project 546 W44th St.				Project No. 170229701			
Location New York, NY				Elevation and Datum Approx. 17.15 BPMD			
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13	
Drilling Equipment Geoprobe 6620 DT				Completion Depth 9.5 ft		Rock Depth 9.5 ft	
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 1	
Casing Diameter (in) N/A				Casing Depth (ft) N/A		Undisturbed 0	
Casing Hammer N/A				Weight (lbs) N/A		Drop (in) N/A	
Sampler Acetate Liner 5'				Water Level (ft.)		Core 0	
Sampler Hammer N/A				Weight (lbs) N/A		Drop (in) N/A	
				Drilling Foreman Chris Iodice			
				Inspecting Engineer Paul McMahon			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/Join	
	+17.2		0					
	+16.7	6" ASPHALT and GRAVEL	1					13:35 Start Drilling
		brown and black fine-coarse SAND, some gravel, trace glass [FILL]	2					PID reading could not be recorded due to PID malfunction. No odor or staining present.
		rock fragments and reddish-brown medium-coarse SAND [FILL]	3	S-1	MACROCORE			N/A
		light-medium brown fine-coarse SAND, some silt, some rock fragments [FILL]	4					
			5					
			6					
			7	S-2	MACROCORE			N/A
	+9.2	light brown fine-medium SAND, some silt and weathered rock [FILL]	8					14:05 Take Sample WC03A_8-9.5' (TPH)
	+7.7		9					
		E.O.B. @ 9.5 ft bgs	10					Refusal at 9.5 ft bgs
			11					
			12					
			13					
			14					
			15					
			16					
			17					
			18					
			19					
			20					

Project				Project No.				
546 W44th St.				170229701				
Location				Elevation and Datum				
New York, NY				Approx. 17.6 BPMD				
Drilling Company				Date Started		Date Finished		
Aquifer Drilling & Testing				7/1/13		7/1/13		
Drilling Equipment				Completion Depth		Rock Depth		
Geoprobe 6620 DT				12 ft		12 ft		
Size and Type of Bit				Number of Samples		Disturbed		
2" Dia. Macrocore				3		0		
Casing Diameter (in)		Casing Depth (ft)		Water Level (ft.)		Undisturbed		
N/A		N/A		First ▽		Completion ▽		
Casing Hammer		Weight (lbs)		Drop (in)		Core		
N/A		N/A		N/A		0		
Sampler				Drilling Foreman				
Acetate Liner 5'				Chris Iodice				
Sampler Hammer				Inspecting Engineer				
N/A				Paul McMahon				
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/ft	
	+17.6		0					
	+17.1	6" ASPHALT and GRAVEL	1					13:10 Start Drilling PID reading could not be recorded due to PID malfunction. No odor or staining present.
		light brown and black fine-coarse SAND, some brick, trace rock fragments, trace silt, trace glass, trace gravel [FILL]	2	S-1	MACROCORE	34		
			3					
			4					
		light brown and gray fine-coarse SAND, trace brick and weathered rock, trace silt [FILL]	5					13:55 Take Sample WC03B_1-3' (TPH)
			6					13:50 Take Sample WC03B_6-8' (TPH)
			7					
			8	S-2	MACROCORE	14		
			9					13:40 Take Sample WC03B_8-10' (VOC/TCLP VOC)
	+7.6	brown fine-medium SAND, some silt and weathered rock [FILL]	10					
			11	S-3	MACROCORE	19		
	+5.6	E.O.B. @ 12.0 ft bgs	12					
			13					Refusal at 12 ft bgs
			14					
			15					
			16					
			17					
			18					
			19					
			20					

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Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 17.9 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 3 ft		Rock Depth 3 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 0	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)	
	+17.9		0						
	+17.4	ASPHALT and GRAVEL							PID reading could not be recorded due to PID malfunction. No odor or staining present.
	+16.4	gray and black fine-coarse SAND, some gravel [FILL]	1						
	+14.9	weathered BEDROCK	2	S-1	MACROCORE	21		N/A	
		E.O.B. @ 3.0 ft bgs	3						Refusal at 3 ft bgs
			4						
			5						
			6						
			7						
			8						
			9						
			10						
			11						
			12						
			13						
			14						
			15						
			16						
			17						
			18						
			19						
			20						

Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 18.6 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 5 ft		Rock Depth 5 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 2	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/ft	PID Reading (ppm)	
	+18.6		0						
	+18.1	6" ASPHALT and GRAVEL	1						12:47 Start Drilling PID reading could not be recorded due to PID malfunction. No odor or staining present. 13:00 Take Sample WC04B_1-2' (VOC/TCLP VOC)
		black fine-coarse SAND, some gravel, trace silt [FILL]	2					N/A	
		light and medium brown fine-medium SAND, rock fragments and weathered rock, trace silt, trace brick [FILL]	3	S-1	MACROCORE	21			
			4					N/A	
	+13.6	E.O.B. @ 5.0 ft bgs	5						13:05 Take Sample WC04B_2-3 (TPH 1 Jar)  Refusal at 5 ft bgs
			6						
			7						
			8						
			9						
			10						
			11						
			12						
			13						
			14						
			15						
			16						
			17						
			18						
			19						
			20						

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Project 546 W44th St.				Project No. 170229701			
Location New York, NY				Elevation and Datum Approx. 17.7 BPMD			
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13	
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth 14 ft	
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 4	Undisturbed 0
Casing Diameter (in) N/A				Casing Depth (ft) N/A		Water Level (ft.) First 13	Core 0
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Completion -	24 HR. -
Sampler Acetate Liner 5'				Drilling Foreman Chris Iodice			
Sampler Hammer N/A				Inspecting Engineer Paul McMahon			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BLU/in	
	+17.7		0					
	+17.2	6" ASPHALT and GRAVEL	1					07:45 Start Drilling
		medium and dark brown fine-coarse SAND, some brick and gravel, trace silt, weathered rock and rock fragments [FILL]	2	S-1	MACROCORE	21		0.0
			3					0.0
		light gray medium-coarse SAND with some silt and gravel, trace brick, rock fragments (granite) [FILL]	4					0.0
			5					0.0
			6	S-2	MACROCORE	29		0.0
			7					0.0
	+8.7	brown / light brown medium-fine SAND, some silt, trace weathered rock	8					0.0
			9					0.0
			10					0.0
			11					0.0
			12	S-3	MACROCORE	30		0.0
			13					0.0
	+3.7	brown / light brown medium-fine SAND, some silt, trace weathered rock (wet)	14					0.0
		E.O.B. @ 14.0 ft bgs	15					
			16					
			17					
			18					
			19					
			20					

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Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 18.2 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth N/A		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 0	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First 12	Completion -	24 HR. -
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/Join	
	+18.2		0					
	+17.7	6" ASPHALT and GRAVEL	0					08:05 Start Drilling
		brown fine-coarse SAND, some gravel and brick, trace coarse black sand, silt, rock fragments [FILL]	1					0.0
			2	S-1	MACROCORE	19		
			3					0.0
			4					
		light gray and brown medium-coarse SAND, fine-medium gravel, trace brick and silt, rock fragments [FILL]	5					0.0
			6					0.0
			7	S-2	MACROCORE	12		
			8					0.0
			9					0.0
			10					0.0
			11					0.0
	+6.2	light brown fine-medium SAND with some weathered rock and rock fragments, trace gravel and silt (wet)	12	S-3	MACROCORE	27		0.0
			13					0.0
	+4.2	E.O.B. @ 14.0 ft bgs	14					
			15					
			16					
			17					
			18					
			19					
			20					

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Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 17.6 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth N/A		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 2	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist	BL/Join	
	+17.6		0						
	+17.1	6" ASPHALT and GRAVEL	1						
		dark brown and black fine-coarse SAND, some gravel, weathered rock, trace silt, brick and coal [FILL]	2						
		light brown medium-coarse SAND, with rock fragments and some silt [FILL]	3	S-1	MACROCORE	25			
		brown medium-fine SAND with some silt and weathered rock, trace glass [FILL]	4						
		brown medium-fine silty SAND with trace rock fragments and weathered rock [FILL]	5						09:35 Take Sample WC06A_5-6 (TPH)
		dark brown medium-fine silty SAND and weathered rock	6						
		brown sandy SILT with trace rock fragments and weathered rock	7	S-2	MACROCORE	25			
			8						09:45 Take Sample WC06A_13-14
	+8.6		9						
			10						
			11						
	+5.6		12	S-3	MACROCORE				
			13						
	+3.6		14						
		E.O.B. @ 14.0 ft bgs	15						
			16						
			17						
			18						
			19						
			20						

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Project 546 W44th St.				Project No. 170229701			
Location New York, NY				Elevation and Datum Approx. 17.9 BPMD			
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13	
Drilling Equipment Geoprobe 6620 DT				Completion Depth 8.5 ft		Rock Depth 8.5 ft	
Size and Type of Bit 2" Dia. Macrocore				Number of Samples Disturbed 3 Undisturbed 0 Core 0			
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.) First $\nabla$ - Completion $\nabla$ -		24 HR. $\nabla$ -	
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice	
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon			
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist	BL/Join	
	+17.9		0						
	+17.4	6" ASPHALT and GRAVEL	0						08:35 Start Drilling
		black fine-coarse SAND with some gravel and rock fragments, trace silt [FILL]	1						
		light brown medium-fine SAND and weathered rock, some brick and concrete, some gravel, trace silt, rock fragments [FILL]	2						
			3	S-1	MACROCORE	36			
			4						09:05 Take Sample WC06B_1-3 (VOC/TCLP VOC TPH)
			5						
			6	S-2	MACROCORE	30			09:15 Take Sample WC06B_4-6 (TPH)
			7						09:20 Take Sample WC06B_7-8.5 (TPH)
			8						
	+9.4	E.O.B. @ 8.5 ft bgs	9						Refusal at 8.5 ft bgs
			10						
			11						
			12						
			13						
			14						
			15						
			16						
			17						
			18						
			19						
			20						

Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 17.7 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 9 ft		Rock Depth 9 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 3	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)		
				Number	Type	Recov. (in)	Penetr. resist	BL/Join		PID Reading (ppm)	
	+17.7	6" ASPHALT and GRAVEL	0								
	+17.2	dark gray and dark brown fine-coarse SAND, some gravel and rock fragments, some concrete [FILL]	1	S-1	MACROCORE	36			0.0	10:05 Start Drilling	
		brown and orange-brown medium-fine SAND, some weathered rock and rock fragments, trace silt and gravel, trace brick [FILL]	2							0.0	10:45 Take Sample WC07A_2-4 TPH
		dark brown fine-medium SAND, some weathered rock and fragments, trace gravel and brick [FILL]	3							0.0	
		dark brown fine-medium SAND, some weathered rock and fragments, trace gravel and brick [FILL]	4							0.0	10:40 Take Sample WC07A_4-6 TPH
		orange-brown medium-fine SAND with weathered bedrock [FILL]	5	S-2	MACROCORE				0.0		
	+10.2	weathered BEDROCK	6							0.0	
	+8.7		7							0.0	10:30 Take Sample WC07A_6-7.5 VOC/TCLP VOC
		E.O.B. @ 9.0 ft bgs	9						0.0	Refusal at 9 ft bgs - Bedrock	
			10								
			11								
			12								
			13								
			14								
			15								
			16								
			17								
			18								
			19								
			20								

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Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 18.45 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth N/A		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 2	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.) First 11		Completion -	24 HR. -	
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

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MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/in	
	+18.5		0					
	+18.0	6" ASPHALT and GRAVEL	1					10:40 Start Drilling
		dark gray fine-coarse SAND, some gravel, trace silt and brick [FILL]; wet @ 3' bgs.	2					10:55 Take Sample WC07B_1-3 (TPH)
			3	S-1	MACROCORE	23		
		BRICK [FILL]	4					
		BRICK, ROCK fragments and GRAVEL, with fine-coarse brown sand and trace gravel [FILL]	5					
			6	S-2	MACROCORE	12		
			7					
			8					
			9					
	+8.5	brown fine sandy SILT (wet)	10					11:05 Take Sample WC07B_10-11 (TPH)
			11	S-3	MACROCORE	32		
			12					
			13					
	+4.5	E.O.B. @ 14.0 ft bgs	14					
			15					
			16					
			17					
			18					
			19					
			20					

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Project 546 W44th St.				Project No. 170229701			
Location New York, NY				Elevation and Datum Approx. 7.6 BPMD			
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13	
Drilling Equipment Geoprobe 6620 DT				Completion Depth 2 ft		Rock Depth 2 ft	
Size and Type of Bit 2" Dia. Macrocore				Number of Samples Disturbed 1 Undisturbed 0 Core 0			
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.) First $\nabla$ - Completion $\nabla$ - 24 HR. $\nabla$ -			
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice	
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon			
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BLU/in	PID Reading (ppm)	
	+7.6		0						
	+7.3	4" CONCRETE slab							12:08 Start Drilling
	+6.1	medium-dark brown fine-coarse SAND, some gravel and weathered rock [FILL]	1	S-1	MACROCORE	10		0.0	12:25 Take Sample WC08A_0-2 (TPH)
	+5.6	weathered BEDROCK	2						Refusal at 2 ft bgs - Bedrock
		E.O.B. @ 2.0 ft bgs	3						
			4						
			5						
			6						
			7						
			8						
			9						
			10						
			11						
			12						
			13						
			14						
			15						
			16						
			17						
			18						
			19						
			20						

# LANGAN

Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 6.5 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 4 ft		Rock Depth 4 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples Disturbed 1		Undisturbed 0		
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.) First $\nabla$ -		Core 0		
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Completion $\nabla$ -		
Sampler Acetate Liner 5'				Drilling Foreman Chris Iodice				
Sampler Hammer N/A				Inspecting Engineer Paul McMahon				
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/oin	
	+6.5		0					
	+6.2	4" CONCRETE slab	1					12:20 Start Drilling
		dark brown and black fine-coarse SAND, some gravel and weathered rock, rock fragments [FILL]	2	S-1	MACROCORE	12		0.0
			3					0.0
	+3.5	light brown fine-medium SAND, with some weathered rock and rock fragments	4					0.0
	+2.5	E.O.B. @ 4.0 ft bgs	5					
			6					
			7					
			8					
			9					
			10					
			11					
			12					
			13					
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Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 5.5 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 3 ft		Rock Depth 3 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 1	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

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MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr. resist	BL/Join		PID Reading (ppm)
	+5.5		0							
	+5.2	4" CONCRETE slab	1	S-1	MACROCORE				0.0	12:35 Start Drilling
		light brown and dark gray fine-coarse SAND, some gravel and weathered bedrock, trace silt [FILL]	2						0.0	
		BRICK [FILL]	3							
	+2.5	E.O.B. @ 3.0 ft bgs	3						12:50 Take Sample WC09A_0.5-2.5 (VOC/TCLP VOC) Refusal at 3 ft bgs	
			4							
			5							
			6							
			7							
			8							
			9							
			10							
			11							
			12							
			13							
			14							
			15							
			16							
			17							
			18							
			19							
			20							

# LANGAN

Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 6.2 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/2/13		Date Finished 7/2/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 5 ft		Rock Depth 5 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 1	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data					Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr. resist	BL/Join		PID Reading (ppm)
	+6.2		0							
	+5.9	4" CONCRETE slab	1	S-1 MACROCORE	32				12:55 Start Drilling	
		brown fine-coarse SAND, with gravel, brick and weathered rock, trace silt [FILL]	2						0.0	
			3						0.0	13:05 Take Sample WC09B_3-4 (TPH)
	+3.2	light-medium brown fine-coarse SAND with some silt and weathered rock	4						0.0	
			5							Refusal at 5 ft bgs
	+1.2	E.O.B. @ 5.0 ft bgs	6							
			7							
			8							
			9							
			10							
			11							
			12							
			13							
			14							
			15							
			16							
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			19							
			20							

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Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 18 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 9 ft		Rock Depth 9 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 0	Undisturbed 0	Core 0
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/Join	
	+18.0		0					
	+17.5	6" ASPHALT and GRAVEL	1					
		black and brown medium-coarse SAND, trace rock fragments, brick and silt [FILL]	2					
		BRICK and dark brown fine-coarse SAND, trace gravel [FILL]	3	S-1	MACROCORE	30		N/A
		ROCK fragments and trace ceramic fragments [FILL]	4					
	+11.0	light brown fine-coarse SAND and decomposed rock, some silt, trace rock fragments [FILL]	5					
			6					
			7	S-2	MACROCORE	17		N/A
	+9.0	E.O.B. @ 9.0 ft bgs	8					
			9					Refusal at 9 ft bgs
			10					
			11					
			12					
			13					
			14					
			15					
			16					
			17					
			18					
			19					
			20					

Project 546 W44th St.				Project No. 170229701				
Location New York, NY				Elevation and Datum Approx. 17.2 BPMD				
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13		
Drilling Equipment Geoprobe 6620 DT				Completion Depth 6 ft		Rock Depth 6 ft		
Size and Type of Bit 2" Dia. Macrocore				Number of Samples Disturbed 1 Undisturbed 0 Core 0				
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.) First $\nabla$ - Completion $\nabla$ - 24 HR. $\nabla$ -				
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice		
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon				
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A				
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. Bl/In	
	+17.2		0					
	+16.7	6" ASPHALT and GRAVEL	1	S-1 MACROCORE	36		N/A	11:30 Start Drilling PID reading could not be recorded due to PID malfunction. No odor or staining present.
		BRICK, black fine-coarse SAND ith trace gravel, glass silt [FILL]	2					
		BRICK [FILL]	3					
	+13.7	STONE/ ROCK fragments	4					11:50 Take Sample WC10B_4-6 (VOC/TCLP VOC/TPH)
	+13.2	dark brown SAND with some silt, trace weathered rock and rock fragments, track brick [FILL]	5	S-2 MC	8		N/A	
	+11.2	E.O.B. @ 6.0 ft bgs	6					Refusal at 6 ft bgs
			7					
			8					
			9					
			10					
			11					
			12					
			13					
			14					
			15					
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			19					
			20					

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Project 546 W44th St.				Project No. 170229701					
Location New York, NY				Elevation and Datum Approx. 17.3 BPMD					
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13			
Drilling Equipment Geoprobe 6620 DT				Completion Depth 8 ft		Rock Depth 8 ft			
Size and Type of Bit 2" Dia. Macrocore				Number of Samples		Disturbed 1	Undisturbed 0	Core 0	
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.)		First ▽	Completion ▽	24 HR. ▽	
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Drilling Foreman Chris Iodice			
Sampler Acetate Liner 5'				Inspecting Engineer Paul McMahon					
Sampler Hammer N/A		Weight (lbs) N/A		Drop (in) N/A					
MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)	
				Number	Type	Recov. (in)	Penetr. resist Bl/ft		PID Reading (ppm)
	+17.3		0						
	+16.8	6" ASPHALT and GRAVEL	1					14:50 Start Drilling PID reading could not be recorded due to PID malfunction. No odor or staining present.	
		light-dark brown fine-coarse SAND with brick and rock fragments, trace gravel and silt [FILL]	2						
			3	S-1	MACROCORE	28			
		CONCRETE and BRICK [FILL]	4						
			5						
	+11.3	brown fine-coarse SAND and weathered rock, rock fragments, trace brick [FILL]	6	S-2	MACROCORE	22		15:31 Take Sample WC11A_6-7 (VOC/TCLP VOC 1 Jar)	
			7						
	+9.3	E.O.B. @ 8.0 ft bgs	8					Refusal at 8 ft bgs	
			9						
			10						
			11						
			12						
			13						
			14						
			15						
			16						
			17						
			18						
			19						
			20						

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Project 546 W44th St.				Project No. 170229701			
Location New York, NY				Elevation and Datum Approx. 15.6 BPMD			
Drilling Company Aquifer Drilling & Testing				Date Started 7/1/13		Date Finished 7/1/13	
Drilling Equipment Geoprobe 6620 DT				Completion Depth 14 ft		Rock Depth N/A	
Size and Type of Bit 2" Dia. Macrocore				Number of Samples Disturbed 3		Undisturbed 0	
Casing Diameter (in) N/A		Casing Depth (ft) N/A		Water Level (ft.) First 11.5		Core 0	
Casing Hammer N/A		Weight (lbs) N/A		Drop (in) N/A		Completion 24 HR. -	
Sampler Acetate Liner 5'				Drilling Foreman Chris Iodice			
Sampler Hammer N/A				Inspecting Engineer Paul McMahon			

MATERIAL SYMBOL	Elev. (ft)	Sample Description	Depth Scale	Sample Data				Remarks (Drilling Fluid, Depth of Casing, Fluid Loss, Drilling Resistance, etc.)
				Number	Type	Recov. (in)	Penetr. resist. BL/Join	
	+15.6	6" ASPHALT and GRAVEL	0					
	+15.1	light brown and black fine-coarse SAND, trace silt, trace glass [FILL]	1					14:35 Start Drilling PID reading could not be recorded due to PID malfunction. No odor or staining present.
	+11.6	BRICK fragments	4	S-1	MACROCORE	24		14:48 Take Sample WC11B_2-4 (TPH)
	+9.6	light-medium brown fine-coarse SAND, trace brick and rock fragments, weathered rock, silt [FILL]	6	S-2	MACROCORE	24		
	+5.6	light brown SAND with some silt, trace rock fragments and weathered rock (wet)	10	S-3	MACROCORE	36		14:58 Take Sample WC11B_10-11 (VOC/TCLP VOC)
	+1.6	E.O.B. @ 14.0 ft bgs	14					15:05 Take Sample WC11B_12-14 (TPH)



# **ATTACHMENT C**



## ANALYTICAL REPORT

Lab Number:	L1312313
Client:	Langan Engineering & Environmental 21 Penn Plaza 360 W. 31st Street, 8th Floor New York, NY 10001-2727
ATTN:	Elodie Bourbon
Phone:	(212) 479-5400
Project Name:	546 W 44TH STREET
Project Number:	170229701
Report Date:	07/17/13

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Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

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508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>
L1312313-01	COMP01_0-14	NY, NY	07/01/13 15:50
L1312313-02	COMP02_0-14	NY, NY	07/01/13 15:53
L1312313-03	COMP03_0-12	NY, NY	07/01/13 15:57
L1312313-04	COMP04_0-5	NY, NY	07/01/13 16:01
L1312313-05	COMP10_0-9	NY, NY	07/01/13 16:05
L1312313-06	COMP11_0-14	NY, NY	07/01/13 16:10
L1312313-07	WC01A_11-13	NY, NY	07/01/13 08:55
L1312313-08	WC01B_1-3	NY, NY	07/01/13 09:22
L1312313-09	WC01B_4-6	NY, NY	07/01/13 09:30
L1312313-10	WC02A_3-4	NY, NY	07/01/13 11:06
L1312313-11	WC02A_1-3	NY, NY	07/01/13 11:15
L1312313-12	WC02A_5-7	NY, NY	07/01/13 11:20
L1312313-13	WC02A_8-10	NY, NY	07/01/13 11:25
L1312313-14	WC10B_4-6	NY, NY	07/01/13 11:50
L1312313-15	WC04B_1-2	NY, NY	07/01/13 13:00
L1312313-16	WC04B_2-3	NY, NY	07/01/13 13:05
L1312313-17	WC03B_1-3	NY, NY	07/01/13 13:55
L1312313-18	WC03B_6-8	NY, NY	07/01/13 13:50
L1312313-19	WC03B_8-10	NY, NY	07/01/13 13:40
L1312313-20	WC03A_8-9.5	NY, NY	07/01/13 14:05
L1312313-21	WC11B_2-4	NY, NY	07/01/13 14:48
L1312313-22	WC11B_10-11	NY, NY	07/01/13 14:58
L1312313-23	WC11B_12-14	NY, NY	07/01/13 15:05
L1312313-24	WC11A_6-7	NY, NY	07/01/13 15:31

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

#### HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

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**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### Case Narrative (continued)

#### Report Submission

This report replaces the report issued July 12, 2013. At the client's request, the Client ID has been changed on L1312313-07.

A previously issued report replaced the report issued July 10, 2013. The Pesticide compound list for L1312313-01 was amended.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Sample Receipt

L1312313-05 and -06: The analyses were specified by the client.

#### Semivolatile Organics - SIM

L1312313-01 through -06 have elevated detection limits due to the dilution required by the sample matrix.

#### Semivolatile Organics

L1312313-03 has elevated detection limits due to the dilution required by the sample matrix.

The WG619245-1 Method Blank, associated with L1312313-01, -02, -04, -05, and -06, has a concentration above the reporting limit for Bis(2-ethylhexyl)phthalate. Since the samples were non-detect for this target analyte, no further actions were taken. The results of the original analysis are reported.

#### TCLP Semivolatiles

The WG619486-2/-3 LCS/LCSD recoveries, associated with L1312313-01 through -06, are above the acceptance criteria for 2,4-Dinitrotoluene (110%/115%) and 2,4,5-Trichlorophenol (133%/133%); however, the associated samples are non-detect for these target compounds. The results of the original analysis are reported.

#### Pesticides

L1312313-04, -05, and -06 have elevated detection limits due to the dilutions required by the sample matrices.

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### Case Narrative (continued)

The WG619184-2 LCS/LCSD recoveries, associated with L1312313-01 through -06, are above the acceptance criteria for Alpha-BHC (LCS at 154%), Heptachlor (LCS at 165%), Aldrin (185%/155%), Heptachlor epoxide (179%/151%), Endrin (233%/197%), Endrin aldehyde (LCS at 154%), Endrin ketone (LCS at 167%), Dieldrin (208%/177%), 4,4'-DDE (191%/160%), 4,4'-DDD (190%/163%), 4,4'-DDT (198%/167%), Endosulfan I (196%/164%), Endosulfan II (LCS at 183%), Endosulfan sulfate (LCS at 164%), Methoxychlor (LCS at 181%), cis-Chlordane (189%/158%), and trans-Chlordane (185%/155%); however, the associated samples are non-detect for these target compounds. The results of the original analysis are reported.

#### Total Metals

L1312313-01 through -065 have elevated detection limits for all elements, with the exception of Mercury, due to the dilutions required by matrix interferences encountered during analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Kelly Stenstrom

Title: Technical Director/Representative

Date: 07/17/13

# ORGANICS

# VOLATILES

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-07  
**Client ID:** WC01A\_11-13  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/09/13 07:50  
**Analyst:** MM  
**Percent Solids:** 74%  
**TCLP/SPLP Ext. Date:** 07/08/13 12:15

**Date Collected:** 07/01/13 08:55  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	103		70-130
Dibromofluoromethane	93		70-130

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-07  
 Client ID: WC01A\_11-13  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/05/13 15:54  
 Analyst: BN  
 Percent Solids: 74%

Date Collected: 07/01/13 08:55  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0062	0.00098	1
1,4-Dioxane	ND		mg/kg	0.12	0.022	1
1,2-Dibromoethane	ND		mg/kg	0.0050	0.00022	1
Methylene chloride	0.0040	J	mg/kg	0.0062	0.0025	1
1,1-Dichloroethane	ND		mg/kg	0.0019	0.00022	1
Chloroform	ND		mg/kg	0.0019	0.00046	1
Carbon tetrachloride	ND		mg/kg	0.0012	0.00026	1
1,2-Dichloropropane	ND		mg/kg	0.0044	0.00028	1
Dibromochloromethane	ND		mg/kg	0.0012	0.00038	1
1,1,2-Trichloroethane	ND		mg/kg	0.0019	0.00038	1
Tetrachloroethene	ND		mg/kg	0.0012	0.00017	1
Chlorobenzene	ND		mg/kg	0.0012	0.00043	1
Trichlorofluoromethane	ND		mg/kg	0.0062	0.00015	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00018	1
1,1,1-Trichloroethane	ND		mg/kg	0.0012	0.00014	1
Bromodichloromethane	ND		mg/kg	0.0012	0.00028	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0012	0.00015	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0012	0.00016	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0012	0.00015	1
Bromoform	ND		mg/kg	0.0050	0.00052	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0012	0.00021	1
Benzene	ND		mg/kg	0.0012	0.00015	1
Toluene	0.00043	J	mg/kg	0.0019	0.00014	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
Chloromethane	ND		mg/kg	0.0062	0.00098	1
Bromomethane	ND		mg/kg	0.0025	0.00042	1
Vinyl chloride	ND		mg/kg	0.0025	0.00018	1
Chloroethane	ND		mg/kg	0.0025	0.00039	1
1,1-Dichloroethene	ND		mg/kg	0.0012	0.00026	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0019	0.00026	1
Trichloroethene	ND		mg/kg	0.0012	0.00019	1

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-07  
 Client ID: WC01A\_11-13  
 Sample Location: NY, NY

Date Collected: 07/01/13 08:55  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0062	0.00023	1
1,3-Dichlorobenzene	ND		mg/kg	0.0062	0.00023	1
1,4-Dichlorobenzene	ND		mg/kg	0.0062	0.00030	1
Methyl tert butyl ether	ND		mg/kg	0.0025	0.00013	1
p/m-Xylene	ND		mg/kg	0.0025	0.00040	1
o-Xylene	ND		mg/kg	0.0025	0.00034	1
Xylenes, Total	ND		mg/kg	0.0025	0.00034	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0012	0.00019	1
Styrene	ND		mg/kg	0.0025	0.00038	1
Dichlorodifluoromethane	ND		mg/kg	0.012	0.00027	1
Acetone	0.032	J	mg/kg	0.045	0.0039	1
Carbon disulfide	ND		mg/kg	0.012	0.0025	1
2-Butanone	0.0060	J	mg/kg	0.012	0.00044	1
4-Methyl-2-pentanone	ND		mg/kg	0.012	0.00030	1
2-Hexanone	ND		mg/kg	0.012	0.00023	1
Bromochloromethane	ND		mg/kg	0.0062	0.00024	1
n-Butylbenzene	ND		mg/kg	0.0012	0.00025	1
sec-Butylbenzene	ND		mg/kg	0.0012	0.00026	1
tert-Butylbenzene	ND		mg/kg	0.0062	0.00070	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00021	1
n-Propylbenzene	ND		mg/kg	0.0012	0.00016	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0062	0.00021	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0062	0.00098	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0062	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0062	0.00071	1
Methyl Acetate	ND		mg/kg	0.0050	0.00095	1
Cyclohexane	ND		mg/kg	0.025	0.0013	1
Methyl cyclohexane	ND		mg/kg	0.0050	0.0016	1
Freon-113	ND		mg/kg	0.025	0.00034	1

## Tentatively Identified Compounds

Total TIC Compounds	0.056	J	mg/kg			1
Unknown	0.0085	J	mg/kg			1
Unknown	0.012	J	mg/kg			1
Unknown	0.0076	J	mg/kg			1
Unknown	0.012	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-07  
 Client ID: WC01A\_11-13  
 Sample Location: NY, NY

Date Collected: 07/01/13 08:55  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab						
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## Tentatively Identified Compounds

Unknown	0.0088	J	mg/kg			1
Unknown	0.0050	J	mg/kg			1
Unknown	0.0026	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	108		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-09  
**Client ID:** WC01B\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/09/13 08:06  
**Analyst:** MM  
**Percent Solids:** 90%  
**TCLP/SPLP Ext. Date:** 07/08/13 12:15

**Date Collected:** 07/01/13 09:30  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	118		70-130
Dibromofluoromethane	96		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-09  
**Client ID:** WC01B\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/05/13 16:22  
**Analyst:** BN  
**Percent Solids:** 90%

**Date Collected:** 07/01/13 09:30  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by GC/MS-5035 - Westborough Lab</b>						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0065	0.0010	1
1,4-Dioxane	ND		mg/kg	0.13	0.022	1
1,2-Dibromoethane	ND		mg/kg	0.0052	0.00023	1
Methylene chloride	0.0046	J	mg/kg	0.0065	0.0026	1
1,1-Dichloroethane	ND		mg/kg	0.0019	0.00023	1
Chloroform	ND		mg/kg	0.0019	0.00048	1
Carbon tetrachloride	ND		mg/kg	0.0013	0.00027	1
1,2-Dichloropropane	ND		mg/kg	0.0045	0.00030	1
Dibromochloromethane	ND		mg/kg	0.0013	0.00040	1
1,1,2-Trichloroethane	ND		mg/kg	0.0019	0.00039	1
Tetrachloroethene	0.00052	J	mg/kg	0.0013	0.00018	1
Chlorobenzene	ND		mg/kg	0.0013	0.00045	1
Trichlorofluoromethane	ND		mg/kg	0.0065	0.00016	1
1,2-Dichloroethane	ND		mg/kg	0.0013	0.00019	1
1,1,1-Trichloroethane	ND		mg/kg	0.0013	0.00014	1
Bromodichloromethane	ND		mg/kg	0.0013	0.00030	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0013	0.00016	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0013	0.00016	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0013	0.00016	1
Bromoform	ND		mg/kg	0.0052	0.00054	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0013	0.00022	1
Benzene	ND		mg/kg	0.0013	0.00015	1
Toluene	0.00038	J	mg/kg	0.0019	0.00014	1
Ethylbenzene	ND		mg/kg	0.0013	0.00019	1
Chloromethane	ND		mg/kg	0.0065	0.0010	1
Bromomethane	ND		mg/kg	0.0026	0.00044	1
Vinyl chloride	ND		mg/kg	0.0026	0.00018	1
Chloroethane	ND		mg/kg	0.0026	0.00041	1
1,1-Dichloroethene	ND		mg/kg	0.0013	0.00027	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0019	0.00027	1
Trichloroethene	ND		mg/kg	0.0013	0.00020	1

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-09

Date Collected: 07/01/13 09:30

Client ID: WC01B\_4-6

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0065	0.00024	1
1,3-Dichlorobenzene	ND		mg/kg	0.0065	0.00024	1
1,4-Dichlorobenzene	ND		mg/kg	0.0065	0.00031	1
Methyl tert butyl ether	ND		mg/kg	0.0026	0.00014	1
p/m-Xylene	ND		mg/kg	0.0026	0.00042	1
o-Xylene	ND		mg/kg	0.0026	0.00035	1
Xylenes, Total	ND		mg/kg	0.0026	0.00035	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0013	0.00019	1
Styrene	ND		mg/kg	0.0026	0.00040	1
Dichlorodifluoromethane	ND		mg/kg	0.013	0.00028	1
Acetone	ND		mg/kg	0.047	0.0040	1
Carbon disulfide	ND		mg/kg	0.013	0.0026	1
2-Butanone	ND		mg/kg	0.013	0.00046	1
4-Methyl-2-pentanone	ND		mg/kg	0.013	0.00032	1
2-Hexanone	ND		mg/kg	0.013	0.00024	1
Bromochloromethane	ND		mg/kg	0.0065	0.00026	1
n-Butylbenzene	ND		mg/kg	0.0013	0.00026	1
sec-Butylbenzene	ND		mg/kg	0.0013	0.00027	1
tert-Butylbenzene	ND		mg/kg	0.0065	0.00073	1
Isopropylbenzene	ND		mg/kg	0.0013	0.00022	1
n-Propylbenzene	ND		mg/kg	0.0013	0.00016	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0065	0.00022	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0065	0.0010	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0065	0.00018	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0065	0.00074	1
Methyl Acetate	ND		mg/kg	0.0052	0.00099	1
Cyclohexane	ND		mg/kg	0.026	0.0014	1
Methyl cyclohexane	ND		mg/kg	0.0052	0.0016	1
Freon-113	ND		mg/kg	0.026	0.00035	1

## Tentatively Identified Compounds

Total TIC Compounds	0.13	J	mg/kg			1
Unknown	0.0050	J	mg/kg			1
Unknown	0.021	J	mg/kg			1
Unknown	0.024	J	mg/kg			1
Unknown	0.014	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-09

Date Collected: 07/01/13 09:30

Client ID: WC01B\_4-6

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.025	J	mg/kg			1
Unknown	0.019	J	mg/kg			1
Unknown	0.012	J	mg/kg			1
Unknown	0.0069	J	mg/kg			1
Unknown	0.0034	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	108		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-10  
**Client ID:** WC02A\_3-4  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/09/13 08:38  
**Analyst:** MM  
**Percent Solids:** 90%  
**TCLP/SPLP Ext. Date:** 07/08/13 12:15

**Date Collected:** 07/01/13 11:06  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Volatiles by EPA 1311 - Westborough Lab						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	97		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-10  
**Client ID:** WC02A\_3-4  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/05/13 16:53  
**Analyst:** BN  
**Percent Solids:** 90%

**Date Collected:** 07/01/13 11:06  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by GC/MS-5035 - Westborough Lab</b>						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0054	0.00086	1
1,4-Dioxane	ND		mg/kg	0.11	0.019	1
1,2-Dibromoethane	ND		mg/kg	0.0044	0.00019	1
Methylene chloride	0.0028	J	mg/kg	0.0054	0.0022	1
1,1-Dichloroethane	ND		mg/kg	0.0016	0.00019	1
Chloroform	0.00047	J	mg/kg	0.0016	0.00040	1
Carbon tetrachloride	ND		mg/kg	0.0011	0.00023	1
1,2-Dichloropropane	ND		mg/kg	0.0038	0.00025	1
Dibromochloromethane	ND		mg/kg	0.0011	0.00033	1
1,1,2-Trichloroethane	ND		mg/kg	0.0016	0.00033	1
Tetrachloroethene	ND		mg/kg	0.0011	0.00015	1
Chlorobenzene	ND		mg/kg	0.0011	0.00038	1
Trichlorofluoromethane	ND		mg/kg	0.0054	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00016	1
1,1,1-Trichloroethane	ND		mg/kg	0.0011	0.00012	1
Bromodichloromethane	ND		mg/kg	0.0011	0.00025	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0011	0.00013	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0011	0.00014	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0011	0.00013	1
Bromoform	ND		mg/kg	0.0044	0.00045	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0011	0.00018	1
Benzene	ND		mg/kg	0.0011	0.00013	1
Toluene	ND		mg/kg	0.0016	0.00012	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
Chloromethane	ND		mg/kg	0.0054	0.00085	1
Bromomethane	ND		mg/kg	0.0022	0.00037	1
Vinyl chloride	ND		mg/kg	0.0022	0.00015	1
Chloroethane	ND		mg/kg	0.0022	0.00034	1
1,1-Dichloroethene	ND		mg/kg	0.0011	0.00022	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0016	0.00023	1
Trichloroethene	ND		mg/kg	0.0011	0.00016	1

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-10

Date Collected: 07/01/13 11:06

Client ID: WC02A\_3-4

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0054	0.00020	1
1,3-Dichlorobenzene	ND		mg/kg	0.0054	0.00020	1
1,4-Dichlorobenzene	ND		mg/kg	0.0054	0.00026	1
Methyl tert butyl ether	ND		mg/kg	0.0022	0.00011	1
p/m-Xylene	ND		mg/kg	0.0022	0.00035	1
o-Xylene	ND		mg/kg	0.0022	0.00029	1
Xylenes, Total	ND		mg/kg	0.0022	0.00029	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0011	0.00016	1
Styrene	ND		mg/kg	0.0022	0.00034	1
Dichlorodifluoromethane	ND		mg/kg	0.011	0.00024	1
Acetone	0.0061	J	mg/kg	0.039	0.0034	1
Carbon disulfide	ND		mg/kg	0.011	0.0022	1
2-Butanone	ND		mg/kg	0.011	0.00039	1
4-Methyl-2-pentanone	ND		mg/kg	0.011	0.00026	1
2-Hexanone	ND		mg/kg	0.011	0.00020	1
Bromochloromethane	ND		mg/kg	0.0054	0.00021	1
n-Butylbenzene	ND		mg/kg	0.0011	0.00022	1
sec-Butylbenzene	ND		mg/kg	0.0011	0.00022	1
tert-Butylbenzene	ND		mg/kg	0.0054	0.00061	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00018	1
n-Propylbenzene	ND		mg/kg	0.0011	0.00014	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0054	0.00018	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0054	0.00086	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0054	0.00016	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0054	0.00062	1
Methyl Acetate	ND		mg/kg	0.0044	0.00083	1
Cyclohexane	ND		mg/kg	0.022	0.0012	1
Methyl cyclohexane	ND		mg/kg	0.0044	0.0014	1
Freon-113	ND		mg/kg	0.022	0.00030	1

## Tentatively Identified Compounds

Total TIC Compounds	0.066	J	mg/kg			1
Unknown	0.0081	J	mg/kg			1
Unknown	0.011	J	mg/kg			1
Unknown	0.0068	J	mg/kg			1
Unknown	0.0085	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-10

Date Collected: 07/01/13 11:06

Client ID: WC02A\_3-4

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab						
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## Tentatively Identified Compounds

Unknown	0.0037	J	mg/kg			1
Unknown	0.011	J	mg/kg			1
Unknown	0.0080	J	mg/kg			1
Unknown	0.0044	J	mg/kg			1
Unknown	0.0023	J	mg/kg			1
Unknown	0.0027	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	110		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	110		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-14  
**Client ID:** WC10B\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/09/13 08:54  
**Analyst:** MM  
**Percent Solids:** 88%  
**TCLP/SPLP Ext. Date:** 07/08/13 12:15

**Date Collected:** 07/01/13 11:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	95		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-14  
**Client ID:** WC10B\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/05/13 17:21  
**Analyst:** BN  
**Percent Solids:** 88%

**Date Collected:** 07/01/13 11:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by GC/MS-5035 - Westborough Lab</b>						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0051	0.00080	1
1,4-Dioxane	ND		mg/kg	0.10	0.018	1
1,2-Dibromoethane	ND		mg/kg	0.0041	0.00018	1
Methylene chloride	0.0025	J	mg/kg	0.0051	0.0020	1
1,1-Dichloroethane	ND		mg/kg	0.0015	0.00018	1
Chloroform	ND		mg/kg	0.0015	0.00038	1
Carbon tetrachloride	ND		mg/kg	0.0010	0.00021	1
1,2-Dichloropropane	ND		mg/kg	0.0036	0.00023	1
Dibromochloromethane	ND		mg/kg	0.0010	0.00031	1
1,1,2-Trichloroethane	ND		mg/kg	0.0015	0.00031	1
Tetrachloroethene	0.00036	J	mg/kg	0.0010	0.00014	1
Chlorobenzene	ND		mg/kg	0.0010	0.00035	1
Trichlorofluoromethane	ND		mg/kg	0.0051	0.00012	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00015	1
1,1,1-Trichloroethane	ND		mg/kg	0.0010	0.00011	1
Bromodichloromethane	ND		mg/kg	0.0010	0.00023	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00012	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0010	0.00012	1
Bromoform	ND		mg/kg	0.0041	0.00042	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0010	0.00017	1
Benzene	ND		mg/kg	0.0010	0.00012	1
Toluene	ND		mg/kg	0.0015	0.00011	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
Chloromethane	ND		mg/kg	0.0051	0.00080	1
Bromomethane	ND		mg/kg	0.0020	0.00034	1
Vinyl chloride	ND		mg/kg	0.0020	0.00014	1
Chloroethane	ND		mg/kg	0.0020	0.00032	1
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00021	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00022	1
Trichloroethene	ND		mg/kg	0.0010	0.00016	1

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-14

Date Collected: 07/01/13 11:50

Client ID: WC10B\_4-6

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0051	0.00019	1
1,3-Dichlorobenzene	ND		mg/kg	0.0051	0.00019	1
1,4-Dichlorobenzene	ND		mg/kg	0.0051	0.00025	1
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00011	1
p/m-Xylene	ND		mg/kg	0.0020	0.00033	1
o-Xylene	ND		mg/kg	0.0020	0.00028	1
Xylenes, Total	ND		mg/kg	0.0020	0.00028	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00015	1
Styrene	ND		mg/kg	0.0020	0.00032	1
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00022	1
Acetone	ND		mg/kg	0.037	0.0032	1
Carbon disulfide	ND		mg/kg	0.010	0.0020	1
2-Butanone	ND		mg/kg	0.010	0.00036	1
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.00025	1
2-Hexanone	ND		mg/kg	0.010	0.00019	1
Bromochloromethane	ND		mg/kg	0.0051	0.00020	1
n-Butylbenzene	ND		mg/kg	0.0010	0.00020	1
sec-Butylbenzene	ND		mg/kg	0.0010	0.00021	1
tert-Butylbenzene	ND		mg/kg	0.0051	0.00057	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00017	1
n-Propylbenzene	ND		mg/kg	0.0010	0.00013	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0051	0.00017	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0051	0.00080	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0051	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0051	0.00058	1
Methyl Acetate	ND		mg/kg	0.0041	0.00078	1
Cyclohexane	ND		mg/kg	0.020	0.0011	1
Methyl cyclohexane	ND		mg/kg	0.0041	0.0013	1
Freon-113	ND		mg/kg	0.020	0.00028	1

## Tentatively Identified Compounds

Total TIC Compounds	0.10	J	mg/kg			1
Unknown	0.020	J	mg/kg			1
Unknown	0.019	J	mg/kg			1
Unknown	0.012	J	mg/kg			1
Unknown	0.036	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-14

Date Collected: 07/01/13 11:50

Client ID: WC10B\_4-6

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.010	J	mg/kg			1
Unknown	0.0056	J	mg/kg			1
Unknown	0.0030	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	109		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-15  
**Client ID:** WC04B\_1-2  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/09/13 09:11  
**Analyst:** MM  
**Percent Solids:** 87%  
**TCLP/SPLP Ext. Date:** 07/08/13 12:15

**Date Collected:** 07/01/13 13:00  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	116		70-130
Dibromofluoromethane	94		70-130

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-15  
 Client ID: WC04B\_1-2  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/05/13 17:50  
 Analyst: BN  
 Percent Solids: 87%

Date Collected: 07/01/13 13:00  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0048	0.00076	1
1,4-Dioxane	ND		mg/kg	0.096	0.017	1
1,2-Dibromoethane	ND		mg/kg	0.0038	0.00017	1
Methylene chloride	0.0031	J	mg/kg	0.0048	0.0019	1
1,1-Dichloroethane	ND		mg/kg	0.0014	0.00017	1
Chloroform	ND		mg/kg	0.0014	0.00035	1
Carbon tetrachloride	ND		mg/kg	0.00096	0.00020	1
1,2-Dichloropropane	ND		mg/kg	0.0034	0.00022	1
Dibromochloromethane	ND		mg/kg	0.00096	0.00029	1
1,1,2-Trichloroethane	ND		mg/kg	0.0014	0.00029	1
Tetrachloroethene	ND		mg/kg	0.00096	0.00013	1
Chlorobenzene	ND		mg/kg	0.00096	0.00033	1
Trichlorofluoromethane	ND		mg/kg	0.0048	0.00012	1
1,2-Dichloroethane	ND		mg/kg	0.00096	0.00014	1
1,1,1-Trichloroethane	ND		mg/kg	0.00096	0.00011	1
Bromodichloromethane	ND		mg/kg	0.00096	0.00022	1
trans-1,3-Dichloropropene	ND		mg/kg	0.00096	0.00012	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00096	0.00012	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00096	0.00012	1
Bromoform	ND		mg/kg	0.0038	0.00040	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00096	0.00016	1
Benzene	ND		mg/kg	0.00096	0.00011	1
Toluene	ND		mg/kg	0.0014	0.00011	1
Ethylbenzene	ND		mg/kg	0.00096	0.00014	1
Chloromethane	ND		mg/kg	0.0048	0.00075	1
Bromomethane	ND		mg/kg	0.0019	0.00032	1
Vinyl chloride	ND		mg/kg	0.0019	0.00014	1
Chloroethane	ND		mg/kg	0.0019	0.00030	1
1,1-Dichloroethene	ND		mg/kg	0.00096	0.00020	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0014	0.00020	1
Trichloroethene	ND		mg/kg	0.00096	0.00014	1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-15

Date Collected: 07/01/13 13:00

Client ID: WC04B\_1-2

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatiles Organics by GC/MS-5035 - Westborough Lab</b>						
1,2-Dichlorobenzene	ND		mg/kg	0.0048	0.00018	1
1,3-Dichlorobenzene	ND		mg/kg	0.0048	0.00018	1
1,4-Dichlorobenzene	ND		mg/kg	0.0048	0.00023	1
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00010	1
p/m-Xylene	ND		mg/kg	0.0019	0.00031	1
o-Xylene	ND		mg/kg	0.0019	0.00026	1
Xylenes, Total	ND		mg/kg	0.0019	0.00026	1
cis-1,2-Dichloroethene	ND		mg/kg	0.00096	0.00014	1
Styrene	ND		mg/kg	0.0019	0.00030	1
Dichlorodifluoromethane	ND		mg/kg	0.0096	0.00021	1
Acetone	ND		mg/kg	0.034	0.0030	1
Carbon disulfide	ND		mg/kg	0.0096	0.0019	1
2-Butanone	ND		mg/kg	0.0096	0.00034	1
4-Methyl-2-pentanone	ND		mg/kg	0.0096	0.00023	1
2-Hexanone	ND		mg/kg	0.0096	0.00018	1
Bromochloromethane	ND		mg/kg	0.0048	0.00019	1
n-Butylbenzene	ND		mg/kg	0.00096	0.00019	1
sec-Butylbenzene	ND		mg/kg	0.00096	0.00020	1
tert-Butylbenzene	ND		mg/kg	0.0048	0.00054	1
Isopropylbenzene	ND		mg/kg	0.00096	0.00016	1
n-Propylbenzene	ND		mg/kg	0.00096	0.00012	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0048	0.00016	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0048	0.00076	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0048	0.00014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0048	0.00055	1
Methyl Acetate	ND		mg/kg	0.0038	0.00073	1
Cyclohexane	ND		mg/kg	0.019	0.0010	1
Methyl cyclohexane	ND		mg/kg	0.0038	0.0012	1
Freon-113	ND		mg/kg	0.019	0.00026	1

**Tentatively Identified Compounds**

Total TIC Compounds	0.095	J	mg/kg			1
Unknown	0.0025	J	mg/kg			1
Unknown	0.0072	J	mg/kg			1
Unknown	0.0070	J	mg/kg			1
Unknown	0.017	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-15

Date Collected: 07/01/13 13:00

Client ID: WC04B\_1-2

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.0099	J	mg/kg			1
Unknown	0.014	J	mg/kg			1
Unknown	0.0056	J	mg/kg			1
Unknown	0.014	J	mg/kg			1
Unknown	0.010	J	mg/kg			1
Unknown	0.0053	J	mg/kg			1
Unknown	0.0028	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	90		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	111		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-19  
**Client ID:** WC03B\_8-10  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/09/13 09:43  
**Analyst:** MM  
**Percent Solids:** 81%  
**TCLP/SPLP Ext. Date:** 07/08/13 12:15

**Date Collected:** 07/01/13 13:40  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	96		70-130

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-19  
 Client ID: WC03B\_8-10  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/04/13 17:41  
 Analyst: BN  
 Percent Solids: 81%

Date Collected: 07/01/13 13:40  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0089	0.0014	1
1,4-Dioxane	ND		mg/kg	0.18	0.031	1
1,2-Dibromoethane	ND		mg/kg	0.0071	0.00032	1
Methylene chloride	0.0066	J	mg/kg	0.0089	0.0035	1
1,1-Dichloroethane	ND		mg/kg	0.0026	0.00031	1
Chloroform	0.0010	J	mg/kg	0.0026	0.00066	1
Carbon tetrachloride	ND		mg/kg	0.0018	0.00037	1
1,2-Dichloropropane	ND		mg/kg	0.0062	0.00040	1
Dibromochloromethane	ND		mg/kg	0.0018	0.00054	1
1,1,2-Trichloroethane	ND		mg/kg	0.0026	0.00054	1
Tetrachloroethene	ND		mg/kg	0.0018	0.00025	1
Chlorobenzene	ND		mg/kg	0.0018	0.00062	1
Trichlorofluoromethane	ND		mg/kg	0.0089	0.00022	1
1,2-Dichloroethane	ND		mg/kg	0.0018	0.00026	1
1,1,1-Trichloroethane	ND		mg/kg	0.0018	0.00020	1
Bromodichloromethane	ND		mg/kg	0.0018	0.00040	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0018	0.00021	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0018	0.00022	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0018	0.00021	1
Bromoform	ND		mg/kg	0.0071	0.00074	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0018	0.00030	1
Benzene	ND		mg/kg	0.0018	0.00021	1
Toluene	ND		mg/kg	0.0026	0.00020	1
Ethylbenzene	ND		mg/kg	0.0018	0.00026	1
Chloromethane	ND		mg/kg	0.0089	0.0014	1
Bromomethane	ND		mg/kg	0.0035	0.00060	1
Vinyl chloride	ND		mg/kg	0.0035	0.00025	1
Chloroethane	ND		mg/kg	0.0035	0.00056	1
1,1-Dichloroethene	ND		mg/kg	0.0018	0.00036	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0026	0.00038	1
Trichloroethene	ND		mg/kg	0.0018	0.00027	1

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-19  
 Client ID: WC03B\_8-10  
 Sample Location: NY, NY

Date Collected: 07/01/13 13:40  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0089	0.00032	1
1,3-Dichlorobenzene	ND		mg/kg	0.0089	0.00032	1
1,4-Dichlorobenzene	ND		mg/kg	0.0089	0.00043	1
Methyl tert butyl ether	ND		mg/kg	0.0035	0.00018	1
p/m-Xylene	ND		mg/kg	0.0035	0.00057	1
o-Xylene	ND		mg/kg	0.0035	0.00048	1
Xylenes, Total	ND		mg/kg	0.0035	0.00048	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0018	0.00026	1
Styrene	ND		mg/kg	0.0035	0.00055	1
Dichlorodifluoromethane	ND		mg/kg	0.018	0.00039	1
Acetone	ND		mg/kg	0.064	0.0055	1
Carbon disulfide	ND		mg/kg	0.018	0.0035	1
2-Butanone	ND		mg/kg	0.018	0.00063	1
4-Methyl-2-pentanone	ND		mg/kg	0.018	0.00043	1
2-Hexanone	ND		mg/kg	0.018	0.00033	1
Bromochloromethane	ND		mg/kg	0.0089	0.00035	1
n-Butylbenzene	ND		mg/kg	0.0018	0.00035	1
sec-Butylbenzene	ND		mg/kg	0.0018	0.00036	1
tert-Butylbenzene	ND		mg/kg	0.0089	0.00099	1
Isopropylbenzene	ND		mg/kg	0.0018	0.00030	1
n-Propylbenzene	ND		mg/kg	0.0018	0.00022	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0089	0.00030	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0089	0.0014	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0089	0.00025	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0089	0.0010	1
Methyl Acetate	ND		mg/kg	0.0071	0.0014	1
Cyclohexane	ND		mg/kg	0.035	0.0019	1
Methyl cyclohexane	ND		mg/kg	0.0071	0.0022	1
Freon-113	ND		mg/kg	0.035	0.00048	1

## Tentatively Identified Compounds

Total TIC Compounds	0.22	J	mg/kg			1
Unknown	0.0077	J	mg/kg			1
Unknown	0.035	J	mg/kg			1
Unknown	0.038	J	mg/kg			1
Unknown	0.020	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-19

Date Collected: 07/01/13 13:40

Client ID: WC03B\_8-10

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						

## Tentatively Identified Compounds

Unknown	0.035	J	mg/kg			1
Unknown	0.013	J	mg/kg			1
Unknown	0.031	J	mg/kg			1
Unknown	0.020	J	mg/kg			1
Unknown	0.010	J	mg/kg			1
Unknown	0.0054	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	92		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	104		70-130

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-22  
 Client ID: WC11B\_10-11  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/09/13 09:59  
 Analyst: MM  
 Percent Solids: 86%  
 TCLP/SPLP Ext. Date: 07/08/13 12:15

Date Collected: 07/01/13 14:58  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-22  
**Client ID:** WC11B\_10-11  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/05/13 18:18  
**Analyst:** BN  
**Percent Solids:** 86%

**Date Collected:** 07/01/13 14:58  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by GC/MS-5035 - Westborough Lab</b>						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0048	0.00076	1
1,4-Dioxane	ND		mg/kg	0.097	0.017	1
1,2-Dibromoethane	ND		mg/kg	0.0039	0.00017	1
Methylene chloride	0.0032	J	mg/kg	0.0048	0.0019	1
1,1-Dichloroethane	ND		mg/kg	0.0014	0.00017	1
Chloroform	ND		mg/kg	0.0014	0.00036	1
Carbon tetrachloride	ND		mg/kg	0.00097	0.00020	1
1,2-Dichloropropane	ND		mg/kg	0.0034	0.00022	1
Dibromochloromethane	ND		mg/kg	0.00097	0.00030	1
1,1,2-Trichloroethane	ND		mg/kg	0.0014	0.00029	1
Tetrachloroethene	0.00049	J	mg/kg	0.00097	0.00014	1
Chlorobenzene	ND		mg/kg	0.00097	0.00034	1
Trichlorofluoromethane	ND		mg/kg	0.0048	0.00012	1
1,2-Dichloroethane	ND		mg/kg	0.00097	0.00014	1
1,1,1-Trichloroethane	ND		mg/kg	0.00097	0.00011	1
Bromodichloromethane	ND		mg/kg	0.00097	0.00022	1
trans-1,3-Dichloropropene	ND		mg/kg	0.00097	0.00012	1
cis-1,3-Dichloropropene	ND		mg/kg	0.00097	0.00012	1
1,3-Dichloropropene, Total	ND		mg/kg	0.00097	0.00012	1
Bromoform	ND		mg/kg	0.0039	0.00040	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.00097	0.00016	1
Benzene	ND		mg/kg	0.00097	0.00011	1
Toluene	ND		mg/kg	0.0014	0.00011	1
Ethylbenzene	ND		mg/kg	0.00097	0.00014	1
Chloromethane	ND		mg/kg	0.0048	0.00076	1
Bromomethane	ND		mg/kg	0.0019	0.00033	1
Vinyl chloride	ND		mg/kg	0.0019	0.00014	1
Chloroethane	ND		mg/kg	0.0019	0.00031	1
1,1-Dichloroethene	ND		mg/kg	0.00097	0.00020	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0014	0.00020	1
Trichloroethene	ND		mg/kg	0.00097	0.00015	1

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-22  
 Client ID: WC11B\_10-11  
 Sample Location: NY, NY

Date Collected: 07/01/13 14:58  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0048	0.00018	1
1,3-Dichlorobenzene	ND		mg/kg	0.0048	0.00018	1
1,4-Dichlorobenzene	ND		mg/kg	0.0048	0.00023	1
Methyl tert butyl ether	ND		mg/kg	0.0019	0.00010	1
p/m-Xylene	ND		mg/kg	0.0019	0.00031	1
o-Xylene	ND		mg/kg	0.0019	0.00026	1
Xylenes, Total	ND		mg/kg	0.0019	0.00026	1
cis-1,2-Dichloroethene	ND		mg/kg	0.00097	0.00014	1
Styrene	ND		mg/kg	0.0019	0.00030	1
Dichlorodifluoromethane	ND		mg/kg	0.0097	0.00021	1
Acetone	ND		mg/kg	0.035	0.0030	1
Carbon disulfide	ND		mg/kg	0.0097	0.0019	1
2-Butanone	ND		mg/kg	0.0097	0.00034	1
4-Methyl-2-pentanone	ND		mg/kg	0.0097	0.00024	1
2-Hexanone	ND		mg/kg	0.0097	0.00018	1
Bromochloromethane	ND		mg/kg	0.0048	0.00019	1
n-Butylbenzene	ND		mg/kg	0.00097	0.00019	1
sec-Butylbenzene	ND		mg/kg	0.00097	0.00020	1
tert-Butylbenzene	ND		mg/kg	0.0048	0.00054	1
Isopropylbenzene	ND		mg/kg	0.00097	0.00016	1
n-Propylbenzene	ND		mg/kg	0.00097	0.00012	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0048	0.00016	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0048	0.00076	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0048	0.00014	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0048	0.00056	1
Methyl Acetate	ND		mg/kg	0.0039	0.00074	1
Cyclohexane	ND		mg/kg	0.019	0.0010	1
Methyl cyclohexane	ND		mg/kg	0.0039	0.0012	1
Freon-113	ND		mg/kg	0.019	0.00026	1

## Tentatively Identified Compounds

Total TIC Compounds	0.11	J	mg/kg			1
Unknown	0.0033	J	mg/kg			1
Unknown	0.017	J	mg/kg			1
Unknown	0.020	J	mg/kg			1
Unknown	0.012	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-22

Date Collected: 07/01/13 14:58

Client ID: WC11B\_10-11

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab						
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## Tentatively Identified Compounds

Unknown	0.016	J	mg/kg			1
Unknown	0.0067	J	mg/kg			1
Unknown	0.016	J	mg/kg			1
Unknown	0.011	J	mg/kg			1
Unknown	0.0058	J	mg/kg			1
Unknown	0.0034	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	108		70-130
Toluene-d8	89		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	109		70-130

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/04/13 11:06  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 19 Batch: WG619685-3					
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0050	0.00079
1,4-Dioxane	ND		mg/kg	0.10	0.017
1,2-Dibromoethane	ND		mg/kg	0.0040	0.00018
Methylene chloride	ND		mg/kg	0.0050	0.0020
1,1-Dichloroethane	ND		mg/kg	0.0015	0.00018
Chloroform	ND		mg/kg	0.0015	0.00037
Carbon tetrachloride	ND		mg/kg	0.0010	0.00021
1,2-Dichloropropane	ND		mg/kg	0.0035	0.00023
Dibromochloromethane	ND		mg/kg	0.0010	0.00031
1,1,2-Trichloroethane	ND		mg/kg	0.0015	0.00030
Tetrachloroethene	ND		mg/kg	0.0010	0.00014
Chlorobenzene	ND		mg/kg	0.0010	0.00035
Trichlorofluoromethane	ND		mg/kg	0.0050	0.00012
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00015
1,1,1-Trichloroethane	ND		mg/kg	0.0010	0.00011
Bromodichloromethane	ND		mg/kg	0.0010	0.00023
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00012
cis-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013
1,3-Dichloropropene, Total	ND		mg/kg	0.0010	0.00012
Bromoform	ND		mg/kg	0.0040	0.00041
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0010	0.00017
Benzene	ND		mg/kg	0.0010	0.00012
Toluene	0.00027	J	mg/kg	0.0015	0.00011
Ethylbenzene	ND		mg/kg	0.0010	0.00015
Chloromethane	ND		mg/kg	0.0050	0.00078
Bromomethane	ND		mg/kg	0.0020	0.00034
Vinyl chloride	ND		mg/kg	0.0020	0.00014
Chloroethane	ND		mg/kg	0.0020	0.00032
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00020
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00021
Trichloroethene	ND		mg/kg	0.0010	0.00015

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/04/13 11:06  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 19 Batch: WG619685-3					
1,2-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,3-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,4-Dichlorobenzene	ND		mg/kg	0.0050	0.00024
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00010
p/m-Xylene	ND		mg/kg	0.0020	0.00032
o-Xylene	ND		mg/kg	0.0020	0.00027
Xylenes, Total	ND		mg/kg	0.0020	0.00027
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00015
Styrene	ND		mg/kg	0.0020	0.00031
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00022
Acetone	ND		mg/kg	0.036	0.0031
Carbon disulfide	ND		mg/kg	0.010	0.0020
2-Butanone	ND		mg/kg	0.010	0.00036
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.00024
2-Hexanone	ND		mg/kg	0.010	0.00019
Bromochloromethane	ND		mg/kg	0.0050	0.00020
n-Butylbenzene	ND		mg/kg	0.0010	0.00020
sec-Butylbenzene	ND		mg/kg	0.0010	0.00020
tert-Butylbenzene	ND		mg/kg	0.0050	0.00056
Isopropylbenzene	ND		mg/kg	0.0010	0.00017
n-Propylbenzene	ND		mg/kg	0.0010	0.00012
1,2,3-Trichlorobenzene	ND		mg/kg	0.0050	0.00017
1,2,4-Trichlorobenzene	ND		mg/kg	0.0050	0.00079
1,3,5-Trimethylbenzene	ND		mg/kg	0.0050	0.00014
1,2,4-Trimethylbenzene	ND		mg/kg	0.0050	0.00057
Methyl Acetate	ND		mg/kg	0.0040	0.00076
Cyclohexane	ND		mg/kg	0.020	0.0011
Methyl cyclohexane	ND		mg/kg	0.0040	0.0013
Freon-113	ND		mg/kg	0.020	0.00027

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 07/04/13 11:06  
 Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 19 Batch: WG619685-3					

Tentatively Identified Compounds

No Tentatively Identified Compounds      ND      mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	102		70-130

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/05/13 08:20  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 07,09-10,14-15,22 Batch: WG620012-3					
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0050	0.00079
1,4-Dioxane	ND		mg/kg	0.10	0.017
1,2-Dibromoethane	ND		mg/kg	0.0040	0.00018
Methylene chloride	ND		mg/kg	0.0050	0.0020
1,1-Dichloroethane	ND		mg/kg	0.0015	0.00018
Chloroform	ND		mg/kg	0.0015	0.00037
Carbon tetrachloride	ND		mg/kg	0.0010	0.00021
1,2-Dichloropropane	ND		mg/kg	0.0035	0.00023
Dibromochloromethane	ND		mg/kg	0.0010	0.00031
1,1,2-Trichloroethane	ND		mg/kg	0.0015	0.00030
Tetrachloroethene	ND		mg/kg	0.0010	0.00014
Chlorobenzene	ND		mg/kg	0.0010	0.00035
Trichlorofluoromethane	ND		mg/kg	0.0050	0.00012
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00015
1,1,1-Trichloroethane	ND		mg/kg	0.0010	0.00011
Bromodichloromethane	ND		mg/kg	0.0010	0.00023
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00012
cis-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013
1,3-Dichloropropene, Total	ND		mg/kg	0.0010	0.00012
Bromoform	ND		mg/kg	0.0040	0.00041
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0010	0.00017
Benzene	ND		mg/kg	0.0010	0.00012
Toluene	0.00030	J	mg/kg	0.0015	0.00011
Ethylbenzene	ND		mg/kg	0.0010	0.00015
Chloromethane	ND		mg/kg	0.0050	0.00078
Bromomethane	ND		mg/kg	0.0020	0.00034
Vinyl chloride	ND		mg/kg	0.0020	0.00014
Chloroethane	ND		mg/kg	0.0020	0.00032
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00020
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00021

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/05/13 08:20  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 07,09-10,14-15,22 Batch: WG620012-3					
Trichloroethene	ND		mg/kg	0.0010	0.00015
1,2-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,3-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,4-Dichlorobenzene	ND		mg/kg	0.0050	0.00024
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00010
p/m-Xylene	ND		mg/kg	0.0020	0.00032
o-Xylene	ND		mg/kg	0.0020	0.00027
Xylenes, Total	ND		mg/kg	0.0020	0.00027
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00015
Styrene	ND		mg/kg	0.0020	0.00031
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00022
Acetone	ND		mg/kg	0.036	0.0031
Carbon disulfide	ND		mg/kg	0.010	0.0020
2-Butanone	ND		mg/kg	0.010	0.00036
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.00024
2-Hexanone	ND		mg/kg	0.010	0.00019
Bromochloromethane	ND		mg/kg	0.0050	0.00020
n-Butylbenzene	ND		mg/kg	0.0010	0.00020
sec-Butylbenzene	ND		mg/kg	0.0010	0.00020
tert-Butylbenzene	ND		mg/kg	0.0050	0.00056
Isopropylbenzene	ND		mg/kg	0.0010	0.00017
n-Propylbenzene	ND		mg/kg	0.0010	0.00012
1,2,3-Trichlorobenzene	ND		mg/kg	0.0050	0.00017
1,2,4-Trichlorobenzene	ND		mg/kg	0.0050	0.00079
1,3,5-Trimethylbenzene	ND		mg/kg	0.0050	0.00014
1,2,4-Trimethylbenzene	ND		mg/kg	0.0050	0.00057
Methyl Acetate	ND		mg/kg	0.0040	0.00076
Cyclohexane	ND		mg/kg	0.020	0.0011
Methyl cyclohexane	ND		mg/kg	0.0040	0.0013
Freon-113	ND		mg/kg	0.020	0.00027

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 07/05/13 08:20  
 Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 07,09-10,14-15,22 Batch: WG620012-3					

Tentatively Identified Compounds

No Tentatively Identified Compounds      ND      mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	102		70-130

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 07:02  
Analyst: MM  
TCLP Extraction Date: 07/08/13 12:15

Extraction Date: 07/08/13 12:15

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Volatiles by EPA 1311 - Westborough Lab for sample(s): 09-10,15,19 Batch: WG620313-3					
Chloroform	ND		ug/l	7.5	1.6
Carbon tetrachloride	ND		ug/l	5.0	1.3
Tetrachloroethene	ND		ug/l	5.0	1.8
Chlorobenzene	ND		ug/l	5.0	1.8
1,2-Dichloroethane	ND		ug/l	5.0	1.3
Benzene	ND		ug/l	5.0	1.6
Vinyl chloride	ND		ug/l	10	1.4
1,1-Dichloroethene	ND		ug/l	5.0	1.4
Trichloroethene	ND		ug/l	5.0	1.7
1,4-Dichlorobenzene	ND		ug/l	25	1.9
2-Butanone	ND		ug/l	50	19.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	113		70-130
Dibromofluoromethane	97		70-130

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 06:13  
Analyst: MM  
TCLP Extraction Date: 07/08/13 12:15

Extraction Date: 07/08/13 12:15

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Volatiles by EPA 1311 - Westborough Lab for sample(s): 07,14,22 Batch: WG620316-3					
Chloroform	ND		ug/l	7.5	1.6
Carbon tetrachloride	ND		ug/l	5.0	1.3
Tetrachloroethene	ND		ug/l	5.0	1.8
Chlorobenzene	ND		ug/l	5.0	1.8
1,2-Dichloroethane	ND		ug/l	5.0	1.3
Benzene	ND		ug/l	5.0	1.6
Vinyl chloride	ND		ug/l	10	1.4
1,1-Dichloroethene	ND		ug/l	5.0	1.4
Trichloroethene	ND		ug/l	5.0	1.7
1,4-Dichlorobenzene	ND		ug/l	25	1.9
2-Butanone	ND		ug/l	50	19.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	93		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 19 Batch: WG619685-1 WG619685-2								
1,2-Dibromo-3-chloropropane	97		95		68-130	2		30
1,4-Dioxane	114		115		65-136	1		30
1,2-Dibromoethane	100		101		70-130	1		30
Methylene chloride	111		108		70-130	3		30
1,1-Dichloroethane	107		106		70-130	1		30
Chloroform	110		108		70-130	2		30
Carbon tetrachloride	114		110		70-130	4		30
1,2-Dichloropropane	108		106		70-130	2		30
Dibromochloromethane	99		99		70-130	1		30
1,1,2-Trichloroethane	100		100		70-130	0		30
2-Chloroethylvinyl ether	122		116			5		30
Tetrachloroethene	105		102		70-130	3		30
Chlorobenzene	102		101		70-130	1		30
Trichlorofluoromethane	112		106		70-139	6		30
1,2-Dichloroethane	105		105		70-130	0		30
1,1,1-Trichloroethane	113		111		70-130	2		30
Bromodichloromethane	106		107		70-130	1		30
trans-1,3-Dichloropropene	100		100		70-130	0		30
cis-1,3-Dichloropropene	110		110		70-130	0		30
1,1-Dichloropropene	115		111		70-130	4		30
Bromoform	94		95		70-130	1		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 19 Batch: WG619685-1 WG619685-2								
1,1,2,2-Tetrachloroethane	95		97		70-130	1		30
Benzene	110		108		70-130	2		30
Toluene	100		97		70-130	4		30
Ethylbenzene	103		102		70-130	1		30
Chloromethane	89		94		52-130	6		30
Bromomethane	100		96		57-147	4		30
Vinyl chloride	108		102		67-130	6		30
Chloroethane	136		126		50-151	8		30
1,1-Dichloroethene	113		108		65-135	5		30
trans-1,2-Dichloroethene	112		109		70-130	3		30
Trichloroethene	115		110		70-130	4		30
1,2-Dichlorobenzene	98		98		70-130	0		30
1,3-Dichlorobenzene	100		99		70-130	1		30
1,4-Dichlorobenzene	99		99		70-130	1		30
Methyl tert butyl ether	108		107		66-130	1		30
p/m-Xylene	105		103		70-130	2		30
o-Xylene	106		104		70-130	2		30
cis-1,2-Dichloroethene	112		109		70-130	3		30
Dibromomethane	108		109		70-130	1		30
1,4-Dichlorobutane	93		92		70-130	2		30
1,2,3-Trichloropropane	96		96		68-130	1		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 19 Batch: WG619685-1 WG619685-2								
Styrene	104		105		70-130	1		30
Dichlorodifluoromethane	111		105		30-146	6		30
Acetone	153	Q	119		54-140	25		30
Carbon disulfide	105		103		59-130	2		30
2-Butanone	119		108		70-130	10		30
Vinyl acetate	102		103		70-130	1		30
4-Methyl-2-pentanone	107		108		70-130	1		30
2-Hexanone	98		91		70-130	7		30
Ethyl methacrylate	102		102		70-130	0		30
Acrolein	100		98			2		30
Acrylonitrile	105		102		70-130	3		30
Bromochloromethane	109		111		70-130	2		30
Tetrahydrofuran	101		99		66-130	2		30
2,2-Dichloropropane	115		110		70-130	4		30
1,3-Dichloropropane	101		100		69-130	1		30
1,1,1,2-Tetrachloroethane	102		101		70-130	1		30
Bromobenzene	100		98		70-130	2		30
n-Butylbenzene	103		100		70-130	3		30
sec-Butylbenzene	103		100		70-130	3		30
tert-Butylbenzene	103		101		70-130	2		30
o-Chlorotoluene	100		97		70-130	3		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 19 Batch: WG619685-1 WG619685-2								
p-Chlorotoluene	101		99		70-130	2		30
Hexachlorobutadiene	105		105		67-130	0		30
Isopropylbenzene	103		99		70-130	4		30
p-Isopropyltoluene	105		102		70-130	3		30
Naphthalene	101		102		70-130	1		30
n-Propylbenzene	102		99		70-130	3		30
1,2,3-Trichlorobenzene	102		102		70-130	0		30
1,2,4-Trichlorobenzene	105		104		70-130	1		30
1,3,5-Trimethylbenzene	102		100		70-130	2		30
1,2,4-Trimethylbenzene	103		100		70-130	3		30
trans-1,4-Dichloro-2-butene	94		91		70-130	3		30
Ethyl ether	106		106		67-130	0		30
Methyl Acetate	98		96		51-146	2		30
Ethyl Acetate	101		102			1		30
Isopropyl Ether	101		100		66-130	1		30
Cyclohexane	112		106		59-142	6		30
tert-Butyl Alcohol	105		107		67-130	2		30
Ethyl-Tert-Butyl-Ether	107		106		70-130	1		30
Methyl cyclohexane	117		113		70-130	3		30
Freon-113	116		111		50-139	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 19 Batch: WG619685-1 WG619685-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		96		70-130
Toluene-d8	96		96		70-130
4-Bromofluorobenzene	101		101		70-130
Dibromofluoromethane	100		102		70-130

Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 07,09-10,14-15,22 Batch: WG620012-1 WG620012-2

1,2-Dibromo-3-chloropropane	92		95		68-130	4	30
1,4-Dioxane	108		118		65-136	9	30
1,2-Dibromoethane	101		103		70-130	2	30
Methylene chloride	116		117		70-130	1	30
1,1-Dichloroethane	109		108		70-130	1	30
Chloroform	110		111		70-130	1	30
Carbon tetrachloride	114		114		70-130	0	30
1,2-Dichloropropane	110		110		70-130	0	30
Dibromochloromethane	101		103		70-130	2	30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 07,09-10,14-15,22 Batch: WG620012-1 WG620012-2								
1,1,2-Trichloroethane	100		102		70-130	2		30
2-Chloroethylvinyl ether	116		120			3		30
Tetrachloroethene	105		102		70-130	3		30
Chlorobenzene	102		102		70-130	0		30
Trichlorofluoromethane	111		108		70-139	3		30
1,2-Dichloroethane	107		109		70-130	2		30
1,1,1-Trichloroethane	112		112		70-130	0		30
Bromodichloromethane	110		112		70-130	2		30
trans-1,3-Dichloropropene	100		101		70-130	1		30
cis-1,3-Dichloropropene	113		115		70-130	2		30
1,1-Dichloropropene	115		113		70-130	2		30
Bromoform	95		96		70-130	1		30
1,1,1,2-Tetrachloroethane	95		96		70-130	1		30
Benzene	111		111		70-130	0		30
Toluene	99		97		70-130	2		30
Ethylbenzene	104		102		70-130	2		30
Chloromethane	99		90		52-130	9		30
Bromomethane	116		104		57-147	11		30
Vinyl chloride	105		102		67-130	3		30
Chloroethane	138		125		50-151	10		30
1,1-Dichloroethene	111		109		65-135	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 07,09-10,14-15,22 Batch: WG620012-1 WG620012-2								
trans-1,2-Dichloroethene	112		111		70-130	1		30
Trichloroethene	113		114		70-130	1		30
1,2-Dichlorobenzene	98		98		70-130	1		30
1,3-Dichlorobenzene	100		98		70-130	2		30
1,4-Dichlorobenzene	99		98		70-130	1		30
Methyl tert butyl ether	108		111		66-130	3		30
p/m-Xylene	106		104		70-130	2		30
o-Xylene	106		105		70-130	1		30
cis-1,2-Dichloroethene	113		114		70-130	1		30
Dibromomethane	110		111		70-130	1		30
1,4-Dichlorobutane	91		90		70-130	2		30
1,2,3-Trichloropropane	94		94		68-130	0		30
Styrene	106		105		70-130	1		30
Dichlorodifluoromethane	108		106		30-146	2		30
Acetone	140		136		54-140	3		30
Carbon disulfide	105		105		59-130	0		30
2-Butanone	110		109		70-130	1		30
Vinyl acetate	102		106		70-130	4		30
4-Methyl-2-pentanone	106		113		70-130	6		30
2-Hexanone	93		93		70-130	0		30
Ethyl methacrylate	102		105		70-130	3		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 07,09-10,14-15,22 Batch: WG620012-1 WG620012-2								
Acrolein	96		100			4		30
Acrylonitrile	105		106		70-130	1		30
Bromochloromethane	113		114		70-130	1		30
Tetrahydrofuran	88		103		66-130	16		30
2,2-Dichloropropane	115		112		70-130	3		30
1,3-Dichloropropane	100		102		69-130	2		30
1,1,1,2-Tetrachloroethane	103		103		70-130	0		30
Bromobenzene	99		98		70-130	1		30
n-Butylbenzene	101		98		70-130	3		30
sec-Butylbenzene	101		98		70-130	3		30
tert-Butylbenzene	102		100		70-130	2		30
o-Chlorotoluene	99		96		70-130	3		30
p-Chlorotoluene	99		97		70-130	2		30
Hexachlorobutadiene	105		102		67-130	3		30
Isopropylbenzene	100		97		70-130	3		30
p-Isopropyltoluene	104		101		70-130	3		30
Naphthalene	99		101		70-130	3		30
n-Propylbenzene	100		96		70-130	4		30
1,2,3-Trichlorobenzene	101		102		70-130	1		30
1,2,4-Trichlorobenzene	103		104		70-130	1		30
1,3,5-Trimethylbenzene	101		99		70-130	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 07,09-10,14-15,22 Batch: WG620012-1 WG620012-2								
1,2,4-Trimethylbenzene	102		99		70-130	3		30
trans-1,4-Dichloro-2-butene	89		92		70-130	3		30
Ethyl ether	107		109		67-130	2		30
Methyl Acetate	97		99		51-146	3		30
Ethyl Acetate	99		103			4		30
Isopropyl Ether	102		103		66-130	1		30
Cyclohexane	109		107		59-142	2		30
tert-Butyl Alcohol	102		110		67-130	8		30
Ethyl-Tert-Butyl-Ether	109		110		70-130	1		30
Methyl cyclohexane	114		113		70-130	1		30
Freon-113	112		112		50-139	0		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	94		96		70-130
Toluene-d8	95		95		70-130
4-Bromofluorobenzene	100		99		70-130
Dibromofluoromethane	101		103		70-130

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
TCLP Volatiles by EPA 1311 - Westborough Lab Associated sample(s): 09-10,15,19 Batch: WG620313-1 WG620313-2								
Chloroform	98		107		70-130	9		20
Carbon tetrachloride	82		95		63-132	15		20
Tetrachloroethene	105		103		70-130	2		20
Chlorobenzene	107		107		75-130	0		25
1,2-Dichloroethane	95		105		70-130	10		20
Benzene	101		112		70-130	10		25
Vinyl chloride	114		125		55-140	9		20
1,1-Dichloroethene	98		109		61-145	11		25
Trichloroethene	92		103		70-130	11		25
1,4-Dichlorobenzene	106		102		70-130	4		20
2-Butanone	120		127		63-138	6		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	88		95		70-130
Toluene-d8	103		103		70-130
4-Bromofluorobenzene	108		105		70-130
Dibromofluoromethane	84		95		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
TCLP Volatiles by EPA 1311 - Westborough Lab Associated sample(s): 07,14,22 Batch: WG620316-1 WG620316-2								
Chloroform	102		105		70-130	3		20
Carbon tetrachloride	82		85		63-132	4		20
Tetrachloroethene	92		91		70-130	1		20
Chlorobenzene	104		106		75-130	2		25
1,2-Dichloroethane	102		107		70-130	5		20
Benzene	109		111		70-130	2		25
Vinyl chloride	104		107		55-140	3		20
1,1-Dichloroethene	97		98		61-145	1		25
Trichloroethene	98		100		70-130	2		25
1,4-Dichlorobenzene	102		103		70-130	1		20
2-Butanone	115		118		63-138	3		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	97		95		70-130
Toluene-d8	106		105		70-130
4-Bromofluorobenzene	104		104		70-130
Dibromofluoromethane	93		92		70-130



# SEMIVOLATILES

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/05/13 17:11  
**Analyst:** RC  
**Percent Solids:** 84%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/03/13 13:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		21-120
Phenol-d6	66		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	82		15-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	104		33-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/03/13 22:27  
**Analyst:** JB  
**Percent Solids:** 84%

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	ND		mg/kg	0.16	0.040	1
2-Chloronaphthalene	ND		mg/kg	0.19	0.063	1
Fluoranthene	0.30		mg/kg	0.12	0.036	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.19	0.059	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.23	0.068	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.21	0.059	1
Hexachlorocyclopentadiene	ND		mg/kg	0.56	0.12	1
Naphthalene	ND		mg/kg	0.19	0.065	1
Bis(2-Ethylhexyl)phthalate	0.12	JB	mg/kg	0.19	0.051	1
Butyl benzyl phthalate	ND		mg/kg	0.19	0.038	1
Di-n-butylphthalate	ND		mg/kg	0.19	0.038	1
Di-n-octylphthalate	ND		mg/kg	0.19	0.048	1
Diethyl phthalate	ND		mg/kg	0.19	0.041	1
Dimethyl phthalate	ND		mg/kg	0.19	0.049	1
Chrysene	0.14		mg/kg	0.12	0.038	1
Acenaphthylene	ND		mg/kg	0.16	0.036	1
Anthracene	0.043	J	mg/kg	0.12	0.032	1
Benzo(ghi)perylene	0.080	J	mg/kg	0.16	0.040	1
Fluorene	ND		mg/kg	0.19	0.056	1
Phenanthrene	0.24		mg/kg	0.12	0.038	1
Pyrene	0.26		mg/kg	0.12	0.038	1
4-Chloroaniline	ND		mg/kg	0.19	0.051	1
2-Nitroaniline	ND		mg/kg	0.19	0.055	1
3-Nitroaniline	ND		mg/kg	0.19	0.054	1
4-Nitroaniline	ND		mg/kg	0.19	0.052	1
Dibenzofuran	ND		mg/kg	0.19	0.065	1
2-Methylnaphthalene	ND		mg/kg	0.23	0.062	1
P-Chloro-M-Cresol	ND		mg/kg	0.19	0.056	1
2-Nitrophenol	ND		mg/kg	0.42	0.061	1
Phenol	ND		mg/kg	0.19	0.058	1
2-Methylphenol	ND		mg/kg	0.19	0.063	1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-01  
 Client ID: COMP01\_0-14  
 Sample Location: NY, NY

Date Collected: 07/01/13 15:50  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.28	0.064	1
Carbazole	ND		mg/kg	0.19	0.042	1
4-Nitrophenol	ND		mg/kg	0.27	0.063	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.19	0.045	1
Benzaldehyde	ND		mg/kg	0.26	0.079	1
Caprolactam	ND		mg/kg	0.19	0.054	1
Acetophenone	ND		mg/kg	0.19	0.060	1
Biphenyl	ND		mg/kg	0.44	0.064	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.19	0.060	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.19	0.052	1

**Tentatively Identified Compounds**

Total TIC Compounds	0.51	J	mg/kg			1
Unknown	0.15	J	mg/kg			1
Unknown PAH	0.037	J	mg/kg			1
Unknown PAH	0.055	J	mg/kg			1
Unknown PAH	0.10	J	mg/kg			1
Unknown	0.059	J	mg/kg			1
Unknown	0.11	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		25-120
Phenol-d6	49		10-120
Nitrobenzene-d5	45		23-120
2-Fluorobiphenyl	62		30-120
2,4,6-Tribromophenol	69		0-136
4-Terphenyl-d14	71		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-01 D  
 Client ID: COMP01\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/05/13 21:31  
 Analyst: AS  
 Percent Solids: 84%

Date Collected: 07/01/13 15:50  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 18:06

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.10	0.022	2
2-Chlorophenol	ND		mg/kg	0.25	0.022	2
Benzo(a)anthracene	0.14	J	mg/kg	0.25	0.040	2
n-Nitrosodi-n-propylamine	ND		mg/kg	0.10	0.021	2
Isophorone	ND		mg/kg	0.10	0.025	2
Nitrobenzene	ND		mg/kg	0.10	0.021	2
2,4-Dichlorophenol	ND		mg/kg	0.10	0.019	2
2,4-Dimethylphenol	ND		mg/kg	0.35	0.051	2
2,4,6-Trichlorophenol	ND		mg/kg	0.10	0.021	2
2,4,5-Trichlorophenol	ND		mg/kg	0.10	0.023	2
2,6-Dinitrotoluene	ND		mg/kg	0.10	0.025	2
2,4-Dinitrophenol	ND		mg/kg	0.15	0.048	2
2,4-Dinitrotoluene	ND		mg/kg	0.10	0.022	2
4,6-Dinitro-o-cresol	ND		mg/kg	0.15	0.034	2
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.10	0.027	2
Atrazine	ND		mg/kg	0.10	0.029	2
3,3'-Dichlorobenzidine	ND		mg/kg	0.10	0.023	2
Benzo(a)pyrene	0.16		mg/kg	0.10	0.032	2
Benzo(b)fluoranthene	0.13		mg/kg	0.10	0.034	2
Benzo(k)fluoranthene	0.14		mg/kg	0.10	0.033	2
Dibenzo(a,h)anthracene	ND		mg/kg	0.10	0.033	2
Indeno(1,2,3-cd)Pyrene	0.081	J	mg/kg	0.30	0.044	2
Hexachlorobenzene	ND		mg/kg	0.10	0.023	2
Pentachlorophenol	ND		mg/kg	0.15	0.030	2
Hexachlorobutadiene	ND		mg/kg	0.30	0.021	2
Hexachloroethane	ND		mg/kg	0.10	0.021	2

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-01 D

Date Collected: 07/01/13 15:50

Client ID: COMP01\_0-14

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		25-120
Phenol-d6	58		10-120
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	64		30-120
2,4,6-Tribromophenol	80		0-136
4-Terphenyl-d14	75		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-02  
**Client ID:** COMP02\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/07/13 21:19  
**Analyst:** RC  
**Percent Solids:** 73%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 15:53  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/03/13 13:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	72		21-120
Phenol-d6	66		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	87		15-120
2,4,6-Tribromophenol	96		10-120
4-Terphenyl-d14	104		33-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-02  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 07/03/13 22:54  
 Analyst: JB  
 Percent Solids: 73%

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	ND		mg/kg	0.18	0.046	1
2-Chloronaphthalene	ND		mg/kg	0.22	0.072	1
Fluoranthene	0.64		mg/kg	0.13	0.041	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.22	0.067	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.26	0.078	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.24	0.067	1
Hexachlorocyclopentadiene	ND		mg/kg	0.64	0.14	1
Naphthalene	ND		mg/kg	0.22	0.074	1
Bis(2-Ethylhexyl)phthalate	0.13	JB	mg/kg	0.22	0.058	1
Butyl benzyl phthalate	ND		mg/kg	0.22	0.043	1
Di-n-butylphthalate	ND		mg/kg	0.22	0.043	1
Di-n-octylphthalate	ND		mg/kg	0.22	0.054	1
Diethyl phthalate	ND		mg/kg	0.22	0.047	1
Dimethyl phthalate	ND		mg/kg	0.22	0.056	1
Chrysene	0.28		mg/kg	0.13	0.044	1
Acenaphthylene	0.076	J	mg/kg	0.18	0.041	1
Anthracene	0.087	J	mg/kg	0.13	0.037	1
Benzo(ghi)perylene	0.16	J	mg/kg	0.18	0.046	1
Fluorene	ND		mg/kg	0.22	0.063	1
Phenanthrene	0.48		mg/kg	0.13	0.043	1
Pyrene	0.56		mg/kg	0.13	0.043	1
4-Chloroaniline	ND		mg/kg	0.22	0.058	1
2-Nitroaniline	ND		mg/kg	0.22	0.062	1
3-Nitroaniline	ND		mg/kg	0.22	0.061	1
4-Nitroaniline	ND		mg/kg	0.22	0.060	1
Dibenzofuran	ND		mg/kg	0.22	0.074	1
2-Methylnaphthalene	ND		mg/kg	0.26	0.071	1
P-Chloro-M-Cresol	ND		mg/kg	0.22	0.064	1
2-Nitrophenol	ND		mg/kg	0.48	0.069	1
Phenol	ND		mg/kg	0.22	0.066	1
2-Methylphenol	ND		mg/kg	0.22	0.071	1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-02  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.32	0.073	1
Carbazole	ND		mg/kg	0.22	0.048	1
4-Nitrophenol	ND		mg/kg	0.31	0.072	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.22	0.051	1
Benzaldehyde	ND		mg/kg	0.29	0.090	1
Caprolactam	ND		mg/kg	0.22	0.061	1
Acetophenone	ND		mg/kg	0.22	0.069	1
Biphenyl	ND		mg/kg	0.50	0.073	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.22	0.069	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.22	0.059	1

**Tentatively Identified Compounds**

No Tentatively Identified Compounds	ND	mg/kg	1
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		25-120
Phenol-d6	49		10-120
Nitrobenzene-d5	45		23-120
2-Fluorobiphenyl	63		30-120
2,4,6-Tribromophenol	61		0-136
4-Terphenyl-d14	75		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-02 D  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/05/13 21:57  
 Analyst: AS  
 Percent Solids: 73%

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 17:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.11	0.025	2
2-Chlorophenol	ND		mg/kg	0.28	0.025	2
Benzo(a)anthracene	0.28		mg/kg	0.28	0.045	2
n-Nitrosodi-n-propylamine	ND		mg/kg	0.11	0.023	2
Isophorone	ND		mg/kg	0.11	0.028	2
Nitrobenzene	ND		mg/kg	0.11	0.024	2
2,4-Dichlorophenol	ND		mg/kg	0.11	0.022	2
2,4-Dimethylphenol	ND		mg/kg	0.40	0.057	2
2,4,6-Trichlorophenol	ND		mg/kg	0.11	0.024	2
2,4,5-Trichlorophenol	ND		mg/kg	0.11	0.026	2
2,6-Dinitrotoluene	ND		mg/kg	0.11	0.028	2
2,4-Dinitrophenol	ND		mg/kg	0.17	0.054	2
2,4-Dinitrotoluene	ND		mg/kg	0.11	0.025	2
4,6-Dinitro-o-cresol	ND		mg/kg	0.17	0.039	2
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.11	0.031	2
Atrazine	ND		mg/kg	0.11	0.033	2
3,3'-Dichlorobenzidine	ND		mg/kg	0.11	0.026	2
Benzo(a)pyrene	0.28		mg/kg	0.11	0.037	2
Benzo(b)fluoranthene	0.24		mg/kg	0.11	0.038	2
Benzo(k)fluoranthene	0.26		mg/kg	0.11	0.038	2
Dibenzo(a,h)anthracene	0.042	J	mg/kg	0.11	0.038	2
Indeno(1,2,3-cd)Pyrene	0.16	J	mg/kg	0.34	0.050	2
Hexachlorobenzene	ND		mg/kg	0.11	0.026	2
Pentachlorophenol	ND		mg/kg	0.17	0.034	2
Hexachlorobutadiene	ND		mg/kg	0.34	0.024	2
Hexachloroethane	ND		mg/kg	0.11	0.024	2

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-02 D

Date Collected: 07/01/13 15:53

Client ID: COMP02\_0-14

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		25-120
Phenol-d6	58		10-120
Nitrobenzene-d5	56		23-120
2-Fluorobiphenyl	60		30-120
2,4,6-Tribromophenol	67		0-136
4-Terphenyl-d14	72		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-03  
**Client ID:** COMP03\_0-12  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/07/13 21:43  
**Analyst:** RC  
**Percent Solids:** 82%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 15:57  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/03/13 13:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		21-120
Phenol-d6	64		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	82		15-120
2,4,6-Tribromophenol	95		10-120
4-Terphenyl-d14	100		33-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-03 D  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 07/09/13 15:33  
 Analyst: RC  
 Percent Solids: 82%

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/09/13 08:56

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	0.36	J	mg/kg	0.80	0.20	5
2-Chloronaphthalene	ND		mg/kg	1.0	0.32	5
Fluoranthene	18.		mg/kg	0.60	0.18	5
4-Chlorophenyl phenyl ether	ND		mg/kg	1.0	0.30	5
Bis(2-chloroisopropyl)ether	ND		mg/kg	1.2	0.35	5
Bis(2-chloroethoxy)methane	ND		mg/kg	1.1	0.30	5
Hexachlorocyclopentadiene	ND		mg/kg	2.8	0.64	5
Naphthalene	ND		mg/kg	1.0	0.33	5
Bis(2-Ethylhexyl)phthalate	ND		mg/kg	1.0	0.26	5
Butyl benzyl phthalate	ND		mg/kg	1.0	0.19	5
Di-n-butylphthalate	ND		mg/kg	1.0	0.19	5
Di-n-octylphthalate	ND		mg/kg	1.0	0.24	5
Diethyl phthalate	ND		mg/kg	1.0	0.21	5
Dimethyl phthalate	ND		mg/kg	1.0	0.25	5
Chrysene	9.5		mg/kg	0.60	0.20	5
Acenaphthylene	1.5		mg/kg	0.80	0.19	5
Anthracene	1.1		mg/kg	0.60	0.16	5
Benzo(ghi)perylene	5.2		mg/kg	0.80	0.21	5
Fluorene	0.69	J	mg/kg	1.0	0.28	5
Phenanthrene	11.		mg/kg	0.60	0.19	5
Pyrene	15.		mg/kg	0.60	0.19	5
4-Chloroaniline	ND		mg/kg	1.0	0.26	5
2-Nitroaniline	ND		mg/kg	1.0	0.28	5
3-Nitroaniline	ND		mg/kg	1.0	0.28	5
4-Nitroaniline	ND		mg/kg	1.0	0.27	5
Dibenzofuran	0.46	J	mg/kg	1.0	0.33	5
2-Methylnaphthalene	ND		mg/kg	1.2	0.32	5
P-Chloro-M-Cresol	ND		mg/kg	1.0	0.29	5
2-Nitrophenol	ND		mg/kg	2.2	0.31	5
Phenol	ND		mg/kg	1.0	0.29	5
2-Methylphenol	ND		mg/kg	1.0	0.32	5

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-03 D  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	1.4	0.33	5
Carbazole	0.85	J	mg/kg	1.0	0.21	5
4-Nitrophenol	ND		mg/kg	1.4	0.32	5
4-Bromophenyl phenyl ether	ND		mg/kg	1.0	0.23	5
Benzaldehyde	ND		mg/kg	1.3	0.40	5
Caprolactam	ND		mg/kg	1.0	0.28	5
Acetophenone	ND		mg/kg	1.0	0.31	5
Biphenyl	ND		mg/kg	2.3	0.33	5
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	1.0	0.31	5
2,3,4,6-Tetrachlorophenol	ND		mg/kg	1.0	0.27	5

**Tentatively Identified Compounds**

Total TIC Compounds	24.	J	mg/kg			5
Unknown PAH	2.1	J	mg/kg			5
Unknown PAH	2.5	J	mg/kg			5
Unknown	2.8	J	mg/kg			5
Unknown PAH	1.8	J	mg/kg			5
Unknown	1.9	J	mg/kg			5
Unknown PAH	1.5	J	mg/kg			5
Unknown PAH	0.98	J	mg/kg			5
Unknown PAH	0.84	J	mg/kg			5
Unknown	0.89	J	mg/kg			5
Unknown PAH	0.80	J	mg/kg			5
Unknown	2.0	J	mg/kg			5
Unknown	1.4	J	mg/kg			5
Unknown	1.9	J	mg/kg			5
Unknown	2.6	J	mg/kg			5

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-03 D

Date Collected: 07/01/13 15:57

Client ID: COMP03\_0-12

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	66		25-120
Phenol-d6	71		10-120
Nitrobenzene-d5	66		23-120
2-Fluorobiphenyl	94		30-120
2,4,6-Tribromophenol	103		0-136
4-Terphenyl-d14	76		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-03 D  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/06/13 00:34  
 Analyst: AS  
 Percent Solids: 82%

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 17:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.20	0.044	4
2-Chlorophenol	ND		mg/kg	0.50	0.044	4
Benzo(a)anthracene	4.4		mg/kg	0.50	0.081	4
n-Nitrosodi-n-propylamine	ND		mg/kg	0.20	0.042	4
Isophorone	ND		mg/kg	0.20	0.051	4
Nitrobenzene	ND		mg/kg	0.20	0.042	4
2,4-Dichlorophenol	ND		mg/kg	0.20	0.038	4
2,4-Dimethylphenol	ND		mg/kg	0.71	0.10	4
2,4,6-Trichlorophenol	ND		mg/kg	0.20	0.042	4
2,4,5-Trichlorophenol	ND		mg/kg	0.20	0.047	4
2,6-Dinitrotoluene	ND		mg/kg	0.20	0.050	4
2,4-Dinitrophenol	ND		mg/kg	0.30	0.097	4
2,4-Dinitrotoluene	ND		mg/kg	0.20	0.045	4
4,6-Dinitro-o-cresol	ND		mg/kg	0.30	0.069	4
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.20	0.055	4
Atrazine	ND		mg/kg	0.20	0.059	4
3,3'-Dichlorobenzidine	ND		mg/kg	0.20	0.046	4
Benzo(a)pyrene	3.8		mg/kg	0.20	0.065	4
Benzo(b)fluoranthene	5.0		mg/kg	0.20	0.068	4
Benzo(k)fluoranthene	4.2		mg/kg	0.20	0.067	4
Dibenzo(a,h)anthracene	0.67		mg/kg	0.20	0.067	4
Indeno(1,2,3-cd)Pyrene	2.4		mg/kg	0.61	0.089	4
Hexachlorobenzene	ND		mg/kg	0.20	0.046	4
Pentachlorophenol	ND		mg/kg	0.30	0.061	4
Hexachlorobutadiene	ND		mg/kg	0.61	0.042	4
Hexachloroethane	ND		mg/kg	0.20	0.043	4

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-03 D

Date Collected: 07/01/13 15:57

Client ID: COMP03\_0-12

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		25-120
Phenol-d6	75		10-120
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	77		30-120
2,4,6-Tribromophenol	90		0-136
4-Terphenyl-d14	83		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-04  
**Client ID:** COMP04\_0-5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/07/13 22:09  
**Analyst:** RC  
**Percent Solids:** 86%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 16:01  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/03/13 13:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	69		21-120
Phenol-d6	64		10-120
Nitrobenzene-d5	71		23-120
2-Fluorobiphenyl	82		15-120
2,4,6-Tribromophenol	79		10-120
4-Terphenyl-d14	98		33-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-04  
**Client ID:** COMP04\_0-5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/05/13 21:44  
**Analyst:** JB  
**Percent Solids:** 86%

**Date Collected:** 07/01/13 16:01  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	0.16		mg/kg	0.15	0.039	1
2-Chloronaphthalene	ND		mg/kg	0.19	0.061	1
Fluoranthene	4.2		mg/kg	0.11	0.034	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.19	0.057	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.22	0.066	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.20	0.057	1
Hexachlorocyclopentadiene	ND		mg/kg	0.54	0.12	1
Naphthalene	0.095	J	mg/kg	0.19	0.062	1
Bis(2-Ethylhexyl)phthalate	0.13	JB	mg/kg	0.19	0.049	1
Butyl benzyl phthalate	ND		mg/kg	0.19	0.037	1
Di-n-butylphthalate	ND		mg/kg	0.19	0.036	1
Di-n-octylphthalate	ND		mg/kg	0.19	0.046	1
Diethyl phthalate	ND		mg/kg	0.19	0.040	1
Dimethyl phthalate	ND		mg/kg	0.19	0.048	1
Chrysene	2.2		mg/kg	0.11	0.037	1
Acenaphthylene	0.31		mg/kg	0.15	0.035	1
Anthracene	0.64		mg/kg	0.11	0.031	1
Benzo(ghi)perylene	1.2		mg/kg	0.15	0.039	1
Fluorene	0.18	J	mg/kg	0.19	0.054	1
Phenanthrene	2.7		mg/kg	0.11	0.037	1
Pyrene	4.1		mg/kg	0.11	0.036	1
4-Chloroaniline	ND		mg/kg	0.19	0.050	1
2-Nitroaniline	ND		mg/kg	0.19	0.053	1
3-Nitroaniline	ND		mg/kg	0.19	0.052	1
4-Nitroaniline	ND		mg/kg	0.19	0.051	1
Dibenzofuran	0.11	J	mg/kg	0.19	0.063	1
2-Methylnaphthalene	ND		mg/kg	0.22	0.060	1
P-Chloro-M-Cresol	ND		mg/kg	0.19	0.054	1
2-Nitrophenol	ND		mg/kg	0.41	0.059	1
Phenol	ND		mg/kg	0.19	0.056	1
2-Methylphenol	ND		mg/kg	0.19	0.060	1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-04  
 Client ID: COMP04\_0-5  
 Sample Location: NY, NY

Date Collected: 07/01/13 16:01  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.27	0.062	1
Carbazole	0.22		mg/kg	0.19	0.040	1
4-Nitrophenol	ND		mg/kg	0.26	0.061	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.19	0.043	1
Benzaldehyde	ND		mg/kg	0.25	0.076	1
Caprolactam	ND		mg/kg	0.19	0.052	1
Acetophenone	ND		mg/kg	0.19	0.058	1
Biphenyl	ND		mg/kg	0.43	0.062	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.19	0.058	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.19	0.050	1

**Tentatively Identified Compounds**

Total TIC Compounds	8.0	J	mg/kg			1
Unknown PAH	0.62	J	mg/kg			1
Unknown PAH	0.84	J	mg/kg			1
Unknown PAH	1.1	J	mg/kg			1
Unknown PAH	0.54	J	mg/kg			1
Unknown	0.45	J	mg/kg			1
Unknown	0.43	J	mg/kg			1
Unknown PAH	0.44	J	mg/kg			1
Unknown PAH	1.0	J	mg/kg			1
Unknown PAH	0.66	J	mg/kg			1
Unknown PAH	0.42	J	mg/kg			1
Unknown	0.19	J	mg/kg			1
Unknown	0.18	J	mg/kg			1
Unknown	0.16	J	mg/kg			1
Unknown	0.37	J	mg/kg			1
Unknown	0.58	J	mg/kg			1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-04

Date Collected: 07/01/13 16:01

Client ID: COMP04\_0-5

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		25-120
Phenol-d6	57		10-120
Nitrobenzene-d5	50		23-120
2-Fluorobiphenyl	74		30-120
2,4,6-Tribromophenol	81		0-136
4-Terphenyl-d14	93		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-04 D  
 Client ID: COMP04\_0-5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/05/13 22:23  
 Analyst: AS  
 Percent Solids: 86%

Date Collected: 07/01/13 16:01  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 17:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.099	0.021	2
2-Chlorophenol	ND		mg/kg	0.24	0.021	2
Benzo(a)anthracene	2.0		mg/kg	0.24	0.039	2
n-Nitrosodi-n-propylamine	ND		mg/kg	0.099	0.020	2
Isophorone	ND		mg/kg	0.099	0.025	2
Nitrobenzene	ND		mg/kg	0.099	0.020	2
2,4-Dichlorophenol	ND		mg/kg	0.099	0.018	2
2,4-Dimethylphenol	ND		mg/kg	0.34	0.050	2
2,4,6-Trichlorophenol	ND		mg/kg	0.099	0.020	2
2,4,5-Trichlorophenol	ND		mg/kg	0.099	0.023	2
2,6-Dinitrotoluene	ND		mg/kg	0.099	0.024	2
2,4-Dinitrophenol	ND		mg/kg	0.15	0.047	2
2,4-Dinitrotoluene	ND		mg/kg	0.099	0.022	2
4,6-Dinitro-o-cresol	ND		mg/kg	0.15	0.033	2
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.099	0.027	2
Atrazine	ND		mg/kg	0.099	0.029	2
3,3'-Dichlorobenzidine	ND		mg/kg	0.099	0.022	2
Benzo(a)pyrene	1.8		mg/kg	0.099	0.032	2
Benzo(b)fluoranthene	2.0		mg/kg	0.099	0.033	2
Benzo(k)fluoranthene	1.5		mg/kg	0.099	0.032	2
Dibenzo(a,h)anthracene	0.29		mg/kg	0.099	0.032	2
Indeno(1,2,3-cd)Pyrene	0.96		mg/kg	0.30	0.043	2
Hexachlorobenzene	ND		mg/kg	0.099	0.022	2
Pentachlorophenol	ND		mg/kg	0.15	0.030	2
Hexachlorobutadiene	ND		mg/kg	0.30	0.020	2
Hexachloroethane	ND		mg/kg	0.099	0.021	2

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-04 D

Date Collected: 07/01/13 16:01

Client ID: COMP04\_0-5

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	53		25-120
Phenol-d6	60		10-120
Nitrobenzene-d5	58		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	87		0-136
4-Terphenyl-d14	77		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-05  
**Client ID:** COMP10\_0-9  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/07/13 22:34  
**Analyst:** RC  
**Percent Solids:** 88%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 16:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/03/13 13:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	76		21-120
Phenol-d6	71		10-120
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	91		15-120
2,4,6-Tribromophenol	94		10-120
4-Terphenyl-d14	107		33-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-05  
**Client ID:** COMP10\_0-9  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/05/13 22:11  
**Analyst:** JB  
**Percent Solids:** 88%

**Date Collected:** 07/01/13 16:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	ND		mg/kg	0.15	0.038	1
2-Chloronaphthalene	ND		mg/kg	0.18	0.060	1
Fluoranthene	0.21		mg/kg	0.11	0.034	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.18	0.056	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.22	0.065	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.20	0.056	1
Hexachlorocyclopentadiene	ND		mg/kg	0.53	0.12	1
Naphthalene	ND		mg/kg	0.18	0.061	1
Bis(2-Ethylhexyl)phthalate	0.16	JB	mg/kg	0.18	0.048	1
Butyl benzyl phthalate	0.042	J	mg/kg	0.18	0.036	1
Di-n-butylphthalate	ND		mg/kg	0.18	0.036	1
Di-n-octylphthalate	ND		mg/kg	0.18	0.045	1
Diethyl phthalate	ND		mg/kg	0.18	0.039	1
Dimethyl phthalate	ND		mg/kg	0.18	0.047	1
Chrysene	0.12		mg/kg	0.11	0.036	1
Acenaphthylene	0.035	J	mg/kg	0.15	0.034	1
Anthracene	0.034	J	mg/kg	0.11	0.031	1
Benzo(ghi)perylene	0.070	J	mg/kg	0.15	0.038	1
Fluorene	ND		mg/kg	0.18	0.053	1
Phenanthrene	0.11		mg/kg	0.11	0.036	1
Pyrene	0.18		mg/kg	0.11	0.036	1
4-Chloroaniline	ND		mg/kg	0.18	0.049	1
2-Nitroaniline	ND		mg/kg	0.18	0.052	1
3-Nitroaniline	ND		mg/kg	0.18	0.051	1
4-Nitroaniline	ND		mg/kg	0.18	0.050	1
Dibenzofuran	ND		mg/kg	0.18	0.062	1
2-Methylnaphthalene	ND		mg/kg	0.22	0.059	1
P-Chloro-M-Cresol	ND		mg/kg	0.18	0.054	1
2-Nitrophenol	ND		mg/kg	0.40	0.058	1
Phenol	ND		mg/kg	0.18	0.055	1
2-Methylphenol	ND		mg/kg	0.18	0.059	1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-05  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.26	0.060	1
Carbazole	ND		mg/kg	0.18	0.040	1
4-Nitrophenol	ND		mg/kg	0.26	0.060	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.18	0.042	1
Benzaldehyde	ND		mg/kg	0.24	0.074	1
Caprolactam	ND		mg/kg	0.18	0.051	1
Acetophenone	ND		mg/kg	0.18	0.057	1
Biphenyl	ND		mg/kg	0.42	0.061	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.18	0.057	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.18	0.049	1

**Tentatively Identified Compounds**

Total TIC Compounds	0.72	J	mg/kg			1
Unknown	0.13	J	mg/kg			1
Unknown	0.015	J	mg/kg			1
Unknown Organic Acid	0.22	J	mg/kg			1
Unknown	0.071	J	mg/kg			1
Unknown	0.28	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	65		25-120
Phenol-d6	64		10-120
Nitrobenzene-d5	62		23-120
2-Fluorobiphenyl	78		30-120
2,4,6-Tribromophenol	80		0-136
4-Terphenyl-d14	84		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-05 D  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/06/13 01:01  
 Analyst: AS  
 Percent Solids: 88%

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 17:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.38	0.082	8
2-Chlorophenol	ND		mg/kg	0.93	0.082	8
Benzo(a)anthracene	ND		mg/kg	0.93	0.15	8
n-Nitrosodi-n-propylamine	ND		mg/kg	0.38	0.077	8
Isophorone	ND		mg/kg	0.38	0.094	8
Nitrobenzene	ND		mg/kg	0.38	0.078	8
2,4-Dichlorophenol	ND		mg/kg	0.38	0.071	8
2,4-Dimethylphenol	ND		mg/kg	1.3	0.19	8
2,4,6-Trichlorophenol	ND		mg/kg	0.38	0.079	8
2,4,5-Trichlorophenol	ND		mg/kg	0.38	0.087	8
2,6-Dinitrotoluene	ND		mg/kg	0.38	0.093	8
2,4-Dinitrophenol	ND		mg/kg	0.56	0.18	8
2,4-Dinitrotoluene	ND		mg/kg	0.38	0.084	8
4,6-Dinitro-o-cresol	ND		mg/kg	0.56	0.13	8
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.38	0.10	8
Atrazine	ND		mg/kg	0.38	0.11	8
3,3'-Dichlorobenzidine	ND		mg/kg	0.38	0.085	8
Benzo(a)pyrene	0.26	J	mg/kg	0.38	0.12	8
Benzo(b)fluoranthene	ND		mg/kg	0.38	0.13	8
Benzo(k)fluoranthene	0.14	J	mg/kg	0.38	0.12	8
Dibenzo(a,h)anthracene	ND		mg/kg	0.38	0.12	8
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	1.1	0.16	8
Hexachlorobenzene	ND		mg/kg	0.38	0.086	8
Pentachlorophenol	ND		mg/kg	0.56	0.11	8
Hexachlorobutadiene	ND		mg/kg	1.1	0.079	8
Hexachloroethane	ND		mg/kg	0.38	0.079	8

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-05 D

Date Collected: 07/01/13 16:05

Client ID: COMP10\_0-9

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	72		25-120
Phenol-d6	76		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	80		30-120
2,4,6-Tribromophenol	87		0-136
4-Terphenyl-d14	85		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-06  
**Client ID:** COMP11\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/07/13 22:59  
**Analyst:** RC  
**Percent Solids:** 84%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 16:10  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/03/13 13:00

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		21-120
Phenol-d6	72		10-120
Nitrobenzene-d5	80		23-120
2-Fluorobiphenyl	96		15-120
2,4,6-Tribromophenol	100		10-120
4-Terphenyl-d14	98		33-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 07/04/13 00:43  
 Analyst: JB  
 Percent Solids: 84%

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 17:49

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	ND		mg/kg	0.16	0.040	1
2-Chloronaphthalene	ND		mg/kg	0.20	0.064	1
Fluoranthene	0.92		mg/kg	0.12	0.036	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.20	0.060	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.24	0.069	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.21	0.060	1
Hexachlorocyclopentadiene	ND		mg/kg	0.56	0.13	1
Naphthalene	ND		mg/kg	0.20	0.065	1
Bis(2-Ethylhexyl)phthalate	0.12	JB	mg/kg	0.20	0.052	1
Butyl benzyl phthalate	ND		mg/kg	0.20	0.038	1
Di-n-butylphthalate	ND		mg/kg	0.20	0.038	1
Di-n-octylphthalate	ND		mg/kg	0.20	0.048	1
Diethyl phthalate	ND		mg/kg	0.20	0.042	1
Dimethyl phthalate	ND		mg/kg	0.20	0.050	1
Chrysene	0.40		mg/kg	0.12	0.039	1
Acenaphthylene	0.12	J	mg/kg	0.16	0.037	1
Anthracene	0.17		mg/kg	0.12	0.033	1
Benzo(ghi)perylene	0.16		mg/kg	0.16	0.041	1
Fluorene	ND		mg/kg	0.20	0.056	1
Phenanthrene	0.35		mg/kg	0.12	0.038	1
Pyrene	0.69		mg/kg	0.12	0.038	1
4-Chloroaniline	ND		mg/kg	0.20	0.052	1
2-Nitroaniline	ND		mg/kg	0.20	0.056	1
3-Nitroaniline	ND		mg/kg	0.20	0.054	1
4-Nitroaniline	ND		mg/kg	0.20	0.053	1
Dibenzofuran	ND		mg/kg	0.20	0.066	1
2-Methylnaphthalene	ND		mg/kg	0.24	0.063	1
P-Chloro-M-Cresol	ND		mg/kg	0.20	0.057	1
2-Nitrophenol	ND		mg/kg	0.42	0.061	1
Phenol	ND		mg/kg	0.20	0.058	1
2-Methylphenol	ND		mg/kg	0.20	0.063	1

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.28	0.064	1
Carbazole	ND		mg/kg	0.20	0.042	1
4-Nitrophenol	ND		mg/kg	0.28	0.064	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.20	0.045	1
Benzaldehyde	ND		mg/kg	0.26	0.080	1
Caprolactam	ND		mg/kg	0.20	0.054	1
Acetophenone	ND		mg/kg	0.20	0.061	1
Biphenyl	ND		mg/kg	0.45	0.065	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.20	0.061	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.20	0.053	1

**Tentatively Identified Compounds**

Total TIC Compounds	0.45	J	mg/kg			1
Unknown PAH	0.29	J	mg/kg			1
Unknown PAH	0.16	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	65		25-120
Phenol-d6	73		10-120
Nitrobenzene-d5	61		23-120
2-Fluorobiphenyl	83		30-120
2,4,6-Tribromophenol	70		0-136
4-Terphenyl-d14	81		18-120

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-06 D  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/06/13 01:27  
 Analyst: AS  
 Percent Solids: 84%

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 17:02

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.20	0.043	4
2-Chlorophenol	ND		mg/kg	0.49	0.043	4
Benzo(a)anthracene	0.47	J	mg/kg	0.49	0.079	4
n-Nitrosodi-n-propylamine	ND		mg/kg	0.20	0.040	4
Isophorone	ND		mg/kg	0.20	0.050	4
Nitrobenzene	ND		mg/kg	0.20	0.041	4
2,4-Dichlorophenol	ND		mg/kg	0.20	0.037	4
2,4-Dimethylphenol	ND		mg/kg	0.69	0.10	4
2,4,6-Trichlorophenol	ND		mg/kg	0.20	0.041	4
2,4,5-Trichlorophenol	ND		mg/kg	0.20	0.046	4
2,6-Dinitrotoluene	ND		mg/kg	0.20	0.049	4
2,4-Dinitrophenol	ND		mg/kg	0.30	0.094	4
2,4-Dinitrotoluene	ND		mg/kg	0.20	0.044	4
4,6-Dinitro-o-cresol	ND		mg/kg	0.30	0.067	4
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.20	0.054	4
Atrazine	ND		mg/kg	0.20	0.058	4
3,3'-Dichlorobenzidine	ND		mg/kg	0.20	0.044	4
Benzo(a)pyrene	0.42		mg/kg	0.20	0.064	4
Benzo(b)fluoranthene	0.33		mg/kg	0.20	0.066	4
Benzo(k)fluoranthene	0.49		mg/kg	0.20	0.065	4
Dibenzo(a,h)anthracene	0.068	J	mg/kg	0.20	0.065	4
Indeno(1,2,3-cd)Pyrene	0.16	J	mg/kg	0.59	0.086	4
Hexachlorobenzene	ND		mg/kg	0.20	0.045	4
Pentachlorophenol	ND		mg/kg	0.30	0.060	4
Hexachlorobutadiene	ND		mg/kg	0.59	0.041	4
Hexachloroethane	ND		mg/kg	0.20	0.042	4

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-06 D

Date Collected: 07/01/13 16:10

Client ID: COMP11\_0-14

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	66		25-120
Phenol-d6	76		10-120
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	74		30-120
2,4,6-Tribromophenol	74		0-136
4-Terphenyl-d14	81		18-120

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D-SIM  
**Analytical Date:** 07/05/13 18:53  
**Analyst:** AS

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 17:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-06 Batch: WG619230-1					
Bis(2-chloroethyl)ether	ND		mg/kg	0.042	0.0092
2-Chlorophenol	ND		mg/kg	0.10	0.0092
Benzo(a)anthracene	ND		mg/kg	0.10	0.017
n-Nitrosodi-n-propylamine	ND		mg/kg	0.042	0.0086
Isophorone	ND		mg/kg	0.042	0.010
Nitrobenzene	ND		mg/kg	0.042	0.0087
2,4-Dichlorophenol	ND		mg/kg	0.042	0.0079
2,4-Dimethylphenol	ND		mg/kg	0.15	0.021
2,4,6-Trichlorophenol	ND		mg/kg	0.042	0.0088
2,4,5-Trichlorophenol	ND		mg/kg	0.042	0.0098
2,6-Dinitrotoluene	ND		mg/kg	0.042	0.010
2,4-Dinitrophenol	ND		mg/kg	0.063	0.020
2,4-Dinitrotoluene	ND		mg/kg	0.042	0.0094
4,6-Dinitro-o-cresol	ND		mg/kg	0.063	0.014
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.042	0.011
Atrazine	ND		mg/kg	0.042	0.012
3,3'-Dichlorobenzidine	ND		mg/kg	0.042	0.0094
Benzo(a)pyrene	ND		mg/kg	0.042	0.014
Benzo(b)fluoranthene	ND		mg/kg	0.042	0.014
Benzo(k)fluoranthene	ND		mg/kg	0.042	0.014
Dibenzo(a,h)anthracene	ND		mg/kg	0.042	0.014
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.13	0.018
Hexachlorobenzene	ND		mg/kg	0.042	0.0096
Pentachlorophenol	ND		mg/kg	0.063	0.013
Hexachlorobutadiene	ND		mg/kg	0.13	0.0088
Hexachloroethane	ND		mg/kg	0.042	0.0088

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8270D-SIM  
Analytical Date: 07/05/13 18:53  
Analyst: AS

Extraction Method: EPA 3546  
Extraction Date: 07/02/13 17:02

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-06 Batch: WG619230-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		25-120
Phenol-d6	53		10-120
Nitrobenzene-d5	53		23-120
2-Fluorobiphenyl	51		30-120
2,4,6-Tribromophenol	59		0-136
4-Terphenyl-d14	62		18-120

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D  
**Analytical Date:** 07/03/13 14:22  
**Analyst:** JB

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04-06 Batch: WG619245-1					
Acenaphthene	ND		mg/kg	0.13	0.034
2-Chloronaphthalene	ND		mg/kg	0.16	0.053
Fluoranthene	ND		mg/kg	0.098	0.030
4-Chlorophenyl phenyl ether	ND		mg/kg	0.16	0.050
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.20	0.058
Bis(2-chloroethoxy)methane	ND		mg/kg	0.18	0.050
Hexachlorocyclopentadiene	ND		mg/kg	0.47	0.10
Naphthalene	ND		mg/kg	0.16	0.054
Bis(2-Ethylhexyl)phthalate	0.18		mg/kg	0.16	0.043
Butyl benzyl phthalate	ND		mg/kg	0.16	0.032
Di-n-butylphthalate	ND		mg/kg	0.16	0.032
Di-n-octylphthalate	ND		mg/kg	0.16	0.040
Diethyl phthalate	ND		mg/kg	0.16	0.034
Dimethyl phthalate	ND		mg/kg	0.16	0.042
Chrysene	ND		mg/kg	0.098	0.032
Acenaphthylene	ND		mg/kg	0.13	0.030
Anthracene	ND		mg/kg	0.098	0.027
Benzo(ghi)perylene	ND		mg/kg	0.13	0.034
Fluorene	ND		mg/kg	0.16	0.047
Phenanthrene	ND		mg/kg	0.098	0.032
Pyrene	ND		mg/kg	0.098	0.032
4-Chloroaniline	ND		mg/kg	0.16	0.043
2-Nitroaniline	ND		mg/kg	0.16	0.046
3-Nitroaniline	ND		mg/kg	0.16	0.045
4-Nitroaniline	ND		mg/kg	0.16	0.044
Dibenzofuran	ND		mg/kg	0.16	0.055
2-Methylnaphthalene	ND		mg/kg	0.20	0.052
P-Chloro-M-Cresol	ND		mg/kg	0.16	0.047
2-Nitrophenol	ND		mg/kg	0.35	0.051
Phenol	ND		mg/kg	0.16	0.048

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D  
**Analytical Date:** 07/03/13 14:22  
**Analyst:** JB

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04-06 Batch: WG619245-1					
2-Methylphenol	ND		mg/kg	0.16	0.053
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.24	0.054
Carbazole	ND		mg/kg	0.16	0.035
4-Nitrophenol	ND		mg/kg	0.23	0.053
4-Bromophenyl phenyl ether	ND		mg/kg	0.16	0.038
Benzaldehyde	ND		mg/kg	0.22	0.066
Caprolactam	ND		mg/kg	0.16	0.045
Acetophenone	ND		mg/kg	0.16	0.051
Biphenyl	ND		mg/kg	0.37	0.054
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.16	0.051
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.16	0.044

Tentatively Identified Compounds

No Tentatively Identified Compounds ND mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		25-120
Phenol-d6	50		10-120
Nitrobenzene-d5	45		23-120
2-Fluorobiphenyl	56		30-120
2,4,6-Tribromophenol	58		0-136
4-Terphenyl-d14	71		18-120

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 07/05/13 12:27  
Analyst: RC  
TCLP Extraction Date: 07/02/13 15:25

Extraction Method: EPA 3510C  
Extraction Date: 07/03/13 13:00

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Semivolatiles by EPA 1311 - Westborough Lab for sample(s): 01-06 Batch: WG619486-1					
Hexachlorobenzene	ND		ug/l	10	3.2
2,4-Dinitrotoluene	ND		ug/l	25	2.2
Hexachlorobutadiene	ND		ug/l	10	4.0
Hexachloroethane	ND		ug/l	10	3.3
Nitrobenzene	ND		ug/l	10	2.5
2,4,6-Trichlorophenol	ND		ug/l	25	2.2
Pentachlorophenol	ND		ug/l	50	6.1
2-Methylphenol	ND		ug/l	25	2.6
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4
2,4,5-Trichlorophenol	ND		ug/l	25	2.2
Pyridine	ND		ug/l	25	3.2

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	74		21-120
Phenol-d6	67		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	84		15-120
2,4,6-Tribromophenol	85		10-120
4-Terphenyl-d14	117		33-120

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D  
**Analytical Date:** 07/09/13 14:05  
**Analyst:** RC

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/09/13 08:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG620307-1					
Acenaphthene	ND		mg/kg	0.13	0.034
2-Chloronaphthalene	ND		mg/kg	0.16	0.054
Fluoranthene	ND		mg/kg	0.099	0.030
4-Chlorophenyl phenyl ether	ND		mg/kg	0.16	0.050
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.20	0.058
Bis(2-chloroethoxy)methane	ND		mg/kg	0.18	0.050
Hexachlorocyclopentadiene	ND		mg/kg	0.47	0.11
Naphthalene	ND		mg/kg	0.16	0.055
Bis(2-Ethylhexyl)phthalate	ND		mg/kg	0.16	0.043
Butyl benzyl phthalate	ND		mg/kg	0.16	0.032
Di-n-butylphthalate	ND		mg/kg	0.16	0.032
Di-n-octylphthalate	ND		mg/kg	0.16	0.041
Diethyl phthalate	ND		mg/kg	0.16	0.035
Dimethyl phthalate	ND		mg/kg	0.16	0.042
Chrysene	ND		mg/kg	0.099	0.032
Acenaphthylene	ND		mg/kg	0.13	0.031
Anthracene	ND		mg/kg	0.099	0.027
Benzo(ghi)perylene	ND		mg/kg	0.13	0.034
Fluorene	ND		mg/kg	0.16	0.047
Phenanthrene	ND		mg/kg	0.099	0.032
Pyrene	ND		mg/kg	0.099	0.032
4-Chloroaniline	ND		mg/kg	0.16	0.044
2-Nitroaniline	ND		mg/kg	0.16	0.046
3-Nitroaniline	ND		mg/kg	0.16	0.046
4-Nitroaniline	ND		mg/kg	0.16	0.045
Dibenzofuran	ND		mg/kg	0.16	0.055
2-Methylnaphthalene	ND		mg/kg	0.20	0.053
P-Chloro-M-Cresol	ND		mg/kg	0.16	0.048
2-Nitrophenol	ND		mg/kg	0.36	0.052
Phenol	ND		mg/kg	0.16	0.049
2-Methylphenol	ND		mg/kg	0.16	0.053

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

**Analytical Method:** 1,8270D  
**Analytical Date:** 07/09/13 14:05  
**Analyst:** RC

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/09/13 08:56

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG620307-1					
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.24	0.054
Carbazole	ND		mg/kg	0.16	0.036
4-Nitrophenol	ND		mg/kg	0.23	0.054
4-Bromophenyl phenyl ether	ND		mg/kg	0.16	0.038
Benzaldehyde	ND		mg/kg	0.22	0.067
Caprolactam	ND		mg/kg	0.16	0.046
Acetophenone	ND		mg/kg	0.16	0.051
Biphenyl	ND		mg/kg	0.38	0.054
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.16	0.051
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.16	0.044

**Tentatively Identified Compounds**

No Tentatively Identified Compounds      ND      mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	83		25-120
Phenol-d6	78		10-120
Nitrobenzene-d5	70		23-120
2-Fluorobiphenyl	61		30-120
2,4,6-Tribromophenol	89		0-136
4-Terphenyl-d14	73		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-06 Batch: WG619230-2 WG619230-3								
Bis(2-chloroethyl)ether	62		58		40-140	7		50
2-Chlorophenol	66		62		25-102	6		50
Benzo(a)anthracene	74		72		40-140	3		50
n-Nitrosodi-n-propylamine	70		65		32-121	7		50
Isophorone	65		61		40-140	6		50
Nitrobenzene	67		63		40-140	6		50
2,4-Dichlorophenol	69		65		30-130	6		50
2,4-Dimethylphenol	73		70		30-130	4		50
2,4,6-Trichlorophenol	73		70		30-130	4		50
2,4,5-Trichlorophenol	73		70		30-130	4		50
2,6-Dinitrotoluene	77		75		40-140	3		50
2,4-Dinitrophenol	61		60		4-130	2		50
2,4-Dinitrotoluene	81		80		28-89	1		50
4,6-Dinitro-o-cresol	68		66		10-130	3		50
NitrosoDiPhenylAmine(NDPA)/DPA	79		76			4		50
Atrazine	90		89			1		50
3,3'-Dichlorobenzidine	58		58		40-140	0		50
Benzo(a)pyrene	70		68		40-140	3		50
Benzo(b)fluoranthene	75		73		40-140	3		50
Benzo(k)fluoranthene	87		84		40-140	4		50
Dibenzo(a,h)anthracene	80		75		40-140	6		50

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-06 Batch: WG619230-2 WG619230-3								
Indeno(1,2,3-cd)Pyrene	77		70		40-140	10		50
Hexachlorobenzene	72		70		40-140	3		50
Pentachlorophenol	68		67		17-109	1		50
Hexachlorobutadiene	62		58		40-140	7		50
Hexachloroethane	61		57		40-140	7		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	66		60		25-120
Phenol-d6	66		62		10-120
Nitrobenzene-d5	67		61		23-120
2-Fluorobiphenyl	65		60		30-120
2,4,6-Tribromophenol	83		79		0-136
4-Terphenyl-d14	74		72		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04-06 Batch: WG619245-2 WG619245-3								
Acenaphthene	80		71		31-137	12		50
2-Chloronaphthalene	88		82		40-140	7		50
Fluoranthene	98		87		40-140	12		50
4-Chlorophenyl phenyl ether	90		81		40-140	11		50
Bis(2-chloroisopropyl)ether	56		52		40-140	7		50
Bis(2-chloroethoxy)methane	72		64		40-117	12		50
Hexachlorocyclopentadiene	77		69		40-140	11		50
Naphthalene	70		65		40-140	7		50
Bis(2-Ethylhexyl)phthalate	87		78		40-140	11		50
Butyl benzyl phthalate	93		82		40-140	13		50
Di-n-butylphthalate	93		82		40-140	13		50
Di-n-octylphthalate	92		80		40-140	14		50
Diethyl phthalate	88		78		40-140	12		50
Dimethyl phthalate	87		77		40-140	12		50
Chrysene	89		79		40-140	12		50
Acenaphthylene	90		80		40-140	12		50
Anthracene	89		80		40-140	11		50
Benzo(ghi)perylene	86		75		40-140	14		50
Fluorene	87		78		40-140	11		50
Phenanthrene	86		76		40-140	12		50
Pyrene	96		86		35-142	11		50

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04-06 Batch: WG619245-2 WG619245-3								
4-Chloroaniline	60		46		40-140	26		50
2-Nitroaniline	100		90		47-134	11		50
3-Nitroaniline	68		56		26-129	19		50
4-Nitroaniline	82		73		41-125	12		50
Dibenzofuran	84		75		40-140	11		50
2-Methylnaphthalene	80		72		40-140	11		50
P-Chloro-M-Cresol	94		85		26-103	10		50
2-Nitrophenol	84		78		30-130	7		50
Phenol	69		64		26-90	8		50
2-Methylphenol	78		76		30-130.	3		50
3-Methylphenol/4-Methylphenol	78		71		30-130	9		50
Carbazole	90		80		54-128	12		50
4-Nitrophenol	77		68		11-114	12		50
4-Bromophenyl phenyl ether	104		91		40-140	13		50
Benzaldehyde	58		54			7		50
Caprolactam	86		79			8		50
Acetophenone	70		63		14-144	11		50
Biphenyl	72		67			7		50
1,2,4,5-Tetrachlorobenzene	76		70		40-117	8		50
2,3,4,6-Tetrachlorophenol	109		97			12		50

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04-06 Batch: WG619245-2 WG619245-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	74		68		25-120
Phenol-d6	77		72		10-120
Nitrobenzene-d5	72		67		23-120
2-Fluorobiphenyl	86		80		30-120
2,4,6-Tribromophenol	91		82		0-136
4-Terphenyl-d14	106		94		18-120

TCLP Semivolatiles by EPA 1311 - Westborough Lab Associated sample(s): 01-06 Batch: WG619486-2 WG619486-3

Hexachlorobenzene	108		113		40-140	5	30
2,4-Dinitrotoluene	110	Q	115	Q	24-96	4	30
Hexachlorobutadiene	82		86		40-140	5	30
Hexachloroethane	73		77		40-140	5	30
Nitrobenzene	81		88		40-140	8	30
2,4,6-Trichlorophenol	121		122		30-130	1	30
Pentachlorophenol	94		97		9-103	3	30
2-Methylphenol	94		96		30-130	2	30
3-Methylphenol/4-Methylphenol	96		98		30-130	2	30

## Lab Control Sample Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Semivolatiles by EPA 1311 - Westborough Lab Associated sample(s): 01-06 Batch: WG619486-2 WG619486-3								
2,4,5-Trichlorophenol	133	Q	133	Q	30-130	0		30
Pyridine	41		38		10-66	8		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	81		87		21-120
Phenol-d6	85		89		10-120
Nitrobenzene-d5	91		93		23-120
2-Fluorobiphenyl	105		104		15-120
2,4,6-Tribromophenol	103		103		10-120
4-Terphenyl-d14	106		111		33-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG620307-2 WG620307-3								
Acenaphthene	86		88		31-137	2		50
2-Chloronaphthalene	88		88		40-140	0		50
Fluoranthene	88		92		40-140	4		50
4-Chlorophenyl phenyl ether	84		87		40-140	4		50
Bis(2-chloroisopropyl)ether	79		74		40-140	7		50
Bis(2-chloroethoxy)methane	83		80		40-117	4		50
Hexachlorocyclopentadiene	80		78		40-140	3		50
Naphthalene	82		80		40-140	2		50
Bis(2-Ethylhexyl)phthalate	106		108		40-140	2		50
Butyl benzyl phthalate	89		91		40-140	2		50
Di-n-butylphthalate	94		96		40-140	2		50
Di-n-octylphthalate	104		108		40-140	4		50
Diethyl phthalate	89		91		40-140	2		50
Dimethyl phthalate	90		92		40-140	2		50
Chrysene	91		94		40-140	3		50
Acenaphthylene	84		86		40-140	2		50
Anthracene	93		97		40-140	4		50
Benzo(ghi)perylene	88		93		40-140	6		50
Fluorene	85		88		40-140	3		50
Phenanthrene	89		94		40-140	5		50
Pyrene	87		92		35-142	6		50

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG620307-2 WG620307-3								
4-Chloroaniline	65		66		40-140	2		50
2-Nitroaniline	88		92		47-134	4		50
3-Nitroaniline	57		59		26-129	3		50
4-Nitroaniline	87		88		41-125	1		50
Dibenzofuran	89		92		40-140	3		50
2-Methylnaphthalene	82		80		40-140	2		50
P-Chloro-M-Cresol	87		89		26-103	2		50
2-Nitrophenol	81		77		30-130	5		50
Phenol	83		79		26-90	5		50
2-Methylphenol	85		81		30-130.	5		50
3-Methylphenol/4-Methylphenol	93		89		30-130	4		50
Carbazole	91		96		54-128	5		50
4-Nitrophenol	78		82		11-114	5		50
4-Bromophenyl phenyl ether	83		84		40-140	1		50
Benzaldehyde	68		63			8		50
Caprolactam	97		102			5		50
Acetophenone	88		84		14-144	5		50
Biphenyl	93		94			1		50
1,2,4,5-Tetrachlorobenzene	84		86		40-117	2		50
2,3,4,6-Tetrachlorophenol	90		92			2		50

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG620307-2 WG620307-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	90		84		25-120
Phenol-d6	80		77		10-120
Nitrobenzene-d5	78		76		23-120
2-Fluorobiphenyl	80		79		30-120
2,4,6-Tribromophenol	92		94		0-136
4-Terphenyl-d14	71		73		18-120

# PETROLEUM HYDROCARBONS

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-08

Date Collected: 07/01/13 09:22

Client ID: WC01B\_1-3

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/08/13 17:05

Analyst: KL

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	6.1		mg/kg	2.8	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	94		70-130
4-Bromofluorobenzene	93		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-08      D  
**Client ID:** WC01B\_1-3  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/02/13 22:28  
**Analyst:** AR  
**Percent Solids:** 88%

**Date Collected:** 07/01/13 09:22  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	279.		mg/kg	73.8	7.22	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	77		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-11

Date Collected: 07/01/13 11:15

Client ID: WC02A\_1-3

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/08/13 17:46

Analyst: KL

Percent Solids: 79%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.2	0.061	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	97		70-130
4-Bromofluorobenzene	94		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-11 D  
 Client ID: WC02A\_1-3  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8015C(M)  
 Analytical Date: 07/02/13 23:29  
 Analyst: AR  
 Percent Solids: 79%

Date Collected: 07/01/13 11:15  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	231.		mg/kg	82.1	8.04	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	73		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-12

Date Collected: 07/01/13 11:20

Client ID: WC02A\_5-7

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method: EPA 3546

Analytical Method: 1,8015C(M)

Extraction Date: 07/02/13 08:07

Analytical Date: 07/03/13 00:31

Analyst: AR

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	25.8	J	mg/kg	36.4	3.56	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	78		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-12

Date Collected: 07/01/13 11:20

Client ID: WC02A\_5-7

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/08/13 18:27

Analyst: KL

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	93		70-130
4-Bromofluorobenzene	91		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-13  
**Client ID:** WC02A\_8-10  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/03/13 01:32  
**Analyst:** AR  
**Percent Solids:** 85%

**Date Collected:** 07/01/13 11:25  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	9.19	J	mg/kg	38.3	3.75	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	83		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-13  
**Client ID:** WC02A\_8-10  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/08/13 19:08  
**Analyst:** KL  
**Percent Solids:** 85%

**Date Collected:** 07/01/13 11:25  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.9	0.056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	92		70-130
4-Bromofluorobenzene	92		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-14  
**Client ID:** WC10B\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/02/13 22:28  
**Analyst:** AR  
**Percent Solids:** 88%

**Date Collected:** 07/01/13 11:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	34.2	J	mg/kg	35.8	3.50	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	70		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-14

Date Collected: 07/01/13 11:50

Client ID: WC10B\_4-6

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/08/13 22:31

Analyst: KL

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	72		70-130
4-Bromofluorobenzene	76		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-16  
**Client ID:** WC04B\_2-3  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/03/13 00:00  
**Analyst:** AR  
**Percent Solids:** 89%

**Date Collected:** 07/01/13 13:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	29.2	J	mg/kg	37.2	3.65	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	82		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-16  
**Client ID:** WC04B\_2-3  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/09/13 00:33  
**Analyst:** KL  
**Percent Solids:** 89%

**Date Collected:** 07/01/13 13:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	95		70-130
4-Bromofluorobenzene	95		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-17

Date Collected: 07/01/13 13:55

Client ID: WC03B\_1-3

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/09/13 01:13

Analyst: KL

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	0.22	J	mg/kg	2.8	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	91		70-130
4-Bromofluorobenzene	89		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-17      D  
**Client ID:** WC03B\_1-3  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/02/13 21:57  
**Analyst:** AR  
**Percent Solids:** 88%

**Date Collected:** 07/01/13 13:55  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	304.		mg/kg	74.8	7.32	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	81		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-18  
**Client ID:** WC03B\_6-8  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/09/13 01:54  
**Analyst:** KL  
**Percent Solids:** 75%

**Date Collected:** 07/01/13 13:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	0.36	J	mg/kg	3.4	0.064	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	93		70-130
4-Bromofluorobenzene	91		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-18 D  
 Client ID: WC03B\_6-8  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8015C(M)  
 Analytical Date: 07/02/13 19:22  
 Analyst: AR  
 Percent Solids: 75%

Date Collected: 07/01/13 13:50  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	538.		mg/kg	87.2	8.53	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	69		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-20  
**Client ID:** WC03A\_8-9.5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/03/13 01:02  
**Analyst:** AR  
**Percent Solids:** 86%

**Date Collected:** 07/01/13 14:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	12.7	J	mg/kg	36.8	3.60	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	77		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-20  
**Client ID:** WC03A\_8-9.5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/09/13 02:34  
**Analyst:** KL  
**Percent Solids:** 86%

**Date Collected:** 07/01/13 14:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.9	0.056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	94		70-130
4-Bromofluorobenzene	94		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-21

Date Collected: 07/01/13 14:48

Client ID: WC11B\_2-4

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method: EPA 3546

Analytical Method: 1,8015C(M)

Extraction Date: 07/02/13 08:07

Analytical Date: 07/02/13 21:26

Analyst: AR

Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	194.		mg/kg	41.9	4.10	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	77		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-21

Date Collected: 07/01/13 14:48

Client ID: WC11B\_2-4

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/09/13 03:15

Analyst: KL

Percent Solids: 77%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.2	0.062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	93		70-130
4-Bromofluorobenzene	91		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-23  
**Client ID:** WC11B\_12-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/03/13 02:03  
**Analyst:** AR  
**Percent Solids:** 88%

**Date Collected:** 07/01/13 15:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	7.78	J	mg/kg	36.1	3.53	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	85		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-23  
**Client ID:** WC11B\_12-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/09/13 03:56  
**Analyst:** KL  
**Percent Solids:** 88%

**Date Collected:** 07/01/13 15:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	91		70-130
4-Bromofluorobenzene	91		70-130

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-24  
**Client ID:** WC11A\_6-7  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/03/13 14:50  
**Analyst:** AR  
**Percent Solids:** 89%

**Date Collected:** 07/01/13 15:31  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	65.3		mg/kg	35.3	3.45	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	78		40-140

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-24

Date Collected: 07/01/13 15:31

Client ID: WC11A\_6-7

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/09/13 04:36

Analyst: KL

Percent Solids: 89%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	90		70-130
4-Bromofluorobenzene	92		70-130

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)  
 Analytical Date: 07/02/13 16:47  
 Analyst: AR

Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 08:07

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Quantitation - Westborough Lab for sample(s): 08,11-14,16-18,20-21,23-24 Batch: WG619008-1					
TPH	ND		mg/kg	33.3	3.26

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	95		40-140

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)  
 Analytical Date: 07/08/13 10:23  
 Analyst: KL

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 08,11-13 Batch: WG619992-3					
Gasoline Range Organics	ND		mg/kg	2.5	0.048

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	101		70-130
4-Bromofluorobenzene	98		70-130

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)  
 Analytical Date: 07/08/13 21:50  
 Analyst: KL

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 14,16-18,20-21,23-24 Batch: WG619994-3					
Gasoline Range Organics	ND		mg/kg	2.5	0.048

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	97		70-130
4-Bromofluorobenzene	94		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 08,11-14,16-18,20-21,23-24 Batch: WG619008-2								
TPH	93		-		40-140	-		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	76				40-140

Gasoline Range Organics - Westborough Lab Associated sample(s): 08,11-13 Batch: WG619992-1 WG619992-2								
Gasoline Range Organics	107		104		80-120	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	107		104		70-130
4-Bromofluorobenzene	102		99		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 14,16-18,20-21,23-24 Batch: WG619994-1 WG619994-2								
Gasoline Range Organics	104		104		80-120	0		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	102		103		70-130
4-Bromofluorobenzene	99		98		70-130

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 08,11-13 QC Batch ID: WG619992-5 QC Sample: L1312309-11 Client ID: MS Sample												
Gasoline Range Organics	ND	23.3	24	104		-	-		80-120	-		20

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	102				70-130
4-Bromofluorobenzene	99				70-130

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 14,16-18,20-21,23-24 QC Batch ID: WG619994-5 QC Sample: L1312313-14 Client ID: WC10B_4-6												
Gasoline Range Organics	ND	22.8	22	95		-	-		80-120	-		20

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	93				70-130
4-Bromofluorobenzene	91				70-130

**Lab Duplicate Analysis**  
**Batch Quality Control**

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 08,11-14,16-18,20-21,23-24 QC Batch ID: WG619008-3 QC Sample: L1312305-02 Client ID: DUP Sample						
TPH	48.8	44.9	mg/kg	8		40

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	88		83		40-140

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 08,11-13 QC Batch ID: WG619992-4 QC Sample: L1312309-11 Client ID: DUP Sample					
Gasoline Range Organics	ND	ND	mg/kg	NC	20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	100		96		70-130
4-Bromofluorobenzene	98		93		70-130

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 14,16-18,20-21,23-24 QC Batch ID: WG619994-4 QC Sample: L1312313-14 Client ID: WC10B_4-6					
Gasoline Range Organics	ND	ND	mg/kg	NC	20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	72		95		70-130
4-Bromofluorobenzene	76		95		70-130

# PCBS

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/06/13 22:20  
**Analyst:** TQ  
**Percent Solids:** 84%

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 01:37  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0382	0.00754	1
Aroclor 1221	ND		mg/kg	0.0382	0.0115	1
Aroclor 1232	ND		mg/kg	0.0382	0.00811	1
Aroclor 1242	ND		mg/kg	0.0382	0.00725	1
Aroclor 1248	ND		mg/kg	0.0382	0.00462	1
Aroclor 1254	ND		mg/kg	0.0382	0.00602	1
Aroclor 1260	ND		mg/kg	0.0382	0.00663	1
Aroclor 1262	ND		mg/kg	0.0382	0.00282	1
Aroclor 1268	ND		mg/kg	0.0382	0.00554	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	54		30-150
Decachlorobiphenyl	56		30-150
2,4,5,6-Tetrachloro-m-xylene	57		30-150
Decachlorobiphenyl	61		30-150

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-02  
**Client ID:** COMP02\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/06/13 22:34  
**Analyst:** TQ  
**Percent Solids:** 73%

**Date Collected:** 07/01/13 15:53  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 01:37  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0442	0.00872	1
Aroclor 1221	ND		mg/kg	0.0442	0.0133	1
Aroclor 1232	ND		mg/kg	0.0442	0.00938	1
Aroclor 1242	ND		mg/kg	0.0442	0.00838	1
Aroclor 1248	ND		mg/kg	0.0442	0.00534	1
Aroclor 1254	ND		mg/kg	0.0442	0.00696	1
Aroclor 1260	ND		mg/kg	0.0442	0.00766	1
Aroclor 1262	ND		mg/kg	0.0442	0.00326	1
Aroclor 1268	ND		mg/kg	0.0442	0.00640	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	51		30-150
Decachlorobiphenyl	56		30-150
2,4,5,6-Tetrachloro-m-xylene	52		30-150
Decachlorobiphenyl	60		30-150

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-03  
**Client ID:** COMP03\_0-12  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/06/13 22:47  
**Analyst:** TQ  
**Percent Solids:** 82%

**Date Collected:** 07/01/13 15:57  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 01:37  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0386	0.00763	1
Aroclor 1221	ND		mg/kg	0.0386	0.0116	1
Aroclor 1232	ND		mg/kg	0.0386	0.00820	1
Aroclor 1242	ND		mg/kg	0.0386	0.00733	1
Aroclor 1248	ND		mg/kg	0.0386	0.00467	1
Aroclor 1254	ND		mg/kg	0.0386	0.00609	1
Aroclor 1260	0.0100	J	mg/kg	0.0386	0.00670	1
Aroclor 1262	ND		mg/kg	0.0386	0.00286	1
Aroclor 1268	ND		mg/kg	0.0386	0.00560	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	51		30-150
Decachlorobiphenyl	56		30-150
2,4,5,6-Tetrachloro-m-xylene	53		30-150
Decachlorobiphenyl	62		30-150

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-04  
**Client ID:** COMP04\_0-5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/06/13 23:00  
**Analyst:** TQ  
**Percent Solids:** 86%

**Date Collected:** 07/01/13 16:01  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 01:37  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0368	0.00727	1
Aroclor 1221	ND		mg/kg	0.0368	0.0111	1
Aroclor 1232	ND		mg/kg	0.0368	0.00782	1
Aroclor 1242	ND		mg/kg	0.0368	0.00699	1
Aroclor 1248	ND		mg/kg	0.0368	0.00446	1
Aroclor 1254	ND		mg/kg	0.0368	0.00580	1
Aroclor 1260	ND		mg/kg	0.0368	0.00639	1
Aroclor 1262	ND		mg/kg	0.0368	0.00272	1
Aroclor 1268	ND		mg/kg	0.0368	0.00534	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	52		30-150
Decachlorobiphenyl	56		30-150
2,4,5,6-Tetrachloro-m-xylene	52		30-150
Decachlorobiphenyl	61		30-150

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-05  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 07/06/13 23:13  
 Analyst: TQ  
 Percent Solids: 88%

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/03/13 01:37  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 07/04/13  
 Cleanup Method2: EPA 3660B  
 Cleanup Date2: 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0359	0.00710	1
Aroclor 1221	ND		mg/kg	0.0359	0.0108	1
Aroclor 1232	ND		mg/kg	0.0359	0.00764	1
Aroclor 1242	ND		mg/kg	0.0359	0.00682	1
Aroclor 1248	ND		mg/kg	0.0359	0.00435	1
Aroclor 1254	ND		mg/kg	0.0359	0.00567	1
Aroclor 1260	0.0112	J	mg/kg	0.0359	0.00624	1
Aroclor 1262	ND		mg/kg	0.0359	0.00266	1
Aroclor 1268	ND		mg/kg	0.0359	0.00521	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	60		30-150
Decachlorobiphenyl	68		30-150
2,4,5,6-Tetrachloro-m-xylene	67		30-150
Decachlorobiphenyl	83		30-150

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 07/06/13 23:26  
 Analyst: TQ  
 Percent Solids: 84%

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/03/13 01:39  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 07/04/13  
 Cleanup Method2: EPA 3660B  
 Cleanup Date2: 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0379	0.00749	1
Aroclor 1221	ND		mg/kg	0.0379	0.0114	1
Aroclor 1232	ND		mg/kg	0.0379	0.00806	1
Aroclor 1242	ND		mg/kg	0.0379	0.00720	1
Aroclor 1248	ND		mg/kg	0.0379	0.00459	1
Aroclor 1254	ND		mg/kg	0.0379	0.00598	1
Aroclor 1260	ND		mg/kg	0.0379	0.00658	1
Aroclor 1262	ND		mg/kg	0.0379	0.00280	1
Aroclor 1268	ND		mg/kg	0.0379	0.00550	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	61		30-150
Decachlorobiphenyl	63		30-150
2,4,5,6-Tetrachloro-m-xylene	62		30-150
Decachlorobiphenyl	71		30-150

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8082A  
 Analytical Date: 07/05/13 16:46  
 Analyst: TQ

Extraction Method: EPA 3546  
 Extraction Date: 07/03/13 01:37  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 07/04/13  
 Cleanup Method2: EPA 3660B  
 Cleanup Date2: 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01-06 Batch: WG619301-1					
Aroclor 1016	ND		mg/kg	0.0332	0.00655
Aroclor 1221	ND		mg/kg	0.0332	0.0100
Aroclor 1232	ND		mg/kg	0.0332	0.00704
Aroclor 1242	ND		mg/kg	0.0332	0.00629
Aroclor 1248	ND		mg/kg	0.0332	0.00401
Aroclor 1254	ND		mg/kg	0.0332	0.00523
Aroclor 1260	ND		mg/kg	0.0332	0.00575
Aroclor 1262	ND		mg/kg	0.0332	0.00245
Aroclor 1268	ND		mg/kg	0.0332	0.00481

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	69		30-150
Decachlorobiphenyl	71		30-150
2,4,5,6-Tetrachloro-m-xylene	74		30-150
Decachlorobiphenyl	76		30-150

## Lab Control Sample Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01-06 Batch: WG619301-2 WG619301-3								
Aroclor 1016	71		68		40-140	4		50
Aroclor 1260	63		61		40-140	3		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	79		73		30-150
Decachlorobiphenyl	78		73		30-150
2,4,5,6-Tetrachloro-m-xylene	80		74		30-150
Decachlorobiphenyl	84		79		30-150

# PESTICIDES

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-01  
 Client ID: COMP01\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 17:51  
 Analyst: SS  
 Percent Solids: 84%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 15:50  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3510C  
 Extraction Date: 07/03/13 10:38  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	80		30-150	B
Decachlorobiphenyl	87		30-150	B
2,4,5,6-Tetrachloro-m-xylene	124		30-150	A
Decachlorobiphenyl	127		30-150	A

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-01  
 Client ID: COMP01\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/09/13 06:55  
 Analyst: BW  
 Percent Solids: 84%

Date Collected: 07/01/13 15:50  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 14:22  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.00183	0.00035	1
Lindane	ND		mg/kg	0.00076	0.00034	1
Alpha-BHC	ND		mg/kg	0.00076	0.00021	1
Beta-BHC	ND		mg/kg	0.00183	0.00069	1
Heptachlor	ND		mg/kg	0.00091	0.00041	1
Aldrin	ND		mg/kg	0.00183	0.00064	1
Heptachlor epoxide	ND		mg/kg	0.00343	0.00103	1
Endrin	ND		mg/kg	0.00076	0.00031	1
Endrin aldehyde	ND		mg/kg	0.00229	0.00080	1
Endrin ketone	ND		mg/kg	0.00183	0.00047	1
Dieldrin	ND		mg/kg	0.00114	0.00057	1
4,4'-DDE	ND		mg/kg	0.00183	0.00042	1
4,4'-DDD	ND		mg/kg	0.00183	0.00065	1
4,4'-DDT	0.00274	J	mg/kg	0.00343	0.00147	1
Endosulfan I	ND		mg/kg	0.00183	0.00043	1
Endosulfan II	ND		mg/kg	0.00183	0.00061	1
Endosulfan sulfate	ND		mg/kg	0.00076	0.00034	1
Methoxychlor	ND		mg/kg	0.00343	0.00107	1
Toxaphene	ND		mg/kg	0.0343	0.00960	1
cis-Chlordane	ND		mg/kg	0.00229	0.00063	1
trans-Chlordane	ND		mg/kg	0.00229	0.00060	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	117		30-150	A
Decachlorobiphenyl	78		30-150	A
2,4,5,6-Tetrachloro-m-xylene	92		30-150	B
Decachlorobiphenyl	134		30-150	B

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 13:23  
**Analyst:** SH  
**Percent Solids:** 84%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/03/13 23:52  
**Methylation Date:** 07/05/13 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	78		30-150	A
DCAA	113		30-150	B

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/05/13 17:34  
**Analyst:** SH  
**Percent Solids:** 84%

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/02/13 15:48  
**Methylation Date:** 07/04/13 03:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.196	0.0238	1
2,4,5-T	ND		mg/kg	0.196	0.0122	1
2,4,5-TP (Silvex)	ND		mg/kg	0.196	0.0108	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	96		30-150	A
DCAA	8	Q	30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-02  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 18:04  
 Analyst: SS  
 Percent Solids: 73%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3510C  
 Extraction Date: 07/03/13 10:38  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	B
Decachlorobiphenyl	84		30-150	B
2,4,5,6-Tetrachloro-m-xylene	102		30-150	A
Decachlorobiphenyl	98		30-150	A

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-02  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 23:24  
 Analyst: BW  
 Percent Solids: 73%

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 14:22  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.00212	0.00041	1
Lindane	ND		mg/kg	0.00088	0.00039	1
Alpha-BHC	ND		mg/kg	0.00088	0.00025	1
Beta-BHC	ND		mg/kg	0.00212	0.00080	1
Heptachlor	ND		mg/kg	0.00106	0.00047	1
Aldrin	ND		mg/kg	0.00212	0.00074	1
Heptachlor epoxide	ND		mg/kg	0.00398	0.00119	1
Endrin	ND		mg/kg	0.00088	0.00036	1
Endrin aldehyde	ND		mg/kg	0.00265	0.00092	1
Endrin ketone	ND		mg/kg	0.00212	0.00054	1
Dieldrin	ND		mg/kg	0.00133	0.00066	1
4,4'-DDE	ND		mg/kg	0.00212	0.00049	1
4,4'-DDD	ND		mg/kg	0.00212	0.00075	1
4,4'-DDT	ND		mg/kg	0.00398	0.00171	1
Endosulfan I	ND		mg/kg	0.00212	0.00050	1
Endosulfan II	ND		mg/kg	0.00212	0.00070	1
Endosulfan sulfate	ND		mg/kg	0.00088	0.00040	1
Methoxychlor	ND		mg/kg	0.00398	0.00124	1
Toxaphene	ND		mg/kg	0.0398	0.0111	1
cis-Chlordane	ND		mg/kg	0.00265	0.00073	1
trans-Chlordane	ND		mg/kg	0.00265	0.00070	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	102		30-150	A
Decachlorobiphenyl	118		30-150	A
2,4,5,6-Tetrachloro-m-xylene	67		30-150	B
Decachlorobiphenyl	77		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-02  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8151A  
 Analytical Date: 07/06/13 21:52  
 Analyst: SH  
 Percent Solids: 73%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 8151A  
 Extraction Date: 07/03/13 23:52  
 Methylation Date: 07/05/13 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	46		30-150	A
DCAA	59		30-150	B

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-02  
**Client ID:** COMP02\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/05/13 20:36  
**Analyst:** SH  
**Percent Solids:** 73%

**Date Collected:** 07/01/13 15:53  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/02/13 15:48  
**Methylation Date:** 07/04/13 03:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.224	0.0272	1
2,4,5-T	ND		mg/kg	0.224	0.0140	1
2,4,5-TP (Silvex)	ND		mg/kg	0.224	0.0124	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	105		30-150	A
DCAA	10	Q	30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-03  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 18:16  
 Analyst: SS  
 Percent Solids: 82%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3510C  
 Extraction Date: 07/03/13 10:38  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	84		30-150	B
Decachlorobiphenyl	102		30-150	B
2,4,5,6-Tetrachloro-m-xylene	112		30-150	A
Decachlorobiphenyl	128		30-150	A

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-03  
**Client ID:** COMP03\_0-12  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/09/13 07:07  
**Analyst:** BW  
**Percent Solids:** 82%

**Date Collected:** 07/01/13 15:57  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/02/13 14:22  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Pesticides by GC - Westborough Lab						
4,4'-DDT	0.00267	J	mg/kg	0.00355	0.00152	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	88		30-150	A
Decachlorobiphenyl	44		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	84		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-03  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/09/13 07:07  
 Analyst: BW  
 Percent Solids: 82%

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 14:22  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.00189	0.00037	1
Lindane	ND		mg/kg	0.00078	0.00035	1
Alpha-BHC	ND		mg/kg	0.00078	0.00022	1
Beta-BHC	ND		mg/kg	0.00189	0.00071	1
Heptachlor	ND		mg/kg	0.00094	0.00042	1
Aldrin	ND		mg/kg	0.00189	0.00066	1
Heptachlor epoxide	ND		mg/kg	0.00355	0.00106	1
Endrin	ND		mg/kg	0.00078	0.00032	1
Endrin aldehyde	ND		mg/kg	0.00237	0.00082	1
Endrin ketone	ND		mg/kg	0.00189	0.00048	1
Dieldrin	ND		mg/kg	0.00118	0.00059	1
4,4'-DDE	ND		mg/kg	0.00189	0.00043	1
4,4'-DDD	ND		mg/kg	0.00189	0.00067	1
Endosulfan I	ND		mg/kg	0.00189	0.00044	1
Endosulfan II	ND		mg/kg	0.00189	0.00063	1
Endosulfan sulfate	ND		mg/kg	0.00078	0.00036	1
Methoxychlor	ND		mg/kg	0.00355	0.00110	1
Toxaphene	ND		mg/kg	0.0355	0.00994	1
cis-Chlordane	ND		mg/kg	0.00237	0.00066	1
trans-Chlordane	ND		mg/kg	0.00237	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	88		30-150	A
Decachlorobiphenyl	44		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	84		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-03  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8151A  
 Analytical Date: 07/06/13 22:12  
 Analyst: SH  
 Percent Solids: 82%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 8151A  
 Extraction Date: 07/03/13 23:52  
 Methylation Date: 07/05/13 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.040	0.002	1
2,4,5-TP (Silvex)	ND		mg/l	0.008	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	60		30-150	A
DCAA	64		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-03  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8151A  
 Analytical Date: 07/05/13 20:16  
 Analyst: SH  
 Percent Solids: 82%

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 8151A  
 Extraction Date: 07/02/13 15:48  
 Methylation Date: 07/04/13 03:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.198	0.0241	1
2,4,5-T	ND		mg/kg	0.198	0.0124	1
2,4,5-TP (Silvex)	ND		mg/kg	0.198	0.0109	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	93		30-150	A
DCAA	10	Q	30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-04  
 Client ID: COMP04\_0-5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 18:29  
 Analyst: SS  
 Percent Solids: 86%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 16:01  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3510C  
 Extraction Date: 07/03/13 10:38  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	78		30-150	B
2,4,5,6-Tetrachloro-m-xylene	113		30-150	A
Decachlorobiphenyl	103		30-150	A

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-04  
**Client ID:** COMP04\_0-5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/06/13 22:32  
**Analyst:** SH  
**Percent Solids:** 86%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 16:01  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/03/13 23:52  
**Methylation Date:** 07/05/13 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	57		30-150	A
DCAA	53		30-150	B

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-04  
**Client ID:** COMP04\_0-5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/05/13 19:56  
**Analyst:** SH  
**Percent Solids:** 86%

**Date Collected:** 07/01/13 16:01  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/02/13 15:48  
**Methylation Date:** 07/04/13 03:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.189	0.0230	1
2,4,5-T	ND		mg/kg	0.189	0.0118	1
2,4,5-TP (Silvex)	ND		mg/kg	0.189	0.0104	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	117		30-150	A
DCAA	11	Q	30-150	B

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-04 D  
 Client ID: COMP04\_0-5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 23:37  
 Analyst: BW  
 Percent Solids: 86%

Date Collected: 07/01/13 16:01  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 14:22  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.00915	0.00179	5
Lindane	ND		mg/kg	0.00381	0.00170	5
Alpha-BHC	ND		mg/kg	0.00381	0.00108	5
Beta-BHC	ND		mg/kg	0.00915	0.00347	5
Heptachlor	ND		mg/kg	0.00457	0.00205	5
Aldrin	ND		mg/kg	0.00915	0.00322	5
Heptachlor epoxide	ND		mg/kg	0.0171	0.00514	5
Endrin	ND		mg/kg	0.00381	0.00156	5
Endrin aldehyde	ND		mg/kg	0.0114	0.00400	5
Endrin ketone	ND		mg/kg	0.00915	0.00236	5
Dieldrin	ND		mg/kg	0.00572	0.00286	5
4,4'-DDE	ND		mg/kg	0.00915	0.00212	5
4,4'-DDD	ND		mg/kg	0.00915	0.00326	5
4,4'-DDT	ND		mg/kg	0.0171	0.00736	5
Endosulfan I	ND		mg/kg	0.00915	0.00216	5
Endosulfan II	ND		mg/kg	0.00915	0.00306	5
Endosulfan sulfate	ND		mg/kg	0.00381	0.00174	5
Methoxychlor	ND		mg/kg	0.0171	0.00534	5
Toxaphene	ND		mg/kg	0.171	0.0480	5
cis-Chlordane	ND		mg/kg	0.0114	0.00319	5
trans-Chlordane	ND		mg/kg	0.0114	0.00302	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	89		30-150	A
Decachlorobiphenyl	101		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	86		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-05  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 18:42  
 Analyst: SS  
 Percent Solids: 88%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3510C  
 Extraction Date: 07/03/13 10:38  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	73		30-150	B
Decachlorobiphenyl	76		30-150	B
2,4,5,6-Tetrachloro-m-xylene	108		30-150	A
Decachlorobiphenyl	119		30-150	A

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312313-05  
**Client ID:** COMP10\_0-9  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/06/13 22:52  
**Analyst:** SH  
**Percent Solids:** 88%  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

**Date Collected:** 07/01/13 16:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/03/13 23:52  
**Methylation Date:** 07/05/13 15:30

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	41		30-150	A
DCAA	44		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-05  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8151A  
 Analytical Date: 07/05/13 19:36  
 Analyst: SH  
 Percent Solids: 88%

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 8151A  
 Extraction Date: 07/02/13 15:48  
 Methylation Date: 07/04/13 03:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.186	0.0226	1
2,4,5-T	ND		mg/kg	0.186	0.0116	1
2,4,5-TP (Silvex)	ND		mg/kg	0.186	0.0103	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	90		30-150	A
DCAA	12	Q	30-150	B

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-05 D  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 23:50  
 Analyst: BW  
 Percent Solids: 88%

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 14:22  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.0173	0.00339	10
Lindane	ND		mg/kg	0.00721	0.00322	10
Alpha-BHC	ND		mg/kg	0.00721	0.00205	10
Beta-BHC	ND		mg/kg	0.0173	0.00656	10
Heptachlor	ND		mg/kg	0.00865	0.00388	10
Aldrin	ND		mg/kg	0.0173	0.00609	10
Heptachlor epoxide	ND		mg/kg	0.0324	0.00974	10
Endrin	ND		mg/kg	0.00721	0.00296	10
Endrin aldehyde	ND		mg/kg	0.0216	0.00757	10
Endrin ketone	ND		mg/kg	0.0173	0.00446	10
Dieldrin	ND		mg/kg	0.0108	0.00541	10
4,4'-DDE	ND		mg/kg	0.0173	0.00400	10
4,4'-DDD	ND		mg/kg	0.0173	0.00617	10
4,4'-DDT	ND		mg/kg	0.0324	0.0139	10
Endosulfan I	ND		mg/kg	0.0173	0.00409	10
Endosulfan II	ND		mg/kg	0.0173	0.00578	10
Endosulfan sulfate	ND		mg/kg	0.00721	0.00330	10
Methoxychlor	ND		mg/kg	0.0324	0.0101	10
Toxaphene	ND		mg/kg	0.324	0.0909	10
cis-Chlordane	ND		mg/kg	0.0216	0.00603	10
trans-Chlordane	ND		mg/kg	0.0216	0.00571	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	101		30-150	A
Decachlorobiphenyl	171	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	89		30-150	B
Decachlorobiphenyl	76		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 18:55  
 Analyst: SS  
 Percent Solids: 84%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3510C  
 Extraction Date: 07/03/13 10:38  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	79		30-150	B
Decachlorobiphenyl	95		30-150	B
2,4,5,6-Tetrachloro-m-xylene	124		30-150	A
Decachlorobiphenyl	141		30-150	A

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8151A  
 Analytical Date: 07/06/13 23:12  
 Analyst: SH  
 Percent Solids: 84%  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 8151A  
 Extraction Date: 07/03/13 23:52  
 Methylation Date: 07/05/13 15:31

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	48		30-150	A
DCAA	77		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8151A  
 Analytical Date: 07/05/13 19:15  
 Analyst: SH  
 Percent Solids: 84%

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 8151A  
 Extraction Date: 07/02/13 15:48  
 Methylation Date: 07/04/13 03:57

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.194	0.0236	1
2,4,5-T	ND		mg/kg	0.194	0.0121	1
2,4,5-TP (Silvex)	ND		mg/kg	0.194	0.0107	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	93		30-150	A
DCAA	12	Q	30-150	B

**Project Name:** 546 W 44TH STREET**Lab Number:** L1312313**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312313-06 D  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/06/13 00:03  
 Analyst: BW  
 Percent Solids: 84%

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 14:22  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.0187	0.00366	10
Lindane	ND		mg/kg	0.00779	0.00348	10
Alpha-BHC	ND		mg/kg	0.00779	0.00221	10
Beta-BHC	ND		mg/kg	0.0187	0.00709	10
Heptachlor	ND		mg/kg	0.00935	0.00419	10
Aldrin	ND		mg/kg	0.0187	0.00659	10
Heptachlor epoxide	ND		mg/kg	0.0351	0.0105	10
Endrin	ND		mg/kg	0.00779	0.00320	10
Endrin aldehyde	ND		mg/kg	0.0234	0.00818	10
Endrin ketone	ND		mg/kg	0.0187	0.00482	10
Dieldrin	ND		mg/kg	0.0117	0.00585	10
4,4'-DDE	ND		mg/kg	0.0187	0.00433	10
4,4'-DDD	ND		mg/kg	0.0187	0.00667	10
4,4'-DDT	ND		mg/kg	0.0351	0.0150	10
Endosulfan I	ND		mg/kg	0.0187	0.00442	10
Endosulfan II	ND		mg/kg	0.0187	0.00625	10
Endosulfan sulfate	ND		mg/kg	0.00779	0.00356	10
Methoxychlor	ND		mg/kg	0.0351	0.0109	10
Toxaphene	ND		mg/kg	0.351	0.0982	10
cis-Chlordane	ND		mg/kg	0.0234	0.00652	10
trans-Chlordane	ND		mg/kg	0.0234	0.00617	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	136		30-150	A
Decachlorobiphenyl	107		30-150	A
2,4,5,6-Tetrachloro-m-xylene	86		30-150	B
Decachlorobiphenyl	104		30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8081B  
 Analytical Date: 07/05/13 19:08  
 Analyst: BW

Extraction Method: EPA 3546  
 Extraction Date: 07/02/13 14:22  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL
Pesticides by GC - Westborough Lab for sample(s): 01-06 Batch: WG619184-1					
Delta-BHC	ND		mg/kg	0.00157	0.00030
Lindane	ND		mg/kg	0.00065	0.00029
Alpha-BHC	ND		mg/kg	0.00065	0.00018
Beta-BHC	ND		mg/kg	0.00157	0.00059
Heptachlor	ND		mg/kg	0.00078	0.00035
Aldrin	ND		mg/kg	0.00157	0.00055
Heptachlor epoxide	ND		mg/kg	0.00295	0.00088
Endrin	ND		mg/kg	0.00065	0.00026
Endrin aldehyde	ND		mg/kg	0.00196	0.00068
Endrin ketone	ND		mg/kg	0.00157	0.00040
Dieldrin	ND		mg/kg	0.00098	0.00049
4,4'-DDE	ND		mg/kg	0.00157	0.00036
4,4'-DDD	ND		mg/kg	0.00157	0.00056
4,4'-DDT	ND		mg/kg	0.00295	0.00126
Endosulfan I	ND		mg/kg	0.00157	0.00037
Endosulfan II	ND		mg/kg	0.00157	0.00052
Endosulfan sulfate	ND		mg/kg	0.00065	0.00029
Methoxychlor	ND		mg/kg	0.00295	0.00091
Toxaphene	ND		mg/kg	0.0295	0.00826
cis-Chlordane	ND		mg/kg	0.00196	0.00054
trans-Chlordane	ND		mg/kg	0.00196	0.00051

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	130		30-150	A
Decachlorobiphenyl	122		30-150	A
2,4,5,6-Tetrachloro-m-xylene	78		30-150	B
Decachlorobiphenyl	98		30-150	B



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis  
 Batch Quality Control**

**Analytical Method:** 1,8151A  
**Analytical Date:** 07/05/13 14:12  
**Analyst:** SH

**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/02/13 15:48

**Methylation Date:** 07/04/13 03:57

Parameter	Result	Qualifier	Units	RL	MDL
Chlorinated Herbicides by GC - Westborough Lab for sample(s): 01-06 Batch: WG619211-1					
2,4-D	ND		mg/kg	0.163	0.0198
2,4,5-T	ND		mg/kg	0.163	0.0101
2,4,5-TP (Silvex)	ND		mg/kg	0.163	0.00898

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	99		30-150	A
DCAA	23	Q	30-150	B

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8081B  
Analytical Date: 07/03/13 16:33  
Analyst: SS  
TCLP Extraction Date: 07/02/13 15:25

Extraction Method: EPA 3510C  
Extraction Date: 07/03/13 10:38  
Cleanup Method1: EPA 3620B  
Cleanup Date1: 07/03/13

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Pesticides by EPA 1311 - Westborough Lab for sample(s): 01-06 Batch: WG619426-1					
Lindane	ND		ug/l	0.100	0.022
Heptachlor	ND		ug/l	0.100	0.016
Heptachlor epoxide	ND		ug/l	0.100	0.021
Endrin	ND		ug/l	0.200	0.021
Methoxychlor	ND		ug/l	1.00	0.034
Toxaphene	ND		ug/l	1.00	0.315
Chlordane	ND		ug/l	1.00	0.232

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	81		30-150	B
Decachlorobiphenyl	112		30-150	B
2,4,5,6-Tetrachloro-m-xylene	102		30-150	A
Decachlorobiphenyl	139		30-150	A

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8151A  
 Analytical Date: 07/06/13 20:32  
 Analyst: SH  
 TCLP Extraction Date: 07/02/13 15:25

Extraction Method: EPA 8151A  
 Extraction Date: 07/03/13 23:52

Methylation Date: 07/05/13 15:30

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Herbicides by EPA 1311 - Westborough Lab for sample(s): 01-06 Batch: WG619582-1					
2,4-D	ND		mg/l	0.025	0.001
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	62		30-150	A
DCAA	71		30-150	B

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Pesticides by GC - Westborough Lab Associated sample(s): 01-06 Batch: WG619184-2 WG619184-3								
Delta-BHC	104		100		30-150	4		30
Lindane	105		100		30-150	5		30
Alpha-BHC	110		105		30-150	5		30
Beta-BHC	88		89		30-150	1		30
Heptachlor	113		109		30-150	4		30
Aldrin	120		115		30-150	4		30
Heptachlor epoxide	116		112		30-150	4		30
Endrin	139		137		30-150	1		30
Endrin aldehyde	85		86		30-150	1		30
Endrin ketone	97		92		30-150	5		30
Dieldrin	110		109		30-150	1		30
4,4'-DDE	125		121		30-150	3		30
4,4'-DDD	117		118		30-150	1		30
4,4'-DDT	122		119		30-150	2		30
Endosulfan I	115		111		30-150	4		30
Endosulfan II	110		106		30-150	4		30
Endosulfan sulfate	96		92		30-150	4		30
Methoxychlor	112		113		30-150	1		30
cis-Chlordane	121		116		30-150	4		30
trans-Chlordane	114		107		30-150	6		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Pesticides by GC - Westborough Lab Associated sample(s): 01-06 Batch: WG619184-2 WG619184-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	145		121		30-150	A
Decachlorobiphenyl	143		154	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	87		81		30-150	B
Decachlorobiphenyl	116		105		30-150	B

Chlorinated Herbicides by GC - Westborough Lab Associated sample(s): 01-06 Batch: WG619211-2 WG619211-3

2,4-D	98		104		30-150	6	30
2,4,5-T	91		104		30-150	13	30
2,4,5-TP (Silvex)	89		110		30-150	21	30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	97		102		30-150	A
DCAA	7	Q	7	Q	30-150	B

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Pesticides by EPA 1311 - Westborough Lab Associated sample(s): 01-06 Batch: WG619426-2 WG619426-3								
Lindane	89		92		30-150	4		20
Heptachlor	89		95		30-150	7		20
Heptachlor epoxide	95		101		30-150	6		20
Endrin	114		122		30-150	7		20
Methoxychlor	93		96		30-150	4		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		81		30-150	B
Decachlorobiphenyl	110		112		30-150	B
2,4,5,6-Tetrachloro-m-xylene	97		114		30-150	A
Decachlorobiphenyl	129		<b>158</b>	Q	30-150	A

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
TCLP Herbicides by EPA 1311 - Westborough Lab Associated sample(s): 01-06 Batch: WG619582-2 WG619582-3								
2,4-D	88		82		30-150	7		25
2,4,5-TP (Silvex)	50		47		30-150	6		25

Surrogate	LCS		LCSD		Acceptance Criteria	Column
	%Recovery	Qual	%Recovery	Qual		
DCAA	58		57		30-150	A
DCAA	147		53		30-150	B

## METALS

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Percent Solids:** 84%

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified  
**TCLP/SPLP Ext. Date:** 07/02/13 15:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/03/13 11:32	07/03/13 16:52	EPA 3015	1,6010C	MG
Barium, TCLP	0.51		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 16:52	EPA 3015	1,6010C	MG
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/03/13 11:32	07/03/13 16:52	EPA 3015	1,6010C	MG
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/03/13 11:32	07/03/13 16:52	EPA 3015	1,6010C	MG
Lead, TCLP	0.70		mg/l	0.50	0.02	1	07/03/13 11:32	07/03/13 16:52	EPA 3015	1,6010C	MG
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/03/13 08:40	07/06/13 12:38	EPA 7470A	1,7470A	KL
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 16:52	EPA 3015	1,6010C	MG
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/03/13 11:32	07/03/13 16:52	EPA 3015	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-01  
 Client ID: COMP01\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 84%

Date Collected: 07/01/13 15:50  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	9100		mg/kg	9.0	1.8	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Antimony, Total	0.85	J	mg/kg	4.5	0.72	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Arsenic, Total	5.3		mg/kg	0.90	0.18	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Barium, Total	570		mg/kg	0.90	0.27	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Beryllium, Total	0.35	J	mg/kg	0.45	0.09	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Cadmium, Total	0.60	J	mg/kg	0.90	0.06	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Calcium, Total	18000		mg/kg	9.0	2.7	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Chromium, Total	16		mg/kg	0.90	0.18	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Cobalt, Total	6.0		mg/kg	1.8	0.45	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Copper, Total	24		mg/kg	0.90	0.18	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Iron, Total	15000		mg/kg	4.5	1.8	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Lead, Total	210		mg/kg	4.5	0.18	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Magnesium, Total	3500		mg/kg	9.0	0.90	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Manganese, Total	200		mg/kg	0.90	0.18	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Mercury, Total	0.56		mg/kg	0.08	0.02	1	07/03/13 13:51	07/03/13 17:53	EPA 7471B	1,7471B	MC
Nickel, Total	17		mg/kg	2.2	0.36	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Potassium, Total	1100		mg/kg	220	36.	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Selenium, Total	ND		mg/kg	1.8	0.27	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Silver, Total	ND		mg/kg	0.90	0.18	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Sodium, Total	140	J	mg/kg	180	27.	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Thallium, Total	ND		mg/kg	1.8	0.36	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Vanadium, Total	20		mg/kg	0.90	0.09	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG
Zinc, Total	260		mg/kg	4.5	0.63	2	07/03/13 11:46	07/05/13 10:55	EPA 3050B	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-02  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 73%

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	0.04	J	mg/l	1.0	0.02	1	07/03/13 11:32	07/03/13 16:56	EPA 3015	1,6010C	MG
Barium, TCLP	0.31	J	mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 16:56	EPA 3015	1,6010C	MG
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/03/13 11:32	07/03/13 16:56	EPA 3015	1,6010C	MG
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/03/13 11:32	07/03/13 16:56	EPA 3015	1,6010C	MG
Lead, TCLP	0.81		mg/l	0.50	0.02	1	07/03/13 11:32	07/03/13 16:56	EPA 3015	1,6010C	MG
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/03/13 08:40	07/06/13 12:40	EPA 7470A	1,7470A	KL
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 16:56	EPA 3015	1,6010C	MG
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/03/13 11:32	07/03/13 16:56	EPA 3015	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-02  
 Client ID: COMP02\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 73%

Date Collected: 07/01/13 15:53  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	6200		mg/kg	10	2.1	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Antimony, Total	1.4	J	mg/kg	5.3	0.84	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Arsenic, Total	8.8		mg/kg	1.0	0.21	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Barium, Total	980		mg/kg	1.0	0.32	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Beryllium, Total	0.26	J	mg/kg	0.53	0.10	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Cadmium, Total	0.89	J	mg/kg	1.0	0.07	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Calcium, Total	35000		mg/kg	10	3.2	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Chromium, Total	15		mg/kg	1.0	0.21	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Cobalt, Total	5.4		mg/kg	2.1	0.53	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Copper, Total	24		mg/kg	1.0	0.21	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Iron, Total	13000		mg/kg	5.3	2.1	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Lead, Total	600		mg/kg	5.3	0.21	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Magnesium, Total	2800		mg/kg	10	1.0	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Manganese, Total	200		mg/kg	1.0	0.21	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Mercury, Total	0.40		mg/kg	0.10	0.02	1	07/03/13 13:51	07/03/13 17:55	EPA 7471B	1,7471B	MC
Nickel, Total	14		mg/kg	2.6	0.42	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Potassium, Total	650		mg/kg	260	42.	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Selenium, Total	ND		mg/kg	2.1	0.32	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Silver, Total	ND		mg/kg	1.0	0.21	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Sodium, Total	130	J	mg/kg	210	32.	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Thallium, Total	ND		mg/kg	2.1	0.42	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Vanadium, Total	16		mg/kg	1.0	0.10	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG
Zinc, Total	760		mg/kg	5.3	0.74	2	07/03/13 11:46	07/05/13 11:13	EPA 3050B	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-03  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 82%

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/03/13 11:32	07/03/13 17:00	EPA 3015	1,6010C	MG
Barium, TCLP	0.63		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:00	EPA 3015	1,6010C	MG
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/03/13 11:32	07/03/13 17:00	EPA 3015	1,6010C	MG
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/03/13 11:32	07/03/13 17:00	EPA 3015	1,6010C	MG
Lead, TCLP	0.40	J	mg/l	0.50	0.02	1	07/03/13 11:32	07/03/13 17:00	EPA 3015	1,6010C	MG
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/03/13 08:40	07/06/13 12:42	EPA 7470A	1,7470A	KL
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:00	EPA 3015	1,6010C	MG
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/03/13 11:32	07/03/13 17:00	EPA 3015	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-03  
 Client ID: COMP03\_0-12  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 82%

Date Collected: 07/01/13 15:57  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	7500		mg/kg	9.7	1.9	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Antimony, Total	1.8	J	mg/kg	4.8	0.77	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Arsenic, Total	5.4		mg/kg	0.97	0.19	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Barium, Total	780		mg/kg	0.97	0.29	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Beryllium, Total	0.30	J	mg/kg	0.48	0.10	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Cadmium, Total	1.1		mg/kg	0.97	0.07	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Calcium, Total	45000		mg/kg	9.7	2.9	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Chromium, Total	20		mg/kg	0.97	0.19	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Cobalt, Total	6.1		mg/kg	1.9	0.48	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Copper, Total	60		mg/kg	0.97	0.19	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Iron, Total	12000		mg/kg	4.8	1.9	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Lead, Total	600		mg/kg	4.8	0.19	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Magnesium, Total	12000		mg/kg	9.7	0.97	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Manganese, Total	210		mg/kg	0.97	0.19	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Mercury, Total	1.9		mg/kg	0.08	0.02	1	07/03/13 13:51	07/03/13 17:57	EPA 7471B	1,7471B	MC
Nickel, Total	18		mg/kg	2.4	0.39	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Potassium, Total	1000		mg/kg	240	39.	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Selenium, Total	0.46	J	mg/kg	1.9	0.29	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Silver, Total	0.42	J	mg/kg	0.97	0.19	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Sodium, Total	210		mg/kg	190	29.	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Thallium, Total	ND		mg/kg	1.9	0.39	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Vanadium, Total	23		mg/kg	0.97	0.10	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG
Zinc, Total	700		mg/kg	4.8	0.68	2	07/03/13 11:46	07/05/13 11:17	EPA 3050B	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-04  
 Client ID: COMP04\_0-5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 86%

Date Collected: 07/01/13 16:01  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/03/13 11:32	07/03/13 17:03	EPA 3015	1,6010C	MG
Barium, TCLP	0.57		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:03	EPA 3015	1,6010C	MG
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/03/13 11:32	07/03/13 17:03	EPA 3015	1,6010C	MG
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/03/13 11:32	07/03/13 17:03	EPA 3015	1,6010C	MG
Lead, TCLP	0.14	J	mg/l	0.50	0.02	1	07/03/13 11:32	07/03/13 17:03	EPA 3015	1,6010C	MG
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/03/13 08:40	07/06/13 12:44	EPA 7470A	1,7470A	KL
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:03	EPA 3015	1,6010C	MG
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/03/13 11:32	07/03/13 17:03	EPA 3015	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-04  
 Client ID: COMP04\_0-5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 86%

Date Collected: 07/01/13 16:01  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	9600		mg/kg	8.9	1.8	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Antimony, Total	2.7	J	mg/kg	4.4	0.71	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Arsenic, Total	33		mg/kg	0.89	0.18	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Barium, Total	170		mg/kg	0.89	0.27	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Beryllium, Total	0.40	J	mg/kg	0.44	0.09	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Cadmium, Total	1.1		mg/kg	0.89	0.06	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Calcium, Total	12000		mg/kg	8.9	2.7	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Chromium, Total	25		mg/kg	0.89	0.18	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Cobalt, Total	13		mg/kg	1.8	0.44	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Copper, Total	110		mg/kg	0.89	0.18	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Iron, Total	34000		mg/kg	4.4	1.8	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Lead, Total	420		mg/kg	4.4	0.18	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Magnesium, Total	6700		mg/kg	8.9	0.89	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Manganese, Total	410		mg/kg	0.89	0.18	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Mercury, Total	1.9		mg/kg	0.09	0.02	1	07/03/13 13:51	07/03/13 18:01	EPA 7471B	1,7471B	MC
Nickel, Total	23		mg/kg	2.2	0.36	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Potassium, Total	3300		mg/kg	220	36.	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Selenium, Total	2.7		mg/kg	1.8	0.27	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Silver, Total	ND		mg/kg	0.89	0.18	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Sodium, Total	360		mg/kg	180	27.	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Thallium, Total	ND		mg/kg	1.8	0.36	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Vanadium, Total	26		mg/kg	0.89	0.09	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG
Zinc, Total	260		mg/kg	4.4	0.62	2	07/03/13 11:46	07/05/13 11:21	EPA 3050B	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-05  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 88%

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	0.03	J	mg/l	1.0	0.02	1	07/03/13 11:32	07/03/13 17:07	EPA 3015	1,6010C	MG
Barium, TCLP	0.62		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:07	EPA 3015	1,6010C	MG
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/03/13 11:32	07/03/13 17:07	EPA 3015	1,6010C	MG
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/03/13 11:32	07/03/13 17:07	EPA 3015	1,6010C	MG
Lead, TCLP	1.4		mg/l	0.50	0.02	1	07/03/13 11:32	07/03/13 17:07	EPA 3015	1,6010C	MG
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/03/13 08:40	07/06/13 12:46	EPA 7470A	1,7470A	KL
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:07	EPA 3015	1,6010C	MG
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/03/13 11:32	07/03/13 17:07	EPA 3015	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-05  
 Client ID: COMP10\_0-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 88%

Date Collected: 07/01/13 16:05  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	14000		mg/kg	8.6	1.7	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Antimony, Total	2.2	J	mg/kg	4.3	0.69	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Arsenic, Total	7.3		mg/kg	0.86	0.17	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Barium, Total	250		mg/kg	0.86	0.26	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Beryllium, Total	0.73		mg/kg	0.43	0.09	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Cadmium, Total	0.83	J	mg/kg	0.86	0.06	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Calcium, Total	15000		mg/kg	8.6	2.6	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Chromium, Total	57		mg/kg	0.86	0.17	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Cobalt, Total	9.2		mg/kg	1.7	0.43	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Copper, Total	52		mg/kg	0.86	0.17	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Iron, Total	24000		mg/kg	4.3	1.7	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Lead, Total	380		mg/kg	4.3	0.17	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Magnesium, Total	4700		mg/kg	8.6	0.86	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Manganese, Total	240		mg/kg	0.86	0.17	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Mercury, Total	0.28		mg/kg	0.08	0.02	1	07/03/13 13:51	07/03/13 18:07	EPA 7471B	1,7471B	MC
Nickel, Total	25		mg/kg	2.2	0.34	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Potassium, Total	2500		mg/kg	220	34.	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Selenium, Total	ND		mg/kg	1.7	0.26	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Silver, Total	ND		mg/kg	0.86	0.17	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Sodium, Total	230		mg/kg	170	26.	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Thallium, Total	ND		mg/kg	1.7	0.34	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Vanadium, Total	34		mg/kg	0.86	0.09	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG
Zinc, Total	150		mg/kg	4.3	0.60	2	07/03/13 11:46	07/05/13 11:24	EPA 3050B	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 84%

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified  
 TCLP/SPLP Ext. Date: 07/02/13 15:25

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	0.03	J	mg/l	1.0	0.02	1	07/03/13 11:32	07/03/13 17:11	EPA 3015	1,6010C	MG
Barium, TCLP	0.34	J	mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:11	EPA 3015	1,6010C	MG
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/03/13 11:32	07/03/13 17:11	EPA 3015	1,6010C	MG
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/03/13 11:32	07/03/13 17:11	EPA 3015	1,6010C	MG
Lead, TCLP	0.03	J	mg/l	0.50	0.02	1	07/03/13 11:32	07/03/13 17:11	EPA 3015	1,6010C	MG
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/03/13 08:40	07/06/13 12:47	EPA 7470A	1,7470A	KL
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 17:11	EPA 3015	1,6010C	MG
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/03/13 11:32	07/03/13 17:11	EPA 3015	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-06  
 Client ID: COMP11\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 84%

Date Collected: 07/01/13 16:10  
 Date Received: 07/01/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	8000		mg/kg	9.3	1.8	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Antimony, Total	16		mg/kg	4.6	0.74	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Arsenic, Total	3.4		mg/kg	0.93	0.18	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Barium, Total	200		mg/kg	0.93	0.28	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Beryllium, Total	0.30	J	mg/kg	0.46	0.09	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Cadmium, Total	0.43	J	mg/kg	0.93	0.07	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Calcium, Total	20000		mg/kg	9.3	2.8	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Chromium, Total	20		mg/kg	0.93	0.18	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Cobalt, Total	6.0		mg/kg	1.8	0.46	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Copper, Total	25		mg/kg	0.93	0.18	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Iron, Total	14000		mg/kg	4.6	1.8	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Lead, Total	82		mg/kg	4.6	0.18	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Magnesium, Total	5200		mg/kg	9.3	0.93	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Manganese, Total	280		mg/kg	0.93	0.18	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Mercury, Total	0.13		mg/kg	0.08	0.02	1	07/03/13 13:51	07/03/13 18:09	EPA 7471B	1,7471B	MC
Nickel, Total	15		mg/kg	2.3	0.37	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Potassium, Total	1300		mg/kg	230	37.	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Selenium, Total	ND		mg/kg	1.8	0.28	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Silver, Total	ND		mg/kg	0.93	0.18	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Sodium, Total	190		mg/kg	180	28.	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Thallium, Total	ND		mg/kg	1.8	0.37	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Vanadium, Total	25		mg/kg	0.93	0.09	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG
Zinc, Total	160		mg/kg	4.6	0.65	2	07/03/13 11:46	07/05/13 11:28	EPA 3050B	1,6010C	MG



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01-06 Batch: WG619061-1									
Mercury, Total	ND	mg/kg	0.08	0.02	1	07/03/13 13:51	07/03/13 17:21	1,7471B	MC

### Prep Information

Digestion Method: EPA 7471B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Westborough Lab for sample(s): 01-06 Batch: WG619385-1									
Mercury, TCLP	ND	mg/l	0.0010	0.0003	1	07/03/13 08:40	07/06/13 12:15	1,7470A	KL

### Prep Information

Digestion Method: EPA 7470A  
TCLP/SPLP Extraction Date: 07/02/13 15:25

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst	
TCLP Metals by EPA 1311 - Westborough Lab for sample(s): 01-06 Batch: WG619444-1										
Arsenic, TCLP	0.02	J	mg/l	1.0	0.02	1	07/03/13 11:32	07/03/13 14:09	1,6010C	MG
Barium, TCLP	0.15	J	mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 14:09	1,6010C	MG
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/03/13 11:32	07/03/13 14:09	1,6010C	MG
Chromium, TCLP	0.05	J	mg/l	0.20	0.02	1	07/03/13 11:32	07/03/13 14:09	1,6010C	MG
Lead, TCLP	ND		mg/l	0.50	0.02	1	07/03/13 11:32	07/03/13 14:09	1,6010C	MG
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/03/13 11:32	07/03/13 14:09	1,6010C	MG
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/03/13 11:32	07/03/13 14:09	1,6010C	MG

### Prep Information

Digestion Method: EPA 3015  
TCLP/SPLP Extraction Date: 07/02/13 15:25

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01-06 Batch: WG619455-1									
Aluminum, Total	ND	mg/kg	4.0	0.80	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Antimony, Total	ND	mg/kg	2.0	0.32	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Arsenic, Total	ND	mg/kg	0.40	0.08	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Barium, Total	ND	mg/kg	0.40	0.12	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Beryllium, Total	ND	mg/kg	0.20	0.04	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Cadmium, Total	ND	mg/kg	0.40	0.03	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Calcium, Total	ND	mg/kg	4.0	1.2	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Chromium, Total	ND	mg/kg	0.40	0.08	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Cobalt, Total	ND	mg/kg	0.80	0.20	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Copper, Total	ND	mg/kg	0.40	0.08	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Iron, Total	ND	mg/kg	2.0	0.80	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Lead, Total	ND	mg/kg	2.0	0.08	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Magnesium, Total	ND	mg/kg	4.0	0.40	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Manganese, Total	ND	mg/kg	0.40	0.08	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Nickel, Total	ND	mg/kg	1.0	0.16	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Potassium, Total	ND	mg/kg	100	16.	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Selenium, Total	ND	mg/kg	0.80	0.12	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Silver, Total	ND	mg/kg	0.40	0.08	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Sodium, Total	ND	mg/kg	80	12.	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Thallium, Total	ND	mg/kg	0.80	0.16	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Vanadium, Total	ND	mg/kg	0.40	0.04	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG
Zinc, Total	ND	mg/kg	2.0	0.28	1	07/03/13 11:46	07/05/13 09:47	1,6010C	MG

### Prep Information

Digestion Method: EPA 3050B

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 Batch: WG619061-2 SRM Lot Number: 0518-10-02								
Mercury, Total	127		-		67-133	-		
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 01-06 Batch: WG619385-2								
Mercury, TCLP	112		-		80-120	-		
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 01-06 Batch: WG619444-2								
Arsenic, TCLP	108		-		75-125	-		20
Barium, TCLP	100		-		75-125	-		20
Cadmium, TCLP	106		-		75-125	-		20
Chromium, TCLP	100		-		75-125	-		20
Lead, TCLP	110		-		75-125	-		20
Selenium, TCLP	108		-		75-125	-		20
Silver, TCLP	102		-		75-125	-		20

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 Batch: WG619455-2 SRM Lot Number: 0518-10-02					
Aluminum, Total	92	-	29-171	-	
Antimony, Total	117	-	4-196	-	
Arsenic, Total	100	-	81-119	-	
Barium, Total	96	-	83-118	-	
Beryllium, Total	98	-	83-117	-	
Cadmium, Total	94	-	82-117	-	
Calcium, Total	90	-	83-117	-	
Chromium, Total	101	-	80-119	-	
Cobalt, Total	101	-	83-117	-	
Copper, Total	101	-	83-117	-	
Iron, Total	101	-	51-150	-	
Lead, Total	98	-	80-120	-	
Magnesium, Total	92	-	74-126	-	
Manganese, Total	97	-	83-117	-	
Nickel, Total	104	-	82-117	-	
Potassium, Total	99	-	74-126	-	
Selenium, Total	106	-	80-120	-	
Silver, Total	100	-	66-134	-	
Sodium, Total	95	-	74-127	-	
Thallium, Total	106	-	79-120	-	
Vanadium, Total	98	-	79-121	-	

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** 546 W 44TH STREET

**Lab Number:** L1312313

**Project Number:** 170229701

**Report Date:** 07/17/13

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 Batch: WG619455-2 SRM Lot Number: 0518-10-02					
Zinc, Total	97	-	82-119	-	

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619061-4 QC Sample: L1312312-02 Client ID: MS Sample												
Mercury, Total	0.26	0.149	1.2	630	Q	-	-		70-130	-		35
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619385-4 QC Sample: L1312298-01 Client ID: MS Sample												
Mercury, TCLP	ND	0.025	0.0229	92		-	-		70-130	-		20
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619444-4 QC Sample: L1312283-01 Client ID: MS Sample												
Arsenic, TCLP	ND	1.2	1.3	108		-	-		75-125	-		20
Barium, TCLP	1.0	20	21	100		-	-		75-125	-		20
Cadmium, TCLP	ND	0.51	0.54	106		-	-		75-125	-		20
Chromium, TCLP	ND	2	2.0	100		-	-		75-125	-		20
Lead, TCLP	0.14J	5.1	5.7	112		-	-		75-125	-		20
Selenium, TCLP	ND	1.2	1.3	108		-	-		75-125	-		20
Silver, TCLP	ND	0.5	0.52	104		-	-		75-125	-		20



### Matrix Spike Analysis Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619455-4 QC Sample: L1312312-01 Client ID: MS Sample									
Aluminum, Total	9200	176	10000	454	Q	-	75-125	-	35
Antimony, Total	1.2J	44	42	95		-	75-125	-	35
Arsenic, Total	4.2	10.6	15	102		-	75-125	-	35
Barium, Total	110	176	280	96		-	75-125	-	35
Beryllium, Total	0.32J	4.4	4.4	100		-	75-125	-	35
Cadmium, Total	0.62J	4.49	4.8	107		-	75-125	-	35
Calcium, Total	19000	880	15000	0	Q	-	75-125	-	35
Chromium, Total	22.	17.6	37	85		-	75-125	-	35
Cobalt, Total	7.0	44	49	95		-	75-125	-	35
Copper, Total	44.	22	80	164	Q	-	75-125	-	35
Iron, Total	16000	88	17000	1140	Q	-	75-125	-	35
Lead, Total	100	44.9	160	134	Q	-	75-125	-	35
Magnesium, Total	6000	880	4900	0	Q	-	75-125	-	35
Manganese, Total	240	44	300	136	Q	-	75-125	-	35
Nickel, Total	17.	44	58	93		-	75-125	-	35
Potassium, Total	1800	880	2600	91		-	75-125	-	35
Selenium, Total	ND	10.6	11	104		-	75-125	-	35
Silver, Total	ND	26.4	26	98		-	75-125	-	35
Sodium, Total	180	880	1000	114		-	75-125	-	35
Thallium, Total	ND	10.6	9.6	91		-	75-125	-	35
Vanadium, Total	28.	44	71	98		-	75-125	-	35

**Matrix Spike Analysis**  
Batch Quality Control

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619455-4 QC Sample: L1312312-01 Client ID: MS Sample									
Zinc, Total	130	44	190	136	Q	-	75-125	-	35

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619061-3 QC Sample: L1312312-02 Client ID: DUP Sample						
Mercury, Total	0.26	0.45	mg/kg	54	Q	35
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619385-3 QC Sample: L1312298-01 Client ID: DUP Sample						
Mercury, TCLP	ND	ND	mg/l	NC		20
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619444-3 QC Sample: L1312283-01 Client ID: DUP Sample						
Lead, TCLP	0.14J	0.13J	mg/l	NC		20

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619455-3 QC Sample: L1312312-01 Client ID: DUP Sample					
Aluminum, Total	9200	9300	mg/kg	1	35
Antimony, Total	1.2J	2.7J	mg/kg	NC	35
Arsenic, Total	4.2	4.7	mg/kg	11	35
Barium, Total	110	130	mg/kg	17	35
Beryllium, Total	0.32J	0.34J	mg/kg	NC	35
Cadmium, Total	0.62J	0.79J	mg/kg	NC	35
Calcium, Total	19000	18000	mg/kg	5	35
Chromium, Total	22.	21	mg/kg	5	35
Cobalt, Total	7.0	6.8	mg/kg	3	35
Copper, Total	44.	62	mg/kg	34	35
Iron, Total	16000	19000	mg/kg	17	35
Lead, Total	100	140	mg/kg	33	35
Magnesium, Total	6000	5300	mg/kg	12	35
Manganese, Total	240	270	mg/kg	12	35
Nickel, Total	17.	16	mg/kg	6	35
Potassium, Total	1800	1900	mg/kg	5	35
Selenium, Total	ND	ND	mg/kg	NC	35
Silver, Total	ND	ND	mg/kg	NC	35
Sodium, Total	180	180	mg/kg	0	35

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619455-3 QC Sample: L1312312-01 Client ID: DUP Sample					
Thallium, Total	ND	ND	mg/kg	NC	35
Vanadium, Total	28.	27	mg/kg	4	35
Zinc, Total	130	170	mg/kg	27	35

# **INORGANICS & MISCELLANEOUS**

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/05/13 17:12	1,1030	TL



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312313-02  
**Client ID:** COMP02\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 15:53  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Wet Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/05/13 17:12	1,1030	TL



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312313-03  
**Client ID:** COMP03\_0-12  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 15:57  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/05/13 17:12	1,1030	TL



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312313-04  
**Client ID:** COMP04\_0-5  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 16:01  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/05/13 17:12	1,1030	TL



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312313-05  
**Client ID:** COMP10\_0-9  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 16:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/05/13 17:12	1,1030	TL



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312313-06  
**Client ID:** COMP11\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 16:10  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/05/13 17:12	1,1030	TL



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312313-01  
**Client ID:** COMP01\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 15:50  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.3		%	0.100	NA	1	-	07/02/13 09:35	30,2540G	MO
Cyanide, Total	ND		mg/kg	1.2	0.27	1	07/02/13 13:20	07/08/13 11:33	1,9010C/9012A	JO
pH (H)	8.2		SU	-	NA	1	-	07/02/13 15:55	1,9045D	TA
Chromium, Hexavalent	ND		mg/kg	0.95	0.21	1	07/03/13 20:30	07/04/13 04:49	1,7196A	JT
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/02/13 21:35	07/03/13 01:37	1,7.3	TL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/02/13 21:35	07/03/13 01:27	1,7.3	TL
Oxidation/Reduction Potential	200		mv	-	NA	1	-	07/02/13 16:15	68,1498	TA



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312313-02  
**Client ID:** COMP02\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 15:53  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	73.2		%	0.100	NA	1	-	07/02/13 09:35	30,2540G	MO
Cyanide, Total	ND		mg/kg	1.2	0.29	1	07/02/13 13:20	07/08/13 11:34	1,9010C/9012A	JO
pH (H)	8.4		SU	-	NA	1	-	07/02/13 15:55	1,9045D	TA
Chromium, Hexavalent	ND		mg/kg	1.1	0.24	1	07/03/13 20:30	07/04/13 04:50	1,7196A	JT
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:24	1,7.3	TL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:14	1,7.3	TL
Oxidation/Reduction Potential	210		mv	-	NA	1	-	07/02/13 16:15	68,1498	TA



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312313-03  
**Client ID:** COMP03\_0-12  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 15:57  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.9		%	0.100	NA	1	-	07/02/13 09:35	30,2540G	MO
Cyanide, Total	ND		mg/kg	1.2	0.28	1	07/02/13 13:20	07/08/13 11:35	1,9010C/9012A	JO
pH (H)	8.1		SU	-	NA	1	-	07/02/13 15:55	1,9045D	TA
Chromium, Hexavalent	ND		mg/kg	0.98	0.22	1	07/03/13 20:30	07/04/13 04:50	1,7196A	JT
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:25	1,7.3	TL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:15	1,7.3	TL
Oxidation/Reduction Potential	200		mv	-	NA	1	-	07/02/13 16:15	68,1498	TA



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312313-04  
**Client ID:** COMP04\_0-5  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 16:01  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.2		%	0.100	NA	1	-	07/02/13 09:35	30,2540G	MO
Cyanide, Total	ND		mg/kg	1.1	0.26	1	07/02/13 13:20	07/08/13 11:47	1,9010C/9012A	JO
pH (H)	8.0		SU	-	NA	1	-	07/02/13 15:55	1,9045D	TA
Chromium, Hexavalent	ND		mg/kg	0.93	0.21	1	07/03/13 20:30	07/04/13 04:51	1,7196A	JT
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:25	1,7.3	TL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:15	1,7.3	TL
Oxidation/Reduction Potential	200		mv	-	NA	1	-	07/02/13 16:15	68,1498	TA



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312313-05  
**Client ID:** COMP10\_0-9  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 16:05  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	88.2		%	0.100	NA	1	-	07/02/13 09:35	30,2540G	MO
Cyanide, Total	ND		mg/kg	1.1	0.25	1	07/02/13 13:20	07/08/13 11:47	1,9010C/9012A	JO
pH (H)	8.1		SU	-	NA	1	-	07/02/13 15:55	1,9045D	TA
Chromium, Hexavalent	ND		mg/kg	0.91	0.20	1	07/03/13 20:30	07/04/13 04:51	1,7196A	JT
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:25	1,7.3	TL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:15	1,7.3	TL
Oxidation/Reduction Potential	200		mv	-	NA	1	-	07/02/13 16:15	68,1498	TA



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312313-06  
**Client ID:** COMP11\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/01/13 16:10  
**Date Received:** 07/01/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.4		%	0.100	NA	1	-	07/02/13 09:35	30,2540G	MO
Cyanide, Total	ND		mg/kg	1.1	0.26	1	07/02/13 13:20	07/08/13 11:48	1,9010C/9012A	JO
pH (H)	10.6		SU	-	NA	1	-	07/02/13 15:55	1,9045D	TA
Chromium, Hexavalent	ND		mg/kg	0.95	0.21	1	07/03/13 20:30	07/04/13 04:51	1,7196A	JT
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:25	1,7.3	TL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:15	1,7.3	TL
Oxidation/Reduction Potential	150		mv	-	NA	1	-	07/02/13 16:15	68,1498	TA



Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-07

Client ID: WC01A\_11-13

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/01/13 08:55

Date Received: 07/01/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.3		%	0.100	NA	1	-	07/02/13 10:14	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-08

Date Collected: 07/01/13 09:22

Client ID: WC01B\_1-3

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.1		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-09

Date Collected: 07/01/13 09:30

Client ID: WC01B\_4-6

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.7		%	0.100	NA	1	-	07/02/13 10:14	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-10

Date Collected: 07/01/13 11:06

Client ID: WC02A\_3-4

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.1		%	0.100	NA	1	-	07/02/13 10:14	30,2540G	MO



Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-11

Client ID: WC02A\_1-3

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/01/13 11:15

Date Received: 07/01/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.8		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-12

Date Collected: 07/01/13 11:20

Client ID: WC02A\_5-7

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-13

Date Collected: 07/01/13 11:25

Client ID: WC02A\_8-10

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.4		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-14

Date Collected: 07/01/13 11:50

Client ID: WC10B\_4-6

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.6		%	0.100	NA	1	-	07/02/13 10:14	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-15

Date Collected: 07/01/13 13:00

Client ID: WC04B\_1-2

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.0		%	0.100	NA	1	-	07/02/13 09:35	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-16

Date Collected: 07/01/13 13:05

Client ID: WC04B\_2-3

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.2		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-17

Client ID: WC03B\_1-3

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/01/13 13:55

Date Received: 07/01/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.0		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-18

Client ID: WC03B\_6-8

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/01/13 13:50

Date Received: 07/01/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	74.6		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-19

Date Collected: 07/01/13 13:40

Client ID: WC03B\_8-10

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.6		%	0.100	NA	1	-	07/02/13 10:14	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-20

Date Collected: 07/01/13 14:05

Client ID: WC03A\_8-9.5

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.3		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-21

Client ID: WC11B\_2-4

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/01/13 14:48

Date Received: 07/01/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	77.3		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-22

Client ID: WC11B\_10-11

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/01/13 14:58

Date Received: 07/01/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	86.0		%	0.100	NA	1	-	07/02/13 10:14	30,2540G	MO



Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312313-23

Client ID: WC11B\_12-14

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/01/13 15:05

Date Received: 07/01/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.8		%	0.100	NA	1	-	07/02/13 11:30	30,2540G	MO



Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312313-24

Date Collected: 07/01/13 15:31

Client ID: WC11A\_6-7

Date Received: 07/01/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	88.7		%	0.100	NA	1	-	07/02/13 22:46	30,2540G	RT



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG619121-1										
Cyanide, Total	ND		mg/kg	0.97	0.23	1	07/02/13 13:20	07/08/13 11:28	1,9010C/9012A	JO
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619265-1										
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/02/13 21:35	07/03/13 01:32	1,7.3	TL
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619266-1										
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/02/13 21:35	07/03/13 01:20	1,7.3	TL
General Chemistry - Westborough Lab for sample(s): 01-06 Batch: WG619309-1										
Chromium, Hexavalent	ND		mg/kg	0.80	0.18	1	07/03/13 20:30	07/04/13 04:36	1,7196A	JT
General Chemistry - Westborough Lab for sample(s): 02-06 Batch: WG619747-1										
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:24	1,7.3	TL
General Chemistry - Westborough Lab for sample(s): 02-06 Batch: WG619749-1										
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 13:50	07/05/13 16:14	1,7.3	TL

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG619121-2 WG619121-3								
Cyanide, Total	92		93		80-120	1		35
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG619226-1								
pH	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG619227-1								
Oxidation/Reduction Potential	102		-		90-110	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619265-2								
Cyanide, Reactive	53		-		30-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619266-2								
Sulfide, Reactive	104		-		60-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 01-06 Batch: WG619309-2								
Chromium, Hexavalent	98		-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 02-06 Batch: WG619747-2								
Cyanide, Reactive	76		-		30-125	-		40

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** 546 W 44TH STREET

**Lab Number:** L1312313

**Project Number:** 170229701

**Report Date:** 07/17/13

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 02-06 Batch: WG619749-2					
Sulfide, Reactive	86	-	60-125	-	40

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619121-4 WG619121-5 QC Sample: L1312313-06 Client ID: COMP11_0-14												
Cyanide, Total	ND	11	11	96		10	89		65-135	10		35
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619309-5 QC Sample: L1312313-01 Client ID: COMP01_0-14												
Chromium, Hexavalent	ND	1480	1400	94		-	-		75-125	-		20

## Lab Duplicate Analysis

Batch Quality Control

**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06,15 QC Batch ID: WG619043-1 QC Sample: L1312312-01 Client ID: DUP Sample						
Solids, Total	87.1	87.9	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 07,09-10,14,19,22 QC Batch ID: WG619062-1 QC Sample: L1312312-09 Client ID: DUP Sample						
Solids, Total	63.5	77.7	%	20		20
General Chemistry - Westborough Lab Associated sample(s): 08,11-13,16-18,20-21,23 QC Batch ID: WG619097-1 QC Sample: L1312313-08 Client ID: WC01B_1-3						
Solids, Total	88.1	89.0	%	1		20
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619226-2 QC Sample: L1312313-01 Client ID: COMP01_0-14						
pH (H)	8.2	8.2	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619227-2 QC Sample: L1312313-01 Client ID: COMP01_0-14						
Oxidation/Reduction Potential	200	200	mv	0		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619265-3 QC Sample: L1312152-02 Client ID: DUP Sample						
Cyanide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619266-3 QC Sample: L1312152-02 Client ID: DUP Sample						
Sulfide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 24 QC Batch ID: WG619276-1 QC Sample: L1312349-01 Client ID: DUP Sample						
Solids, Total	76.4	73.8	%	3		20

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH STREET

Project Number: 170229701

Lab Number: L1312313

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-06 QC Batch ID: WG619309-4 QC Sample: L1312313-01 Client ID: COMP01_0-14					
Chromium, Hexavalent	ND	ND	mg/kg	NC	20
General Chemistry - Westborough Lab Associated sample(s): 02-06 QC Batch ID: WG619747-3 QC Sample: L1312396-02 Client ID: DUP Sample					
Cyanide, Reactive	ND	ND	mg/kg	NC	40
General Chemistry - Westborough Lab Associated sample(s): 02-06 QC Batch ID: WG619749-3 QC Sample: L1312396-02 Client ID: DUP Sample					
Sulfide, Reactive	ND	ND	mg/kg	NC	40

Project Name: 546 W 44TH STREET

Lab Number: L1312313

Project Number: 170229701

Report Date: 07/17/13

## Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: 07/02/2013 03:30

## Cooler Information Custody Seal

## Cooler

A	Absent
B	Absent

## Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-01A	Amber 250ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-01B	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

\*Values in parentheses indicate holding time in days



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-01C	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-01S	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	TCLP-8270(14)
L1312313-01T	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312313-01U	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312313-01X	Plastic 250ml HNO3 preserved spl	A	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312313-02A	Amber 250ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

\*Values in parentheses indicate holding time in days



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-02B	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-02C	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-02S	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312313-02T	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312313-02X	Plastic 250ml HNO3 preserved spl	A	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312313-02Y	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	TCLP-8270(14)

\*Values in parentheses indicate holding time in days



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-03A	Amber 250ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-03B	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-03C	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-03S	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	HERB-TCLP*(14)

\*Values in parentheses indicate holding time in days



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-03T	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312313-03X	Plastic 250ml HNO3 preserved spl	A	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312313-03Y	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	TCLP-8270(14)
L1312313-04A	Amber 250ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-04B	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-04S	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312313-04T	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312313-04X	Plastic 250ml HNO3 preserved spl	A	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312313-04Y	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	TCLP-8270(14)

\*Values in parentheses indicate holding time in days



**Project Name:** 546 W 44TH STREET  
**Project Number:** 170229701

**Lab Number:** L1312313  
**Report Date:** 07/17/13

**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-05A	Amber 250ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-05B	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-05S	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312313-05T	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312313-05X	Plastic 250ml HNO3 preserved spl	A	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312313-05Y	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	TCLP-8270(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-06A	Amber 250ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-06B	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-06C	Amber 500ml unpreserved	A	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312313-06S	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	HERB-TCLP*(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-06T	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312313-06X	Plastic 250ml HNO3 preserved spl	A	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312313-06Y	Amber 1000ml unpreserved split	A	7	3.1	Y	Absent	TCLP-8270(14)
L1312313-07A	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-07B	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-07C	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-07D	Vial Large unpreserved	B	N/A	2.6	Y	Absent	TCLP-EXT-ZHE(14)
L1312313-07E	Plastic 2oz unpreserved for TS	B	N/A	2.6	Y	Absent	TS(7)
L1312313-07S	Vial MeOH preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-07T	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-07U	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-07X	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-07Y	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-08A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-08B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-09A	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-09B	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-09C	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-09D	Vial Large unpreserved	B	N/A	2.6	Y	Absent	TCLP-EXT-ZHE(14)
L1312313-09E	Plastic 2oz unpreserved for TS	B	N/A	2.6	Y	Absent	TS(7)
L1312313-09S	Vial MeOH preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-09T	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-09U	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-09X	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-09Y	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-10A	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-10B	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-10C	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-10D	Vial Large unpreserved	B	N/A	2.6	Y	Absent	TCLP-EXT-ZHE(14)
L1312313-10E	Plastic 2oz unpreserved for TS	B	N/A	2.6	Y	Absent	TS(7)
L1312313-10S	Vial MeOH preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-10T	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-10U	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-10X	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-10Y	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-11A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-11B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-12A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-12B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-13A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-13B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-14A	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-14B	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-14C	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-14D	Vial Large unpreserved	B	N/A	2.6	Y	Absent	TCLP-EXT-ZHE(14)
L1312313-14E	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-14F	Amber 120ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14)
L1312313-14G	Plastic 2oz unpreserved for TS	B	N/A	2.6	Y	Absent	TS(7)
L1312313-14S	Vial MeOH preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-14T	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-14U	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-14X	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-14Y	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-15A	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-15B	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-15C	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-15D	Vial Large unpreserved	B	N/A	2.6	Y	Absent	TCLP-EXT-ZHE(14)
L1312313-15E	Plastic 2oz unpreserved for TS	B	N/A	2.6	Y	Absent	TS(7)
L1312313-15S	Vial MeOH preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-15T	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-15U	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-15X	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-15Y	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-16A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7),NJ-TPH-GRO(14)
L1312313-17A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-17B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-18A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-18B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-19A	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)

\*Values in parentheses indicate holding time in days



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**Lab Number:** L1312313  
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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312313-19B	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-19C	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-19D	Vial Large unpreserved	B	N/A	2.6	Y	Absent	TCLP-EXT-ZHE(14)
L1312313-19E	Plastic 2oz unpreserved for TS	B	N/A	2.6	Y	Absent	TS(7)
L1312313-19S	Vial MeOH preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-19T	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-19U	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-19X	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-19Y	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-20A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-20B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-21A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-21B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-22A	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-22B	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-22C	5 gram Encore Sampler	B	N/A	2.6	Y	Absent	NJ-8260HLW(2)
L1312313-22D	Vial Large unpreserved	B	N/A	2.6	Y	Absent	TCLP-EXT-ZHE(14)
L1312313-22E	Plastic 2oz unpreserved for TS	B	N/A	2.6	Y	Absent	TS(7)
L1312313-22S	Vial MeOH preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-22T	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-22U	Vial Water preserved split	B	N/A	2.6	Y	Absent	NJ-8260HLW(14)
L1312313-22X	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-22Y	Vial unpreserved split	B	N/A	2.6	Y	Absent	TCLP-VOA(14)
L1312313-23A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-GRO(14)
L1312313-23B	Amber 250ml unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312313-24A	Vial Large unpreserved	B	N/A	2.6	Y	Absent	NJ-TPH-DRO-D(14),TS(7),NJ-TPH-GRO(14)

\*Values in parentheses indicate holding time in days



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## GLOSSARY

### Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported

Report Format: DU Report with "J" Qualifiers



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#### **Data Qualifiers**

due to obvious interference.

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with "J" Qualifiers

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**Lab Number:** L1312313  
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## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.
- 68 Annual Book of ASTM (American Society for Testing and Materials) Standards following extraction by SW-846 EPA Method 9045C under the requirements of MADEP BWSC, WSC-CAM-VIB. August 2004.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



**C** **A** **r** **S**  
Last revised July 2, 2013 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.  
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

**C** **D** **r** **S** **Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.**

*Drinking Water (Inorganic Parameters:* Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Silver, Sodium, Thallium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. *Organic Parameters:* Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). *Microbiology Parameters:* Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223, Enumeration and P/A), E. Coli. – Colilert (SM9223, Enumeration and P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform-EC Medium (SM 9221E).

*Wastewater/Non-Potable Water (Inorganic Parameters:* Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. *Organic Parameters:* PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. *Microbiology Parameters:* Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), E. Coli – Colilert (SM9223 Enumeration), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterococcus - Enterolert.

*Solid Waste/Soil (Inorganic Parameters:* pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. *Organic Parameters:* PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics (SW 8260), Acid Extractables (Phenols) (SW 8270), Benzidines (SW 8270), Phthalates (SW 8270), Nitrosamines (SW 8270), Nitroaromatics & Cyclic Ketones (SW 8270), PAHs (SW 8270), Haloethers (SW 8270), Chlorinated Hydrocarbons (SW 8270). )

**S** **D** **r** **S** **Certificate/Lab ID: 003155. NELAP Accredited.**

*Drinking Water (Inorganic Parameters:* SM2120B, 2320B, 2510B, 2540C, SM4500CN-CE, 4500F-C, 4500H-B, 4500NO3-F, 5310C, EPA 200.7, 200.8, 245.1, 300.0. *Organic Parameters:* EPA 504.1, 524.2.)

*Wastewater/Non-Potable Water (Inorganic Parameters:* SM2120B, 2310B, 2320B, 2340B, 2510B, 2540B, 2540C, 2540D, SM4500CL-E, 4500CN-E, 4500F-C, 4500H-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-E, 4500S-D, 4500SO3-B, 5210B, 5220D, 5310C, 5540C, EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1. *Organic Parameters:* EPA 608, 624, 625.)

*Hazardous and Solid Waste (Inorganic Parameters:* EPA 1010A, 1030, 1311, 1312, 6010C, 6020A, 7196A, 7470A, 7471B, 9012B, 9014, 9038, 9040C, 9045D, 9050A, 9065, 9251. *Organic Parameters:* 8011 (NPW only), 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8315A, 8330.)

**M** **D** **r** **S** **Certificate/Lab ID: 2009024.**

*Drinking Water (Inorganic Parameters:* SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2120B, 2130B, 2320B, 2510C, 2540C, 4500CI-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, 5310C, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. *Organic Parameters:* 504.1, 524.2.)

*Wastewater/Non-Potable Water (Inorganic Parameters:* EPA 120.1, 1664A, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 8315A, 9010C, SM2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CI-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-C, 4500NH3-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-B, 4500P-E, 4500S2-D, 4500SO3-B, 5540C, 5210B, 5220D, 5310C, 9010B, 9030B, 9040C, 7470A, 7196A, 2340B, EPA 200.7, 6010C, 200.8, 6020A, 245.1, 1311, 1312, 3005A, Enterolert, 9223B, 9222D. *Organic Parameters:* 608, 624, 625, 8011, 8081B, 8082A, 8330, 8151A, 8260C, 8270D, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)



9050A, 9065, 9251. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5035L, 5035H, NJ EPH.)

**Norfolk District** Certificate/Lab ID: 11148. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.1, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO<sub>3</sub>-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH<sub>3</sub>-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO<sub>3</sub>-F, 4500-NO<sub>2</sub>-B, 4500P-E, 2340B, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010C, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 7470A, SM2120B, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 8315A, 3005A, 3015, 9010C, 9030B. Organic Parameters: EPA 624, 8260C, 8270D, 8270D-SIM, 625, 608, 8081B, 8151A, 8330, 8082A, EPA 3510C, 5030B, 8015C, 8011.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, EPA 6010C, 6020A, 7196A, 7471B, 8315A, 9012B, 9014, 9065, 9050A, 9038, 9251, EPA 1311, 1312, 3005A, 3050B, 9010C, 9030B, 9040C, 9045D. Organic Parameters: EPA 8260C, 8270D, 8270D-SIM, 8015C, 8081B, 8151A, 8330, 8082A, 3540C, 3546, 3580A, 5035A-H, 5035A-L.)

**Norfolk District** Certificate/Lab ID: 666. (Inorganic Parameters: SM2310B, 2320B, 4500Cl-E, 4500Cn-E, 9012B, 9014, Lachat 10-204-00-1-X, 1010A, 1030, 4500NO<sub>3</sub>-F, 353.2, 4500P-E, 4500SO<sub>4</sub>-E, 300.0, 4500S-D, 5310B, 5310C, 6010C, 6020A, 200.7, 200.8, 3500Cr-B, 7196A, 245.1, 7470A, 7471B, 1311, 1312. Organic Parameters: 608, 8081B, 8082A, 624, 8260B, 625, 8270D, 8151A, 8015C, 504.1, MA-EPH, MA-VPH.)

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

**District** Certificate/Lab ID: 68-03671. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: 200.7, 200.8, 300.0, 332.0, 2120B, 2320B, 2510B, 2540C, 4500-CN-CE, 4500F-C, 4500H+-B, 4500NO<sub>3</sub>-F, 5310C. Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1312, 3005A, 3015, 3060A, 200.7, 200.8, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P, BE, 245.1, 300.0, 350.1, 350.2, 351.1, 353.2, 420.1, 6010C, 6020A, 7196A, 7470A, 9030B, 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 3500Cr-D, 426C, 4500CN-CE, 4500Cl-E, 4500F-B, 4500F-C, 4500H+-B, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>-B, 4500NO<sub>3</sub>-F, 4500S-D, 4500SO<sub>3</sub>-B, 5310BCD, 5540C, 9010C, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, 8015C, NJ-EPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3005A, 3050B, 3060A, 6010C, 6020A, 7196A, 7471B, 9010C, 9012B, 9014, 9040B, 9045D, 9050A, 9065, SM 4500NH<sub>3</sub>-BH, 9030B, 9038, 9251. Organic Parameters: 3540C, 3546, 3580A, 3620C, 3630C, 5035, 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, NJ-EPH.)

**Rock Island District** Certificate/Lab ID: LAO00065. **NELAP Accredited via NJ-DEP.**

Refer to MA-DEP Certificate for Potable and Non-Potable Water.

Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

**Tarrant County** Certificate/Lab ID: T104704476. **NELAP Accredited.**

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>B, 4500P-E, 4500 S<sup>2-</sup> D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

**District** Certificate/Lab ID: 460195. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: EPA 200.7, 200.8, 300.0, 2510B, 2120B, 2540C, 4500CN-CE, 245.1, 2320B, 4500F-C, 4500NO<sub>3</sub>-F, 4500H+B, 5310C. Organic Parameters: EPA 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 351.2, 3005A, 3015, 1312, 6010B, 6010C, 3060A, 353.2, 420.1, 2340B, 6020, 6020A, SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X, 7196A, 7470A, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 3500Cr-D, 426C, 4500Cl-E, 4500F-B, 4500F-C, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>-B, 4500NO<sub>3</sub>-F, 4500 SO<sub>3</sub>-B, 4500H-B, 4500PE, 510AC, 5210B, 5310B 5310C, 5540C, 9010Cm

9030B, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 8260B, 608, 624, 625, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, )

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1010A, 1030, 3060A, 3050B, 1311, 1312, 6010B, 6010C, 6020, , 7196A, 7471A, 7471B, 6020A, 9010C, 9012B, 9030B, 9014, 9038, 9040C, 9045D, 9251, 9050A, 9065. Organic Parameters: EPA 5030B, 5035, 3540C, 3546, 3550B, 3580A, 3620C, 3630C, 6020A, 8260B, 8260C, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330.)

**D** **r** **o** **D** **L** **A** **B** Certificate/Lab ID: L2217.

*Drinking Water* (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

*Non-Potable Water* (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1, 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056, 7196A, 3500-Cr-D. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

**T** **o** **o** **r** **o** **N** **E** **L** **A** **T** **N** **I** **S** **o** **o** **A** **r** **o**

**E** **A** Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether. **E** **A** **B** 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **E** **A** **N** **o** **o** **r** **o** **r** Iodomethane (methyl iodide), Methyl methacrylate. **E** **A** **S** **o** **r** **o** Tert-amyl methyl ether (TAME), Diisopropyl ether (DIPE), Azobenzene. **E** **A** **A** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **E** **A** **C** Methyl naphthalene, Dimethyl naphthalene, Total Methylnaphthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine. **E** **A** **o** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, TKN in a soil matrix, NO<sub>2</sub> in a soil matrix, NO<sub>3</sub> in a soil matrix. **E** **A** **o** **o** Total Petroleum Hydrocarbons, Oil & Grease.









## ANALYTICAL REPORT

Lab Number:	L1312411
Client:	Langan Engineering & Environmental 21 Penn Plaza 360 W. 31st Street, 8th Floor New York, NY 10001-2727
ATTN:	Elodie Bourbon
Phone:	(212) 479-5400
Project Name:	546 W 44TH ST
Project Number:	170229701
Report Date:	07/17/13

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

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**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>
L1312411-01	WC05A_3-5	NY, NY	07/02/13 08:05
L1312411-02	WC05A_5-7	NY, NY	07/02/13 08:12
L1312411-03	WC05A_7-9	NY, NY	07/02/13 08:17
L1312411-04	WC05A_13-14	NY, NY	07/02/13 08:20
L1312411-05	WC06B_4-6	NY, NY	07/02/13 09:15
L1312411-06	WC06B_1-3	NY, NY	07/02/13 09:05
L1312411-07	WC06B_7-8.5	NY, NY	07/02/13 09:20
L1312411-08	WC06A_5-6	NY, NY	07/02/13 09:35
L1312411-09	WC06A_13-14	NY, NY	07/02/13 09:45
L1312411-10	WC07A_2-4	NY, NY	07/02/13 10:45
L1312411-11	WC07A_4-6	NY, NY	07/02/13 10:40
L1312411-12	WC07A_6-7.5	NY, NY	07/02/13 10:30
L1312411-13	WC07B_1-3	NY, NY	07/02/13 10:55
L1312411-14	WC07B_10-11	NY, NY	07/02/13 11:05
L1312411-15	WC09B_3-4	NY, NY	07/02/13 13:05
L1312411-16	WC09A_0.5-2.5	NY, NY	07/02/13 12:50
L1312411-17	WC08A_0-2	NY, NY	07/02/13 12:25
L1312411-18	WC08B_3-4	NY, NY	07/02/13 12:30
L1312411-19	HOLD	NY, NY	07/02/13 14:00
L1312411-20	COMP05_0-14	NY, NY	07/02/13 14:40
L1312411-21	COMP06_0-14	NY, NY	07/02/13 14:50
L1312411-22	COMP07_0-14	NY, NY	07/02/13 15:00
L1312411-23	COMP08_10-14	NY, NY	07/02/13 15:20
L1312411-24	COMP09_10-14	NY, NY	07/02/13 15:25
L1312411-25	COMP NAT_14	NY, NY	07/02/13 15:10

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

#### HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### Case Narrative (continued)

#### Report Submission

This report replaces the report issued July 11, 2013. At the client's request, the Client ID has been changed on L1312411-25.

At the client's request, the results for sample "LB4OW\_070213" will be issued under separate cover.

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Volatile Organics

L1312411-06: The internal standard (IS) response for 1,4-Dichlorobenzene-d4 (51%) was below the acceptance criteria; however, re-analysis achieved similar results for Chlorobenzene-d5 (44%) and 1,4-Dichlorobenzene-d4 (16%). The results of both analyses are reported. In addition, the Methylene chloride response associated with the original analysis is believed to be laboratory contamination.

#### Semivolatile Organics-SIM

L1312411-21 and -22 have elevated detection limits due to the dilutions required by the sample matrices.

#### TCLP Semivolatile Organics

The WG619934-2/-3 LCS/LCSD recoveries, associated with L1312411-20 through -25, are above the acceptance criteria for 2,4-Dinitrotoluene (125%/133%), 2,4,6-Trichlorophenol (LCSD at 142%), Pentachlorophenol (111%/118%), and 2,4,5-Trichlorophenol (138%/148%); however, the associated samples are non-detect for these target compounds. The results of the original analysis are reported.

#### Pesticides

L1312411-21, -22, and -24 have elevated detection limits due to the dilutions required by the sample matrices.

The surrogate recoveries for L1312411-22 are below the acceptance criteria for 2,4,5,6-Tetrachloro-m-xylene and Decachlorobiphenyl (all at 0%) due to the dilution required to quantitate the sample. Re-extraction was not

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### Case Narrative (continued)

required; therefore, the results of the original analysis are reported.

The dual column RPD for L1312411-23 is above the acceptance criteria for 4,4'-DDT; however, obvious column interferences are present. Due to these interferences, the lower of the two results is reported and qualified with a "P".

The WG619540-3 LCS/LCSD recoveries, associated with L1312411-20, are above the acceptance criteria for Endrin (160%) and Methoxychlor (154%); however, the associated sample is non-detect for these target compounds. The results of the original analysis are reported.

#### TCLP Pesticides

The WG619937-2/-3 LCS/LCSD recoveries, associated with L1312411-20 through -25, are above the acceptance criteria for Endrin (160%/163%); however, the associated samples are non-detect for this target compound. The results of the original analysis are reported.

#### Metals

L1312411-20 through -25 have elevated detection limits for all elements, with the exception of Mercury, due to the analytical dilutions required by matrix interferences encountered during analysis.

The WG619731-4 MS recoveries for Aluminum (613%), Calcium (0%), Iron (2450%), and Zinc (0%), performed on L1312411-20, do not apply because the sample concentrations are greater than four times the spike amounts added.

The WG619731-4 MS recoveries, performed on L1312411-20, are outside the acceptance criteria for Barium (128%), Lead (44%), and Potassium (126%). A post digestion spike was performed with acceptable recoveries for Barium (91%), Lead (80%), and Potassium (95%).

The WG619731-4 MS recovery, performed on L1312411-20, is below the acceptance criteria for Magnesium (0%). A post digestion spike was performed with an unacceptable recovery of 64%. This has been attributed to sample matrix.

The WG620049-4 MS recovery, performed on L1312411-25, is above the acceptance criteria for Mercury (201%). A post digestion spike was performed with an acceptable recovery of 123%.

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Case Narrative (continued)**

Chromium, Hexavalent

The WG620300-5 MSD recovery (67%), performed on L1312411-20, is below the acceptance criteria. The LCS and MS recoveries are within criteria. No further action taken.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Kelly Stenstrom

Title: Technical Director/Representative

Date: 07/17/13

# ORGANICS

# VOLATILES

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-01  
**Client ID:** WC05A\_3-5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/10/13 09:08  
**Analyst:** MM  
**Percent Solids:** 88%  
**TCLP/SPLP Ext. Date:** 07/09/13 15:11

**Date Collected:** 07/02/13 08:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	99		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	94		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-01  
 Client ID: WC05A\_3-5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/10/13 01:43  
 Analyst: PP  
 Percent Solids: 88%

Date Collected: 07/02/13 08:05  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0060	0.00094	1
1,4-Dioxane	ND		mg/kg	0.12	0.021	1
1,2-Dibromoethane	ND		mg/kg	0.0048	0.00021	1
Methylene chloride	ND		mg/kg	0.0060	0.0024	1
1,1-Dichloroethane	ND		mg/kg	0.0018	0.00021	1
Chloroform	ND		mg/kg	0.0018	0.00044	1
Carbon tetrachloride	ND		mg/kg	0.0012	0.00025	1
1,2-Dichloropropane	ND		mg/kg	0.0042	0.00027	1
Dibromochloromethane	ND		mg/kg	0.0012	0.00037	1
1,1,2-Trichloroethane	ND		mg/kg	0.0018	0.00036	1
Tetrachloroethene	0.0019		mg/kg	0.0012	0.00017	1
Chlorobenzene	ND		mg/kg	0.0012	0.00041	1
Trichlorofluoromethane	ND		mg/kg	0.0060	0.00014	1
1,2-Dichloroethane	ND		mg/kg	0.0012	0.00017	1
1,1,1-Trichloroethane	ND		mg/kg	0.0012	0.00013	1
Bromodichloromethane	ND		mg/kg	0.0012	0.00027	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0012	0.00014	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0012	0.00015	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0012	0.00014	1
Bromoform	ND		mg/kg	0.0048	0.00049	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0012	0.00020	1
Benzene	ND		mg/kg	0.0012	0.00014	1
Toluene	ND		mg/kg	0.0018	0.00013	1
Ethylbenzene	ND		mg/kg	0.0012	0.00018	1
Chloromethane	ND		mg/kg	0.0060	0.00093	1
Bromomethane	ND		mg/kg	0.0024	0.00040	1
Vinyl chloride	ND		mg/kg	0.0024	0.00017	1
Chloroethane	ND		mg/kg	0.0024	0.00038	1
1,1-Dichloroethene	ND		mg/kg	0.0012	0.00024	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0018	0.00025	1
Trichloroethene	ND		mg/kg	0.0012	0.00018	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-01

Date Collected: 07/02/13 08:05

Client ID: WC05A\_3-5

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0060	0.00022	1
1,3-Dichlorobenzene	ND		mg/kg	0.0060	0.00022	1
1,4-Dichlorobenzene	ND		mg/kg	0.0060	0.00029	1
Methyl tert butyl ether	ND		mg/kg	0.0024	0.00012	1
p/m-Xylene	ND		mg/kg	0.0024	0.00038	1
o-Xylene	ND		mg/kg	0.0024	0.00032	1
Xylenes, Total	ND		mg/kg	0.0024	0.00032	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0012	0.00018	1
Styrene	ND		mg/kg	0.0024	0.00037	1
Dichlorodifluoromethane	ND		mg/kg	0.012	0.00026	1
Acetone	ND		mg/kg	0.043	0.0037	1
Carbon disulfide	ND		mg/kg	0.012	0.0024	1
2-Butanone	ND		mg/kg	0.012	0.00042	1
4-Methyl-2-pentanone	ND		mg/kg	0.012	0.00029	1
2-Hexanone	ND		mg/kg	0.012	0.00022	1
Bromochloromethane	ND		mg/kg	0.0060	0.00023	1
n-Butylbenzene	ND		mg/kg	0.0012	0.00024	1
sec-Butylbenzene	ND		mg/kg	0.0012	0.00024	1
tert-Butylbenzene	ND		mg/kg	0.0060	0.00067	1
Isopropylbenzene	ND		mg/kg	0.0012	0.00020	1
n-Propylbenzene	ND		mg/kg	0.0012	0.00015	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0060	0.00020	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0060	0.00094	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0060	0.00017	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0060	0.00068	1
Methyl Acetate	ND		mg/kg	0.0048	0.00091	1
Cyclohexane	ND		mg/kg	0.024	0.0013	1
Methyl cyclohexane	ND		mg/kg	0.0048	0.0015	1
Freon-113	ND		mg/kg	0.024	0.00032	1

## Tentatively Identified Compounds

Total TIC Compounds	0.085	J	mg/kg			1
Unknown	0.0025	J	mg/kg			1
Unknown	0.010	J	mg/kg			1
Unknown	0.013	J	mg/kg			1
Unknown	0.0083	J	mg/kg			1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-01

Date Collected: 07/02/13 08:05

Client ID: WC05A\_3-5

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.016	J	mg/kg			1
Unknown	0.0042	J	mg/kg			1
Unknown	0.015	J	mg/kg			1
Unknown	0.0086	J	mg/kg			1
Unknown	0.0042	J	mg/kg			1
Unknown Alkane	0.0028	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	101		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	98		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-06  
**Client ID:** WC06B\_1-3  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/10/13 09:24  
**Analyst:** MM  
**Percent Solids:** 89%  
**TCLP/SPLP Ext. Date:** 07/09/13 15:11

**Date Collected:** 07/02/13 09:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Volatiles by EPA 1311 - Westborough Lab						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	95		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	112		70-130
Dibromofluoromethane	96		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-06  
 Client ID: WC06B\_1-3  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/09/13 12:23  
 Analyst: BN  
 Percent Solids: 89%

Date Collected: 07/02/13 09:05  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.011	0.0017	1
1,4-Dioxane	ND		mg/kg	0.22	0.038	1
1,2-Dibromoethane	ND		mg/kg	0.0086	0.00038	1
Methylene chloride	0.014		mg/kg	0.011	0.0043	1
1,1-Dichloroethane	ND		mg/kg	0.0032	0.00038	1
Chloroform	0.0029	J	mg/kg	0.0032	0.00080	1
Carbon tetrachloride	ND		mg/kg	0.0022	0.00045	1
1,2-Dichloropropane	ND		mg/kg	0.0076	0.00049	1
Dibromochloromethane	ND		mg/kg	0.0022	0.00066	1
1,1,2-Trichloroethane	ND		mg/kg	0.0032	0.00066	1
Tetrachloroethene	0.0044		mg/kg	0.0022	0.00030	1
Chlorobenzene	ND		mg/kg	0.0022	0.00075	1
Trichlorofluoromethane	ND		mg/kg	0.011	0.00026	1
1,2-Dichloroethane	ND		mg/kg	0.0022	0.00032	1
1,1,1-Trichloroethane	ND		mg/kg	0.0022	0.00024	1
Bromodichloromethane	ND		mg/kg	0.0022	0.00049	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0022	0.00026	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0022	0.00027	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0022	0.00026	1
Bromoform	ND		mg/kg	0.0086	0.00090	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0022	0.00037	1
Benzene	ND		mg/kg	0.0022	0.00025	1
Toluene	ND		mg/kg	0.0032	0.00024	1
Ethylbenzene	ND		mg/kg	0.0022	0.00032	1
Chloromethane	ND		mg/kg	0.011	0.0017	1
Bromomethane	ND		mg/kg	0.0043	0.00073	1
Vinyl chloride	ND		mg/kg	0.0043	0.00030	1
Chloroethane	ND		mg/kg	0.0043	0.00068	1
1,1-Dichloroethene	ND		mg/kg	0.0022	0.00044	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0032	0.00046	1
Trichloroethene	ND		mg/kg	0.0022	0.00033	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-06

Date Collected: 07/02/13 09:05

Client ID: WC06B\_1-3

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.011	0.00040	1
1,3-Dichlorobenzene	ND		mg/kg	0.011	0.00040	1
1,4-Dichlorobenzene	ND		mg/kg	0.011	0.00052	1
Methyl tert butyl ether	ND		mg/kg	0.0043	0.00022	1
p/m-Xylene	ND		mg/kg	0.0043	0.00070	1
o-Xylene	ND		mg/kg	0.0043	0.00058	1
Xylenes, Total	ND		mg/kg	0.0043	0.00058	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0022	0.00032	1
Styrene	ND		mg/kg	0.0043	0.00067	1
Dichlorodifluoromethane	ND		mg/kg	0.022	0.00047	1
Acetone	ND		mg/kg	0.078	0.0067	1
Carbon disulfide	ND		mg/kg	0.022	0.0043	1
2-Butanone	ND		mg/kg	0.022	0.00077	1
4-Methyl-2-pentanone	ND		mg/kg	0.022	0.00053	1
2-Hexanone	ND		mg/kg	0.022	0.00041	1
Bromochloromethane	ND		mg/kg	0.011	0.00042	1
n-Butylbenzene	ND		mg/kg	0.0022	0.00043	1
sec-Butylbenzene	ND		mg/kg	0.0022	0.00044	1
tert-Butylbenzene	ND		mg/kg	0.011	0.0012	1
Isopropylbenzene	ND		mg/kg	0.0022	0.00036	1
n-Propylbenzene	ND		mg/kg	0.0022	0.00027	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.011	0.00036	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.011	0.0017	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.011	0.00031	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.011	0.0012	1
Methyl Acetate	ND		mg/kg	0.0086	0.0016	1
Cyclohexane	ND		mg/kg	0.043	0.0023	1
Methyl cyclohexane	ND		mg/kg	0.0086	0.0027	1
Freon-113	ND		mg/kg	0.043	0.00059	1

## Tentatively Identified Compounds

Total TIC Compounds	0.28	J	mg/kg			1
Propane	0.0057	NJ	mg/kg			1
Unknown	0.010	J	mg/kg			1
Unknown	0.044	J	mg/kg			1
Unknown	0.054	J	mg/kg			1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-06

Date Collected: 07/02/13 09:05

Client ID: WC06B\_1-3

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.034	J	mg/kg			1
Unknown	0.056	J	mg/kg			1
Unknown	0.042	J	mg/kg			1
Unknown	0.022	J	mg/kg			1
Unknown	0.010	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	107		70-130
Toluene-d8	80		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	118		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-06 R  
 Client ID: WC06B\_1-3  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/10/13 02:11  
 Analyst: BN  
 Percent Solids: 89%

Date Collected: 07/02/13 09:05  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0085	0.0013	1
1,4-Dioxane	ND		mg/kg	0.17	0.030	1
1,2-Dibromoethane	ND		mg/kg	0.0068	0.00030	1
Methylene chloride	ND		mg/kg	0.0085	0.0034	1
1,1-Dichloroethane	ND		mg/kg	0.0026	0.00030	1
Chloroform	0.0039		mg/kg	0.0026	0.00063	1
Carbon tetrachloride	ND		mg/kg	0.0017	0.00036	1
1,2-Dichloropropane	ND		mg/kg	0.0060	0.00039	1
Dibromochloromethane	ND		mg/kg	0.0017	0.00052	1
1,1,2-Trichloroethane	ND		mg/kg	0.0026	0.00052	1
Tetrachloroethene	0.027		mg/kg	0.0017	0.00024	1
Chlorobenzene	ND		mg/kg	0.0017	0.00059	1
Trichlorofluoromethane	ND		mg/kg	0.0085	0.00021	1
1,2-Dichloroethane	ND		mg/kg	0.0017	0.00025	1
1,1,1-Trichloroethane	ND		mg/kg	0.0017	0.00019	1
Bromodichloromethane	ND		mg/kg	0.0017	0.00039	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0017	0.00020	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0017	0.00022	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0017	0.00020	1
Bromoform	ND		mg/kg	0.0068	0.00070	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0017	0.00029	1
Benzene	ND		mg/kg	0.0017	0.00020	1
Toluene	0.00089	J	mg/kg	0.0026	0.00019	1
Ethylbenzene	ND		mg/kg	0.0017	0.00025	1
Chloromethane	ND		mg/kg	0.0085	0.0013	1
Bromomethane	ND		mg/kg	0.0034	0.00057	1
Vinyl chloride	ND		mg/kg	0.0034	0.00024	1
Chloroethane	ND		mg/kg	0.0034	0.00054	1
1,1-Dichloroethene	ND		mg/kg	0.0017	0.00035	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0026	0.00036	1
Trichloroethene	0.00044	J	mg/kg	0.0017	0.00026	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-06 R  
 Client ID: WC06B\_1-3  
 Sample Location: NY, NY

Date Collected: 07/02/13 09:05  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0085	0.00031	1
1,3-Dichlorobenzene	ND		mg/kg	0.0085	0.00031	1
1,4-Dichlorobenzene	ND		mg/kg	0.0085	0.00041	1
Methyl tert butyl ether	ND		mg/kg	0.0034	0.00018	1
p/m-Xylene	ND		mg/kg	0.0034	0.00055	1
o-Xylene	ND		mg/kg	0.0034	0.00046	1
Xylenes, Total	ND		mg/kg	0.0034	0.00046	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0017	0.00025	1
Styrene	ND		mg/kg	0.0034	0.00053	1
Dichlorodifluoromethane	ND		mg/kg	0.017	0.00037	1
Acetone	ND		mg/kg	0.061	0.0053	1
Carbon disulfide	ND		mg/kg	0.017	0.0034	1
2-Butanone	ND		mg/kg	0.017	0.00060	1
4-Methyl-2-pentanone	ND		mg/kg	0.017	0.00042	1
2-Hexanone	ND		mg/kg	0.017	0.00032	1
Bromochloromethane	ND		mg/kg	0.0085	0.00033	1
n-Butylbenzene	ND		mg/kg	0.0017	0.00034	1
sec-Butylbenzene	ND		mg/kg	0.0017	0.00035	1
tert-Butylbenzene	ND		mg/kg	0.0085	0.00095	1
Isopropylbenzene	ND		mg/kg	0.0017	0.00028	1
n-Propylbenzene	ND		mg/kg	0.0017	0.00021	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0085	0.00028	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0085	0.0013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0085	0.00024	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0085	0.00097	1
Methyl Acetate	ND		mg/kg	0.0068	0.0013	1
Cyclohexane	ND		mg/kg	0.034	0.0018	1
Methyl cyclohexane	ND		mg/kg	0.0068	0.0021	1
Freon-113	ND		mg/kg	0.034	0.00046	1

## Tentatively Identified Compounds

Total TIC Compounds	0.22	J	mg/kg			1
Unknown	0.0048	J	mg/kg			1
Unknown	0.0050	J	mg/kg			1
Unknown	0.026	J	mg/kg			1
Unknown	0.030	J	mg/kg			1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-06 R

Date Collected: 07/02/13 09:05

Client ID: WC06B\_1-3

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.019	J	mg/kg			1
Unknown	0.060	J	mg/kg			1
Unknown	0.025	J	mg/kg			1
Unknown	0.013	J	mg/kg			1
Unknown	0.0045	J	mg/kg			1
Unknown Alkane	0.0058	J	mg/kg			1
Unknown	0.012	J	mg/kg			1
Unknown	0.0065	J	mg/kg			1
Unknown	0.0076	J	mg/kg			1
Unknown Alkane	0.0035	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	142	Q	70-130
4-Bromofluorobenzene	144	Q	70-130
Dibromofluoromethane	108		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-12  
**Client ID:** WC07A\_6-7.5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/10/13 09:40  
**Analyst:** MM  
**Percent Solids:** 83%  
**TCLP/SPLP Ext. Date:** 07/09/13 15:11

**Date Collected:** 07/02/13 10:30  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	108		70-130
Dibromofluoromethane	93		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-12  
 Client ID: WC07A\_6-7.5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/10/13 02:39  
 Analyst: PP  
 Percent Solids: 83%

Date Collected: 07/02/13 10:30  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0054	0.00085	1
1,4-Dioxane	ND		mg/kg	0.11	0.019	1
1,2-Dibromoethane	ND		mg/kg	0.0043	0.00019	1
Methylene chloride	ND		mg/kg	0.0054	0.0021	1
1,1-Dichloroethane	ND		mg/kg	0.0016	0.00019	1
Chloroform	ND		mg/kg	0.0016	0.00040	1
Carbon tetrachloride	ND		mg/kg	0.0011	0.00022	1
1,2-Dichloropropane	ND		mg/kg	0.0038	0.00024	1
Dibromochloromethane	ND		mg/kg	0.0011	0.00033	1
1,1,2-Trichloroethane	ND		mg/kg	0.0016	0.00033	1
Tetrachloroethene	0.00036	J	mg/kg	0.0011	0.00015	1
Chlorobenzene	ND		mg/kg	0.0011	0.00037	1
Trichlorofluoromethane	ND		mg/kg	0.0054	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.0011	0.00016	1
1,1,1-Trichloroethane	ND		mg/kg	0.0011	0.00012	1
Bromodichloromethane	ND		mg/kg	0.0011	0.00025	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0011	0.00013	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0011	0.00014	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0011	0.00013	1
Bromoform	ND		mg/kg	0.0043	0.00044	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0011	0.00018	1
Benzene	ND		mg/kg	0.0011	0.00013	1
Toluene	ND		mg/kg	0.0016	0.00012	1
Ethylbenzene	ND		mg/kg	0.0011	0.00016	1
Chloromethane	ND		mg/kg	0.0054	0.00084	1
Bromomethane	ND		mg/kg	0.0021	0.00036	1
Vinyl chloride	ND		mg/kg	0.0021	0.00015	1
Chloroethane	ND		mg/kg	0.0021	0.00034	1
1,1-Dichloroethene	ND		mg/kg	0.0011	0.00022	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0016	0.00023	1
Trichloroethene	ND		mg/kg	0.0011	0.00016	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-12  
 Client ID: WC07A\_6-7.5  
 Sample Location: NY, NY

Date Collected: 07/02/13 10:30  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0054	0.00020	1
1,3-Dichlorobenzene	ND		mg/kg	0.0054	0.00020	1
1,4-Dichlorobenzene	ND		mg/kg	0.0054	0.00026	1
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00011	1
p/m-Xylene	ND		mg/kg	0.0021	0.00035	1
o-Xylene	ND		mg/kg	0.0021	0.00029	1
Xylenes, Total	ND		mg/kg	0.0021	0.00029	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0011	0.00016	1
Styrene	ND		mg/kg	0.0021	0.00033	1
Dichlorodifluoromethane	ND		mg/kg	0.011	0.00023	1
Acetone	ND		mg/kg	0.039	0.0033	1
Carbon disulfide	ND		mg/kg	0.011	0.0021	1
2-Butanone	ND		mg/kg	0.011	0.00038	1
4-Methyl-2-pentanone	ND		mg/kg	0.011	0.00026	1
2-Hexanone	ND		mg/kg	0.011	0.00020	1
Bromochloromethane	ND		mg/kg	0.0054	0.00021	1
n-Butylbenzene	ND		mg/kg	0.0011	0.00021	1
sec-Butylbenzene	ND		mg/kg	0.0011	0.00022	1
tert-Butylbenzene	ND		mg/kg	0.0054	0.00060	1
Isopropylbenzene	ND		mg/kg	0.0011	0.00018	1
n-Propylbenzene	ND		mg/kg	0.0011	0.00014	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0054	0.00018	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0054	0.00085	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0054	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0054	0.00062	1
Methyl Acetate	ND		mg/kg	0.0043	0.00082	1
Cyclohexane	ND		mg/kg	0.021	0.0012	1
Methyl cyclohexane	ND		mg/kg	0.0043	0.0014	1
Freon-113	ND		mg/kg	0.021	0.00029	1

## Tentatively Identified Compounds

Total TIC Compounds	0.097	J	mg/kg			1
Unknown	0.0029	J	mg/kg			1
Unknown	0.013	J	mg/kg			1
Unknown	0.016	J	mg/kg			1
Unknown	0.0096	J	mg/kg			1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-12  
 Client ID: WC07A\_6-7.5  
 Sample Location: NY, NY

Date Collected: 07/02/13 10:30  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatiles Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.018	J	mg/kg			1
Unknown	0.0071	J	mg/kg			1
Unknown	0.016	J	mg/kg			1
Unknown	0.0084	J	mg/kg			1
Unknown	0.0056	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	112		70-130
4-Bromofluorobenzene	106		70-130
Dibromofluoromethane	98		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-16  
**Client ID:** WC09A\_0.5-2.5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/10/13 09:56  
**Analyst:** MM  
**Percent Solids:** 90%  
**TCLP/SPLP Ext. Date:** 07/09/13 15:11

**Date Collected:** 07/02/13 12:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	93		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	117		70-130
Dibromofluoromethane	95		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-16  
 Client ID: WC09A\_0.5-2.5  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/10/13 03:06  
 Analyst: PP  
 Percent Solids: 90%

Date Collected: 07/02/13 12:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0052	0.00083	1
1,4-Dioxane	ND		mg/kg	0.10	0.018	1
1,2-Dibromoethane	ND		mg/kg	0.0042	0.00019	1
Methylene chloride	ND		mg/kg	0.0052	0.0021	1
1,1-Dichloroethane	ND		mg/kg	0.0016	0.00018	1
Chloroform	ND		mg/kg	0.0016	0.00039	1
Carbon tetrachloride	ND		mg/kg	0.0010	0.00022	1
1,2-Dichloropropane	ND		mg/kg	0.0037	0.00024	1
Dibromochloromethane	ND		mg/kg	0.0010	0.00032	1
1,1,2-Trichloroethane	ND		mg/kg	0.0016	0.00032	1
Tetrachloroethene	0.00060	J	mg/kg	0.0010	0.00015	1
Chlorobenzene	ND		mg/kg	0.0010	0.00036	1
Trichlorofluoromethane	ND		mg/kg	0.0052	0.00013	1
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00015	1
1,1,1-Trichloroethane	ND		mg/kg	0.0010	0.00012	1
Bromodichloromethane	ND		mg/kg	0.0010	0.00024	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0010	0.00013	1
Bromoform	ND		mg/kg	0.0042	0.00043	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0010	0.00018	1
Benzene	ND		mg/kg	0.0010	0.00012	1
Toluene	ND		mg/kg	0.0016	0.00012	1
Ethylbenzene	ND		mg/kg	0.0010	0.00015	1
Chloromethane	ND		mg/kg	0.0052	0.00082	1
Bromomethane	ND		mg/kg	0.0021	0.00035	1
Vinyl chloride	ND		mg/kg	0.0021	0.00015	1
Chloroethane	ND		mg/kg	0.0021	0.00033	1
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00022	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0016	0.00022	1
Trichloroethene	ND		mg/kg	0.0010	0.00016	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-16  
 Client ID: WC09A\_0.5-2.5  
 Sample Location: NY, NY

Date Collected: 07/02/13 12:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0052	0.00019	1
1,3-Dichlorobenzene	ND		mg/kg	0.0052	0.00019	1
1,4-Dichlorobenzene	ND		mg/kg	0.0052	0.00025	1
Methyl tert butyl ether	ND		mg/kg	0.0021	0.00011	1
p/m-Xylene	ND		mg/kg	0.0021	0.00034	1
o-Xylene	ND		mg/kg	0.0021	0.00028	1
Xylenes, Total	ND		mg/kg	0.0021	0.00028	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00016	1
Styrene	ND		mg/kg	0.0021	0.00032	1
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00023	1
Acetone	ND		mg/kg	0.038	0.0032	1
Carbon disulfide	ND		mg/kg	0.010	0.0021	1
2-Butanone	ND		mg/kg	0.010	0.00037	1
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.00026	1
2-Hexanone	ND		mg/kg	0.010	0.00020	1
Bromochloromethane	ND		mg/kg	0.0052	0.00021	1
n-Butylbenzene	ND		mg/kg	0.0010	0.00021	1
sec-Butylbenzene	ND		mg/kg	0.0010	0.00022	1
tert-Butylbenzene	ND		mg/kg	0.0052	0.00059	1
Isopropylbenzene	ND		mg/kg	0.0010	0.00018	1
n-Propylbenzene	ND		mg/kg	0.0010	0.00013	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0052	0.00018	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0052	0.00083	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0052	0.00015	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0052	0.00060	1
Methyl Acetate	ND		mg/kg	0.0042	0.00080	1
Cyclohexane	ND		mg/kg	0.021	0.0011	1
Methyl cyclohexane	ND		mg/kg	0.0042	0.0013	1
Freon-113	ND		mg/kg	0.021	0.00029	1

## Tentatively Identified Compounds

Total TIC Compounds	0.095	J	mg/kg			1
Unknown	0.0021	J	mg/kg			1
Unknown	0.012	J	mg/kg			1
Unknown	0.014	J	mg/kg			1
Unknown	0.0090	J	mg/kg			1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-16  
 Client ID: WC09A\_0.5-2.5  
 Sample Location: NY, NY

Date Collected: 07/02/13 12:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatiles Organics by GC/MS-5035 - Westborough Lab

## Tentatively Identified Compounds

Unknown	0.040	J	mg/kg			1
Unknown	0.0088	J	mg/kg			1
Unknown	0.0038	J	mg/kg			1
Unknown	0.0033	J	mg/kg			1
Unknown	0.0022	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	107		70-130
Dibromofluoromethane	98		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-18  
**Client ID:** WC08B\_3-4  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8260C  
**Analytical Date:** 07/10/13 10:12  
**Analyst:** MM  
**Percent Solids:** 87%  
**TCLP/SPLP Ext. Date:** 07/09/13 15:11

**Date Collected:** 07/02/13 12:30  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Volatiles by EPA 1311 - Westborough Lab</b>						
Chloroform	ND		ug/l	7.5	1.6	10
Carbon tetrachloride	ND		ug/l	5.0	1.3	10
Tetrachloroethene	ND		ug/l	5.0	1.8	10
Chlorobenzene	ND		ug/l	5.0	1.8	10
1,2-Dichloroethane	ND		ug/l	5.0	1.3	10
Benzene	ND		ug/l	5.0	1.6	10
Vinyl chloride	ND		ug/l	10	1.4	10
1,1-Dichloroethene	ND		ug/l	5.0	1.4	10
Trichloroethene	ND		ug/l	5.0	1.7	10
1,4-Dichlorobenzene	ND		ug/l	25	1.9	10
2-Butanone	ND		ug/l	50	19.	10

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	98		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	92		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-18  
 Client ID: WC08B\_3-4  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8260C  
 Analytical Date: 07/10/13 03:34  
 Analyst: PP  
 Percent Solids: 87%

Date Collected: 07/02/13 12:30  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0082	0.0013	1
1,4-Dioxane	ND		mg/kg	0.16	0.028	1
1,2-Dibromoethane	ND		mg/kg	0.0065	0.00029	1
Methylene chloride	ND		mg/kg	0.0082	0.0033	1
1,1-Dichloroethane	ND		mg/kg	0.0024	0.00029	1
Chloroform	ND		mg/kg	0.0024	0.00060	1
Carbon tetrachloride	ND		mg/kg	0.0016	0.00034	1
1,2-Dichloropropane	ND		mg/kg	0.0057	0.00037	1
Dibromochloromethane	ND		mg/kg	0.0016	0.00050	1
1,1,2-Trichloroethane	ND		mg/kg	0.0024	0.00050	1
Tetrachloroethene	0.00039	J	mg/kg	0.0016	0.00023	1
Chlorobenzene	ND		mg/kg	0.0016	0.00057	1
Trichlorofluoromethane	ND		mg/kg	0.0082	0.00020	1
1,2-Dichloroethane	ND		mg/kg	0.0016	0.00024	1
1,1,1-Trichloroethane	ND		mg/kg	0.0016	0.00018	1
Bromodichloromethane	ND		mg/kg	0.0016	0.00037	1
trans-1,3-Dichloropropene	ND		mg/kg	0.0016	0.00020	1
cis-1,3-Dichloropropene	ND		mg/kg	0.0016	0.00021	1
1,3-Dichloropropene, Total	ND		mg/kg	0.0016	0.00020	1
Bromoform	ND		mg/kg	0.0065	0.00068	1
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0016	0.00028	1
Benzene	ND		mg/kg	0.0016	0.00019	1
Toluene	ND		mg/kg	0.0024	0.00018	1
Ethylbenzene	ND		mg/kg	0.0016	0.00024	1
Chloromethane	ND		mg/kg	0.0082	0.0013	1
Bromomethane	ND		mg/kg	0.0033	0.00055	1
Vinyl chloride	ND		mg/kg	0.0033	0.00023	1
Chloroethane	ND		mg/kg	0.0033	0.00052	1
1,1-Dichloroethene	ND		mg/kg	0.0016	0.00034	1
trans-1,2-Dichloroethene	ND		mg/kg	0.0024	0.00034	1
Trichloroethene	ND		mg/kg	0.0016	0.00025	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-18

Date Collected: 07/02/13 12:30

Client ID: WC08B\_3-4

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
1,2-Dichlorobenzene	ND		mg/kg	0.0082	0.00030	1
1,3-Dichlorobenzene	ND		mg/kg	0.0082	0.00030	1
1,4-Dichlorobenzene	ND		mg/kg	0.0082	0.00040	1
Methyl tert butyl ether	ND		mg/kg	0.0033	0.00017	1
p/m-Xylene	ND		mg/kg	0.0033	0.00053	1
o-Xylene	ND		mg/kg	0.0033	0.00044	1
Xylenes, Total	ND		mg/kg	0.0033	0.00044	1
cis-1,2-Dichloroethene	ND		mg/kg	0.0016	0.00024	1
Styrene	ND		mg/kg	0.0033	0.00050	1
Dichlorodifluoromethane	ND		mg/kg	0.016	0.00036	1
Acetone	ND		mg/kg	0.059	0.0051	1
Carbon disulfide	ND		mg/kg	0.016	0.0033	1
2-Butanone	ND		mg/kg	0.016	0.00058	1
4-Methyl-2-pentanone	ND		mg/kg	0.016	0.00040	1
2-Hexanone	ND		mg/kg	0.016	0.00031	1
Bromochloromethane	ND		mg/kg	0.0082	0.00032	1
n-Butylbenzene	ND		mg/kg	0.0016	0.00032	1
sec-Butylbenzene	ND		mg/kg	0.0016	0.00034	1
tert-Butylbenzene	ND		mg/kg	0.0082	0.00092	1
Isopropylbenzene	ND		mg/kg	0.0016	0.00027	1
n-Propylbenzene	ND		mg/kg	0.0016	0.00020	1
1,2,3-Trichlorobenzene	ND		mg/kg	0.0082	0.00027	1
1,2,4-Trichlorobenzene	ND		mg/kg	0.0082	0.0013	1
1,3,5-Trimethylbenzene	ND		mg/kg	0.0082	0.00023	1
1,2,4-Trimethylbenzene	ND		mg/kg	0.0082	0.00094	1
Methyl Acetate	ND		mg/kg	0.0065	0.0012	1
Cyclohexane	ND		mg/kg	0.033	0.0018	1
Methyl cyclohexane	ND		mg/kg	0.0065	0.0021	1
Freon-113	ND		mg/kg	0.033	0.00045	1

## Tentatively Identified Compounds

Total TIC Compounds	0.083	J	mg/kg			1
Unknown	0.0090	J	mg/kg			1
Unknown	0.013	J	mg/kg			1
Unknown	0.0080	J	mg/kg			1
Unknown	0.014	J	mg/kg			1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-18

Date Collected: 07/02/13 12:30

Client ID: WC08B\_3-4

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Volatile Organics by GC/MS-5035 - Westborough Lab						
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## Tentatively Identified Compounds

Unknown	0.0062	J	mg/kg			1
Unknown	0.015	J	mg/kg			1
Unknown	0.0089	J	mg/kg			1
Unknown	0.0047	J	mg/kg			1
Unknown Alkane	0.0042	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	113		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	98		70-130

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/10/13 08:03  
Analyst: MM  
TCLP Extraction Date: 07/09/13 15:11

Extraction Date: 07/09/13 15:11

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Volatiles by EPA 1311 - Westborough Lab for sample(s): 01,12,18 Batch: WG620642-3					
Chloroform	ND		ug/l	7.5	1.6
Carbon tetrachloride	ND		ug/l	5.0	1.3
Tetrachloroethene	ND		ug/l	5.0	1.8
Chlorobenzene	ND		ug/l	5.0	1.8
1,2-Dichloroethane	ND		ug/l	5.0	1.3
Benzene	ND		ug/l	5.0	1.6
Vinyl chloride	ND		ug/l	10	1.4
1,1-Dichloroethene	ND		ug/l	5.0	1.4
Trichloroethene	ND		ug/l	5.0	1.7
1,4-Dichlorobenzene	ND		ug/l	25	1.9
2-Butanone	ND		ug/l	50	19.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	94		70-130
Toluene-d8	104		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	95		70-130

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/10/13 08:20  
Analyst: MM  
TCLP Extraction Date: 07/09/13 15:11

Extraction Date: 07/09/13 15:11

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Volatiles by EPA 1311 - Westborough Lab for sample(s): 06,16 Batch: WG620643-3					
Chloroform	ND		ug/l	7.5	1.6
Carbon tetrachloride	ND		ug/l	5.0	1.3
Tetrachloroethene	ND		ug/l	5.0	1.8
Chlorobenzene	ND		ug/l	5.0	1.8
1,2-Dichloroethane	ND		ug/l	5.0	1.3
Benzene	ND		ug/l	5.0	1.6
Vinyl chloride	ND		ug/l	10	1.4
1,1-Dichloroethene	ND		ug/l	5.0	1.4
Trichloroethene	ND		ug/l	5.0	1.7
1,4-Dichlorobenzene	ND		ug/l	25	1.9
2-Butanone	ND		ug/l	50	19.

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	115		70-130
Dibromofluoromethane	95		70-130

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 08:13  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG620662-3					
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0050	0.00079
1,4-Dioxane	ND		mg/kg	0.10	0.017
1,2-Dibromoethane	ND		mg/kg	0.0040	0.00018
Methylene chloride	ND		mg/kg	0.0050	0.0020
1,1-Dichloroethane	ND		mg/kg	0.0015	0.00018
Chloroform	ND		mg/kg	0.0015	0.00037
Carbon tetrachloride	ND		mg/kg	0.0010	0.00021
1,2-Dichloropropane	ND		mg/kg	0.0035	0.00023
Dibromochloromethane	ND		mg/kg	0.0010	0.00031
1,1,2-Trichloroethane	ND		mg/kg	0.0015	0.00030
Tetrachloroethene	ND		mg/kg	0.0010	0.00014
Chlorobenzene	ND		mg/kg	0.0010	0.00035
Trichlorofluoromethane	ND		mg/kg	0.0050	0.00012
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00015
1,1,1-Trichloroethane	ND		mg/kg	0.0010	0.00011
Bromodichloromethane	ND		mg/kg	0.0010	0.00023
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00012
cis-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013
1,3-Dichloropropene, Total	ND		mg/kg	0.0010	0.00012
Bromoform	ND		mg/kg	0.0040	0.00041
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0010	0.00017
Benzene	ND		mg/kg	0.0010	0.00012
Toluene	0.00021	J	mg/kg	0.0015	0.00011
Ethylbenzene	ND		mg/kg	0.0010	0.00015
Chloromethane	ND		mg/kg	0.0050	0.00078
Bromomethane	ND		mg/kg	0.0020	0.00034
Vinyl chloride	ND		mg/kg	0.0020	0.00014
Chloroethane	ND		mg/kg	0.0020	0.00032
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00020
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00021
Trichloroethene	ND		mg/kg	0.0010	0.00015

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 08:13  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG620662-3					
1,2-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,3-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,4-Dichlorobenzene	ND		mg/kg	0.0050	0.00024
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00010
p/m-Xylene	ND		mg/kg	0.0020	0.00032
o-Xylene	ND		mg/kg	0.0020	0.00027
Xylenes, Total	ND		mg/kg	0.0020	0.00027
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00015
Styrene	ND		mg/kg	0.0020	0.00031
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00022
Acetone	ND		mg/kg	0.036	0.0031
Carbon disulfide	ND		mg/kg	0.010	0.0020
2-Butanone	ND		mg/kg	0.010	0.00036
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.00024
2-Hexanone	ND		mg/kg	0.010	0.00019
Bromochloromethane	ND		mg/kg	0.0050	0.00020
n-Butylbenzene	ND		mg/kg	0.0010	0.00020
sec-Butylbenzene	ND		mg/kg	0.0010	0.00020
tert-Butylbenzene	ND		mg/kg	0.0050	0.00056
Isopropylbenzene	ND		mg/kg	0.0010	0.00017
n-Propylbenzene	ND		mg/kg	0.0010	0.00012
1,2,3-Trichlorobenzene	ND		mg/kg	0.0050	0.00017
1,2,4-Trichlorobenzene	ND		mg/kg	0.0050	0.00079
1,3,5-Trimethylbenzene	ND		mg/kg	0.0050	0.00014
1,2,4-Trimethylbenzene	ND		mg/kg	0.0050	0.00057
Methyl Acetate	ND		mg/kg	0.0040	0.00076
Cyclohexane	ND		mg/kg	0.020	0.0011
Methyl cyclohexane	ND		mg/kg	0.0040	0.0013
Freon-113	ND		mg/kg	0.020	0.00027

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 07/09/13 08:13  
 Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG620662-3					

Tentatively Identified Compounds

No Tentatively Identified Compounds                      ND                      mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	83		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	111		70-130

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 22:01  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG620662-6					
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0050	0.00079
1,4-Dioxane	ND		mg/kg	0.10	0.017
1,2-Dibromoethane	ND		mg/kg	0.0040	0.00018
Methylene chloride	ND		mg/kg	0.0050	0.0020
1,1-Dichloroethane	ND		mg/kg	0.0015	0.00018
Chloroform	ND		mg/kg	0.0015	0.00037
Carbon tetrachloride	ND		mg/kg	0.0010	0.00021
1,2-Dichloropropane	ND		mg/kg	0.0035	0.00023
Dibromochloromethane	ND		mg/kg	0.0010	0.00031
1,1,2-Trichloroethane	ND		mg/kg	0.0015	0.00030
Tetrachloroethene	ND		mg/kg	0.0010	0.00014
Chlorobenzene	ND		mg/kg	0.0010	0.00035
Trichlorofluoromethane	ND		mg/kg	0.0050	0.00012
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00015
1,1,1-Trichloroethane	ND		mg/kg	0.0010	0.00011
Bromodichloromethane	ND		mg/kg	0.0010	0.00023
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00012
cis-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013
1,3-Dichloropropene, Total	ND		mg/kg	0.0010	0.00012
Bromoform	ND		mg/kg	0.0040	0.00041
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0010	0.00017
Benzene	ND		mg/kg	0.0010	0.00012
Toluene	ND		mg/kg	0.0015	0.00011
Ethylbenzene	ND		mg/kg	0.0010	0.00015
Chloromethane	ND		mg/kg	0.0050	0.00078
Bromomethane	ND		mg/kg	0.0020	0.00034
Vinyl chloride	ND		mg/kg	0.0020	0.00014
Chloroethane	ND		mg/kg	0.0020	0.00032
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00020
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00021
Trichloroethene	ND		mg/kg	0.0010	0.00015

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 22:01  
Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG620662-6					
1,2-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,3-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,4-Dichlorobenzene	ND		mg/kg	0.0050	0.00024
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00010
p/m-Xylene	ND		mg/kg	0.0020	0.00032
o-Xylene	ND		mg/kg	0.0020	0.00027
Xylenes, Total	ND		mg/kg	0.0020	0.00027
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00015
Styrene	ND		mg/kg	0.0020	0.00031
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00022
Acetone	ND		mg/kg	0.036	0.0031
Carbon disulfide	ND		mg/kg	0.010	0.0020
2-Butanone	ND		mg/kg	0.010	0.00036
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.00024
2-Hexanone	ND		mg/kg	0.010	0.00019
Bromochloromethane	ND		mg/kg	0.0050	0.00020
n-Butylbenzene	ND		mg/kg	0.0010	0.00020
sec-Butylbenzene	ND		mg/kg	0.0010	0.00020
tert-Butylbenzene	ND		mg/kg	0.0050	0.00056
Isopropylbenzene	ND		mg/kg	0.0010	0.00017
n-Propylbenzene	ND		mg/kg	0.0010	0.00012
1,2,3-Trichlorobenzene	ND		mg/kg	0.0050	0.00017
1,2,4-Trichlorobenzene	ND		mg/kg	0.0050	0.00079
1,3,5-Trimethylbenzene	ND		mg/kg	0.0050	0.00014
1,2,4-Trimethylbenzene	ND		mg/kg	0.0050	0.00057
Methyl Acetate	ND		mg/kg	0.0040	0.00076
Cyclohexane	ND		mg/kg	0.020	0.0011
Methyl cyclohexane	ND		mg/kg	0.0040	0.0013
Freon-113	ND		mg/kg	0.020	0.00027

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
 Analytical Date: 07/09/13 22:01  
 Analyst: BN

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 06 Batch: WG620662-6					

Tentatively Identified Compounds

No Tentatively Identified Compounds      ND      mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 22:01  
Analyst: PP

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01,12,16,18 Batch: WG620673-3					
1,2-Dibromo-3-chloropropane	ND		mg/kg	0.0050	0.00079
1,4-Dioxane	ND		mg/kg	0.10	0.017
1,2-Dibromoethane	ND		mg/kg	0.0040	0.00018
Methylene chloride	ND		mg/kg	0.0050	0.0020
1,1-Dichloroethane	ND		mg/kg	0.0015	0.00018
Chloroform	ND		mg/kg	0.0015	0.00037
Carbon tetrachloride	ND		mg/kg	0.0010	0.00021
1,2-Dichloropropane	ND		mg/kg	0.0035	0.00023
Dibromochloromethane	ND		mg/kg	0.0010	0.00031
1,1,2-Trichloroethane	ND		mg/kg	0.0015	0.00030
Tetrachloroethene	ND		mg/kg	0.0010	0.00014
Chlorobenzene	ND		mg/kg	0.0010	0.00035
Trichlorofluoromethane	ND		mg/kg	0.0050	0.00012
1,2-Dichloroethane	ND		mg/kg	0.0010	0.00015
1,1,1-Trichloroethane	ND		mg/kg	0.0010	0.00011
Bromodichloromethane	ND		mg/kg	0.0010	0.00023
trans-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00012
cis-1,3-Dichloropropene	ND		mg/kg	0.0010	0.00013
1,3-Dichloropropene, Total	ND		mg/kg	0.0010	0.00012
Bromoform	ND		mg/kg	0.0040	0.00041
1,1,2,2-Tetrachloroethane	ND		mg/kg	0.0010	0.00017
Benzene	ND		mg/kg	0.0010	0.00012
Toluene	ND		mg/kg	0.0015	0.00011
Ethylbenzene	ND		mg/kg	0.0010	0.00015
Chloromethane	ND		mg/kg	0.0050	0.00078
Bromomethane	ND		mg/kg	0.0020	0.00034
Vinyl chloride	ND		mg/kg	0.0020	0.00014
Chloroethane	ND		mg/kg	0.0020	0.00032
1,1-Dichloroethene	ND		mg/kg	0.0010	0.00020
trans-1,2-Dichloroethene	ND		mg/kg	0.0015	0.00021

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 22:01  
Analyst: PP

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01,12,16,18 Batch: WG620673-3					
Trichloroethene	ND		mg/kg	0.0010	0.00015
1,2-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,3-Dichlorobenzene	ND		mg/kg	0.0050	0.00018
1,4-Dichlorobenzene	ND		mg/kg	0.0050	0.00024
Methyl tert butyl ether	ND		mg/kg	0.0020	0.00010
p/m-Xylene	ND		mg/kg	0.0020	0.00032
o-Xylene	ND		mg/kg	0.0020	0.00027
Xylenes, Total	ND		mg/kg	0.0020	0.00027
cis-1,2-Dichloroethene	ND		mg/kg	0.0010	0.00015
Styrene	ND		mg/kg	0.0020	0.00031
Dichlorodifluoromethane	ND		mg/kg	0.010	0.00022
Acetone	ND		mg/kg	0.036	0.0031
Carbon disulfide	ND		mg/kg	0.010	0.0020
2-Butanone	ND		mg/kg	0.010	0.00036
4-Methyl-2-pentanone	ND		mg/kg	0.010	0.00024
2-Hexanone	ND		mg/kg	0.010	0.00019
Bromochloromethane	ND		mg/kg	0.0050	0.00020
n-Butylbenzene	ND		mg/kg	0.0010	0.00020
sec-Butylbenzene	ND		mg/kg	0.0010	0.00020
tert-Butylbenzene	ND		mg/kg	0.0050	0.00056
Isopropylbenzene	ND		mg/kg	0.0010	0.00017
n-Propylbenzene	ND		mg/kg	0.0010	0.00012
1,2,3-Trichlorobenzene	ND		mg/kg	0.0050	0.00017
1,2,4-Trichlorobenzene	ND		mg/kg	0.0050	0.00079
1,3,5-Trimethylbenzene	ND		mg/kg	0.0050	0.00014
1,2,4-Trimethylbenzene	ND		mg/kg	0.0050	0.00057
Methyl Acetate	ND		mg/kg	0.0040	0.00076
Cyclohexane	ND		mg/kg	0.020	0.0011
Methyl cyclohexane	ND		mg/kg	0.0040	0.0013
Freon-113	ND		mg/kg	0.020	0.00027

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8260C  
Analytical Date: 07/09/13 22:01  
Analyst: PP

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 01,12,16,18 Batch: WG620673-3					

Tentatively Identified Compounds

No Tentatively Identified Compounds      ND      mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	100		70-130
Toluene-d8	93		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	103		70-130

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
TCLP Volatiles by EPA 1311 - Westborough Lab Associated sample(s): 01,12,18 Batch: WG620642-1 WG620642-2								
Chloroform	95		101		70-130	6		20
Carbon tetrachloride	76		84		63-132	10		20
Tetrachloroethene	87		93		70-130	7		20
Chlorobenzene	100		105		75-130	5		25
1,2-Dichloroethane	93		102		70-130	9		20
Benzene	102		106		70-130	4		25
Vinyl chloride	99		104		55-140	5		20
1,1-Dichloroethene	89		98		61-145	10		25
Trichloroethene	93		95		70-130	2		25
1,4-Dichlorobenzene	97		102		70-130	5		20
2-Butanone	109		132		63-138	19		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	90		94		70-130
Toluene-d8	105		105		70-130
4-Bromofluorobenzene	104		102		70-130
Dibromofluoromethane	88		89		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
TCLP Volatiles by EPA 1311 - Westborough Lab Associated sample(s): 06,16 Batch: WG620643-1 WG620643-2								
Chloroform	100		94		70-130	6		20
Carbon tetrachloride	85		82		63-132	4		20
Tetrachloroethene	98		101		70-130	3		20
Chlorobenzene	98		104		75-130	6		25
1,2-Dichloroethane	96		92		70-130	4		20
Benzene	104		98		70-130	6		25
Vinyl chloride	104		102		55-140	2		20
1,1-Dichloroethene	97		91		61-145	6		25
Trichloroethene	96		88		70-130	9		25
1,4-Dichlorobenzene	95		99		70-130	4		20
2-Butanone	127		128		63-138	1		20

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	98		90		70-130
Toluene-d8	103		107		70-130
4-Bromofluorobenzene	107		102		70-130
Dibromofluoromethane	93		83		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-1 WG620662-2								
1,2-Dibromo-3-chloropropane	75		81		68-130	8		30
1,4-Dioxane	118		124		65-136	5		30
1,2-Dibromoethane	92		95		70-130	3		30
Methylene chloride	120		126		70-130	5		30
1,1-Dichloroethane	115		121		70-130	5		30
Chloroform	120		124		70-130	3		30
Carbon tetrachloride	122		132	Q	70-130	8		30
1,2-Dichloropropane	116		122		70-130	5		30
Dibromochloromethane	94		98		70-130	4		30
1,1,2-Trichloroethane	92		96		70-130	4		30
2-Chloroethylvinyl ether	113		123			8		30
Tetrachloroethene	93		98		70-130	5		30
Chlorobenzene	94		97		70-130	4		30
Trichlorofluoromethane	119		129		70-139	8		30
1,2-Dichloroethane	116		121		70-130	4		30
1,1,1-Trichloroethane	121		128		70-130	6		30
Bromodichloromethane	121		125		70-130	3		30
trans-1,3-Dichloropropene	91		95		70-130	4		30
cis-1,3-Dichloropropene	121		126		70-130	4		30
1,1-Dichloropropene	119		126		70-130	6		30
Bromoform	81		84		70-130	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-1 WG620662-2								
1,1,1,2-Tetrachloroethane	79		84		70-130	6		30
Benzene	117		123		70-130	5		30
Toluene	88		93		70-130	5		30
Ethylbenzene	93		97		70-130	4		30
Chloromethane	102		110		52-130	8		30
Bromomethane	124		132		57-147	6		30
Vinyl chloride	107		117		67-130	9		30
Chloroethane	138		145		50-151	5		30
1,1-Dichloroethene	117		125		65-135	7		30
trans-1,2-Dichloroethene	118		125		70-130	6		30
Trichloroethene	120		126		70-130	5		30
1,2-Dichlorobenzene	84		87		70-130	3		30
1,3-Dichlorobenzene	85		88		70-130	4		30
1,4-Dichlorobenzene	85		87		70-130	3		30
Methyl tert butyl ether	113		120		66-130	6		30
p/m-Xylene	96		100		70-130	4		30
o-Xylene	97		101		70-130	5		30
cis-1,2-Dichloroethene	120		124		70-130	3		30
Dibromomethane	118		125		70-130	6		30
1,4-Dichlorobutane	76		80		70-130	5		30
1,2,3-Trichloropropane	77		82		68-130	6		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-1 WG620662-2								
Styrene	97		101		70-130	4		30
Dichlorodifluoromethane	107		116		30-146	8		30
Acetone	114		154	Q	54-140	30		30
Carbon disulfide	111		118		59-130	6		30
2-Butanone	102		120		70-130	16		30
Vinyl acetate	108		114		70-130	5		30
4-Methyl-2-pentanone	113		118		70-130	4		30
2-Hexanone	77		86		70-130	12		30
Ethyl methacrylate	90		93		70-130	3		30
Acrolein	99		109			10		30
Acrylonitrile	107		115		70-130	7		30
Bromochloromethane	121		128		70-130	6		30
Tetrahydrofuran	101		108		66-130	7		30
2,2-Dichloropropane	120		129		70-130	7		30
1,3-Dichloropropane	91		95		69-130	4		30
1,1,1,2-Tetrachloroethane	94		99		70-130	5		30
Bromobenzene	84		88		70-130	4		30
n-Butylbenzene	84		89		70-130	6		30
sec-Butylbenzene	84		88		70-130	5		30
tert-Butylbenzene	85		89		70-130	4		30
o-Chlorotoluene	82		86		70-130	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-1 WG620662-2								
p-Chlorotoluene	82		86		70-130	5		30
Hexachlorobutadiene	86		92		67-130	6		30
Isopropylbenzene	82		87		70-130	5		30
p-Isopropyltoluene	86		90		70-130	5		30
Naphthalene	82		87		70-130	5		30
n-Propylbenzene	82		87		70-130	5		30
1,2,3-Trichlorobenzene	87		90		70-130	4		30
1,2,4-Trichlorobenzene	87		91		70-130	4		30
1,3,5-Trimethylbenzene	84		88		70-130	5		30
1,2,4-Trimethylbenzene	84		88		70-130	4		30
trans-1,4-Dichloro-2-butene	75		81		70-130	7		30
Ethyl ether	114		95		67-130	18		30
Methyl Acetate	100		107		51-146	7		30
Ethyl Acetate	104		109			5		30
Isopropyl Ether	109		114		66-130	4		30
Cyclohexane	113		121		59-142	7		30
tert-Butyl Alcohol	109		115		67-130	5		30
Ethyl-Tert-Butyl-Ether	115		119		70-130	3		30
Methyl cyclohexane	119		126		70-130	6		30
Freon-113	118		128		50-139	8		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-1 WG620662-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	95		97		70-130
Toluene-d8	85		85		70-130
4-Bromofluorobenzene	96		97		70-130
Dibromofluoromethane	107		108		70-130

Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-4 WG620662-5

1,2-Dibromo-3-chloropropane	72		73		68-130	1	30
1,4-Dioxane	129		131		65-136	2	30
1,2-Dibromoethane	85		84		70-130	1	30
Methylene chloride	110		101		70-130	9	30
1,1-Dichloroethane	102		96		70-130	6	30
Chloroform	103		100		70-130	3	30
Carbon tetrachloride	103		98		70-130	5	30
1,2-Dichloropropane	101		97		70-130	4	30
Dibromochloromethane	85		85		70-130	1	30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-4 WG620662-5								
1,1,2-Trichloroethane	85		85		70-130	0		30
2-Chloroethylvinyl ether	93		96			3		30
Tetrachloroethene	89		84		70-130	5		30
Chlorobenzene	88		85		70-130	4		30
Trichlorofluoromethane	98		93		70-139	5		30
1,2-Dichloroethane	99		96		70-130	3		30
1,1,1-Trichloroethane	104		99		70-130	5		30
Bromodichloromethane	102		98		70-130	4		30
trans-1,3-Dichloropropene	85		83		70-130	2		30
cis-1,3-Dichloropropene	106		101		70-130	5		30
1,1-Dichloropropene	105		98		70-130	7		30
Bromoform	75		78		70-130	4		30
1,1,1,2-Tetrachloroethane	76		78		70-130	3		30
Benzene	105		99		70-130	6		30
Toluene	86		80		70-130	7		30
Ethylbenzene	88		85		70-130	4		30
Chloromethane	92		83		52-130	11		30
Bromomethane	110		100		57-147	10		30
Vinyl chloride	96		89		67-130	7		30
Chloroethane	130		122		50-151	6		30
1,1-Dichloroethene	102		96		65-135	6		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-4 WG620662-5								
trans-1,2-Dichloroethene	105		99		70-130	6		30
Trichloroethene	107		100		70-130	7		30
1,2-Dichlorobenzene	80		77		70-130	3		30
1,3-Dichlorobenzene	80		79		70-130	2		30
1,4-Dichlorobenzene	80		78		70-130	2		30
Methyl tert butyl ether	102		98		66-130	4		30
p/m-Xylene	91		87		70-130	4		30
o-Xylene	91		88		70-130	3		30
cis-1,2-Dichloroethene	107		100		70-130	7		30
Dibromomethane	102		99		70-130	3		30
1,4-Dichlorobutane	72		73		70-130	1		30
1,2,3-Trichloropropane	74		76		68-130	2		30
Styrene	90		88		70-130	3		30
Dichlorodifluoromethane	85		79		30-146	7		30
Acetone	<b>158</b>	Q	124		54-140	24		30
Carbon disulfide	99		92		59-130	7		30
2-Butanone	110		100		70-130	10		30
Vinyl acetate	93		91		70-130	3		30
4-Methyl-2-pentanone	102		100		70-130	2		30
2-Hexanone	85		79		70-130	8		30
Ethyl methacrylate	86		84		70-130	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-4 WG620662-5								
Acrolein	91		89			2		30
Acrylonitrile	94		96		70-130	3		30
Bromochloromethane	105		102		70-130	3		30
Tetrahydrofuran	91		89		66-130	2		30
2,2-Dichloropropane	108		101		70-130	7		30
1,3-Dichloropropane	85		84		69-130	1		30
1,1,1,2-Tetrachloroethane	88		86		70-130	3		30
Bromobenzene	80		78		70-130	1		30
n-Butylbenzene	81		78		70-130	3		30
sec-Butylbenzene	80		78		70-130	3		30
tert-Butylbenzene	82		80		70-130	2		30
o-Chlorotoluene	85		78		70-130	9		30
p-Chlorotoluene	80		79		70-130	1		30
Hexachlorobutadiene	83		81		67-130	2		30
Isopropylbenzene	80		78		70-130	3		30
p-Isopropyltoluene	83		80		70-130	3		30
Naphthalene	79		80		70-130	1		30
n-Propylbenzene	80		77		70-130	3		30
1,2,3-Trichlorobenzene	82		81		70-130	1		30
1,2,4-Trichlorobenzene	84		82		70-130	2		30
1,3,5-Trimethylbenzene	81		79		70-130	3		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 06 Batch: WG620662-4 WG620662-5								
1,2,4-Trimethylbenzene	82		80		70-130	2		30
trans-1,4-Dichloro-2-butene	71		72		70-130	2		30
Ethyl ether	101		96		67-130	5		30
Methyl Acetate	91		89		51-146	3		30
Ethyl Acetate	93		92			1		30
Isopropyl Ether	95		90		66-130	5		30
Cyclohexane	93		87		59-142	7		30
tert-Butyl Alcohol	98		100		67-130	2		30
Ethyl-Tert-Butyl-Ether	100		98		70-130	2		30
Methyl cyclohexane	98		91		70-130	7		30
Freon-113	98		91		50-139	7		30

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
1,2-Dichloroethane-d4	96		98		70-130
Toluene-d8	89		90		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	103		106		70-130



## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312411

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Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,12,16,18 Batch: WG620673-1 WG620673-2								
1,2-Dibromo-3-chloropropane	72		73		68-130	1		30
1,4-Dioxane	129		131		65-136	2		30
1,2-Dibromoethane	85		84		70-130	1		30
Methylene chloride	110		101		70-130	9		30
1,1-Dichloroethane	102		96		70-130	6		30
Chloroform	103		100		70-130	3		30
Carbon tetrachloride	103		98		70-130	5		30
1,2-Dichloropropane	101		97		70-130	4		30
Dibromochloromethane	85		85		70-130	1		30
1,1,2-Trichloroethane	85		85		70-130	0		30
2-Chloroethylvinyl ether	93		96			3		30
Tetrachloroethene	89		84		70-130	5		30
Chlorobenzene	88		85		70-130	4		30
Trichlorofluoromethane	98		93		70-139	5		30
1,2-Dichloroethane	99		96		70-130	3		30
1,1,1-Trichloroethane	104		99		70-130	5		30
Bromodichloromethane	102		98		70-130	4		30
trans-1,3-Dichloropropene	85		83		70-130	2		30
cis-1,3-Dichloropropene	106		101		70-130	5		30
1,1-Dichloropropene	105		98		70-130	7		30
Bromoform	75		78		70-130	4		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,12,16,18 Batch: WG620673-1 WG620673-2								
1,1,2,2-Tetrachloroethane	76		78		70-130	3		30
Benzene	105		99		70-130	6		30
Toluene	86		80		70-130	7		30
Ethylbenzene	88		85		70-130	4		30
Chloromethane	92		83		52-130	11		30
Bromomethane	110		100		57-147	10		30
Vinyl chloride	96		89		67-130	7		30
Chloroethane	130		122		50-151	6		30
1,1-Dichloroethene	102		96		65-135	6		30
trans-1,2-Dichloroethene	105		99		70-130	6		30
Trichloroethene	107		100		70-130	7		30
1,2-Dichlorobenzene	80		77		70-130	3		30
1,3-Dichlorobenzene	80		79		70-130	2		30
1,4-Dichlorobenzene	80		78		70-130	2		30
Methyl tert butyl ether	102		98		66-130	4		30
p/m-Xylene	91		87		70-130	4		30
o-Xylene	91		88		70-130	3		30
cis-1,2-Dichloroethene	107		100		70-130	7		30
Dibromomethane	102		99		70-130	3		30
1,4-Dichlorobutane	72		73		70-130	1		30
1,2,3-Trichloropropane	74		76		68-130	2		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,12,16,18 Batch: WG620673-1 WG620673-2								
Styrene	90		88		70-130	3		30
Dichlorodifluoromethane	85		79		30-146	7		30
Acetone	158	Q	124		54-140	24		30
Carbon disulfide	99		92		59-130	7		30
2-Butanone	110		100		70-130	10		30
Vinyl acetate	93		91		70-130	3		30
4-Methyl-2-pentanone	102		100		70-130	2		30
2-Hexanone	85		79		70-130	8		30
Ethyl methacrylate	86		84		70-130	2		30
Acrolein	91		89			2		30
Acrylonitrile	94		96		70-130	3		30
Bromochloromethane	105		102		70-130	3		30
Tetrahydrofuran	91		89		66-130	2		30
2,2-Dichloropropane	108		101		70-130	7		30
1,3-Dichloropropane	85		84		69-130	1		30
1,1,1,2-Tetrachloroethane	88		86		70-130	3		30
Bromobenzene	80		78		70-130	1		30
n-Butylbenzene	81		78		70-130	3		30
sec-Butylbenzene	80		78		70-130	3		30
tert-Butylbenzene	82		80		70-130	2		30
o-Chlorotoluene	85		78		70-130	9		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,12,16,18 Batch: WG620673-1 WG620673-2								
p-Chlorotoluene	80		79		70-130	1		30
Hexachlorobutadiene	83		81		67-130	2		30
Isopropylbenzene	80		78		70-130	3		30
p-Isopropyltoluene	83		80		70-130	3		30
Naphthalene	79		80		70-130	1		30
n-Propylbenzene	80		77		70-130	3		30
1,2,3-Trichlorobenzene	82		81		70-130	1		30
1,2,4-Trichlorobenzene	84		82		70-130	2		30
1,3,5-Trimethylbenzene	81		79		70-130	3		30
1,2,4-Trimethylbenzene	82		80		70-130	2		30
trans-1,4-Dichloro-2-butene	71		72		70-130	2		30
Ethyl ether	101		96		67-130	5		30
Methyl Acetate	91		89		51-146	3		30
Ethyl Acetate	93		92			1		30
Isopropyl Ether	95		90		66-130	5		30
Cyclohexane	93		87		59-142	7		30
tert-Butyl Alcohol	98		100		67-130	2		30
Ethyl-Tert-Butyl-Ether	100		98		70-130	2		30
Methyl cyclohexane	98		91		70-130	7		30
Freon-113	98		91		50-139	7		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 01,12,16,18 Batch: WG620673-1 WG620673-2

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	96		98		70-130
Toluene-d8	89		90		70-130
4-Bromofluorobenzene	98		98		70-130
Dibromofluoromethane	103		106		70-130

# SEMIVOLATILES

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 16:33  
**Analyst:** RC  
**Percent Solids:** 88%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 12:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	109		21-120
Phenol-d6	101		10-120
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	109		15-120
2,4,6-Tribromophenol	103		10-120
4-Terphenyl-d14	93		33-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-20  
 Client ID: COMP05\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 07/08/13 01:29  
 Analyst: RC  
 Percent Solids: 88%

Date Collected: 07/02/13 14:40  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 01:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	0.044	J	mg/kg	0.15	0.039	1
2-Chloronaphthalene	ND		mg/kg	0.19	0.062	1
Fluoranthene	0.94		mg/kg	0.11	0.035	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.19	0.058	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.23	0.066	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.20	0.057	1
Hexachlorocyclopentadiene	ND		mg/kg	0.54	0.12	1
Naphthalene	ND		mg/kg	0.19	0.063	1
Bis(2-Ethylhexyl)phthalate	0.15	J	mg/kg	0.19	0.050	1
Butyl benzyl phthalate	ND		mg/kg	0.19	0.037	1
Di-n-butylphthalate	ND		mg/kg	0.19	0.036	1
Di-n-octylphthalate	ND		mg/kg	0.19	0.046	1
Diethyl phthalate	ND		mg/kg	0.19	0.040	1
Dimethyl phthalate	ND		mg/kg	0.19	0.048	1
Chrysene	0.45		mg/kg	0.11	0.037	1
Acenaphthylene	0.089	J	mg/kg	0.15	0.035	1
Anthracene	0.14		mg/kg	0.11	0.031	1
Benzo(ghi)perylene	0.25		mg/kg	0.15	0.039	1
Fluorene	ND		mg/kg	0.19	0.054	1
Phenanthrene	0.61		mg/kg	0.11	0.037	1
Pyrene	0.80		mg/kg	0.11	0.037	1
4-Chloroaniline	ND		mg/kg	0.19	0.050	1
2-Nitroaniline	ND		mg/kg	0.19	0.053	1
3-Nitroaniline	ND		mg/kg	0.19	0.052	1
4-Nitroaniline	ND		mg/kg	0.19	0.051	1
Dibenzofuran	ND		mg/kg	0.19	0.063	1
2-Methylnaphthalene	ND		mg/kg	0.23	0.060	1
P-Chloro-M-Cresol	ND		mg/kg	0.19	0.055	1
2-Nitrophenol	ND		mg/kg	0.41	0.059	1
Phenol	ND		mg/kg	0.19	0.056	1
2-Methylphenol	ND		mg/kg	0.19	0.061	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-20  
 Client ID: COMP05\_0-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 14:40  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.27	0.062	1
Carbazole	0.074	J	mg/kg	0.19	0.041	1
4-Nitrophenol	ND		mg/kg	0.26	0.061	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.19	0.044	1
Benzaldehyde	ND		mg/kg	0.25	0.076	1
Caprolactam	ND		mg/kg	0.19	0.052	1
Acetophenone	ND		mg/kg	0.19	0.059	1
Biphenyl	ND		mg/kg	0.43	0.062	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.19	0.059	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.19	0.051	1

## Tentatively Identified Compounds

Total TIC Compounds	14.	J	mg/kg			1
Unknown	0.66	J	mg/kg			1
Unknown	6.1	J	mg/kg			1
Unknown	5.3	J	mg/kg			1
Unknown	0.64	J	mg/kg			1
Unknown	0.19	J	mg/kg			1
Unknown	0.19	J	mg/kg			1
Unknown PAH	0.20	J	mg/kg			1
Unknown PAH	0.16	J	mg/kg			1
Unknown	0.24	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	73		25-120
Phenol-d6	79		10-120
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	97		30-120
2,4,6-Tribromophenol	84		0-136
4-Terphenyl-d14	95		18-120

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-20  
 Client ID: COMP05\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/09/13 20:12  
 Analyst: AS  
 Percent Solids: 88%

Date Collected: 07/02/13 14:40  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 01:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Bis(2-chloroethyl)ether	ND		mg/kg	0.049	0.010	1
2-Chlorophenol	ND		mg/kg	0.12	0.010	1
Benzo(a)anthracene	0.41		mg/kg	0.12	0.019	1
n-Nitrosodi-n-propylamine	ND		mg/kg	0.049	0.0099	1
Isophorone	ND		mg/kg	0.049	0.012	1
Nitrobenzene	ND		mg/kg	0.049	0.010	1
2,4-Dichlorophenol	ND		mg/kg	0.049	0.0092	1
2,4-Dimethylphenol	ND		mg/kg	0.17	0.024	1
2,4,6-Trichlorophenol	ND		mg/kg	0.049	0.010	1
2,4,5-Trichlorophenol	ND		mg/kg	0.049	0.011	1
2,6-Dinitrotoluene	ND		mg/kg	0.049	0.012	1
2,4-Dinitrophenol	ND		mg/kg	0.073	0.023	1
2,4-Dinitrotoluene	ND		mg/kg	0.049	0.011	1
4,6-Dinitro-o-cresol	ND		mg/kg	0.073	0.016	1
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.049	0.013	1
Atrazine	ND		mg/kg	0.049	0.014	1
3,3'-Dichlorobenzidine	ND		mg/kg	0.049	0.011	1
Benzo(a)pyrene	0.39		mg/kg	0.049	0.016	1
Benzo(b)fluoranthene	0.46		mg/kg	0.049	0.016	1
Benzo(k)fluoranthene	0.38		mg/kg	0.049	0.016	1
Dibenzo(a,h)anthracene	0.066		mg/kg	0.049	0.016	1
Indeno(1,2,3-cd)Pyrene	0.25		mg/kg	0.14	0.021	1
Hexachlorobenzene	ND		mg/kg	0.049	0.011	1
Pentachlorophenol	ND		mg/kg	0.073	0.015	1
Hexachlorobutadiene	ND		mg/kg	0.14	0.010	1
Hexachloroethane	ND		mg/kg	0.049	0.010	1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-20  
 Client ID: COMP05\_0-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 14:40  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab						
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		25-120
Phenol-d6	77		10-120
Nitrobenzene-d5	85		23-120
2-Fluorobiphenyl	79		30-120
2,4,6-Tribromophenol	69		0-136
4-Terphenyl-d14	85		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 16:59  
**Analyst:** RC  
**Percent Solids:** 81%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 12:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	109		21-120
Phenol-d6	99		10-120
Nitrobenzene-d5	91		23-120
2-Fluorobiphenyl	108		15-120
2,4,6-Tribromophenol	100		10-120
4-Terphenyl-d14	95		33-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 01:54  
**Analyst:** RC  
**Percent Solids:** 81%

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 01:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	0.12	J	mg/kg	0.16	0.042	1
2-Chloronaphthalene	ND		mg/kg	0.20	0.067	1
Fluoranthene	2.7		mg/kg	0.12	0.038	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.20	0.062	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.24	0.072	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.22	0.062	1
Hexachlorocyclopentadiene	ND		mg/kg	0.59	0.13	1
Naphthalene	ND		mg/kg	0.20	0.068	1
Bis(2-Ethylhexyl)phthalate	ND		mg/kg	0.20	0.054	1
Butyl benzyl phthalate	ND		mg/kg	0.20	0.040	1
Di-n-butylphthalate	ND		mg/kg	0.20	0.039	1
Di-n-octylphthalate	ND		mg/kg	0.20	0.050	1
Diethyl phthalate	ND		mg/kg	0.20	0.043	1
Dimethyl phthalate	ND		mg/kg	0.20	0.052	1
Chrysene	1.2		mg/kg	0.12	0.040	1
Acenaphthylene	0.19		mg/kg	0.16	0.038	1
Anthracene	0.24		mg/kg	0.12	0.034	1
Benzo(ghi)perylene	0.56		mg/kg	0.16	0.042	1
Fluorene	0.14	J	mg/kg	0.20	0.059	1
Phenanthrene	2.2		mg/kg	0.12	0.040	1
Pyrene	2.3		mg/kg	0.12	0.040	1
4-Chloroaniline	ND		mg/kg	0.20	0.054	1
2-Nitroaniline	ND		mg/kg	0.20	0.058	1
3-Nitroaniline	ND		mg/kg	0.20	0.056	1
4-Nitroaniline	ND		mg/kg	0.20	0.055	1
Dibenzofuran	0.096	J	mg/kg	0.20	0.068	1
2-Methylnaphthalene	ND		mg/kg	0.24	0.065	1
P-Chloro-M-Cresol	ND		mg/kg	0.20	0.059	1
2-Nitrophenol	ND		mg/kg	0.44	0.064	1
Phenol	ND		mg/kg	0.20	0.060	1
2-Methylphenol	ND		mg/kg	0.20	0.066	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-21  
 Client ID: COMP06\_0-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 14:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.29	0.067	1
Carbazole	0.16	J	mg/kg	0.20	0.044	1
4-Nitrophenol	ND		mg/kg	0.29	0.066	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.20	0.047	1
Benzaldehyde	ND		mg/kg	0.27	0.083	1
Caprolactam	ND		mg/kg	0.20	0.056	1
Acetophenone	ND		mg/kg	0.20	0.063	1
Biphenyl	ND		mg/kg	0.47	0.067	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.20	0.063	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.20	0.055	1

## Tentatively Identified Compounds

Total TIC Compounds	16.	J	mg/kg			1
Unknown	2.0	J	mg/kg			1
Unknown	5.3	J	mg/kg			1
Unknown Alkane	4.3	J	mg/kg			1
Unknown PAH	0.40	J	mg/kg			1
Unknown	0.48	J	mg/kg			1
Unknown	0.56	J	mg/kg			1
Unknown PAH	0.43	J	mg/kg			1
Unknown PAH	0.34	J	mg/kg			1
Unknown	0.27	J	mg/kg			1
Unknown	0.27	J	mg/kg			1
Unknown	0.26	J	mg/kg			1
Unknown	0.35	J	mg/kg			1
Unknown	0.19	J	mg/kg			1
Unknown	1.1	J	mg/kg			1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-21  
 Client ID: COMP06\_0-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 14:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	58		25-120
Phenol-d6	79		10-120
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	87		30-120
2,4,6-Tribromophenol	69		0-136
4-Terphenyl-d14	58		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-21 D  
 Client ID: COMP06\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/09/13 20:38  
 Analyst: AS  
 Percent Solids: 81%

Date Collected: 07/02/13 14:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 01:52

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.10	0.023	2
2-Chlorophenol	ND		mg/kg	0.26	0.023	2
Benzo(a)anthracene	0.80		mg/kg	0.26	0.042	2
n-Nitrosodi-n-propylamine	ND		mg/kg	0.10	0.021	2
Isophorone	ND		mg/kg	0.10	0.026	2
Nitrobenzene	ND		mg/kg	0.10	0.022	2
2,4-Dichlorophenol	ND		mg/kg	0.10	0.020	2
2,4-Dimethylphenol	ND		mg/kg	0.36	0.053	2
2,4,6-Trichlorophenol	ND		mg/kg	0.10	0.022	2
2,4,5-Trichlorophenol	ND		mg/kg	0.10	0.024	2
2,6-Dinitrotoluene	ND		mg/kg	0.10	0.026	2
2,4-Dinitrophenol	ND		mg/kg	0.16	0.050	2
2,4-Dinitrotoluene	ND		mg/kg	0.10	0.023	2
4,6-Dinitro-o-cresol	ND		mg/kg	0.16	0.036	2
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.10	0.028	2
Atrazine	ND		mg/kg	0.10	0.031	2
3,3'-Dichlorobenzidine	ND		mg/kg	0.10	0.024	2
Benzo(a)pyrene	0.76		mg/kg	0.10	0.034	2
Benzo(b)fluoranthene	0.93		mg/kg	0.10	0.035	2
Benzo(k)fluoranthene	0.72		mg/kg	0.10	0.034	2
Dibenzo(a,h)anthracene	0.12		mg/kg	0.10	0.034	2
Indeno(1,2,3-cd)Pyrene	0.48		mg/kg	0.31	0.046	2
Hexachlorobenzene	ND		mg/kg	0.10	0.024	2
Pentachlorophenol	ND		mg/kg	0.16	0.032	2
Hexachlorobutadiene	ND		mg/kg	0.31	0.022	2
Hexachloroethane	ND		mg/kg	0.10	0.022	2

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-21 D

Date Collected: 07/02/13 14:50

Client ID: COMP06\_0-14

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	49		25-120
Phenol-d6	68		10-120
Nitrobenzene-d5	75		23-120
2-Fluorobiphenyl	66		30-120
2,4,6-Tribromophenol	50		0-136
4-Terphenyl-d14	55		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 17:25  
**Analyst:** RC  
**Percent Solids:** 85%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 12:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	115		21-120
Phenol-d6	104		10-120
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	112		15-120
2,4,6-Tribromophenol	103		10-120
4-Terphenyl-d14	100		33-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 02:20  
**Analyst:** RC  
**Percent Solids:** 85%

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 11:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	ND		mg/kg	0.16	0.040	1
2-Chloronaphthalene	ND		mg/kg	0.19	0.063	1
Fluoranthene	0.36		mg/kg	0.12	0.036	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.19	0.059	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.23	0.068	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.21	0.059	1
Hexachlorocyclopentadiene	ND		mg/kg	0.56	0.12	1
Naphthalene	ND		mg/kg	0.19	0.064	1
Bis(2-Ethylhexyl)phthalate	0.11	J	mg/kg	0.19	0.051	1
Butyl benzyl phthalate	ND		mg/kg	0.19	0.038	1
Di-n-butylphthalate	ND		mg/kg	0.19	0.038	1
Di-n-octylphthalate	ND		mg/kg	0.19	0.048	1
Diethyl phthalate	ND		mg/kg	0.19	0.041	1
Dimethyl phthalate	ND		mg/kg	0.19	0.049	1
Chrysene	0.16		mg/kg	0.12	0.038	1
Acenaphthylene	ND		mg/kg	0.16	0.036	1
Anthracene	0.035	J	mg/kg	0.12	0.032	1
Benzo(ghi)perylene	0.086	J	mg/kg	0.16	0.040	1
Fluorene	ND		mg/kg	0.19	0.056	1
Phenanthrene	0.29		mg/kg	0.12	0.038	1
Pyrene	0.35		mg/kg	0.12	0.038	1
4-Chloroaniline	ND		mg/kg	0.19	0.051	1
2-Nitroaniline	ND		mg/kg	0.19	0.055	1
3-Nitroaniline	ND		mg/kg	0.19	0.054	1
4-Nitroaniline	ND		mg/kg	0.19	0.052	1
Dibenzofuran	ND		mg/kg	0.19	0.065	1
2-Methylnaphthalene	ND		mg/kg	0.23	0.062	1
P-Chloro-M-Cresol	ND		mg/kg	0.19	0.056	1
2-Nitrophenol	ND		mg/kg	0.42	0.061	1
Phenol	ND		mg/kg	0.19	0.058	1
2-Methylphenol	ND		mg/kg	0.19	0.063	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-22  
 Client ID: COMP07\_0-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 15:00  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.28	0.064	1
Carbazole	ND		mg/kg	0.19	0.042	1
4-Nitrophenol	ND		mg/kg	0.27	0.063	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.19	0.045	1
Benzaldehyde	ND		mg/kg	0.26	0.078	1
Caprolactam	ND		mg/kg	0.19	0.054	1
Acetophenone	ND		mg/kg	0.19	0.060	1
Biphenyl	ND		mg/kg	0.44	0.064	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.19	0.060	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.19	0.052	1

## Tentatively Identified Compounds

Total TIC Compounds	3.6	J	mg/kg			1
Unknown	1.9	J	mg/kg			1
Unknown	0.37	J	mg/kg			1
Unknown	0.40	J	mg/kg			1
Unknown	0.77	J	mg/kg			1
Unknown PAH	0.11	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		25-120
Phenol-d6	84		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	81		30-120
2,4,6-Tribromophenol	82		0-136
4-Terphenyl-d14	56		18-120

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-22 D  
 Client ID: COMP07\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/09/13 21:05  
 Analyst: AS  
 Percent Solids: 85%

Date Collected: 07/02/13 15:00  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 04:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Bis(2-chloroethyl)ether	ND		mg/kg	0.25	0.054	5
2-Chlorophenol	ND		mg/kg	0.62	0.054	5
Benzo(a)anthracene	0.15	J	mg/kg	0.62	0.099	5
n-Nitrosodi-n-propylamine	ND		mg/kg	0.25	0.051	5
Isophorone	ND		mg/kg	0.25	0.062	5
Nitrobenzene	ND		mg/kg	0.25	0.052	5
2,4-Dichlorophenol	ND		mg/kg	0.25	0.047	5
2,4-Dimethylphenol	ND		mg/kg	0.87	0.12	5
2,4,6-Trichlorophenol	ND		mg/kg	0.25	0.052	5
2,4,5-Trichlorophenol	ND		mg/kg	0.25	0.058	5
2,6-Dinitrotoluene	ND		mg/kg	0.25	0.062	5
2,4-Dinitrophenol	ND		mg/kg	0.37	0.12	5
2,4-Dinitrotoluene	ND		mg/kg	0.25	0.055	5
4,6-Dinitro-o-cresol	ND		mg/kg	0.37	0.084	5
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.25	0.067	5
Atrazine	ND		mg/kg	0.25	0.073	5
3,3'-Dichlorobenzidine	ND		mg/kg	0.25	0.056	5
Benzo(a)pyrene	0.16	J	mg/kg	0.25	0.080	5
Benzo(b)fluoranthene	0.14	J	mg/kg	0.25	0.083	5
Benzo(k)fluoranthene	0.14	J	mg/kg	0.25	0.082	5
Dibenzo(a,h)anthracene	ND		mg/kg	0.25	0.082	5
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.75	0.11	5
Hexachlorobenzene	ND		mg/kg	0.25	0.057	5
Pentachlorophenol	ND		mg/kg	0.37	0.075	5
Hexachlorobutadiene	ND		mg/kg	0.75	0.052	5
Hexachloroethane	ND		mg/kg	0.25	0.052	5

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-22 D

Date Collected: 07/02/13 15:00

Client ID: COMP07\_0-14

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		25-120
Phenol-d6	81		10-120
Nitrobenzene-d5	81		23-120
2-Fluorobiphenyl	70		30-120
2,4,6-Tribromophenol	67		0-136
4-Terphenyl-d14	59		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 17:51  
**Analyst:** RC  
**Percent Solids:** 87%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 12:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	105		21-120
Phenol-d6	97		10-120
Nitrobenzene-d5	89		23-120
2-Fluorobiphenyl	107		15-120
2,4,6-Tribromophenol	98		10-120
4-Terphenyl-d14	92		33-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 02:45  
**Analyst:** RC  
**Percent Solids:** 87%

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 11:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	0.10	J	mg/kg	0.15	0.040	1
2-Chloronaphthalene	ND		mg/kg	0.19	0.062	1
Fluoranthene	1.6		mg/kg	0.12	0.035	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.19	0.058	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.23	0.068	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.21	0.058	1
Hexachlorocyclopentadiene	ND		mg/kg	0.55	0.12	1
Naphthalene	ND		mg/kg	0.19	0.064	1
Bis(2-Ethylhexyl)phthalate	0.095	J	mg/kg	0.19	0.050	1
Butyl benzyl phthalate	ND		mg/kg	0.19	0.038	1
Di-n-butylphthalate	ND		mg/kg	0.19	0.037	1
Di-n-octylphthalate	ND		mg/kg	0.19	0.047	1
Diethyl phthalate	ND		mg/kg	0.19	0.040	1
Dimethyl phthalate	ND		mg/kg	0.19	0.049	1
Chrysene	0.73		mg/kg	0.12	0.038	1
Acenaphthylene	0.044	J	mg/kg	0.15	0.036	1
Anthracene	0.28		mg/kg	0.12	0.032	1
Benzo(ghi)perylene	0.38		mg/kg	0.15	0.040	1
Fluorene	0.093	J	mg/kg	0.19	0.055	1
Phenanthrene	1.3		mg/kg	0.12	0.038	1
Pyrene	1.4		mg/kg	0.12	0.037	1
4-Chloroaniline	ND		mg/kg	0.19	0.051	1
2-Nitroaniline	ND		mg/kg	0.19	0.054	1
3-Nitroaniline	ND		mg/kg	0.19	0.053	1
4-Nitroaniline	ND		mg/kg	0.19	0.052	1
Dibenzofuran	0.074	J	mg/kg	0.19	0.064	1
2-Methylnaphthalene	ND		mg/kg	0.23	0.061	1
P-Chloro-M-Cresol	ND		mg/kg	0.19	0.056	1
2-Nitrophenol	ND		mg/kg	0.41	0.060	1
Phenol	ND		mg/kg	0.19	0.057	1
2-Methylphenol	ND		mg/kg	0.19	0.062	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-23  
 Client ID: COMP08\_10-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 15:20  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.28	0.063	1
Carbazole	0.14	J	mg/kg	0.19	0.041	1
4-Nitrophenol	ND		mg/kg	0.27	0.062	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.19	0.044	1
Benzaldehyde	ND		mg/kg	0.25	0.078	1
Caprolactam	ND		mg/kg	0.19	0.053	1
Acetophenone	ND		mg/kg	0.19	0.060	1
Biphenyl	ND		mg/kg	0.44	0.063	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.19	0.059	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.19	0.051	1

## Tentatively Identified Compounds

Total TIC Compounds	14.	J	mg/kg			1
Unknown	0.80	J	mg/kg			1
Unknown	0.55	J	mg/kg			1
Unknown	4.8	J	mg/kg			1
Unknown Alkane	4.0	J	mg/kg			1
Unknown	0.50	J	mg/kg			1
Unknown Alkane	0.60	J	mg/kg			1
Unknown PAH	0.16	J	mg/kg			1
Unknown	0.22	J	mg/kg			1
Unknown	0.26	J	mg/kg			1
Unknown PAH	0.16	J	mg/kg			1
Unknown	0.33	J	mg/kg			1
Unknown	0.69	J	mg/kg			1
Unknown	0.53	J	mg/kg			1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-23  
 Client ID: COMP08\_10-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 15:20  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS - Westborough Lab						
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	56		25-120
Phenol-d6	76		10-120
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	91		30-120
2,4,6-Tribromophenol	43		0-136
4-Terphenyl-d14	71		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D-SIM  
**Analytical Date:** 07/09/13 21:31  
**Analyst:** AS  
**Percent Solids:** 87%

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 04:11

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.050	0.011	1
2-Chlorophenol	ND		mg/kg	0.12	0.011	1
Benzo(a)anthracene	0.65		mg/kg	0.12	0.020	1
n-Nitrosodi-n-propylamine	ND		mg/kg	0.050	0.010	1
Isophorone	ND		mg/kg	0.050	0.012	1
Nitrobenzene	ND		mg/kg	0.050	0.010	1
2,4-Dichlorophenol	ND		mg/kg	0.050	0.0093	1
2,4-Dimethylphenol	ND		mg/kg	0.17	0.025	1
2,4,6-Trichlorophenol	ND		mg/kg	0.050	0.010	1
2,4,5-Trichlorophenol	ND		mg/kg	0.050	0.011	1
2,6-Dinitrotoluene	ND		mg/kg	0.050	0.012	1
2,4-Dinitrophenol	ND		mg/kg	0.074	0.024	1
2,4-Dinitrotoluene	ND		mg/kg	0.050	0.011	1
4,6-Dinitro-o-cresol	ND		mg/kg	0.074	0.017	1
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.050	0.013	1
Atrazine	ND		mg/kg	0.050	0.014	1
3,3'-Dichlorobenzidine	ND		mg/kg	0.050	0.011	1
Benzo(a)pyrene	0.56		mg/kg	0.050	0.016	1
Benzo(b)fluoranthene	0.69		mg/kg	0.050	0.016	1
Benzo(k)fluoranthene	0.54		mg/kg	0.050	0.016	1
Dibenzo(a,h)anthracene	0.11		mg/kg	0.050	0.016	1
Indeno(1,2,3-cd)Pyrene	0.38		mg/kg	0.15	0.022	1
Hexachlorobenzene	ND		mg/kg	0.050	0.011	1
Pentachlorophenol	ND		mg/kg	0.074	0.015	1
Hexachlorobutadiene	ND		mg/kg	0.15	0.010	1
Hexachloroethane	ND		mg/kg	0.050	0.010	1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-23  
 Client ID: COMP08\_10-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 15:20  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab						
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	52		25-120
Phenol-d6	73		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	73		30-120
2,4,6-Tribromophenol	31		0-136
4-Terphenyl-d14	60		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-24  
**Client ID:** COMP09\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 18:16  
**Analyst:** RC  
**Percent Solids:** 82%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 12:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	109		21-120
Phenol-d6	96		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	109		15-120
2,4,6-Tribromophenol	104		10-120
4-Terphenyl-d14	97		33-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-24 D  
 Client ID: COMP09\_10-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D  
 Analytical Date: 07/10/13 15:27  
 Analyst: RC  
 Percent Solids: 82%

Date Collected: 07/02/13 15:25  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 11:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	0.39	J	mg/kg	0.81	0.21	5
2-Chloronaphthalene	ND		mg/kg	1.0	0.33	5
Fluoranthene	23.		mg/kg	0.60	0.18	5
4-Chlorophenyl phenyl ether	ND		mg/kg	1.0	0.31	5
Bis(2-chloroisopropyl)ether	ND		mg/kg	1.2	0.35	5
Bis(2-chloroethoxy)methane	ND		mg/kg	1.1	0.30	5
Hexachlorocyclopentadiene	ND		mg/kg	2.9	0.65	5
Naphthalene	ND		mg/kg	1.0	0.33	5
Bis(2-Ethylhexyl)phthalate	ND		mg/kg	1.0	0.26	5
Butyl benzyl phthalate	ND		mg/kg	1.0	0.20	5
Di-n-butylphthalate	ND		mg/kg	1.0	0.19	5
Di-n-octylphthalate	ND		mg/kg	1.0	0.25	5
Diethyl phthalate	ND		mg/kg	1.0	0.21	5
Dimethyl phthalate	ND		mg/kg	1.0	0.26	5
Chrysene	8.8		mg/kg	0.60	0.20	5
Acenaphthylene	0.42	J	mg/kg	0.81	0.19	5
Anthracene	2.1		mg/kg	0.60	0.17	5
Benzo(ghi)perylene	4.3		mg/kg	0.81	0.21	5
Fluorene	0.45	J	mg/kg	1.0	0.29	5
Phenanthrene	8.7		mg/kg	0.60	0.20	5
Pyrene	21.		mg/kg	0.60	0.20	5
4-Chloroaniline	ND		mg/kg	1.0	0.27	5
2-Nitroaniline	ND		mg/kg	1.0	0.28	5
3-Nitroaniline	ND		mg/kg	1.0	0.28	5
4-Nitroaniline	ND		mg/kg	1.0	0.27	5
Dibenzofuran	ND		mg/kg	1.0	0.34	5
2-Methylnaphthalene	ND		mg/kg	1.2	0.32	5
P-Chloro-M-Cresol	ND		mg/kg	1.0	0.29	5
2-Nitrophenol	ND		mg/kg	2.2	0.31	5
Phenol	ND		mg/kg	1.0	0.30	5
2-Methylphenol	ND		mg/kg	1.0	0.32	5

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-24 D  
 Client ID: COMP09\_10-14  
 Sample Location: NY, NY

Date Collected: 07/02/13 15:25  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	1.4	0.33	5
Carbazole	ND		mg/kg	1.0	0.22	5
4-Nitrophenol	ND		mg/kg	1.4	0.33	5
4-Bromophenyl phenyl ether	ND		mg/kg	1.0	0.23	5
Benzaldehyde	ND		mg/kg	1.3	0.41	5
Caprolactam	ND		mg/kg	1.0	0.28	5
Acetophenone	ND		mg/kg	1.0	0.31	5
Biphenyl	ND		mg/kg	2.3	0.33	5
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	1.0	0.31	5
2,3,4,6-Tetrachlorophenol	ND		mg/kg	1.0	0.27	5

## Tentatively Identified Compounds

Total TIC Compounds	52.	J	mg/kg			5
Unknown	17.	J	mg/kg			5
Unknown	17.	J	mg/kg			5
Unknown PAH	1.8	J	mg/kg			5
Unknown PAH	2.6	J	mg/kg			5
Unknown PAH	2.8	J	mg/kg			5
Unknown PAH	2.0	J	mg/kg			5
Unknown	2.6	J	mg/kg			5
Unknown PAH	1.6	J	mg/kg			5
Unknown	1.0	J	mg/kg			5
Unknown PAH	0.90	J	mg/kg			5
Unknown	1.7	J	mg/kg			5
Unknown	1.5	J	mg/kg			5

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	109		25-120
Phenol-d6	99		10-120
Nitrobenzene-d5	113		23-120
2-Fluorobiphenyl	102		30-120
2,4,6-Tribromophenol	110		0-136
4-Terphenyl-d14	87		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-24 D  
 Client ID: COMP09\_10-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8270D-SIM  
 Analytical Date: 07/09/13 21:57  
 Analyst: AS  
 Percent Solids: 82%

Date Collected: 07/02/13 15:25  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 04:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.26	0.056	5
2-Chlorophenol	ND		mg/kg	0.64	0.056	5
Benzo(a)anthracene	6.3		mg/kg	0.64	0.10	5
n-Nitrosodi-n-propylamine	ND		mg/kg	0.26	0.053	5
Isophorone	ND		mg/kg	0.26	0.065	5
Nitrobenzene	ND		mg/kg	0.26	0.054	5
2,4-Dichlorophenol	ND		mg/kg	0.26	0.049	5
2,4-Dimethylphenol	ND		mg/kg	0.90	0.13	5
2,4,6-Trichlorophenol	ND		mg/kg	0.26	0.054	5
2,4,5-Trichlorophenol	ND		mg/kg	0.26	0.060	5
2,6-Dinitrotoluene	ND		mg/kg	0.26	0.064	5
2,4-Dinitrophenol	ND		mg/kg	0.39	0.12	5
2,4-Dinitrotoluene	ND		mg/kg	0.26	0.057	5
4,6-Dinitro-o-cresol	ND		mg/kg	0.39	0.088	5
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.26	0.070	5
Atrazine	ND		mg/kg	0.26	0.075	5
3,3'-Dichlorobenzidine	ND		mg/kg	0.26	0.058	5
Benzo(a)pyrene	5.9		mg/kg	0.26	0.083	5
Benzo(b)fluoranthene	6.3		mg/kg	0.26	0.086	5
Benzo(k)fluoranthene	4.7		mg/kg	0.26	0.085	5
Dibenzo(a,h)anthracene	0.84		mg/kg	0.26	0.085	5
Indeno(1,2,3-cd)Pyrene	3.2		mg/kg	0.77	0.11	5
Hexachlorobenzene	ND		mg/kg	0.26	0.059	5
Pentachlorophenol	ND		mg/kg	0.39	0.078	5
Hexachlorobutadiene	ND		mg/kg	0.77	0.054	5
Hexachloroethane	ND		mg/kg	0.26	0.054	5

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-24 D

Date Collected: 07/02/13 15:25

Client ID: COMP09\_10-14

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	80		25-120
Phenol-d6	86		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	79		30-120
2,4,6-Tribromophenol	86		0-136
4-Terphenyl-d14	65		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 18:42  
**Analyst:** RC  
**Percent Solids:** 80%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 12:01

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Semivolatiles by EPA 1311 - Westborough Lab</b>						
Hexachlorobenzene	ND		ug/l	10	3.2	1
2,4-Dinitrotoluene	ND		ug/l	25	2.2	1
Hexachlorobutadiene	ND		ug/l	10	4.0	1
Hexachloroethane	ND		ug/l	10	3.3	1
Nitrobenzene	ND		ug/l	10	2.5	1
2,4,6-Trichlorophenol	ND		ug/l	25	2.2	1
Pentachlorophenol	ND		ug/l	50	6.1	1
2-Methylphenol	ND		ug/l	25	2.6	1
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4	1
2,4,5-Trichlorophenol	ND		ug/l	25	2.2	1
Pyridine	ND		ug/l	25	3.2	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	106		21-120
Phenol-d6	94		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	106		15-120
2,4,6-Tribromophenol	97		10-120
4-Terphenyl-d14	89		33-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D  
**Analytical Date:** 07/08/13 03:35  
**Analyst:** RC  
**Percent Solids:** 80%

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 11:22

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
Acenaphthene	ND		mg/kg	0.16	0.042	1
2-Chloronaphthalene	ND		mg/kg	0.20	0.066	1
Fluoranthene	ND		mg/kg	0.12	0.037	1
4-Chlorophenyl phenyl ether	ND		mg/kg	0.20	0.062	1
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.24	0.071	1
Bis(2-chloroethoxy)methane	ND		mg/kg	0.22	0.061	1
Hexachlorocyclopentadiene	ND		mg/kg	0.58	0.13	1
Naphthalene	ND		mg/kg	0.20	0.067	1
Bis(2-Ethylhexyl)phthalate	ND		mg/kg	0.20	0.053	1
Butyl benzyl phthalate	ND		mg/kg	0.20	0.040	1
Di-n-butylphthalate	ND		mg/kg	0.20	0.039	1
Di-n-octylphthalate	ND		mg/kg	0.20	0.050	1
Diethyl phthalate	ND		mg/kg	0.20	0.043	1
Dimethyl phthalate	ND		mg/kg	0.20	0.052	1
Chrysene	ND		mg/kg	0.12	0.040	1
Acenaphthylene	ND		mg/kg	0.16	0.038	1
Anthracene	ND		mg/kg	0.12	0.034	1
Benzo(ghi)perylene	ND		mg/kg	0.16	0.042	1
Fluorene	ND		mg/kg	0.20	0.058	1
Phenanthrene	ND		mg/kg	0.12	0.040	1
Pyrene	ND		mg/kg	0.12	0.039	1
4-Chloroaniline	ND		mg/kg	0.20	0.054	1
2-Nitroaniline	ND		mg/kg	0.20	0.057	1
3-Nitroaniline	ND		mg/kg	0.20	0.056	1
4-Nitroaniline	ND		mg/kg	0.20	0.055	1
Dibenzofuran	ND		mg/kg	0.20	0.068	1
2-Methylnaphthalene	ND		mg/kg	0.24	0.065	1
P-Chloro-M-Cresol	ND		mg/kg	0.20	0.059	1
2-Nitrophenol	ND		mg/kg	0.44	0.063	1
Phenol	ND		mg/kg	0.20	0.060	1
2-Methylphenol	ND		mg/kg	0.20	0.065	1

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-25  
 Client ID: COMPNAT\_14  
 Sample Location: NY, NY

Date Collected: 07/02/13 15:10  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS - Westborough Lab</b>						
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.29	0.066	1
Carbazole	ND		mg/kg	0.20	0.044	1
4-Nitrophenol	ND		mg/kg	0.28	0.066	1
4-Bromophenyl phenyl ether	ND		mg/kg	0.20	0.047	1
Benzaldehyde	ND		mg/kg	0.27	0.082	1
Caprolactam	ND		mg/kg	0.20	0.056	1
Acetophenone	ND		mg/kg	0.20	0.063	1
Biphenyl	ND		mg/kg	0.46	0.067	1
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.20	0.063	1
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.20	0.054	1

## Tentatively Identified Compounds

Total TIC Compounds	0.25	J	mg/kg			1
Unknown	0.25	J	mg/kg			1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	78		25-120
Phenol-d6	77		10-120
Nitrobenzene-d5	82		23-120
2-Fluorobiphenyl	88		30-120
2,4,6-Tribromophenol	104		0-136
4-Terphenyl-d14	81		18-120

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8270D-SIM  
**Analytical Date:** 07/09/13 22:23  
**Analyst:** AS  
**Percent Solids:** 80%

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 04:13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Semivolatile Organics by GC/MS-SIM - Westborough Lab</b>						
Bis(2-chloroethyl)ether	ND		mg/kg	0.052	0.011	1
2-Chlorophenol	ND		mg/kg	0.13	0.011	1
Benzo(a)anthracene	ND		mg/kg	0.13	0.021	1
n-Nitrosodi-n-propylamine	ND		mg/kg	0.052	0.011	1
Isophorone	ND		mg/kg	0.052	0.013	1
Nitrobenzene	ND		mg/kg	0.052	0.011	1
2,4-Dichlorophenol	ND		mg/kg	0.052	0.0098	1
2,4-Dimethylphenol	ND		mg/kg	0.18	0.026	1
2,4,6-Trichlorophenol	ND		mg/kg	0.052	0.011	1
2,4,5-Trichlorophenol	ND		mg/kg	0.052	0.012	1
2,6-Dinitrotoluene	ND		mg/kg	0.052	0.013	1
2,4-Dinitrophenol	ND		mg/kg	0.078	0.025	1
2,4-Dinitrotoluene	ND		mg/kg	0.052	0.012	1
4,6-Dinitro-o-cresol	ND		mg/kg	0.078	0.018	1
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.052	0.014	1
Atrazine	ND		mg/kg	0.052	0.015	1
3,3'-Dichlorobenzidine	ND		mg/kg	0.052	0.012	1
Benzo(a)pyrene	ND		mg/kg	0.052	0.017	1
Benzo(b)fluoranthene	ND		mg/kg	0.052	0.017	1
Benzo(k)fluoranthene	ND		mg/kg	0.052	0.017	1
Dibenzo(a,h)anthracene	ND		mg/kg	0.052	0.017	1
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.16	0.023	1
Hexachlorobenzene	ND		mg/kg	0.052	0.012	1
Pentachlorophenol	ND		mg/kg	0.078	0.016	1
Hexachlorobutadiene	ND		mg/kg	0.16	0.011	1
Hexachloroethane	ND		mg/kg	0.052	0.011	1

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-25  
 Client ID: COMPNAT\_14  
 Sample Location: NY, NY

Date Collected: 07/02/13 15:10  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
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Semivolatile Organics by GC/MS-SIM - Westborough Lab						
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	77		25-120
Phenol-d6	80		10-120
Nitrobenzene-d5	86		23-120
2-Fluorobiphenyl	77		30-120
2,4,6-Tribromophenol	79		0-136
4-Terphenyl-d14	78		18-120

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D  
**Analytical Date:** 07/07/13 16:27  
**Analyst:** RC

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 01:45

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 20-25 Batch: WG619592-1					
Acenaphthene	ND		mg/kg	0.13	0.034
Benzidine	ND		mg/kg	0.55	0.13
Azobenzene	ND		mg/kg	0.17	0.044
2-Chloronaphthalene	ND		mg/kg	0.17	0.054
Fluoranthene	ND		mg/kg	0.10	0.030
4-Chlorophenyl phenyl ether	ND		mg/kg	0.17	0.050
Bis(2-chloroisopropyl)ether	ND		mg/kg	0.20	0.058
Bis(2-chloroethoxy)methane	ND		mg/kg	0.18	0.050
Hexachlorocyclopentadiene	ND		mg/kg	0.48	0.11
Naphthalene	ND		mg/kg	0.17	0.055
Bis(2-Ethylhexyl)phthalate	ND		mg/kg	0.17	0.043
Butyl benzyl phthalate	ND		mg/kg	0.17	0.032
Di-n-butylphthalate	ND		mg/kg	0.17	0.032
Di-n-octylphthalate	ND		mg/kg	0.17	0.041
Diethyl phthalate	ND		mg/kg	0.17	0.035
Dimethyl phthalate	ND		mg/kg	0.17	0.042
Chrysene	ND		mg/kg	0.10	0.033
Acenaphthylene	ND		mg/kg	0.13	0.031
Anthracene	ND		mg/kg	0.10	0.028
Benzo(ghi)perylene	ND		mg/kg	0.13	0.034
Fluorene	ND		mg/kg	0.17	0.048
Phenanthrene	ND		mg/kg	0.10	0.032
Pyrene	ND		mg/kg	0.10	0.032
4-Chloroaniline	ND		mg/kg	0.17	0.044
2-Nitroaniline	ND		mg/kg	0.17	0.047
3-Nitroaniline	ND		mg/kg	0.17	0.046
4-Nitroaniline	ND		mg/kg	0.17	0.045
Dibenzofuran	ND		mg/kg	0.17	0.055
2-Methylnaphthalene	ND		mg/kg	0.20	0.053
P-Chloro-M-Cresol	ND		mg/kg	0.17	0.048
2-Nitrophenol	ND		mg/kg	0.36	0.052

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D  
**Analytical Date:** 07/07/13 16:27  
**Analyst:** RC

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 01:45

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 20-25 Batch: WG619592-1					
Phenol	ND		mg/kg	0.17	0.049
2-Methylphenol	ND		mg/kg	0.17	0.053
3-Methylphenol/4-Methylphenol	ND		mg/kg	0.24	0.054
Carbazole	ND		mg/kg	0.17	0.036
4-Nitrophenol	ND		mg/kg	0.23	0.054
n-Nitrosodimethylamine	ND		mg/kg	0.33	0.054
4-Bromophenyl phenyl ether	ND		mg/kg	0.17	0.038
Benzaldehyde	ND		mg/kg	0.22	0.067
Caprolactam	ND		mg/kg	0.17	0.046
Acetophenone	ND		mg/kg	0.17	0.051
Biphenyl	ND		mg/kg	0.38	0.055
1,2,4,5-Tetrachlorobenzene	ND		mg/kg	0.17	0.051
2,3,4,6-Tetrachlorophenol	ND		mg/kg	0.17	0.044

**Tentatively Identified Compounds**

No Tentatively Identified Compounds      ND      mg/kg

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	70		25-120
Phenol-d6	68		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	82		30-120
2,4,6-Tribromophenol	69		0-136
4-Terphenyl-d14	98		18-120

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D-SIM  
**Analytical Date:** 07/07/13 10:00  
**Analyst:** AS

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 01:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 20-25 Batch: WG619593-1					
Bis(2-chloroethyl)ether	ND		mg/kg	0.043	0.0093
2-Chlorophenol	ND		mg/kg	0.10	0.0093
Benzo(a)anthracene	ND		mg/kg	0.10	0.017
n-Nitrosodi-n-propylamine	ND		mg/kg	0.043	0.0087
Isophorone	ND		mg/kg	0.043	0.011
Nitrobenzene	ND		mg/kg	0.043	0.0088
2,4-Dichlorophenol	ND		mg/kg	0.043	0.0080
2,4-Dimethylphenol	ND		mg/kg	0.15	0.021
2,4,6-Trichlorophenol	ND		mg/kg	0.043	0.0089
2,4,5-Trichlorophenol	ND		mg/kg	0.043	0.0099
2,6-Dinitrotoluene	ND		mg/kg	0.043	0.010
2,4-Dinitrophenol	ND		mg/kg	0.064	0.020
2,4-Dinitrotoluene	ND		mg/kg	0.043	0.0095
4,6-Dinitro-o-cresol	ND		mg/kg	0.064	0.014
NitrosoDiPhenylAmine(NDPA)/DPA	ND		mg/kg	0.043	0.012
Atrazine	ND		mg/kg	0.043	0.012
3,3'-Dichlorobenzidine	ND		mg/kg	0.043	0.0096
Benzo(a)pyrene	ND		mg/kg	0.043	0.014
Benzo(b)fluoranthene	ND		mg/kg	0.043	0.014
Benzo(k)fluoranthene	ND		mg/kg	0.043	0.014
Dibenzo(a,h)anthracene	ND		mg/kg	0.043	0.014
Indeno(1,2,3-cd)Pyrene	ND		mg/kg	0.13	0.019
Hexachlorobenzene	ND		mg/kg	0.043	0.0097
Pentachlorophenol	ND		mg/kg	0.064	0.013
Hexachlorobutadiene	ND		mg/kg	0.13	0.0089
Hexachloroethane	ND		mg/kg	0.043	0.0089

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8270D-SIM  
**Analytical Date:** 07/07/13 10:00  
**Analyst:** AS

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 01:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 20-25 Batch: WG619593-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	82		25-120
Phenol-d6	83		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	84		30-120
2,4,6-Tribromophenol	100		0-136
4-Terphenyl-d14	86		18-120

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8270D  
Analytical Date: 07/08/13 12:35  
Analyst: RC  
TCLP Extraction Date: 07/06/13 13:45

Extraction Method: EPA 3510C  
Extraction Date: 07/07/13 12:01

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Semivolatiles by EPA 1311 - Westborough Lab for sample(s): 20-25 Batch: WG619934-1					
Hexachlorobenzene	ND		ug/l	10	3.2
2,4-Dinitrotoluene	ND		ug/l	25	2.2
Hexachlorobutadiene	ND		ug/l	10	4.0
Hexachloroethane	ND		ug/l	10	3.3
Nitrobenzene	ND		ug/l	10	2.5
2,4,6-Trichlorophenol	ND		ug/l	25	2.2
Pentachlorophenol	ND		ug/l	50	6.1
2-Methylphenol	ND		ug/l	25	2.6
3-Methylphenol/4-Methylphenol	ND		ug/l	25	2.4
2,4,5-Trichlorophenol	ND		ug/l	25	2.2
Pyridine	ND		ug/l	25	3.2

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	101		21-120
Phenol-d6	88		10-120
Nitrobenzene-d5	98		23-120
2-Fluorobiphenyl	112		15-120
2,4,6-Tribromophenol	106		10-120
4-Terphenyl-d14	116		33-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 20-25 Batch: WG619592-2 WG619592-3								
Acenaphthene	89		86		31-137	3		50
Benzidine	37		45			20		50
Azobenzene	77		77		40-140	0		50
2-Chloronaphthalene	101		100		40-140	1		50
Fluoranthene	97		106		40-140	9		50
4-Chlorophenyl phenyl ether	100		99		40-140	1		50
Bis(2-chloroisopropyl)ether	65		66		40-140	2		50
Bis(2-chloroethoxy)methane	82		80		40-117	2		50
Hexachlorocyclopentadiene	68		64		40-140	6		50
Naphthalene	88		84		40-140	5		50
Bis(2-Ethylhexyl)phthalate	91		92		40-140	1		50
Butyl benzyl phthalate	93		102		40-140	9		50
Di-n-butylphthalate	98		100		40-140	2		50
Di-n-octylphthalate	98		100		40-140	2		50
Diethyl phthalate	95		97		40-140	2		50
Dimethyl phthalate	99		98		40-140	1		50
Chrysene	92		96		40-140	4		50
Acenaphthylene	100		99		40-140	1		50
Anthracene	92		97		40-140	5		50
Benzo(ghi)perylene	98		103		40-140	5		50
Fluorene	96		93		40-140	3		50

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 20-25 Batch: WG619592-2 WG619592-3								
Phenanthrene	87		91		40-140	4		50
Pyrene	95		103		35-142	8		50
4-Chloroaniline	63		60		40-140	5		50
2-Nitroaniline	106		109		47-134	3		50
3-Nitroaniline	76		82		26-129	8		50
4-Nitroaniline	90		93		41-125	3		50
Dibenzofuran	94		92		40-140	2		50
2-Methylnaphthalene	94		90		40-140	4		50
P-Chloro-M-Cresol	101		100		26-103	1		50
2-Nitrophenol	102		103		30-130	1		50
Phenol	81		79		26-90	3		50
2-Methylphenol	85		89		30-130	5		50
3-Methylphenol/4-Methylphenol	89		89		30-130	0		50
Carbazole	90		97		54-128	7		50
4-Nitrophenol	68		90		11-114	28		50
n-Nitrosodimethylamine	75		71			5		50
4-Bromophenyl phenyl ether	110		109		40-140	1		50
Benzaldehyde	68		62			9		50
Caprolactam	96		98			2		50
Acetophenone	80		80		14-144	0		50
Biphenyl	86		85			1		50

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 20-25 Batch: WG619592-2 WG619592-3								
1,2,4,5-Tetrachlorobenzene	95		88		40-117	8		50
2,3,4,6-Tetrachlorophenol	106		105			1		50

Surrogate	LCS		LCSD		Acceptance Criteria
	%Recovery	Qual	%Recovery	Qual	
2-Fluorophenol	89		87		25-120
Phenol-d6	89		86		10-120
Nitrobenzene-d5	82		81		23-120
2-Fluorobiphenyl	99		94		30-120
2,4,6-Tribromophenol	85		88		0-136
4-Terphenyl-d14	102		108		18-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 20-25 Batch: WG619593-2 WG619593-3								
Bis(2-chloroethyl)ether	66		82		40-140	22		50
2-Chlorophenol	72		86		25-102	18		50
Benzo(a)anthracene	102		89		40-140	14		50
n-Nitrosodi-n-propylamine	83		90		32-121	8		50
Isophorone	83		88		40-140	6		50
Nitrobenzene	78		89		40-140	13		50
2,4-Dichlorophenol	91		93		30-130	2		50
2,4-Dimethylphenol	89		94		30-130	5		50
2,4,6-Trichlorophenol	99		94		30-130	5		50
2,4,5-Trichlorophenol	104		96		30-130	8		50
2,6-Dinitrotoluene	109		102		40-140	7		50
2,4-Dinitrophenol	90		80		4-130	12		50
2,4-Dinitrotoluene	115	Q	103	Q	28-89	11		50
4,6-Dinitro-o-cresol	96		86		10-130	11		50
NitrosoDiPhenylAmine(NDPA)/DPA	110		99			11		50
Atrazine	122		110			10		50
3,3'-Dichlorobenzidine	86		72		40-140	18		50
Benzo(a)pyrene	95		78		40-140	20		50
Benzo(b)fluoranthene	113		96		40-140	16		50
Benzo(k)fluoranthene	109		88		40-140	21		50
Dibenzo(a,h)anthracene	103		77		40-140	29		50

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 20-25 Batch: WG619593-2 WG619593-3								
Indeno(1,2,3-cd)Pyrene	96		70		40-140	31		50
Hexachlorobenzene	105		93		40-140	12		50
Pentachlorophenol	97		86		17-109	12		50
Hexachlorobutadiene	70		86		40-140	21		50
Hexachloroethane	62		81		40-140	27		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	65		79		25-120
Phenol-d6	71		78		10-120
Nitrobenzene-d5	73		82		23-120
2-Fluorobiphenyl	78		80		30-120
2,4,6-Tribromophenol	112		102		0-136
4-Terphenyl-d14	88		80		18-120

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Semivolatiles by EPA 1311 - Westborough Lab Associated sample(s): 20-25 Batch: WG619934-2 WG619934-3								
Hexachlorobenzene	117		123		40-140	5		30
2,4-Dinitrotoluene	125	Q	133	Q	24-96	6		30
Hexachlorobutadiene	91		105		40-140	14		30
Hexachloroethane	82		92		40-140	11		30
Nitrobenzene	92		100		40-140	8		30
2,4,6-Trichlorophenol	125		142	Q	30-130	13		30
Pentachlorophenol	111	Q	118	Q	9-103	6		30
2-Methylphenol	102		115		30-130	12		30
3-Methylphenol/4-Methylphenol	102		116		30-130	13		30
2,4,5-Trichlorophenol	138	Q	148	Q	30-130	7		30
Pyridine	26		49		10-66	61	Q	30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	94		101		21-120
Phenol-d6	93		102		10-120
Nitrobenzene-d5	100		108		23-120
2-Fluorobiphenyl	109		118		15-120
2,4,6-Tribromophenol	114		117		10-120
4-Terphenyl-d14	102		105		33-120

# **PETROLEUM HYDROCARBONS**

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-01  
**Client ID:** WC05A\_3-5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/06/13 02:20  
**Analyst:** AR  
**Percent Solids:** 88%

**Date Collected:** 07/02/13 08:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	229.		mg/kg	36.6	3.58	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	97		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-01

Date Collected: 07/02/13 08:05

Client ID: WC05A\_3-5

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/09/13 18:22

Analyst: KL

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	94		70-130
4-Bromofluorobenzene	91		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-02  
**Client ID:** WC05A\_5-7  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 17:31  
**Analyst:** AR  
**Percent Solids:** 84%

**Date Collected:** 07/02/13 08:12  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	96.8		mg/kg	38.5	3.77	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	102		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-02  
**Client ID:** WC05A\_5-7  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/09/13 19:03  
**Analyst:** KL  
**Percent Solids:** 84%

**Date Collected:** 07/02/13 08:12  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.0	0.058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	95		70-130
4-Bromofluorobenzene	95		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-03  
**Client ID:** WC05A\_7-9  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/09/13 19:43  
**Analyst:** KL  
**Percent Solids:** 85%

**Date Collected:** 07/02/13 08:17  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.9	0.056	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	94		70-130
4-Bromofluorobenzene	91		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-03 D  
 Client ID: WC05A\_7-9  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8015C(M)  
 Analytical Date: 07/05/13 19:05  
 Analyst: AR  
 Percent Solids: 85%

Date Collected: 07/02/13 08:17  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	182.		mg/kg	75.6	7.40	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	90		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-04  
**Client ID:** WC05A\_13-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/06/13 04:55  
**Analyst:** AR  
**Percent Solids:** 83%

**Date Collected:** 07/02/13 08:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	6.32	J	mg/kg	38.6	3.77	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	63		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-04  
**Client ID:** WC05A\_13-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/10/13 16:25  
**Analyst:** KL  
**Percent Solids:** 83%

**Date Collected:** 07/02/13 08:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.0	0.058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	87		70-130
4-Bromofluorobenzene	86		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-05  
**Client ID:** WC06B\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/06/13 00:48  
**Analyst:** AR  
**Percent Solids:** 90%

**Date Collected:** 07/02/13 09:15  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	114.		mg/kg	35.6	3.48	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	105		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-05  
**Client ID:** WC06B\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/10/13 17:06  
**Analyst:** KL  
**Percent Solids:** 90%

**Date Collected:** 07/02/13 09:15  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	87		70-130
4-Bromofluorobenzene	86		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-06  
**Client ID:** WC06B\_1-3  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 21:41  
**Analyst:** AR  
**Percent Solids:** 89%

**Date Collected:** 07/02/13 09:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	5.33	J	mg/kg	35.6	3.48	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	96		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-06  
**Client ID:** WC06B\_1-3  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/10/13 17:47  
**Analyst:** KL  
**Percent Solids:** 89%

**Date Collected:** 07/02/13 09:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	84		70-130
4-Bromofluorobenzene	85		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-07  
**Client ID:** WC06B\_7-8.5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 22:44  
**Analyst:** AR  
**Percent Solids:** 90%

**Date Collected:** 07/02/13 09:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	4.24	J	mg/kg	35.2	3.45	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	101		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-07  
**Client ID:** WC06B\_7-8.5  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/10/13 18:28  
**Analyst:** KL  
**Percent Solids:** 90%

**Date Collected:** 07/02/13 09:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.053	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	76		70-130
4-Bromofluorobenzene	78		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-08  
**Client ID:** WC06A\_5-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 20:08  
**Analyst:** AR  
**Percent Solids:** 83%

**Date Collected:** 07/02/13 09:35  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	29.4	J	mg/kg	38.6	3.78	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	91		40-140

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-08  
 Client ID: WC06A\_5-6  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8015C(M)  
 Analytical Date: 07/10/13 19:09  
 Analyst: KL  
 Percent Solids: 83%

Date Collected: 07/02/13 09:35  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.0	0.058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	78		70-130
4-Bromofluorobenzene	82		70-130



**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-09  
**Client ID:** WC06A\_13-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 20:39  
**Analyst:** AR  
**Percent Solids:** 80%

**Date Collected:** 07/02/13 09:45  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	120.		mg/kg	40.2	3.93	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	92		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-09  
**Client ID:** WC06A\_13-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/11/13 15:12  
**Analyst:** KL  
**Percent Solids:** 80%

**Date Collected:** 07/02/13 09:45  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.1	0.060	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	89		70-130
4-Bromofluorobenzene	86		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-10  
**Client ID:** WC07A\_2-4  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 21:10  
**Analyst:** AR  
**Percent Solids:** 88%

**Date Collected:** 07/02/13 10:45  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	13.0	J	mg/kg	35.9	3.52	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	93		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-10

Date Collected: 07/02/13 10:45

Client ID: WC07A\_2-4

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/11/13 13:09

Analyst: KL

Percent Solids: 88%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	2.8	0.055	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	84		70-130
4-Bromofluorobenzene	83		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-11  
**Client ID:** WC07A\_4-6  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 21:41  
**Analyst:** AR  
**Percent Solids:** 90%

**Date Collected:** 07/02/13 10:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	30.2	J	mg/kg	35.4	3.46	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	102		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-11

Date Collected: 07/02/13 10:40

Client ID: WC07A\_4-6

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/11/13 13:50

Analyst: KL

Percent Solids: 90%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	0.44	J	mg/kg	2.8	0.054	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	82		70-130
4-Bromofluorobenzene	84		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-13

Date Collected: 07/02/13 10:55

Client ID: WC07B\_1-3

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Extraction Method:

Analytical Method: 1,8015C(M)

Analytical Date: 07/11/13 14:31

Analyst: KL

Percent Solids: 82%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.0	0.059	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	86		70-130
4-Bromofluorobenzene	85		70-130

**Project Name:** 546 W 44TH ST

**Lab Number:** L1312411

**Project Number:** 170229701

**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-13 D  
 Client ID: WC07B\_1-3  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8015C(M)  
 Analytical Date: 07/05/13 19:37  
 Analyst: AR  
 Percent Solids: 82%

Date Collected: 07/02/13 10:55  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						

TPH	731.		mg/kg	78.3	7.67	2
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Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	84		40-140



**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-14  
**Client ID:** WC07B\_10-11  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/05/13 20:39  
**Analyst:** AR  
**Percent Solids:** 79%

**Date Collected:** 07/02/13 11:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	15.8	J	mg/kg	40.9	4.01	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	76		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-14  
**Client ID:** WC07B\_10-11  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/11/13 01:15  
**Analyst:** KL  
**Percent Solids:** 79%

**Date Collected:** 07/02/13 11:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.2	0.061	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	88		70-130
4-Bromofluorobenzene	87		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-15  
**Client ID:** WC09B\_3-4  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/06/13 04:24  
**Analyst:** AR  
**Percent Solids:** 79%

**Date Collected:** 07/02/13 13:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	44.9		mg/kg	41.1	4.02	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	68		40-140

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-15  
**Client ID:** WC09B\_3-4  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/11/13 03:18  
**Analyst:** KL  
**Percent Solids:** 79%

**Date Collected:** 07/02/13 13:05  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.2	0.061	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	88		70-130
4-Bromofluorobenzene	86		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-17  
**Client ID:** WC08A\_0-2  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8015C(M)  
**Analytical Date:** 07/11/13 03:59  
**Analyst:** KL  
**Percent Solids:** 78%

**Date Collected:** 07/02/13 12:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Gasoline Range Organics - Westborough Lab						
Gasoline Range Organics	ND		mg/kg	3.2	0.061	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	87		70-130
4-Bromofluorobenzene	86		70-130

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-17 D  
 Client ID: WC08A\_0-2  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8015C(M)  
 Analytical Date: 07/06/13 16:05  
 Analyst: AR  
 Percent Solids: 78%

Date Collected: 07/02/13 12:25  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 00:26

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Petroleum Hydrocarbon Quantitation - Westborough Lab						
TPH	574.		mg/kg	82.4	8.07	2

Surrogate	% Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	75		40-140

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)

Extraction Method: EPA 3546

Analytical Date: 07/05/13 15:26

Extraction Date: 07/04/13 00:26

Analyst: AR

Parameter	Result	Qualifier	Units	RL	MDL
Petroleum Hydrocarbon Quantitation - Westborough Lab for sample(s): 01-11,13-15,17 Batch: WG619585-1					
TPH	ND		mg/kg	33.1	3.24

Surrogate	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	104		40-140

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)  
 Analytical Date: 07/09/13 10:25  
 Analyst: KL

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 01-03 Batch: WG620293-3					
Gasoline Range Organics	ND		mg/kg	2.5	0.048

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	98		70-130
4-Bromofluorobenzene	96		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)  
 Analytical Date: 07/10/13 10:25  
 Analyst: KL

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 04-08 Batch: WG620593-3					
Gasoline Range Organics	ND		mg/kg	2.5	0.048

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	97		70-130
4-Bromofluorobenzene	94		70-130

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)  
 Analytical Date: 07/11/13 11:56  
 Analyst: KL

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 09-11,13 Batch: WG620593-9					
Gasoline Range Organics	ND		mg/kg	2.5	0.048

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	92		70-130
4-Bromofluorobenzene	89		70-130

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8015C(M)  
 Analytical Date: 07/11/13 00:35  
 Analyst: KL

Parameter	Result	Qualifier	Units	RL	MDL
Gasoline Range Organics - Westborough Lab for sample(s): 14-15,17 Batch: WG620594-3					
Gasoline Range Organics	ND		mg/kg	2.5	0.048

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	88		70-130
4-Bromofluorobenzene	86		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01-11,13-15,17 Batch: WG619585-2								
TPH	97		-		40-140	-		40

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
o-Terphenyl	99				40-140

Gasoline Range Organics - Westborough Lab Associated sample(s): 01-03 Batch: WG620293-1 WG620293-2								
Gasoline Range Organics	105		108		80-120	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	104		107		70-130
4-Bromofluorobenzene	100		104		70-130

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 04-08 Batch: WG620593-1 WG620593-2								
Gasoline Range Organics	106		105		80-120	1		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	107		103		70-130
4-Bromofluorobenzene	102		100		70-130

Gasoline Range Organics - Westborough Lab Associated sample(s): 09-11,13 Batch: WG620593-7 WG620593-8								
Gasoline Range Organics	100		103		80-120	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	102		103		70-130
4-Bromofluorobenzene	95		98		70-130

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 14-15,17 Batch: WG620594-1 WG620594-2								
Gasoline Range Organics	100		102		80-120	2		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,1,1-Trifluorotoluene	99		100		70-130
4-Bromofluorobenzene	95		97		70-130

## Matrix Spike Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG620293-5 QC Sample: L1312335-01 Client ID: MS Sample												
Gasoline Range Organics	ND	25.2	26	102		-	-		80-120	-		20

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
1,1,1-Trifluorotoluene	101				70-130
4-Bromofluorobenzene	98				70-130

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 04-11,13 QC Batch ID: WG620593-5 QC Sample: L1312700-01 Client ID: MS Sample												
Gasoline Range Organics	ND	20.5	20	100		-	-		80-120	-		20

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	99				70-130
4-Bromofluorobenzene	96				70-130

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 14-15,17 QC Batch ID: WG620594-5 QC Sample: L1312411-14 Client ID: WC07B_10-11												
Gasoline Range Organics	ND	25.3	25	99		-	-		80-120	-		20

Surrogate	MS % Recovery	MS Qualifier	MSD % Recovery	MSD Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	97				70-130
4-Bromofluorobenzene	94				70-130

**Lab Duplicate Analysis**  
Batch Quality Control

**Project Name:** 546 W 44TH ST

**Project Number:** 170229701

**Lab Number:** L1312411

**Report Date:** 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Petroleum Hydrocarbon Quantitation - Westborough Lab Associated sample(s): 01-11,13-15,17 QC Batch ID: WG619585-3 QC Sample: L1312335-01 Client ID: DUP Sample						
TPH	18.6J	108.	mg/kg	NC		40

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
o-Terphenyl	59		91		40-140

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 01-03 QC Batch ID: WG620293-4 QC Sample: L1312335-01 Client ID: DUP Sample					
Gasoline Range Organics	ND	ND	mg/kg	NC	20

Surrogate	%Recovery Qualifier	%Recovery Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	95	96	70-130
4-Bromofluorobenzene	92	93	70-130

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 04-11,13 QC Batch ID: WG620593-4 QC Sample: L1312700-01 Client ID: DUP Sample					
Gasoline Range Organics	ND	ND	mg/kg	NC	20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	95		95		70-130
4-Bromofluorobenzene	92		93		70-130

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Gasoline Range Organics - Westborough Lab Associated sample(s): 14-15,17 QC Batch ID: WG620594-4 QC Sample: L1312411-14 Client ID: WC07B_10-11					
Gasoline Range Organics	ND	ND	mg/kg	NC	20

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
1,1,1-Trifluorotoluene	88		89		70-130
4-Bromofluorobenzene	87		88		70-130

# PCBS

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/05/13 15:54  
**Analyst:** TQ  
**Percent Solids:** 88%

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 21:57  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Polychlorinated Biphenyls by GC - Westborough Lab						
Aroclor 1016	ND		mg/kg	0.0369	0.00729	1
Aroclor 1221	ND		mg/kg	0.0369	0.0111	1
Aroclor 1232	ND		mg/kg	0.0369	0.00784	1
Aroclor 1242	ND		mg/kg	0.0369	0.00701	1
Aroclor 1248	ND		mg/kg	0.0369	0.00447	1
Aroclor 1254	ND		mg/kg	0.0369	0.00582	1
Aroclor 1260	ND		mg/kg	0.0369	0.00641	1
Aroclor 1262	ND		mg/kg	0.0369	0.00273	1
Aroclor 1268	ND		mg/kg	0.0369	0.00536	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	63		30-150
Decachlorobiphenyl	67		30-150
2,4,5,6-Tetrachloro-m-xylene	61		30-150
Decachlorobiphenyl	78		30-150

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/05/13 16:06  
**Analyst:** TQ  
**Percent Solids:** 81%

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 21:58  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0396	0.00783	1
Aroclor 1221	ND		mg/kg	0.0396	0.0120	1
Aroclor 1232	ND		mg/kg	0.0396	0.00842	1
Aroclor 1242	ND		mg/kg	0.0396	0.00752	1
Aroclor 1248	ND		mg/kg	0.0396	0.00479	1
Aroclor 1254	ND		mg/kg	0.0396	0.00625	1
Aroclor 1260	ND		mg/kg	0.0396	0.00688	1
Aroclor 1262	ND		mg/kg	0.0396	0.00293	1
Aroclor 1268	ND		mg/kg	0.0396	0.00575	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	64		30-150
Decachlorobiphenyl	64		30-150
2,4,5,6-Tetrachloro-m-xylene	60		30-150
Decachlorobiphenyl	73		30-150

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/05/13 17:08  
**Analyst:** TQ  
**Percent Solids:** 85%

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 21:58  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0386	0.00763	1
Aroclor 1221	ND		mg/kg	0.0386	0.0116	1
Aroclor 1232	ND		mg/kg	0.0386	0.00821	1
Aroclor 1242	ND		mg/kg	0.0386	0.00733	1
Aroclor 1248	ND		mg/kg	0.0386	0.00467	1
Aroclor 1254	ND		mg/kg	0.0386	0.00609	1
Aroclor 1260	ND		mg/kg	0.0386	0.00670	1
Aroclor 1262	ND		mg/kg	0.0386	0.00286	1
Aroclor 1268	ND		mg/kg	0.0386	0.00560	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	67		30-150
Decachlorobiphenyl	63		30-150
2,4,5,6-Tetrachloro-m-xylene	65		30-150
Decachlorobiphenyl	69		30-150

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/05/13 17:20  
**Analyst:** TQ  
**Percent Solids:** 87%

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 21:58  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0382	0.00754	1
Aroclor 1221	ND		mg/kg	0.0382	0.0115	1
Aroclor 1232	ND		mg/kg	0.0382	0.00811	1
Aroclor 1242	ND		mg/kg	0.0382	0.00725	1
Aroclor 1248	ND		mg/kg	0.0382	0.00462	1
Aroclor 1254	ND		mg/kg	0.0382	0.00602	1
Aroclor 1260	ND		mg/kg	0.0382	0.00663	1
Aroclor 1262	ND		mg/kg	0.0382	0.00282	1
Aroclor 1268	ND		mg/kg	0.0382	0.00554	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	76		30-150
Decachlorobiphenyl	77		30-150
2,4,5,6-Tetrachloro-m-xylene	71		30-150
Decachlorobiphenyl	89		30-150

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-24  
 Client ID: COMP09\_10-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8082A  
 Analytical Date: 07/05/13 17:32  
 Analyst: TQ  
 Percent Solids: 82%

Date Collected: 07/02/13 15:25  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/03/13 21:58  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 07/04/13  
 Cleanup Method2: EPA 3660B  
 Cleanup Date2: 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Polychlorinated Biphenyls by GC - Westborough Lab						
Aroclor 1016	ND		mg/kg	0.0384	0.00759	1
Aroclor 1221	ND		mg/kg	0.0384	0.0116	1
Aroclor 1232	ND		mg/kg	0.0384	0.00816	1
Aroclor 1242	ND		mg/kg	0.0384	0.00729	1
Aroclor 1248	ND		mg/kg	0.0384	0.00465	1
Aroclor 1254	ND		mg/kg	0.0384	0.00606	1
Aroclor 1260	ND		mg/kg	0.0384	0.00667	1
Aroclor 1262	ND		mg/kg	0.0384	0.00284	1
Aroclor 1268	ND		mg/kg	0.0384	0.00557	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	73		30-150
Decachlorobiphenyl	74		30-150
2,4,5,6-Tetrachloro-m-xylene	70		30-150
Decachlorobiphenyl	83		30-150

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8082A  
**Analytical Date:** 07/05/13 17:45  
**Analyst:** TQ  
**Percent Solids:** 80%

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 21:58  
**Cleanup Method1:** EPA 3665A  
**Cleanup Date1:** 07/04/13  
**Cleanup Method2:** EPA 3660B  
**Cleanup Date2:** 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Polychlorinated Biphenyls by GC - Westborough Lab</b>						
Aroclor 1016	ND		mg/kg	0.0397	0.00784	1
Aroclor 1221	ND		mg/kg	0.0397	0.0120	1
Aroclor 1232	ND		mg/kg	0.0397	0.00844	1
Aroclor 1242	ND		mg/kg	0.0397	0.00754	1
Aroclor 1248	ND		mg/kg	0.0397	0.00480	1
Aroclor 1254	ND		mg/kg	0.0397	0.00626	1
Aroclor 1260	ND		mg/kg	0.0397	0.00689	1
Aroclor 1262	ND		mg/kg	0.0397	0.00294	1
Aroclor 1268	ND		mg/kg	0.0397	0.00576	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	66		30-150
Decachlorobiphenyl	67		30-150
2,4,5,6-Tetrachloro-m-xylene	68		30-150
Decachlorobiphenyl	74		30-150

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8082A  
Analytical Date: 07/05/13 16:18  
Analyst: TQ

Extraction Method: EPA 3546  
Extraction Date: 07/03/13 21:57  
Cleanup Method1: EPA 3665A  
Cleanup Date1: 07/04/13  
Cleanup Method2: EPA 3660B  
Cleanup Date2: 07/04/13

Parameter	Result	Qualifier	Units	RL	MDL
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 20-25 Batch: WG619573-1					
Aroclor 1016	ND		mg/kg	0.0320	0.00633
Aroclor 1221	ND		mg/kg	0.0320	0.00966
Aroclor 1232	ND		mg/kg	0.0320	0.00680
Aroclor 1242	ND		mg/kg	0.0320	0.00608
Aroclor 1248	ND		mg/kg	0.0320	0.00388
Aroclor 1254	ND		mg/kg	0.0320	0.00505
Aroclor 1260	ND		mg/kg	0.0320	0.00556
Aroclor 1262	ND		mg/kg	0.0320	0.00237
Aroclor 1268	ND		mg/kg	0.0320	0.00465

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	60		30-150
Decachlorobiphenyl	60		30-150
2,4,5,6-Tetrachloro-m-xylene	60		30-150
Decachlorobiphenyl	72		30-150

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 20-25 Batch: WG619573-2 WG619573-3								
Aroclor 1016	57		51		40-140	11		50
Aroclor 1260	51		43		40-140	17		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	64		56		30-150
Decachlorobiphenyl	65		53		30-150
2,4,5,6-Tetrachloro-m-xylene	64		55		30-150
Decachlorobiphenyl	77		61		30-150

# PESTICIDES

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/08/13 14:10  
**Analyst:** SH  
**Percent Solids:** 88%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 14:48  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/08/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	70		30-150	B
Decachlorobiphenyl	103		30-150	B
2,4,5,6-Tetrachloro-m-xylene	100		30-150	A
Decachlorobiphenyl	79		30-150	A

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/06/13 06:52  
**Analyst:** BW  
**Percent Solids:** 88%

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 17:19  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/05/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.00176	0.00034	1
Lindane	ND		mg/kg	0.00073	0.00032	1
Alpha-BHC	ND		mg/kg	0.00073	0.00020	1
Beta-BHC	ND		mg/kg	0.00176	0.00066	1
Heptachlor	ND		mg/kg	0.00088	0.00039	1
Aldrin	ND		mg/kg	0.00176	0.00062	1
Heptachlor epoxide	ND		mg/kg	0.00330	0.00099	1
Endrin	ND		mg/kg	0.00073	0.00030	1
Endrin aldehyde	ND		mg/kg	0.00220	0.00077	1
Endrin ketone	ND		mg/kg	0.00176	0.00045	1
Dieldrin	ND		mg/kg	0.00110	0.00055	1
4,4'-DDE	ND		mg/kg	0.00176	0.00040	1
4,4'-DDD	ND		mg/kg	0.00176	0.00062	1
4,4'-DDT	ND		mg/kg	0.00330	0.00142	1
Endosulfan I	ND		mg/kg	0.00176	0.00041	1
Endosulfan II	ND		mg/kg	0.00176	0.00058	1
Endosulfan sulfate	ND		mg/kg	0.00073	0.00033	1
Methoxychlor	ND		mg/kg	0.00330	0.00103	1
Toxaphene	ND		mg/kg	0.0330	0.00924	1
cis-Chlordane	ND		mg/kg	0.00220	0.00061	1
trans-Chlordane	ND		mg/kg	0.00220	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	A
Decachlorobiphenyl	100		30-150	A
2,4,5,6-Tetrachloro-m-xylene	59		30-150	B
Decachlorobiphenyl	71		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 20:01  
**Analyst:** BW  
**Percent Solids:** 88%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/07/13 21:46  
**Methylation Date:** 07/08/13 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	46		30-150	A
DCAA	<b>178</b>	Q	30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 16:02  
**Analyst:** SH  
**Percent Solids:** 88%

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/05/13 17:09  
**Methylation Date:** 07/07/13 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.187	0.0227	1
2,4,5-T	ND		mg/kg	0.187	0.0116	1
2,4,5-TP (Silvex)	ND		mg/kg	0.187	0.0103	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	79		30-150	A
DCAA	40		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/08/13 14:23  
**Analyst:** SH  
**Percent Solids:** 81%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 14:48  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/08/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	75		30-150	B
Decachlorobiphenyl	97		30-150	B
2,4,5,6-Tetrachloro-m-xylene	104		30-150	A
Decachlorobiphenyl	60		30-150	A

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 20:21  
**Analyst:** BW  
**Percent Solids:** 81%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/07/13 21:46  
**Methylation Date:** 07/08/13 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	70		30-150	A
DCAA	<b>203</b>	Q	30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 16:22  
**Analyst:** SH  
**Percent Solids:** 81%

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/05/13 17:09  
**Methylation Date:** 07/07/13 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.204	0.0248	1
2,4,5-T	ND		mg/kg	0.204	0.0127	1
2,4,5-TP (Silvex)	ND		mg/kg	0.204	0.0113	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	83		30-150	A
DCAA	56		30-150	B

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-21 D  
 Client ID: COMP06\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/07/13 05:48  
 Analyst: BW  
 Percent Solids: 81%

Date Collected: 07/02/13 14:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 08:18  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/06/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Pesticides by GC - Westborough Lab						
Delta-BHC	ND		mg/kg	0.00941	0.00186	5
Lindane	ND		mg/kg	0.00392	0.00175	5
Alpha-BHC	ND		mg/kg	0.00392	0.00111	5
Beta-BHC	ND		mg/kg	0.00941	0.00357	5
Heptachlor	ND		mg/kg	0.00470	0.00211	5
Aldrin	ND		mg/kg	0.00941	0.00331	5
Heptachlor epoxide	ND		mg/kg	0.0176	0.00529	5
Endrin	ND		mg/kg	0.00392	0.00161	5
Endrin aldehyde	ND		mg/kg	0.0118	0.00412	5
Endrin ketone	ND		mg/kg	0.00941	0.00242	5
Dieldrin	ND		mg/kg	0.00588	0.00294	5
4,4'-DDE	ND		mg/kg	0.00941	0.00218	5
4,4'-DDD	ND		mg/kg	0.00941	0.00336	5
4,4'-DDT	ND		mg/kg	0.0176	0.00756	5
Endosulfan I	ND		mg/kg	0.00941	0.00222	5
Endosulfan II	ND		mg/kg	0.00941	0.00314	5
Endosulfan sulfate	ND		mg/kg	0.00392	0.00179	5
Methoxychlor	ND		mg/kg	0.0176	0.00549	5
Toxaphene	ND		mg/kg	0.176	0.0494	5
cis-Chlordane	ND		mg/kg	0.0118	0.00328	5
trans-Chlordane	ND		mg/kg	0.0118	0.00310	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	88		30-150	A
Decachlorobiphenyl	101		30-150	A
2,4,5,6-Tetrachloro-m-xylene	66		30-150	B
Decachlorobiphenyl	63		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/08/13 14:36  
**Analyst:** SH  
**Percent Solids:** 85%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 14:48  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/08/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	71		30-150	B
Decachlorobiphenyl	102		30-150	B
2,4,5,6-Tetrachloro-m-xylene	96		30-150	A
Decachlorobiphenyl	81		30-150	A

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 21:00  
**Analyst:** BW  
**Percent Solids:** 85%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/07/13 21:46  
**Methylation Date:** 07/08/13 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	37		30-150	A
DCAA	177	Q	30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 16:42  
**Analyst:** SH  
**Percent Solids:** 85%

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/05/13 17:09  
**Methylation Date:** 07/07/13 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.194	0.0236	1
2,4,5-T	ND		mg/kg	0.194	0.0121	1
2,4,5-TP (Silvex)	ND		mg/kg	0.194	0.0107	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	75		30-150	A
DCAA	56		30-150	B

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-22 D  
 Client ID: COMP07\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/07/13 06:01  
 Analyst: BW  
 Percent Solids: 85%

Date Collected: 07/02/13 15:00  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 08:18  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/06/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Pesticides by GC - Westborough Lab						
Delta-BHC	ND		mg/kg	0.0364	0.00721	20
Lindane	ND		mg/kg	0.0152	0.00679	20
Alpha-BHC	ND		mg/kg	0.0152	0.00431	20
Beta-BHC	ND		mg/kg	0.0364	0.0138	20
Heptachlor	ND		mg/kg	0.0182	0.00817	20
Aldrin	ND		mg/kg	0.0364	0.0128	20
Heptachlor epoxide	ND		mg/kg	0.0683	0.0205	20
Endrin	ND		mg/kg	0.0152	0.00622	20
Endrin aldehyde	ND		mg/kg	0.0456	0.0159	20
Endrin ketone	ND		mg/kg	0.0364	0.00938	20
Dieldrin	ND		mg/kg	0.0228	0.0114	20
4,4'-DDE	ND		mg/kg	0.0364	0.00843	20
4,4'-DDD	ND		mg/kg	0.0364	0.0130	20
4,4'-DDT	ND		mg/kg	0.0683	0.0293	20
Endosulfan I	ND		mg/kg	0.0364	0.00861	20
Endosulfan II	ND		mg/kg	0.0364	0.0122	20
Endosulfan sulfate	ND		mg/kg	0.0152	0.00694	20
Methoxychlor	ND		mg/kg	0.0683	0.0212	20
Toxaphene	ND		mg/kg	0.683	0.191	20
cis-Chlordane	ND		mg/kg	0.0456	0.0127	20
trans-Chlordane	ND		mg/kg	0.0456	0.0120	20

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	A
Decachlorobiphenyl	0	Q	30-150	A
2,4,5,6-Tetrachloro-m-xylene	0	Q	30-150	B
Decachlorobiphenyl	0	Q	30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/08/13 14:49  
**Analyst:** SH  
**Percent Solids:** 87%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 14:48  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/08/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	76		30-150	B
Decachlorobiphenyl	109		30-150	B
2,4,5,6-Tetrachloro-m-xylene	101		30-150	A
Decachlorobiphenyl	87		30-150	A

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/07/13 06:13  
**Analyst:** BW  
**Percent Solids:** 87%

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 08:18  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/06/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.00176	0.00034	1
Lindane	ND		mg/kg	0.00073	0.00032	1
Alpha-BHC	ND		mg/kg	0.00073	0.00020	1
Beta-BHC	ND		mg/kg	0.00176	0.00066	1
Heptachlor	ND		mg/kg	0.00088	0.00039	1
Aldrin	ND		mg/kg	0.00176	0.00062	1
Heptachlor epoxide	ND		mg/kg	0.00330	0.00099	1
Endrin	ND		mg/kg	0.00073	0.00030	1
Endrin aldehyde	ND		mg/kg	0.00220	0.00077	1
Endrin ketone	ND		mg/kg	0.00176	0.00045	1
Dieldrin	ND		mg/kg	0.00110	0.00055	1
4,4'-DDE	ND		mg/kg	0.00176	0.00040	1
4,4'-DDD	ND		mg/kg	0.00176	0.00062	1
Endosulfan I	ND		mg/kg	0.00176	0.00041	1
Endosulfan II	ND		mg/kg	0.00176	0.00058	1
Endosulfan sulfate	ND		mg/kg	0.00073	0.00033	1
Methoxychlor	ND		mg/kg	0.00330	0.00103	1
Toxaphene	ND		mg/kg	0.0330	0.00925	1
cis-Chlordane	ND		mg/kg	0.00220	0.00061	1
trans-Chlordane	ND		mg/kg	0.00220	0.00058	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		30-150	A
Decachlorobiphenyl	67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	57		30-150	B
Decachlorobiphenyl	52		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/07/13 06:13  
**Analyst:** BW  
**Percent Solids:** 87%

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 08:18  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/06/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Pesticides by GC - Westborough Lab						
4,4'-DDT	ND	P	mg/kg	0.00330	0.00142	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	72		30-150	A
Decachlorobiphenyl	67		30-150	A
2,4,5,6-Tetrachloro-m-xylene	57		30-150	B
Decachlorobiphenyl	52		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 21:20  
**Analyst:** BW  
**Percent Solids:** 87%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/07/13 21:46  
**Methylation Date:** 07/08/13 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	47		30-150	A
DCAA	90		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 17:21  
**Analyst:** SH  
**Percent Solids:** 87%

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/05/13 17:09  
**Methylation Date:** 07/07/13 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.188	0.0228	1
2,4,5-T	ND		mg/kg	0.188	0.0117	1
2,4,5-TP (Silvex)	ND		mg/kg	0.188	0.0104	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	83		30-150	A
DCAA	59		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-24  
**Client ID:** COMP09\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/08/13 15:02  
**Analyst:** SH  
**Percent Solids:** 82%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 14:48  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/08/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	74		30-150	B
Decachlorobiphenyl	96		30-150	B
2,4,5,6-Tetrachloro-m-xylene	98		30-150	A
Decachlorobiphenyl	65		30-150	A

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-24  
**Client ID:** COMP09\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 21:40  
**Analyst:** BW  
**Percent Solids:** 82%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/07/13 21:46  
**Methylation Date:** 07/08/13 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	41		30-150	A
DCAA	<b>163</b>	Q	30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-24  
**Client ID:** COMP09\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/11/13 10:06  
**Analyst:** SH  
**Percent Solids:** 82%

**Date Collected:** 07/02/13 15:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/05/13 17:09  
**Methylation Date:** 07/07/13 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.198	0.0241	1
2,4,5-T	ND		mg/kg	0.198	0.0124	1
2,4,5-TP (Silvex)	ND		mg/kg	0.198	0.0109	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	83		30-150	A
DCAA	51		30-150	B

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-24 D  
 Client ID: COMP09\_10-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/07/13 07:30  
 Analyst: BW  
 Percent Solids: 82%

Date Collected: 07/02/13 15:25  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 08:18  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/06/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Pesticides by GC - Westborough Lab						
Delta-BHC	ND		mg/kg	0.00948	0.00187	5
Lindane	ND		mg/kg	0.00395	0.00176	5
Alpha-BHC	ND		mg/kg	0.00395	0.00112	5
Beta-BHC	ND		mg/kg	0.00948	0.00359	5
Heptachlor	ND		mg/kg	0.00474	0.00212	5
Aldrin	ND		mg/kg	0.00948	0.00334	5
Heptachlor epoxide	ND		mg/kg	0.0178	0.00533	5
Endrin	ND		mg/kg	0.00395	0.00162	5
Endrin aldehyde	ND		mg/kg	0.0118	0.00414	5
Endrin ketone	ND		mg/kg	0.00948	0.00244	5
Dieldrin	ND		mg/kg	0.00592	0.00296	5
4,4'-DDE	ND		mg/kg	0.00948	0.00219	5
4,4'-DDD	ND		mg/kg	0.00948	0.00338	5
4,4'-DDT	ND		mg/kg	0.0178	0.00762	5
Endosulfan I	ND		mg/kg	0.00948	0.00224	5
Endosulfan II	ND		mg/kg	0.00948	0.00317	5
Endosulfan sulfate	ND		mg/kg	0.00395	0.00180	5
Methoxychlor	ND		mg/kg	0.0178	0.00553	5
Toxaphene	ND		mg/kg	0.178	0.0497	5
cis-Chlordane	ND		mg/kg	0.0118	0.00330	5
trans-Chlordane	ND		mg/kg	0.0118	0.00313	5

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	87		30-150	A
Decachlorobiphenyl	94		30-150	A
2,4,5,6-Tetrachloro-m-xylene	61		30-150	B
Decachlorobiphenyl	76		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8081B  
**Analytical Date:** 07/08/13 15:27  
**Analyst:** SH  
**Percent Solids:** 80%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 3510C  
**Extraction Date:** 07/07/13 14:48  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/08/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>TCLP Pesticides by EPA 1311 - Westborough Lab</b>						
Lindane	ND		ug/l	0.100	0.022	1
Heptachlor	ND		ug/l	0.100	0.016	1
Heptachlor epoxide	ND		ug/l	0.100	0.021	1
Endrin	ND		ug/l	0.200	0.021	1
Methoxychlor	ND		ug/l	1.00	0.034	1
Toxaphene	ND		ug/l	1.00	0.315	1
Chlordane	ND		ug/l	1.00	0.232	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	64		30-150	B
Decachlorobiphenyl	98		30-150	B
2,4,5,6-Tetrachloro-m-xylene	85		30-150	A
Decachlorobiphenyl	67		30-150	A

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

Lab ID: L1312411-25  
 Client ID: COMPNAT\_14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Analytical Method: 1,8081B  
 Analytical Date: 07/07/13 07:43  
 Analyst: BW  
 Percent Solids: 80%

Date Collected: 07/02/13 15:10  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 3546  
 Extraction Date: 07/04/13 08:18  
 Cleanup Method1: EPA 3620B  
 Cleanup Date1: 07/06/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Pesticides by GC - Westborough Lab</b>						
Delta-BHC	ND		mg/kg	0.00189	0.00037	1
Lindane	ND		mg/kg	0.00078	0.00035	1
Alpha-BHC	ND		mg/kg	0.00078	0.00022	1
Beta-BHC	ND		mg/kg	0.00189	0.00071	1
Heptachlor	ND		mg/kg	0.00094	0.00042	1
Aldrin	ND		mg/kg	0.00189	0.00066	1
Heptachlor epoxide	ND		mg/kg	0.00355	0.00106	1
Endrin	ND		mg/kg	0.00078	0.00032	1
Endrin aldehyde	ND		mg/kg	0.00237	0.00082	1
Endrin ketone	ND		mg/kg	0.00189	0.00048	1
Dieldrin	ND		mg/kg	0.00118	0.00059	1
4,4'-DDE	ND		mg/kg	0.00189	0.00043	1
4,4'-DDD	ND		mg/kg	0.00189	0.00067	1
4,4'-DDT	0.00190	J	mg/kg	0.00355	0.00152	1
Endosulfan I	ND		mg/kg	0.00189	0.00044	1
Endosulfan II	ND		mg/kg	0.00189	0.00063	1
Endosulfan sulfate	ND		mg/kg	0.00078	0.00036	1
Methoxychlor	ND		mg/kg	0.00355	0.00110	1
Toxaphene	ND		mg/kg	0.0355	0.00994	1
cis-Chlordane	ND		mg/kg	0.00237	0.00065	1
trans-Chlordane	ND		mg/kg	0.00237	0.00062	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	94		30-150	A
Decachlorobiphenyl	86		30-150	A
2,4,5,6-Tetrachloro-m-xylene	64		30-150	B
Decachlorobiphenyl	71		30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 22:00  
**Analyst:** BW  
**Percent Solids:** 80%  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/07/13 21:46  
**Methylation Date:** 07/08/13 15:48

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
TCLP Herbicides by EPA 1311 - Westborough Lab						
2,4-D	ND		mg/l	0.025	0.001	1
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	81		30-150	A
DCAA	<b>324</b>	Q	30-150	B

**Project Name:** 546 W 44TH ST**Lab Number:** L1312411**Project Number:** 170229701**Report Date:** 07/17/13**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 18:01  
**Analyst:** SH  
**Percent Solids:** 80%

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/05/13 17:09  
**Methylation Date:** 07/07/13 12:10

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Chlorinated Herbicides by GC - Westborough Lab						
2,4-D	ND		mg/kg	0.203	0.0247	1
2,4,5-T	ND		mg/kg	0.203	0.0127	1
2,4,5-TP (Silvex)	ND		mg/kg	0.203	0.0112	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria	Column
DCAA	82		30-150	A
DCAA	45		30-150	B

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8081B  
**Analytical Date:** 07/06/13 02:23  
**Analyst:** BW

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/03/13 16:41  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/05/13

Parameter	Result	Qualifier	Units	RL	MDL
Pesticides by GC - Westborough Lab for sample(s): 20 Batch: WG619540-1					
Delta-BHC	ND		mg/kg	0.00158	0.00031
Lindane	ND		mg/kg	0.00065	0.00029
Alpha-BHC	ND		mg/kg	0.00065	0.00018
Beta-BHC	ND		mg/kg	0.00158	0.00059
Heptachlor	ND		mg/kg	0.00078	0.00035
Aldrin	ND		mg/kg	0.00158	0.00055
Heptachlor epoxide	ND		mg/kg	0.00295	0.00088
Endrin	ND		mg/kg	0.00065	0.00026
Endrin aldehyde	ND		mg/kg	0.00197	0.00068
Endrin ketone	ND		mg/kg	0.00158	0.00040
Dieldrin	ND		mg/kg	0.00098	0.00049
4,4'-DDE	ND		mg/kg	0.00158	0.00036
4,4'-DDD	ND		mg/kg	0.00158	0.00056
4,4'-DDT	ND		mg/kg	0.00295	0.00127
Endosulfan I	ND		mg/kg	0.00158	0.00037
Endosulfan II	ND		mg/kg	0.00158	0.00052
Endosulfan sulfate	ND		mg/kg	0.00065	0.00030
Methoxychlor	ND		mg/kg	0.00295	0.00091
Toxaphene	ND		mg/kg	0.0295	0.00827
cis-Chlordane	ND		mg/kg	0.00197	0.00054
trans-Chlordane	ND		mg/kg	0.00197	0.00052

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	99		30-150	A
Decachlorobiphenyl	120		30-150	A
2,4,5,6-Tetrachloro-m-xylene	70		30-150	B
Decachlorobiphenyl	90		30-150	B



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

**Analytical Method:** 1,8081B  
**Analytical Date:** 07/07/13 08:21  
**Analyst:** BW

**Extraction Method:** EPA 3546  
**Extraction Date:** 07/04/13 08:18  
**Cleanup Method1:** EPA 3620B  
**Cleanup Date1:** 07/06/13

Parameter	Result	Qualifier	Units	RL	MDL
Pesticides by GC - Westborough Lab for sample(s): 21-25 Batch: WG619626-1					
Delta-BHC	ND		mg/kg	0.00159	0.00031
Lindane	ND		mg/kg	0.00066	0.00029
Alpha-BHC	ND		mg/kg	0.00066	0.00018
Beta-BHC	ND		mg/kg	0.00159	0.00060
Heptachlor	ND		mg/kg	0.00079	0.00035
Aldrin	ND		mg/kg	0.00159	0.00056
Heptachlor epoxide	ND		mg/kg	0.00298	0.00089
Endrin	ND		mg/kg	0.00066	0.00027
Endrin aldehyde	ND		mg/kg	0.00199	0.00069
Endrin ketone	ND		mg/kg	0.00159	0.00041
Dieldrin	ND		mg/kg	0.00099	0.00049
4,4'-DDE	ND		mg/kg	0.00159	0.00036
4,4'-DDD	ND		mg/kg	0.00159	0.00056
4,4'-DDT	ND		mg/kg	0.00298	0.00128
Endosulfan I	ND		mg/kg	0.00159	0.00037
Endosulfan II	ND		mg/kg	0.00159	0.00053
Endosulfan sulfate	ND		mg/kg	0.00066	0.00030
Methoxychlor	ND		mg/kg	0.00298	0.00092
Toxaphene	ND		mg/kg	0.0298	0.00836
cis-Chlordane	ND		mg/kg	0.00199	0.00055
trans-Chlordane	ND		mg/kg	0.00199	0.00052

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	95		30-150	A
Decachlorobiphenyl	89		30-150	A
2,4,5,6-Tetrachloro-m-xylene	69		30-150	B
Decachlorobiphenyl	84		30-150	B

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 1,8081B  
Analytical Date: 07/08/13 10:57  
Analyst: SH  
TCLP Extraction Date: 07/06/13 13:45

Extraction Method: EPA 3510C  
Extraction Date: 07/07/13 14:48  
Cleanup Method1: EPA 3620B  
Cleanup Date1: 07/08/13

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Pesticides by EPA 1311 - Westborough Lab for sample(s): 20-25 Batch: WG619937-1					
Lindane	ND		ug/l	0.100	0.022
Heptachlor	ND		ug/l	0.100	0.016
Heptachlor epoxide	ND		ug/l	0.100	0.021
Endrin	ND		ug/l	0.200	0.021
Methoxychlor	ND		ug/l	1.00	0.034
Toxaphene	ND		ug/l	1.00	0.315
Chlordane	ND		ug/l	1.00	0.232

Surrogate	%Recovery	Qualifier	Acceptance	
			Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	60		30-150	B
Decachlorobiphenyl	73		30-150	B
2,4,5,6-Tetrachloro-m-xylene	100		30-150	A
Decachlorobiphenyl	101		30-150	A

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 1,8151A  
Analytical Date: 07/08/13 09:00  
Analyst: BW  
TCLP Extraction Date: 07/06/13 13:45

Extraction Method: EPA 8151A  
Extraction Date: 07/07/13 21:46

Methylation Date: 07/08/13 04:33

Parameter	Result	Qualifier	Units	RL	MDL
TCLP Herbicides by EPA 1311 - Westborough Lab for sample(s): 20-25 Batch: WG619950-1					
2,4-D	ND		mg/l	0.025	0.001
2,4,5-TP (Silvex)	ND		mg/l	0.005	0.001

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	68		30-150	A
DCAA	84		30-150	B

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 1,8151A  
**Analytical Date:** 07/09/13 14:02  
**Analyst:** SH

**Extraction Method:** EPA 8151A  
**Extraction Date:** 07/05/13 17:09

**Methylation Date:** 07/07/13 12:10

Parameter	Result	Qualifier	Units	RL	MDL
Chlorinated Herbicides by GC - Westborough Lab for sample(s): 20-25 Batch: WG620133-1					
2,4-D	ND		mg/kg	0.166	0.0202
2,4,5-T	ND		mg/kg	0.166	0.0104
2,4,5-TP (Silvex)	ND		mg/kg	0.166	0.00919

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
DCAA	88		30-150	A
DCAA	41		30-150	B

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Pesticides by GC - Westborough Lab Associated sample(s): 20 Batch: WG619540-2 WG619540-3								
Delta-BHC	88		99		30-150	12		30
Lindane	90		102		30-150	13		30
Alpha-BHC	90		101		30-150	12		30
Beta-BHC	91		105		30-150	14		30
Heptachlor	95		106		30-150	11		30
Aldrin	115		124		30-150	8		30
Heptachlor epoxide	117		128		30-150	9		30
Endrin	143		<b>160</b>	Q	30-150	11		30
Endrin aldehyde	94		97		30-150	3		30
Endrin ketone	98		120		30-150	20		30
Dieldrin	129		139		30-150	7		30
4,4'-DDE	116		128		30-150	10		30
4,4'-DDD	123		135		30-150	9		30
4,4'-DDT	122		138		30-150	12		30
Endosulfan I	125		139		30-150	11		30
Endosulfan II	114		122		30-150	7		30
Endosulfan sulfate	99		116		30-150	16		30
Methoxychlor	110		<b>154</b>	Q	30-150	<b>33</b>	Q	30
cis-Chlordane	120		119		30-150	1		30
trans-Chlordane	119		130		30-150	9		30

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
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Pesticides by GC - Westborough Lab Associated sample(s): 20 Batch: WG619540-2 WG619540-3

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	103		105		30-150	A
Decachlorobiphenyl	108		131		30-150	A
2,4,5,6-Tetrachloro-m-xylene	63		66		30-150	B
Decachlorobiphenyl	67		81		30-150	B

Pesticides by GC - Westborough Lab Associated sample(s): 21-25 Batch: WG619626-2 WG619626-3

Delta-BHC	69		79		30-150	14	30
Lindane	74		78		30-150	5	30
Alpha-BHC	71		76		30-150	7	30
Beta-BHC	77		82		30-150	6	30
Heptachlor	86		89		30-150	3	30
Aldrin	95		99		30-150	4	30
Heptachlor epoxide	97		102		30-150	5	30
Endrin	128		132		30-150	3	30
Endrin aldehyde	77		84		30-150	9	30

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Pesticides by GC - Westborough Lab Associated sample(s): 21-25 Batch: WG619626-2 WG619626-3								
Endrin ketone	89		94		30-150	5		30
Dieldrin	108		113		30-150	5		30
4,4'-DDE	99		103		30-150	4		30
4,4'-DDD	98		108		30-150	10		30
4,4'-DDT	107		113		30-150	5		30
Endosulfan I	104		109		30-150	5		30
Endosulfan II	97		102		30-150	5		30
Endosulfan sulfate	94		100		30-150	6		30
Methoxychlor	104		118		30-150	13		30
cis-Chlordane	99		106		30-150	7		30
trans-Chlordane	100		103		30-150	3		30

Surrogate	LCS		LCSD		Acceptance Criteria	Column
	%Recovery	Qual	%Recovery	Qual		
2,4,5,6-Tetrachloro-m-xylene	73		92		30-150	A
Decachlorobiphenyl	75		85		30-150	A
2,4,5,6-Tetrachloro-m-xylene	49		66		30-150	B
Decachlorobiphenyl	63		86		30-150	B

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
TCLP Pesticides by EPA 1311 - Westborough Lab Associated sample(s): 20-25 Batch: WG619937-2 WG619937-3								
Lindane	104		102		30-150	2		20
Heptachlor	102		105		30-150	3		20
Heptachlor epoxide	127		129		30-150	2		20
Endrin	160	Q	163	Q	30-150	2		20
Methoxychlor	138		125		30-150	10		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	54		58		30-150	B
Decachlorobiphenyl	57		66		30-150	B
2,4,5,6-Tetrachloro-m-xylene	72		77		30-150	A
Decachlorobiphenyl	84		96		30-150	A

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
TCLP Herbicides by EPA 1311 - Westborough Lab Associated sample(s): 20-25 Batch: WG619950-2 WG619950-3								
2,4-D	136		122		30-150	11		25
2,4,5-TP (Silvex)	67		68		30-150	1		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	75		77		30-150	A
DCAA	312	Q	352	Q	30-150	B

Chlorinated Herbicides by GC - Westborough Lab Associated sample(s): 20-25 Batch: WG620133-2 WG620133-3								
Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
2,4-D	90		90		30-150	0		30
2,4,5-T	86		92		30-150	7		30
2,4,5-TP (Silvex)	86		88		30-150	2		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
DCAA	93		89		30-150	A
DCAA	69		32		30-150	B



## METALS

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Percent Solids:** 88%

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/08/13 12:43	07/08/13 15:31	EPA 3015	1,6010C	TT
Barium, TCLP	0.50		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:31	EPA 3015	1,6010C	TT
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/08/13 12:43	07/08/13 15:31	EPA 3015	1,6010C	TT
Chromium, TCLP	0.02	J	mg/l	0.20	0.02	1	07/08/13 12:43	07/08/13 15:31	EPA 3015	1,6010C	TT
Lead, TCLP	0.12	J	mg/l	0.50	0.02	1	07/08/13 12:43	07/08/13 15:31	EPA 3015	1,6010C	TT
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/09/13 11:20	07/09/13 14:14	EPA 7470A	1,7470A	JH
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:31	EPA 3015	1,6010C	TT
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/08/13 12:43	07/08/13 15:31	EPA 3015	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-20  
 Client ID: COMP05\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 88%

Date Collected: 07/02/13 14:40  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	4700		mg/kg	8.5	1.7	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Antimony, Total	ND		mg/kg	4.3	0.68	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Arsenic, Total	5.2		mg/kg	0.85	0.17	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Barium, Total	490		mg/kg	0.85	0.26	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Beryllium, Total	0.26	J	mg/kg	0.43	0.09	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Cadmium, Total	0.54	J	mg/kg	0.85	0.06	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Calcium, Total	48000		mg/kg	8.5	2.6	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Chromium, Total	11		mg/kg	0.85	0.17	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Cobalt, Total	3.7		mg/kg	1.7	0.43	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Copper, Total	14		mg/kg	0.85	0.17	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Iron, Total	8800		mg/kg	4.3	1.7	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Lead, Total	270		mg/kg	4.3	0.17	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Magnesium, Total	3600		mg/kg	8.5	0.85	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Manganese, Total	190		mg/kg	0.85	0.17	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Mercury, Total	0.63		mg/kg	0.08	0.02	1	07/05/13 14:43	07/08/13 15:14	EPA 7471B	1,7471B	MC
Nickel, Total	13		mg/kg	2.1	0.34	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Potassium, Total	970		mg/kg	210	34.	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Selenium, Total	0.65	J	mg/kg	1.7	0.26	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Silver, Total	ND		mg/kg	0.85	0.17	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Sodium, Total	200		mg/kg	170	26.	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Thallium, Total	ND		mg/kg	1.7	0.34	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Vanadium, Total	15		mg/kg	0.85	0.09	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT
Zinc, Total	330		mg/kg	4.3	0.60	2	07/05/13 12:08	07/06/13 09:34	EPA 3050B	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Percent Solids:** 81%

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/08/13 12:43	07/08/13 15:35	EPA 3015	1,6010C	TT
Barium, TCLP	0.99		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:35	EPA 3015	1,6010C	TT
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/08/13 12:43	07/08/13 15:35	EPA 3015	1,6010C	TT
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/08/13 12:43	07/08/13 15:35	EPA 3015	1,6010C	TT
Lead, TCLP	0.04	J	mg/l	0.50	0.02	1	07/08/13 12:43	07/08/13 15:35	EPA 3015	1,6010C	TT
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/09/13 11:20	07/09/13 14:16	EPA 7470A	1,7470A	JH
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:35	EPA 3015	1,6010C	TT
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/08/13 12:43	07/08/13 15:35	EPA 3015	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-21  
 Client ID: COMP06\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 81%

Date Collected: 07/02/13 14:50  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	10000		mg/kg	9.7	1.9	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Antimony, Total	ND		mg/kg	4.8	0.77	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Arsenic, Total	8.1		mg/kg	0.97	0.19	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Barium, Total	320		mg/kg	0.97	0.29	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Beryllium, Total	0.50		mg/kg	0.48	0.10	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Cadmium, Total	0.61	J	mg/kg	0.97	0.07	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Calcium, Total	23000		mg/kg	9.7	2.9	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Chromium, Total	19		mg/kg	0.97	0.19	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Cobalt, Total	7.0		mg/kg	1.9	0.48	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Copper, Total	47		mg/kg	0.97	0.19	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Iron, Total	18000		mg/kg	4.8	1.9	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Lead, Total	320		mg/kg	4.8	0.19	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Magnesium, Total	3000		mg/kg	9.7	0.97	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Manganese, Total	340		mg/kg	0.97	0.19	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Mercury, Total	1.8		mg/kg	0.08	0.02	1	07/05/13 14:43	07/08/13 15:16	EPA 7471B	1,7471B	MC
Nickel, Total	18		mg/kg	2.4	0.39	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Potassium, Total	1000		mg/kg	240	39.	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Selenium, Total	ND		mg/kg	1.9	0.29	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Silver, Total	ND		mg/kg	0.97	0.19	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Sodium, Total	160	J	mg/kg	190	29.	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Thallium, Total	ND		mg/kg	1.9	0.39	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Vanadium, Total	23		mg/kg	0.97	0.10	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT
Zinc, Total	200		mg/kg	4.8	0.68	2	07/05/13 12:08	07/06/13 10:10	EPA 3050B	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Percent Solids:** 85%

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/08/13 12:43	07/08/13 15:39	EPA 3015	1,6010C	TT
Barium, TCLP	0.50		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:39	EPA 3015	1,6010C	TT
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/08/13 12:43	07/08/13 15:39	EPA 3015	1,6010C	TT
Chromium, TCLP	0.02	J	mg/l	0.20	0.02	1	07/08/13 12:43	07/08/13 15:39	EPA 3015	1,6010C	TT
Lead, TCLP	0.03	J	mg/l	0.50	0.02	1	07/08/13 12:43	07/08/13 15:39	EPA 3015	1,6010C	TT
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/09/13 11:20	07/09/13 14:18	EPA 7470A	1,7470A	JH
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:39	EPA 3015	1,6010C	TT
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/08/13 12:43	07/08/13 15:39	EPA 3015	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-22  
 Client ID: COMP07\_0-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 85%

Date Collected: 07/02/13 15:00  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	11000		mg/kg	9.3	1.9	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Antimony, Total	ND		mg/kg	4.6	0.74	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Arsenic, Total	8.7		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Barium, Total	97		mg/kg	0.93	0.28	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Beryllium, Total	0.43	J	mg/kg	0.46	0.09	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Cadmium, Total	0.49	J	mg/kg	0.93	0.07	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Calcium, Total	13000		mg/kg	9.3	2.8	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Chromium, Total	19		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Cobalt, Total	7.1		mg/kg	1.9	0.46	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Copper, Total	29		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Iron, Total	18000		mg/kg	4.6	1.9	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Lead, Total	150		mg/kg	4.6	0.19	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Magnesium, Total	3600		mg/kg	9.3	0.93	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Manganese, Total	300		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Mercury, Total	0.56		mg/kg	0.08	0.02	1	07/05/13 14:43	07/08/13 15:18	EPA 7471B	1,7471B	MC
Nickel, Total	17		mg/kg	2.3	0.37	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Potassium, Total	1400		mg/kg	230	37.	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Selenium, Total	0.40	J	mg/kg	1.9	0.28	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Silver, Total	ND		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Sodium, Total	210		mg/kg	190	28.	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Thallium, Total	ND		mg/kg	1.9	0.37	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Vanadium, Total	26		mg/kg	0.93	0.09	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT
Zinc, Total	82		mg/kg	4.6	0.65	2	07/05/13 12:08	07/06/13 10:14	EPA 3050B	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Percent Solids:** 87%

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/08/13 12:43	07/08/13 15:43	EPA 3015	1,6010C	TT
Barium, TCLP	0.36	J	mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:43	EPA 3015	1,6010C	TT
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/08/13 12:43	07/08/13 15:43	EPA 3015	1,6010C	TT
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/08/13 12:43	07/08/13 15:43	EPA 3015	1,6010C	TT
Lead, TCLP	0.06	J	mg/l	0.50	0.02	1	07/08/13 12:43	07/08/13 15:43	EPA 3015	1,6010C	TT
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/09/13 11:20	07/09/13 14:20	EPA 7470A	1,7470A	JH
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:43	EPA 3015	1,6010C	TT
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/08/13 12:43	07/08/13 15:43	EPA 3015	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-23  
 Client ID: COMP08\_10-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 87%

Date Collected: 07/02/13 15:20  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	8200		mg/kg	8.8	1.8	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Antimony, Total	ND		mg/kg	4.4	0.71	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Arsenic, Total	10		mg/kg	0.88	0.18	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Barium, Total	120		mg/kg	0.88	0.26	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Beryllium, Total	0.34	J	mg/kg	0.44	0.09	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Cadmium, Total	0.85	J	mg/kg	0.88	0.06	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Calcium, Total	21000		mg/kg	8.8	2.6	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Chromium, Total	19		mg/kg	0.88	0.18	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Cobalt, Total	7.6		mg/kg	1.8	0.44	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Copper, Total	52		mg/kg	0.88	0.18	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Iron, Total	19000		mg/kg	4.4	1.8	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Lead, Total	260		mg/kg	4.4	0.18	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Magnesium, Total	4400		mg/kg	8.8	0.88	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Manganese, Total	290		mg/kg	0.88	0.18	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Mercury, Total	0.30		mg/kg	0.09	0.02	1	07/05/13 14:43	07/08/13 15:20	EPA 7471B	1,7471B	MC
Nickel, Total	20		mg/kg	2.2	0.35	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Potassium, Total	2900		mg/kg	220	35.	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Selenium, Total	1.3	J	mg/kg	1.8	0.26	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Silver, Total	ND		mg/kg	0.88	0.18	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Sodium, Total	940		mg/kg	180	26.	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Thallium, Total	ND		mg/kg	1.8	0.35	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Vanadium, Total	22		mg/kg	0.88	0.09	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT
Zinc, Total	200		mg/kg	4.4	0.62	2	07/05/13 12:08	07/06/13 10:17	EPA 3050B	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-24  
**Client ID:** COMP09\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Percent Solids:** 82%

**Date Collected:** 07/02/13 15:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/08/13 12:43	07/08/13 15:47	EPA 3015	1,6010C	TT
Barium, TCLP	0.34	J	mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:47	EPA 3015	1,6010C	TT
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/08/13 12:43	07/08/13 15:47	EPA 3015	1,6010C	TT
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/08/13 12:43	07/08/13 15:47	EPA 3015	1,6010C	TT
Lead, TCLP	ND		mg/l	0.50	0.02	1	07/08/13 12:43	07/08/13 15:47	EPA 3015	1,6010C	TT
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/09/13 11:20	07/09/13 14:21	EPA 7470A	1,7470A	JH
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:47	EPA 3015	1,6010C	TT
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/08/13 12:43	07/08/13 15:47	EPA 3015	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-24  
 Client ID: COMP09\_10-14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 82%

Date Collected: 07/02/13 15:25  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	9600		mg/kg	9.3	1.9	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Antimony, Total	ND		mg/kg	4.7	0.75	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Arsenic, Total	9.1		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Barium, Total	100		mg/kg	0.93	0.28	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Beryllium, Total	0.36	J	mg/kg	0.47	0.09	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Cadmium, Total	0.73	J	mg/kg	0.93	0.07	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Calcium, Total	16000		mg/kg	9.3	2.8	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Chromium, Total	18		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Cobalt, Total	10		mg/kg	1.9	0.47	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Copper, Total	42		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Iron, Total	23000		mg/kg	4.7	1.9	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Lead, Total	200		mg/kg	4.7	0.19	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Magnesium, Total	3500		mg/kg	9.3	0.93	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Manganese, Total	310		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Mercury, Total	0.47		mg/kg	0.09	0.02	1	07/05/13 14:43	07/08/13 15:25	EPA 7471B	1,7471B	MC
Nickel, Total	17		mg/kg	2.3	0.37	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Potassium, Total	1900		mg/kg	230	37.	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Selenium, Total	ND		mg/kg	1.9	0.28	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Silver, Total	ND		mg/kg	0.93	0.19	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Sodium, Total	660		mg/kg	190	28.	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Thallium, Total	ND		mg/kg	1.9	0.37	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Vanadium, Total	22		mg/kg	0.93	0.09	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT
Zinc, Total	170		mg/kg	4.7	0.65	2	07/05/13 12:08	07/06/13 10:21	EPA 3050B	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil  
**Percent Solids:** 80%

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**TCLP/SPLP Ext. Date:** 07/06/13 13:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>TCLP Metals by EPA 1311 - Westborough Lab</b>											
Arsenic, TCLP	ND		mg/l	1.0	0.02	1	07/08/13 12:43	07/08/13 15:51	EPA 3015	1,6010C	TT
Barium, TCLP	0.41	J	mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:51	EPA 3015	1,6010C	TT
Cadmium, TCLP	ND		mg/l	0.10	0.01	1	07/08/13 12:43	07/08/13 15:51	EPA 3015	1,6010C	TT
Chromium, TCLP	ND		mg/l	0.20	0.02	1	07/08/13 12:43	07/08/13 15:51	EPA 3015	1,6010C	TT
Lead, TCLP	ND		mg/l	0.50	0.02	1	07/08/13 12:43	07/08/13 15:51	EPA 3015	1,6010C	TT
Mercury, TCLP	ND		mg/l	0.0010	0.0003	1	07/09/13 11:20	07/09/13 14:27	EPA 7470A	1,7470A	JH
Selenium, TCLP	ND		mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 15:51	EPA 3015	1,6010C	TT
Silver, TCLP	ND		mg/l	0.10	0.02	1	07/08/13 12:43	07/08/13 15:51	EPA 3015	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-25  
 Client ID: COMPNAT\_14  
 Sample Location: NY, NY  
 Matrix: Soil  
 Percent Solids: 80%

Date Collected: 07/02/13 15:10  
 Date Received: 07/02/13  
 Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Aluminum, Total	12000		mg/kg	9.8	2.0	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Antimony, Total	ND		mg/kg	4.9	0.79	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Arsenic, Total	3.4		mg/kg	0.98	0.20	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Barium, Total	85		mg/kg	0.98	0.29	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Beryllium, Total	0.43	J	mg/kg	0.49	0.10	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Cadmium, Total	0.36	J	mg/kg	0.98	0.07	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Calcium, Total	2900		mg/kg	9.8	2.9	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Chromium, Total	20		mg/kg	0.98	0.20	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Cobalt, Total	8.3		mg/kg	2.0	0.49	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Copper, Total	26		mg/kg	0.98	0.20	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Iron, Total	19000		mg/kg	4.9	2.0	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Lead, Total	54		mg/kg	4.9	0.20	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Magnesium, Total	3600		mg/kg	9.8	0.98	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Manganese, Total	260		mg/kg	0.98	0.20	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Mercury, Total	0.05	J	mg/kg	0.08	0.02	1	07/09/13 09:31	07/09/13 10:42	EPA 7471B	1,7471B	MC
Nickel, Total	18		mg/kg	2.4	0.39	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Potassium, Total	1300		mg/kg	240	39.	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Selenium, Total	ND		mg/kg	2.0	0.29	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Silver, Total	ND		mg/kg	0.98	0.20	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Sodium, Total	160	J	mg/kg	200	29.	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Thallium, Total	ND		mg/kg	2.0	0.39	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Vanadium, Total	25		mg/kg	0.98	0.10	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT
Zinc, Total	62		mg/kg	4.9	0.69	2	07/05/13 12:08	07/06/13 10:25	EPA 3050B	1,6010C	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 20-24 Batch: WG619692-1									
Mercury, Total	ND	mg/kg	0.08	0.02	1	07/05/13 14:43	07/08/13 14:31	1,7471B	MC

### Prep Information

Digestion Method: EPA 7471B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 20-25 Batch: WG619731-1									
Aluminum, Total	ND	mg/kg	4.0	0.80	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Antimony, Total	ND	mg/kg	2.0	0.32	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Arsenic, Total	ND	mg/kg	0.40	0.08	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Barium, Total	ND	mg/kg	0.40	0.12	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Beryllium, Total	ND	mg/kg	0.20	0.04	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Cadmium, Total	ND	mg/kg	0.40	0.03	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Calcium, Total	ND	mg/kg	4.0	1.2	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Chromium, Total	ND	mg/kg	0.40	0.08	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Cobalt, Total	ND	mg/kg	0.80	0.20	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Copper, Total	ND	mg/kg	0.40	0.08	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Iron, Total	ND	mg/kg	2.0	0.80	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Lead, Total	ND	mg/kg	2.0	0.08	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Magnesium, Total	ND	mg/kg	4.0	0.40	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Manganese, Total	ND	mg/kg	0.40	0.08	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Nickel, Total	ND	mg/kg	1.0	0.16	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Potassium, Total	ND	mg/kg	100	16.	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Selenium, Total	ND	mg/kg	0.80	0.12	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Silver, Total	ND	mg/kg	0.40	0.08	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Sodium, Total	ND	mg/kg	80	12.	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Thallium, Total	ND	mg/kg	0.80	0.16	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Vanadium, Total	ND	mg/kg	0.40	0.04	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT
Zinc, Total	ND	mg/kg	2.0	0.28	1	07/05/13 12:08	07/06/13 09:26	1,6010C	TT

Project Name: 546 W 44TH ST  
 Project Number: 170229701

Lab Number: L1312411  
 Report Date: 07/17/13

## Method Blank Analysis Batch Quality Control

### Prep Information

Digestion Method: EPA 3050B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 25 Batch: WG620049-1									
Mercury, Total	ND	mg/kg	0.08	0.02	1	07/09/13 09:31	07/09/13 10:34	1,7471B	MC

### Prep Information

Digestion Method: EPA 7471B

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Westborough Lab for sample(s): 20-25 Batch: WG620089-1									
Arsenic, TCLP	ND	mg/l	1.0	0.02	1	07/08/13 12:43	07/08/13 13:45	1,6010C	TT
Barium, TCLP	0.17 J	mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 13:45	1,6010C	TT
Cadmium, TCLP	ND	mg/l	0.10	0.01	1	07/08/13 12:43	07/08/13 13:45	1,6010C	TT
Chromium, TCLP	ND	mg/l	0.20	0.02	1	07/08/13 12:43	07/08/13 13:45	1,6010C	TT
Lead, TCLP	ND	mg/l	0.50	0.02	1	07/08/13 12:43	07/08/13 13:45	1,6010C	TT
Selenium, TCLP	ND	mg/l	0.50	0.03	1	07/08/13 12:43	07/08/13 13:45	1,6010C	TT
Silver, TCLP	ND	mg/l	0.10	0.02	1	07/08/13 12:43	07/08/13 13:45	1,6010C	TT

### Prep Information

Digestion Method: EPA 3015

TCLP/SPLP Extraction Date: 07/06/13 13:45

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
TCLP Metals by EPA 1311 - Westborough Lab for sample(s): 20-25 Batch: WG620385-1									
Mercury, TCLP	ND	mg/l	0.0010	0.0003	1	07/09/13 11:20	07/09/13 14:05	1,7470A	JH

### Prep Information

Digestion Method: EPA 7470A

TCLP/SPLP Extraction Date: 07/06/13 13:45



## Lab Control Sample Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 20-24 Batch: WG619692-2 SRM Lot Number: 0518-10-02								
Mercury, Total	124		-		67-133	-		

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 20-25 Batch: WG619731-2 SRM Lot Number: 0518-10-02					
Aluminum, Total	101	-	29-171	-	
Antimony, Total	122	-	4-196	-	
Arsenic, Total	109	-	81-119	-	
Barium, Total	104	-	83-118	-	
Beryllium, Total	110	-	83-117	-	
Cadmium, Total	98	-	82-117	-	
Calcium, Total	100	-	83-117	-	
Chromium, Total	97	-	80-119	-	
Cobalt, Total	103	-	83-117	-	
Copper, Total	101	-	83-117	-	
Iron, Total	101	-	51-150	-	
Lead, Total	95	-	80-120	-	
Magnesium, Total	92	-	74-126	-	
Manganese, Total	102	-	83-117	-	
Nickel, Total	99	-	82-117	-	
Potassium, Total	107	-	74-126	-	
Selenium, Total	109	-	80-120	-	
Silver, Total	104	-	66-134	-	
Sodium, Total	109	-	74-127	-	
Thallium, Total	96	-	79-120	-	
Vanadium, Total	98	-	79-121	-	

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 20-25 Batch: WG619731-2 SRM Lot Number: 0518-10-02					
Zinc, Total	100	-	82-119	-	
Total Metals - Westborough Lab Associated sample(s): 25 Batch: WG620049-2 SRM Lot Number: 0518-10-02					
Mercury, Total	133	-	67-133	-	
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 20-25 Batch: WG620089-2					
Arsenic, TCLP	117	-	75-125	-	20
Barium, TCLP	110	-	75-125	-	20
Cadmium, TCLP	110	-	75-125	-	20
Chromium, TCLP	110	-	75-125	-	20
Lead, TCLP	106	-	75-125	-	20
Selenium, TCLP	117	-	75-125	-	20
Silver, TCLP	106	-	75-125	-	20
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 20-25 Batch: WG620385-2					
Mercury, TCLP	101	-	80-120	-	

**Matrix Spike Analysis**  
Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

<u>Parameter</u>	<u>Native Sample</u>	<u>MS Added</u>	<u>MS Found</u>	<u>MS %Recovery</u>	<u>MSD Qual</u>	<u>MSD Found</u>	<u>MSD %Recovery</u>	<u>MSD Qual</u>	<u>Recovery Limits</u>	<u>RPD</u>	<u>Qual</u>	<u>RPD Limits</u>
Total Metals - Westborough Lab Associated sample(s): 20-24 QC Batch ID: WG619692-4 QC Sample: L1312408-13 Client ID: MS Sample												
Mercury, Total	ND	0.168	0.18	107		-	-		70-130	-		35

## Matrix Spike Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG619731-4 QC Sample: L1312411-20 Client ID: COMP05_0-14									
Aluminum, Total	4700	179	5800	613	Q	-	75-125	-	35
Antimony, Total	ND	44.8	45	100		-	75-125	-	35
Arsenic, Total	5.2	10.8	17	110		-	75-125	-	35
Barium, Total	490	179	720	128	Q	-	75-125	-	35
Beryllium, Total	0.26J	4.48	4.9	109		-	75-125	-	35
Cadmium, Total	0.54J	4.58	5.0	109		-	75-125	-	35
Calcium, Total	48000	897	35000	0	Q	-	75-125	-	35
Chromium, Total	11.	17.9	30	106		-	75-125	-	35
Cobalt, Total	3.7	44.8	49	101		-	75-125	-	35
Copper, Total	14.	22.4	41	120		-	75-125	-	35
Iron, Total	8800	89.7	11000	2450	Q	-	75-125	-	35
Lead, Total	270	45.8	290	44	Q	-	75-125	-	35
Magnesium, Total	3600	897	3600	0	Q	-	75-125	-	35
Manganese, Total	190	44.8	240	111		-	75-125	-	35
Nickel, Total	13.	44.8	57	98		-	75-125	-	35
Potassium, Total	970	897	2100	126	Q	-	75-125	-	35
Selenium, Total	0.65J	10.8	12	111		-	75-125	-	35
Silver, Total	ND	26.9	29	108		-	75-125	-	35
Sodium, Total	200	897	1100	100		-	75-125	-	35
Thallium, Total	ND	10.8	9.6	89		-	75-125	-	35
Vanadium, Total	15.	44.8	65	111		-	75-125	-	35

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG619731-4 QC Sample: L1312411-20 Client ID: COMP05_0-14									
Zinc, Total	330	44.8	300	0	Q	-	75-125	-	35
Total Metals - Westborough Lab Associated sample(s): 25 QC Batch ID: WG620049-4 QC Sample: L1312411-25 Client ID: COMPNAT_14									
Mercury, Total	0.05J	0.174	0.35	201	Q	-	70-130	-	35
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG620089-4 QC Sample: L1312396-02 Client ID: MS Sample									
Arsenic, TCLP	ND	1.2	1.3	108	-	-	75-125	-	20
Barium, TCLP	0.69	20	22	106	-	-	75-125	-	20
Cadmium, TCLP	ND	0.51	0.54	106	-	-	75-125	-	20
Chromium, TCLP	0.02J	2	2.2	110	-	-	75-125	-	20
Lead, TCLP	ND	5.1	5.3	104	-	-	75-125	-	20
Selenium, TCLP	ND	1.2	1.4	117	-	-	75-125	-	20
Silver, TCLP	ND	0.5	0.51	102	-	-	75-125	-	20
TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG620385-4 QC Sample: L1312396-02 Client ID: MS Sample									
Mercury, TCLP	ND	0.025	0.0273	109	-	-	70-130	-	20

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 20-24 QC Batch ID: WG619692-3 QC Sample: L1312408-13 Client ID: DUP Sample						
Mercury, Total	ND	ND	mg/kg	NC		35

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG619731-3 QC Sample: L1312411-20 Client ID: COMP05_0-14					
Aluminum, Total	4700	5800	mg/kg	21	35
Antimony, Total	ND	ND	mg/kg	NC	35
Arsenic, Total	5.2	4.6	mg/kg	12	35
Barium, Total	490	550	mg/kg	12	35
Beryllium, Total	0.26J	0.22J	mg/kg	NC	35
Cadmium, Total	0.54J	0.46J	mg/kg	NC	35
Calcium, Total	48000	34000	mg/kg	34	35
Chromium, Total	11.	13	mg/kg	17	35
Cobalt, Total	3.7	4.3	mg/kg	15	35
Copper, Total	14.	15	mg/kg	7	35
Iron, Total	8800	11000	mg/kg	22	35
Lead, Total	270	250	mg/kg	8	35
Magnesium, Total	3600	2800	mg/kg	25	35
Manganese, Total	190	170	mg/kg	11	35
Nickel, Total	13.	13	mg/kg	0	35
Potassium, Total	970	1200	mg/kg	21	35
Selenium, Total	0.65J	ND	mg/kg	NC	35
Silver, Total	ND	ND	mg/kg	NC	35
Sodium, Total	200	180	mg/kg	11	35

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
<b>Total Metals - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG619731-3 QC Sample: L1312411-20 Client ID: COMP05_0-14</b>					
Thallium, Total	ND	ND	mg/kg	NC	35
Vanadium, Total	15.	16	mg/kg	6	35
Zinc, Total	330	250	mg/kg	28	35
<b>Total Metals - Westborough Lab Associated sample(s): 25 QC Batch ID: WG620049-3 QC Sample: L1312411-25 Client ID: COMPNAT_14</b>					
Mercury, Total	0.05J	0.15	mg/kg	NC	35
<b>TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG620089-3 QC Sample: L1312396-02 Client ID: DUP Sample</b>					
Arsenic, TCLP	ND	ND	mg/l	NC	20
Barium, TCLP	0.69	0.68	mg/l	1	20
Cadmium, TCLP	ND	ND	mg/l	NC	20
Chromium, TCLP	0.02J	ND	mg/l	NC	20
Lead, TCLP	ND	ND	mg/l	NC	20
Selenium, TCLP	ND	ND	mg/l	NC	20
Silver, TCLP	ND	ND	mg/l	NC	20
<b>TCLP Metals by EPA 1311 - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG620385-3 QC Sample: L1312396-02 Client ID: DUP Sample</b>					
Mercury, TCLP	ND	ND	mg/l	NC	20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/08/13 13:00	1,1030	DM



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/08/13 13:00	1,1030	DM



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/08/13 13:00	1,1030	DM



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Soil  
**Particle Size:** Medium  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/08/13 13:00	1,1030	DM



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312411-24  
**Client ID:** COMP09\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Sand  
**Particle Size:** Fine  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/08/13 13:00	1,1030	DM



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### SAMPLE RESULTS

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

### Test Material Information

**Source of Material:** Unknown  
**Description of Material:** Non-Metallic - Damp Sand  
**Particle Size:** Fine  
**Preliminary Burning Time (sec):** 120

Parameter	Result	Date Analyzed	Analytical Method	Analyst
Ignitability of Solids - Westborough Lab				
Ignitability	NI	07/08/13 13:00	1,1030	DM



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

**SAMPLE RESULTS**

Lab ID: L1312411-01

Date Collected: 07/02/13 08:05

Client ID: WC05A\_3-5

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.5		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-02

Client ID: WC05A\_5-7

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 08:12

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.6		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-03

Client ID: WC05A\_7-9

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 08:17

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	85.1		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-04

Date Collected: 07/02/13 08:20

Client ID: WC05A\_13-14

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-05

Client ID: WC06B\_4-6

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 09:15

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.8		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-06

Client ID: WC06B\_1-3

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 09:05

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.1		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-07

Client ID: WC06B\_7-8.5

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 09:20

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.1		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-08

Date Collected: 07/02/13 09:35

Client ID: WC06A\_5-6

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	82.6		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-09

Date Collected: 07/02/13 09:45

Client ID: WC06A\_13-14

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	80.4		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-10

Date Collected: 07/02/13 10:45

Client ID: WC07A\_2-4

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.9		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-11

Date Collected: 07/02/13 10:40

Client ID: WC07A\_4-6

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	89.8		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-12

Client ID: WC07A\_6-7.5

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 10:30

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	83.1		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-13

Client ID: WC07B\_1-3

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 10:55

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	81.7		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-14

Client ID: WC07B\_10-11

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 11:05

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.9		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-15

Client ID: WC09B\_3-4

Sample Location: NY, NY

Matrix: Soil

Date Collected: 07/02/13 13:05

Date Received: 07/02/13

Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.8		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-16

Date Collected: 07/02/13 12:50

Client ID: WC09A\_0.5-2.5

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	90.1		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-17

Date Collected: 07/02/13 12:25

Client ID: WC08A\_0-2

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.3		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

## SAMPLE RESULTS

Lab ID: L1312411-18

Date Collected: 07/02/13 12:30

Client ID: WC08B\_3-4

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	87.4		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-20  
**Client ID:** COMP05\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 14:40  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	87.7		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT
Cyanide, Total	ND		mg/kg	1.1	0.26	1	07/03/13 13:30	07/08/13 12:07	1,9010C/9012A	JO
pH (H)	8.8		SU	-	NA	1	-	07/03/13 03:00	1,9045D	DE
Chromium, Hexavalent	0.23	J	mg/kg	0.91	0.20	1	07/03/13 14:00	07/06/13 14:44	1,7196A	ST
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/06/13 21:50	07/07/13 00:30	1,7.3	EL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/06/13 21:50	07/07/13 00:00	1,7.3	EL
Oxidation/Reduction Potential	190		mv	-	NA	1	-	07/08/13 23:30	68,1498	TA



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-21  
**Client ID:** COMP06\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 14:50  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.3		%	0.100	NA	1	-	07/03/13 02:04	30,2540G	RT
Cyanide, Total	ND		mg/kg	1.2	0.28	1	07/03/13 13:30	07/08/13 12:08	1,9010C/9012A	JO
pH (H)	8.2		SU	-	NA	1	-	07/03/13 03:00	1,9045D	DE
Chromium, Hexavalent	ND		mg/kg	0.98	0.22	1	07/03/13 14:00	07/06/13 14:44	1,7196A	ST
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/06/13 00:24	1,7.3	EL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/05/13 21:55	1,7.3	EL
Oxidation/Reduction Potential	190		mv	-	NA	1	-	07/08/13 23:30	68,1498	TA
Paint Filter Liquid	NEGATIVE		-	0	NA	1	-	07/05/13 15:50	1,9095A	ST



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-22  
**Client ID:** COMP07\_0-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	84.7		%	0.100	NA	1	-	07/03/13 02:44	30,2540G	RT
Cyanide, Total	ND		mg/kg	1.1	0.27	1	07/03/13 13:30	07/08/13 12:09	1,9010C/9012A	JO
pH (H)	8.2		SU	-	NA	1	-	07/03/13 03:00	1,9045D	DE
Chromium, Hexavalent	ND		mg/kg	0.94	0.21	1	07/03/13 14:00	07/06/13 14:45	1,7196A	ST
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/06/13 00:24	1,7.3	EL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/05/13 21:55	1,7.3	EL
Oxidation/Reduction Potential	200		mv	-	NA	1	-	07/08/13 23:30	68,1498	TA



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-23  
**Client ID:** COMP08\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:20  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	86.6		%	0.100	NA	1	-	07/03/13 02:44	30,2540G	RT
Cyanide, Total	ND		mg/kg	1.1	0.25	1	07/03/13 13:30	07/08/13 12:10	1,9010C/9012A	JO
pH (H)	10.0		SU	-	NA	1	-	07/03/13 03:00	1,9045D	DE
Chromium, Hexavalent	0.29	J	mg/kg	0.92	0.21	1	07/03/13 14:00	07/06/13 14:45	1,7196A	ST
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/06/13 00:24	1,7.3	EL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/05/13 21:56	1,7.3	EL
Oxidation/Reduction Potential	190		mv	-	NA	1	-	07/08/13 23:30	68,1498	TA



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-24  
**Client ID:** COMP09\_10-14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:25  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	81.6		%	0.100	NA	1	-	07/03/13 02:44	30,2540G	RT
Cyanide, Total	ND		mg/kg	1.2	0.28	1	07/03/13 13:30	07/08/13 12:12	1,9010C/9012A	JO
pH (H)	8.7		SU	-	NA	1	-	07/03/13 03:00	1,9045D	DE
Chromium, Hexavalent	0.24	J	mg/kg	0.98	0.22	1	07/03/13 14:00	07/06/13 14:45	1,7196A	ST
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/06/13 00:25	1,7.3	EL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/05/13 21:56	1,7.3	EL
Oxidation/Reduction Potential	200		mv	-	NA	1	-	07/08/13 23:30	68,1498	TA



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**SAMPLE RESULTS**

**Lab ID:** L1312411-25  
**Client ID:** COMPNAT\_14  
**Sample Location:** NY, NY  
**Matrix:** Soil

**Date Collected:** 07/02/13 15:10  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	80.4		%	0.100	NA	1	-	07/03/13 02:44	30,2540G	RT
Cyanide, Total	ND		mg/kg	1.2	0.27	1	07/03/13 13:30	07/08/13 12:16	1,9010C/9012A	JO
pH (H)	8.1		SU	-	NA	1	-	07/03/13 03:00	1,9045D	DE
Chromium, Hexavalent	ND		mg/kg	1.0	0.22	1	07/03/13 14:00	07/06/13 14:46	1,7196A	ST
Cyanide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/06/13 00:25	1,7.3	EL
Sulfide, Reactive	ND		mg/kg	10	10.	1	07/05/13 20:00	07/05/13 21:56	1,7.3	EL
Oxidation/Reduction Potential	220		mv	-	NA	1	-	07/08/13 23:30	68,1498	TA



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 20-23 Batch: WG619434-1									
Cyanide, Total	ND	mg/kg	0.97	0.23	1	07/03/13 13:30	07/08/13 11:56	1,9010C/9012A	JO
General Chemistry - Westborough Lab for sample(s): 24-25 Batch: WG619435-1									
Cyanide, Total	ND	mg/kg	0.97	0.23	1	07/03/13 13:30	07/08/13 11:57	1,9010C/9012A	JO
General Chemistry - Westborough Lab for sample(s): 21-25 Batch: WG619812-1									
Sulfide, Reactive	ND	mg/kg	10	10.	1	07/05/13 20:00	07/05/13 21:53	1,7.3	EL
General Chemistry - Westborough Lab for sample(s): 21-25 Batch: WG619813-1									
Cyanide, Reactive	ND	mg/kg	10	10.	1	07/05/13 20:00	07/06/13 00:22	1,7.3	EL
General Chemistry - Westborough Lab for sample(s): 20 Batch: WG619919-1									
Cyanide, Reactive	ND	mg/kg	10	10.	1	07/06/13 21:50	07/07/13 00:29	1,7.3	EL
General Chemistry - Westborough Lab for sample(s): 20 Batch: WG619920-1									
Sulfide, Reactive	ND	mg/kg	10	10.	1	07/06/13 21:50	07/07/13 00:00	1,7.3	EL
General Chemistry - Westborough Lab for sample(s): 20-25 Batch: WG620300-1									
Chromium, Hexavalent	ND	mg/kg	0.80	0.18	1	07/03/13 14:00	07/06/13 13:55	1,7196A	ST

## Lab Control Sample Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 20-25 Batch: WG619313-1								
pH	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 20-23 Batch: WG619434-2 WG619434-3								
Cyanide, Total	97		95		80-120	2		35
General Chemistry - Westborough Lab Associated sample(s): 24-25 Batch: WG619435-2 WG619435-3								
Cyanide, Total	95		95		80-120	0		35
General Chemistry - Westborough Lab Associated sample(s): 21-25 Batch: WG619812-2								
Sulfide, Reactive	96		-		60-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 21-25 Batch: WG619813-2								
Cyanide, Reactive	61		-		30-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 20 Batch: WG619919-2								
Cyanide, Reactive	63		-		30-125	-		40
General Chemistry - Westborough Lab Associated sample(s): 20 Batch: WG619920-2								
Sulfide, Reactive	96		-		60-125	-		40



## Lab Control Sample Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 20-25 Batch: WG620228-1					
Oxidation/Reduction Potential	99	-	90-110	-	20
General Chemistry - Westborough Lab Associated sample(s): 20-25 Batch: WG620300-2					
Chromium, Hexavalent	95	-	80-120	-	20

### Matrix Spike Analysis Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 20-23 QC Batch ID: WG619434-4 WG619434-5 QC Sample: L1312411-23 Client ID: COMP08_10-14												
Cyanide, Total	ND	11	10	91		10	89		65-135	0		35
General Chemistry - Westborough Lab Associated sample(s): 24-25 QC Batch ID: WG619435-4 WG619435-5 QC Sample: L1312411-24 Client ID: COMP09_10-14												
Cyanide, Total	ND	12	11	92		11	96		65-135	0		35
General Chemistry - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG620300-4 WG620300-5 QC Sample: L1312411-20 Client ID: COMP05_0-14												
Chromium, Hexavalent	0.23J	1460	1200	82		980	67	Q	75-125	20		20

## Lab Duplicate Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312411

Report Date: 07/17/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-18,20-21 QC Batch ID: WG619310-1 QC Sample: L1312411-02 Client ID: WC05A_5-7						
Solids, Total	83.6	83.6	%	0		20
General Chemistry - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG619313-2 QC Sample: L1312405-03 Client ID: DUP Sample						
pH	9.5	9.7	SU	2		5
General Chemistry - Westborough Lab Associated sample(s): 22-25 QC Batch ID: WG619317-1 QC Sample: L1312405-01 Client ID: DUP Sample						
Solids, Total	83.5	85.8	%	3		20
General Chemistry - Westborough Lab Associated sample(s): 21-25 QC Batch ID: WG619812-3 QC Sample: L1312405-08 Client ID: DUP Sample						
Sulfide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 21-25 QC Batch ID: WG619813-3 QC Sample: L1312405-08 Client ID: DUP Sample						
Cyanide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 20 QC Batch ID: WG619919-3 QC Sample: L1312557-13 Client ID: DUP Sample						
Cyanide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 20 QC Batch ID: WG619920-3 QC Sample: L1312557-13 Client ID: DUP Sample						
Sulfide, Reactive	ND	ND	mg/kg	NC		40
General Chemistry - Westborough Lab Associated sample(s): 20-25 QC Batch ID: WG620228-2 QC Sample: L1312632-01 Client ID: DUP Sample						
Oxidation/Reduction Potential	190	190	mv	0		20

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

### Sample Receipt and Container Information

Were project specific reporting limits specified? YES

**Reagent H2O Preserved Vials Frozen on:** 07/03/2013 04:50

#### Cooler Information Custody Seal Cooler

A Absent  
B Absent

#### Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-01A	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-01B	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-01C	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-01D	Vial Large unpreserved	B	N/A	3.1	Y	Absent	TCLP-EXT-ZHE(14)
L1312411-01E	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-01F	Amber 120ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14)
L1312411-01G	Plastic 2oz unpreserved for TS	B	N/A	3.1	Y	Absent	TS(7)
L1312411-01S	Vial MeOH preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-01T	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-01U	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-01X	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-01Y	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-02A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-02B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-03A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-03B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-04A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-04B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-05A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-05B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-06A	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-06B	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-06C	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-06D	Vial Large unpreserved	B	N/A	3.1	Y	Absent	TCLP-EXT-ZHE(14)
L1312411-06E	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-06F	Amber 120ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14)

\*Values in parentheses indicate holding time in days



Project Name: 546 W 44TH ST

Lab Number: L1312411

Project Number: 170229701

Report Date: 07/17/13

**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-06G	Plastic 2oz unpreserved for TS	B	N/A	3.1	Y	Absent	TS(7)
L1312411-06S	Vial MeOH preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-06T	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-06U	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-06X	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-06Y	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-07A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-07B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-08A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-08B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-09A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-09B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-10A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-10B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-11A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-11B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-12A	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-12B	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-12C	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-12D	Vial Large unpreserved	B	N/A	3.1	Y	Absent	TCLP-EXT-ZHE(14)
L1312411-12E	Plastic 2oz unpreserved for TS	B	N/A	3.1	Y	Absent	TS(7)
L1312411-12S	Vial MeOH preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-12T	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-12U	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-12X	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-12Y	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-13A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-13B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-14A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-14B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-15A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-15B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-16A	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-16B	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-16C	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-16D	Vial Large unpreserved	B	N/A	3.1	Y	Absent	TCLP-EXT-ZHE(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-16E	Plastic 2oz unpreserved for TS	B	N/A	3.1	Y	Absent	TS(7)
L1312411-16S	Vial MeOH preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-16T	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-16U	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-16X	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-16Y	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-17A	Vial Large unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-GRO(14)
L1312411-17B	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	NJ-TPH-DRO-D(14),TS(7)
L1312411-18A	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-18B	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-18C	5 gram Encore Sampler	B	N/A	3.1	Y	Absent	NJ-8260HLW(2)
L1312411-18D	Vial Large unpreserved	B	N/A	3.1	Y	Absent	TCLP-EXT-ZHE(14)
L1312411-18E	Plastic 2oz unpreserved for TS	B	N/A	3.1	Y	Absent	TS(7)
L1312411-18S	Vial MeOH preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-18T	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-18U	Vial Water preserved split	B	N/A	3.1	Y	Absent	NJ-8260HLW(14)
L1312411-18X	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-18Y	Vial unpreserved split	B	N/A	3.1	Y	Absent	TCLP-VOA(14)
L1312411-19A	Vial Na2S2O3 preserved	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19B	Vial Na2S2O3 preserved	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19C	Vial Na2S2O3 preserved	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19D	Plastic 1000ml unpreserved	A	7	2.6	Y	Absent	HOLD(14)
L1312411-19E	Plastic 1000ml unpreserved	A	7	2.6	Y	Absent	HOLD(14)
L1312411-19F	Plastic 1000ml unpreserved	A	7	2.6	Y	Absent	HOLD(14)
L1312411-19G	Plastic 500ml HNO3 preserved	A	<2	2.6	Y	Absent	HOLD(14)
L1312411-19H	Plastic 500ml H2SO4 preserved	A	<2	2.6	Y	Absent	HOLD(14)
L1312411-19I	Amber 1000ml Na2S2O3	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19J	Amber 1000ml Na2S2O3	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19K	Amber 1000ml Na2S2O3	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19L	Amber 1000ml Na2S2O3	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19M	Amber 1000ml Na2S2O3	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19N	Amber 1000ml Na2S2O3	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19O	Amber 1000ml HCl preserved	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19P	Amber 1000ml HCl preserved	A	N/A	2.6	Y	Absent	HOLD(14)
L1312411-19Q	Amber 500ml unpreserved	A	N/A	2.6	Y	Absent	HOLD(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-20A	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-20B	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-20C	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-20U	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	HERB-TCLP*(14)

\*Values in parentheses indicate holding time in days



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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-20V	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312411-20W	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	TCLP-8270(14)
L1312411-20X	Plastic 250ml HNO3 preserved spl	B	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312411-21A	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),PAINTF(),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-21B	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),PAINTF(),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

\*Values in parentheses indicate holding time in days



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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-21C	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),PAINTF(),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-21U	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312411-21V	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312411-21W	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	TCLP-8270(14)
L1312411-21X	Plastic 250ml HNO3 preserved spl	B	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312411-22A	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-22B	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-22U	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312411-22V	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312411-22W	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	TCLP-8270(14)
L1312411-22X	Plastic 250ml HNO3 preserved spl	B	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312411-23A	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-23B	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-23U	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312411-23V	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312411-23W	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	TCLP-8270(14)
L1312411-23X	Plastic 250ml HNO3 preserved spl	B	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312411-24A	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-24B	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-24U	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312411-24V	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312411-24W	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	TCLP-8270(14)
L1312411-24X	Plastic 250ml HNO3 preserved spl	B	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)
L1312411-25A	Amber 250ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)

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**Container Information**

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312411-25B	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-25C	Amber 500ml unpreserved	B	N/A	3.1	Y	Absent	BE-TI(180),IGNIT-1030(14),ORP-9045(1),REACTS(14),TCN-9010(14),AS-TI(180),BA-TI(180),AG-TI(180),NJ-8082(14),NJ-8270(14),AL-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),TS(7),CU-TI(180),NJ-8270SIM-TECH(14),PB-TI(180),PH-9045(1),SB-TI(180),SE-TI(180),ZN-TI(180),CO-TI(180),V-TI(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),NJ-8081(14),NJ-HERB-APA(14),NJ-HEXCR-7196(30),REACTCN(14),CA-TI(180),CD-TI(180),K-TI(180),NA-TI(180)
L1312411-25U	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	HERB-TCLP*(14)
L1312411-25V	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	PEST-TCLP*(14)
L1312411-25W	Amber 1000ml unpreserved split	B	7	3.1	Y	Absent	TCLP-8270(14)
L1312411-25X	Plastic 250ml HNO3 preserved spl	B	<2	3.1	Y	Absent	CD-CI(180),AS-CI(180),BA-CI(180),HG-C(28),PB-CI(180),CR-CI(180),SE-CI(180),AG-CI(180)

\*Values in parentheses indicate holding time in days



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## GLOSSARY

### Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported

**Report Format:** DU Report with "J" Qualifiers



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

#### **Data Qualifiers**

due to obvious interference.

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with "J" Qualifiers

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**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312411  
**Report Date:** 07/17/13

## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.
- 68 Annual Book of ASTM (American Society for Testing and Materials) Standards following extraction by SW-846 EPA Method 9045C under the requirements of MADEP BWSC, WSC-CAM-VIB. August 2004.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



**C** **A** **r** **S**  
Last revised July 2, 2013 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.  
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

**C** **D** **r** **S** **Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.**

*Drinking Water* (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Silver, Sodium, Thallium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223, Enumeration and P/A), E. Coli. – Colilert (SM9223, Enumeration and P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform-EC Medium (SM 9221E).

*Wastewater/Non-Potable Water* (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), E. Coli – Colilert (SM9223 Enumeration), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterococcus - Enterolert.

*Solid Waste/Soil* (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP (Silvex), Dalapon, Volatile Organics (SW 8260), Acid Extractables (Phenols) (SW 8270), Benzidines (SW 8270), Phthalates (SW 8270), Nitrosamines (SW 8270), Nitroaromatics & Cyclic Ketones (SW 8270), PAHs (SW 8270), Haloethers (SW 8270), Chlorinated Hydrocarbons (SW 8270).)

**S** **D** **r** **S** **Certificate/Lab ID: 003155. NELAP Accredited.**

*Drinking Water* (Inorganic Parameters: SM2120B, 2320B, 2510B, 2540C, SM4500CN-CE, 4500F-C, 4500H-B, 4500NO3-F, 5310C, EPA 200.7, 200.8, 245.1, 300.0. Organic Parameters: EPA 504.1, 524.2.)

*Wastewater/Non-Potable Water* (Inorganic Parameters: SM2120B, 2310B, 2320B, 2340B, 2510B, 2540B, 2540C, 2540D, SM4500CL-E, 4500CN-E, 4500F-C, 4500H-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-E, 4500S-D, 4500SO3-B, 5210B, 5220D, 5310C, 5540C, EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1. Organic Parameters: EPA 608, 624, 625.)

*Hazardous and Solid Waste* (Inorganic Parameters: EPA 1010A, 1030, 1311, 1312, 6010C, 6020A, 7196A, 7470A, 7471B, 9012B, 9014, 9038, 9040C, 9045D, 9050A, 9065, 9251. Organic Parameters: 8011 (NPW only), 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8315A, 8330.)

**M** **D** **r** **S** **Certificate/Lab ID: 2009024.**

*Drinking Water* (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2120B, 2130B, 2320B, 2510C, 2540C, 4500CI-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, 5310C, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

*Wastewater/Non-Potable Water* (Inorganic Parameters: EPA 120.1, 1664A, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 8315A, 9010C, SM2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CI-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-C, 4500NH3-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-B, 4500P-E, 4500S2-D, 4500SO3-B, 5540C, 5210B, 5220D, 5310C, 9010B, 9030B, 9040C, 7470A, 7196A, 2340B, EPA 200.7, 6010C, 200.8, 6020A, 245.1, 1311, 1312, 3005A, Enterolert, 9223B, 9222D. Organic Parameters: 608, 624, 625, 8011, 8081B, 8082A, 8330, 8151A, 8260C, 8270D, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)



9050A, 9065, 9251. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5035L, 5035H, NJ EPH.)

**Norfolk Drinking Water** Certificate/Lab ID: 11148. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.1, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO<sub>3</sub>-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH<sub>3</sub>-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO<sub>3</sub>-F, 4500-NO<sub>2</sub>-B, 4500P-E, 2340B, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010C, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 7470A, SM2120B, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 8315A, 3005A, 3015, 9010C, 9030B. Organic Parameters: EPA 624, 8260C, 8270D, 8270D-SIM, 625, 608, 8081B, 8151A, 8330, 8082A, EPA 3510C, 5030B, 8015C, 8011.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, EPA 6010C, 6020A, 7196A, 7471B, 8315A, 9012B, 9014, 9065, 9050A, 9038, 9251, EPA 1311, 1312, 3005A, 3050B, 9010C, 9030B, 9040C, 9045D. Organic Parameters: EPA 8260C, 8270D, 8270D-SIM, 8015C, 8081B, 8151A, 8330, 8082A, 3540C, 3546, 3580A, 5035A-H, 5035A-L.)

**Norfolk County Drinking Water** Certificate/Lab ID : 666. (Inorganic Parameters: SM2310B, 2320B, 4500Cl-E, 4500Cn-E, 9012B, 9014, Lachat 10-204-00-1-X, 1010A, 1030, 4500NO<sub>3</sub>-F, 353.2, 4500P-E, 4500SO<sub>4</sub>-E, 300.0, 4500S-D, 5310B, 5310C, 6010C, 6020A, 200.7, 200.8, 3500Cr-B, 7196A, 245.1, 7470A, 7471B, 1311,1312. Organic Parameters: 608, 8081B, 8082A, 624, 8260B, 625, 8270D, 8151A, 8015C, 504.1, MA-EPH, MA-VPH.)

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

**Drinking Water** Certificate/Lab ID : 68-03671. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: 200.7, 200.8, 300.0, 332.0, 2120B, 2320B, 2510B, 2540C, 4500-CN-CE, 4500F-C, 4500H+-B, 4500NO<sub>3</sub>-F, 5310C. Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1312, 3005A,3015, 3060A, 200.7, 200.8, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE, 245.1, 300.0, 350.1, 350.2, 351.1, 353.2, 420.1, 6010C, 6020A, 7196A, 7470A, 9030B, 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 3500Cr-D, 426C, 4500CN-CE, 4500Cl-E, 4500F-B, 4500F-C, 4500H+-B, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>-B, 4500NO<sub>3</sub>-F, 4500S-D, 4500SO<sub>3</sub>-B, 5310BCD, 5540C, 9010C, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, 8015C, NJ-EPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3005A, 3050B, 3060A, 6010C, 6020A, 7196A, 7471B, 9010C, 9012B, 9014, 9040B, 9045D, 9050A, 9065, SM 4500NH<sub>3</sub>-BH, 9030B, 9038, 9251. Organic Parameters: 3540C, 3546, 3580A, 3620C, 3630C, 5035, 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, NJ-EPH.)

**Rock Island Drinking Water** Certificate/Lab ID: LAO00065. **NELAP Accredited via NJ-DEP.**

Refer to MA-DEP Certificate for Potable and Non-Potable Water.

Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

**Tarrant County Drinking Water** Certificate/Lab ID: T104704476. **NELAP Accredited.**

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>B, 4500P-E, 4500 S<sup>2-</sup> D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

**Franklin County Drinking Water** Certificate/Lab ID: 460195. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: EPA 200.7, 200.8, 300.0, 2510B, 2120B, 2540C, 4500CN-CE, 245.1, 2320B, 4500F-C, 4500NO<sub>3</sub>-F, 4500H+B, 5310C. Organic Parameters: EPA 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 351.2, 3005A, 3015, 1312, 6010B, 6010C, 3060A, 353.2, 420.1, 2340B, 6020, 6020A, SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X, 7196A, 7470A, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 3500Cr-D, 426C, 4500Cl-E, 4500F-B, 4500F-C, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>-B, 4500NO<sub>3</sub>-F, 4500 SO<sub>3</sub>-B, 4500H-B, 4500PE, 510AC, 5210B, 5310B 5310C, 5540C, 9010Cm

9030B, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 8260B, 608, 624, 625, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, )

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1010A, 1030, 3060A, 3050B, 1311, 1312, 6010B, 6010C, 6020, , 7196A, 7471A, 7471B, 6020A, 9010C, 9012B, 9030B, 9014, 9038, 9040C, 9045D, 9251, 9050A, 9065. Organic Parameters: EPA 5030B, 5035, 3540C, 3546, 3550B, 3580A, 3620C, 3630C, 6020A, 8260B, 8260C, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330.)

**D** **r** **o** **D** **L** **A** **B** Certificate/Lab ID: L2217.

*Drinking Water* (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

*Non-Potable Water* (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1, 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056, 7196A, 3500-Cr-D. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

**T** **o** **o** **r** **o** **N** **E** **L** **A** **T** **N** **I** **S** **o** **o** **A** **r** **o**

**E** **A** Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether. **E** **A** **B** 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **E** **A** **N** **o** **o** **r** **r** Iodomethane (methyl iodide), Methyl methacrylate. **E** **A** **S** **o** **r** Tert-amyl methyl ether (TAME), Diisopropyl ether (DIPE), Azobenzene. **E** **A** **A** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **E** **A** **C** Methyl naphthalene, Dimethyl naphthalene, Total Methylnaphthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine. **E** **A** **4**-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, TKN in a soil matrix, NO<sub>2</sub> in a soil matrix, NO<sub>3</sub> in a soil matrix. **E** **A** Total Petroleum Hydrocarbons, Oil & Grease.







WESTBORO, MA  
 TEL: 508-898-9220  
 FAX: 508-898-9193

MANSFIELD, MA  
 TEL: 508-822-9300  
 FAX: 508-822-3288

# CHAIN OF CUSTODY

PAGE 3 OF 3

Date Rec'd in Lab: 7/2/13

ALPHA Job #: L1312411

## Client Information

Client: Langan  
 Address: 360 W 31st St  
NY, NY 10001  
 Phone: 212 479-5400  
 Fax: 212 479-5444  
 Email: EBoarban@langan.com

These samples have been previously analyzed by Alpha

## Project Information

Project Name: 546 W 44th St  
 Project Location: NY, NY  
 Project #: 170229701  
 Project Manager: Elodie Boarban  
 ALPHA Quote #:

## Turn-Around Time

Standard  RUSH (only confirmed if pre-approved!)  
 Date Due: 7/10/13 Time:

## Report Information - Data Deliverables

FAX  EMAIL  
 ADEx  Add'l Deliverables

## Billing Information

Same as Client info PO #:

## Regulatory Requirements/Report Limits

State /Fed Program: Part 375 Unrestricted - NY Restricted  
 Criteria:

Other Project Specific Requirements/Comments/Detection Limits:

ANALYSIS  
 TLL SVOC/PCB  
 Herb/Pest  
 TAL Metals/Hex Chrom  
 Total Cyantole  
 TLL SVOC/ Metals/Residuals  
 Lead/Chromium/Asbestos/PAH  
 Paint Filter

## SAMPLE HANDLING

Filtration \_\_\_\_\_  
 Done  
 Not needed  
 Lab to do Preservation  
 Lab to do  
 (Please specify below)

TOTAL # BOTTLES

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection		Sample Matrix	Sampler's Initials	ANALYSIS										Sample Specific Comments	TOTAL # BOTTLES					
		Date	Time			TLL SVOC/PCB	Herb/Pest	TAL Metals/Hex Chrom	Total Cyantole	TLL SVOC/ Metals/Residuals	Lead/Chromium/Asbestos/PAH	Paint Filter	Other	Other	Other			Other	Other	Other		
12411-20	COMP05-0-14	7/2/13	14:40	Soil	PM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		3
-21	COMP06-0-14		14:50		PM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		3
-22	COMP07-0-14		15:00		PM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Low Volume	2
-23	COMP08-10-14		15:10		PM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Low Volume	2
-24	COMP09-10-14		15:25		PM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Low Volume	2
-25	COMP NAT-9-14		15:10		PM	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		3

Container Type  
 Preservative

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

Relinquished By: <u>Paul McManus</u>	Date/Time: <u>7/2/13 15:30</u>	Received By: <u>Elodie Boarban</u>	Date/Time: <u>7-2-13 15:30</u>
<u>Elodie Boarban</u>	<u>7/2/13 18:13</u>	<u>Paul McManus</u>	<u>7/2/13 18:13</u>
<u>Elodie Boarban</u>	<u>7/2/13 23:25</u>	<u>Paul McManus</u>	<u>7/2/13 23:25</u>



## ANALYTICAL REPORT

Lab Number:	L1312612
Client:	Langan Engineering & Environmental 21 Penn Plaza 360 W. 31st Street, 8th Floor New York, NY 10001-2727
ATTN:	Elodie Bourbon
Phone:	(212) 479-5400
Project Name:	546 W 44TH ST
Project Number:	170229701
Report Date:	07/10/13

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Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

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Eight Walkup Drive, Westborough, MA 01581-1019  
508-898-9220 (Fax) 508-898-9193 800-624-9220 - [www.alphalab.com](http://www.alphalab.com)



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

<b>Alpha Sample ID</b>	<b>Client ID</b>	<b>Sample Location</b>	<b>Collection Date/Time</b>
L1312612-01	LB4OW_070213	NY, NY	07/02/13 14:00

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

### Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

#### HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples free of charge for 30 days from the date the project is completed. After 30 days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples.

Please contact Client Services at 800-624-9220 with any questions.

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**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

### Case Narrative (continued)

#### Report Submission

All non-detect (ND) or estimated concentrations (J-qualified) have been quantitated to the limit noted in the MDL column.

#### Solids, Total Suspended

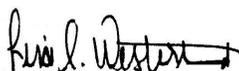
WG619338: A Laboratory Duplicate could not be performed due to insufficient sample volume available for analysis.

#### Non-Polar Material by EPA 1664

WG620380: A Matrix Spike could not be performed due to insufficient sample volume available for analysis.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:



Lisa Westerlind

Title: Technical Director/Representative

Date: 07/10/13

# ORGANICS

# VOLATILES

**Project Name:** 546 W 44TH ST**Lab Number:** L1312612**Project Number:** 170229701**Report Date:** 07/10/13**SAMPLE RESULTS**

**Lab ID:** L1312612-01  
**Client ID:** LB4OW\_070213  
**Sample Location:** NY, NY  
**Matrix:** Water  
**Analytical Method:** 5,624  
**Analytical Date:** 07/05/13 10:20  
**Analyst:** MM

**Date Collected:** 07/02/13 14:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
<b>Volatile Organics by GC/MS - Westborough Lab</b>						
Chloroform	ND		ug/l	1.5	0.29	1
Carbon tetrachloride	ND		ug/l	1.0	0.33	1
Tetrachloroethene	ND		ug/l	1.5	0.38	1
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30	1
Benzene	ND		ug/l	1.0	0.31	1
Toluene	ND		ug/l	1.0	0.35	1
Ethylbenzene	ND		ug/l	1.0	0.33	1
1,4-Dichlorobenzene	ND		ug/l	5.0	0.85	1
p/m-Xylene	ND		ug/l	2.0	0.66	1
o-Xylene	ND		ug/l	1.0	0.30	1
Xylene (Total)	ND		ug/l	2.0	0.66	1
Methyl tert butyl ether	ND		ug/l	10	0.58	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	93		80-120
Fluorobenzene	98		80-120
4-Bromofluorobenzene	99		80-120

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

**Method Blank Analysis**  
**Batch Quality Control**

Analytical Method: 5,624  
Analytical Date: 07/05/13 09:44  
Analyst: MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG620114-2					
Methylene chloride	1.2	J	ug/l	5.0	0.65
1,1-Dichloroethane	ND		ug/l	1.5	0.31
Chloroform	ND		ug/l	1.5	0.29
Carbon tetrachloride	ND		ug/l	1.0	0.33
1,2-Dichloropropane	ND		ug/l	3.5	0.28
Dibromochloromethane	ND		ug/l	1.0	0.33
1,1,2-Trichloroethane	ND		ug/l	1.5	0.34
2-Chloroethylvinyl ether	ND		ug/l	10	0.62
Tetrachloroethene	ND		ug/l	1.5	0.38
Chlorobenzene	ND		ug/l	3.5	0.32
Trichlorofluoromethane	ND		ug/l	5.0	0.33
1,2-Dichloroethane	ND		ug/l	1.5	0.36
1,1,1-Trichloroethane	ND		ug/l	2.0	0.30
Bromodichloromethane	ND		ug/l	1.0	0.30
trans-1,3-Dichloropropene	ND		ug/l	1.5	0.30
cis-1,3-Dichloropropene	ND		ug/l	1.5	0.32
Bromoform	ND		ug/l	1.0	0.32
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	0.35
Benzene	ND		ug/l	1.0	0.31
Toluene	ND		ug/l	1.0	0.35
Ethylbenzene	ND		ug/l	1.0	0.33
Chloromethane	ND		ug/l	5.0	0.89
Bromomethane	ND		ug/l	5.0	1.3
Vinyl chloride	ND		ug/l	2.0	0.30
Chloroethane	ND		ug/l	2.0	0.31
1,1-Dichloroethene	ND		ug/l	1.0	0.28
trans-1,2-Dichloroethene	ND		ug/l	1.5	0.34
cis-1,2-Dichloroethene <sup>1</sup>	ND		ug/l	1.0	0.33
Trichloroethene	ND		ug/l	1.0	0.33
1,2-Dichlorobenzene	ND		ug/l	5.0	0.75
1,3-Dichlorobenzene	ND		ug/l	5.0	0.93

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

**Method Blank Analysis  
Batch Quality Control**

**Analytical Method:** 5,624  
**Analytical Date:** 07/05/13 09:44  
**Analyst:** MM

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG620114-2					
1,4-Dichlorobenzene	ND		ug/l	5.0	0.85
p/m-Xylene <sup>1</sup>	ND		ug/l	2.0	0.66
o-Xylene <sup>1</sup>	ND		ug/l	1.0	0.30
Xylene (Total) <sup>1</sup>	ND		ug/l	2.0	0.66
Styrene <sup>1</sup>	ND		ug/l	1.0	0.30
Acetone <sup>1</sup>	7.3	J	ug/l	10	1.8
Carbon disulfide <sup>1</sup>	ND		ug/l	5.0	0.90
2-Butanone <sup>1</sup>	ND		ug/l	10	2.2
Vinyl acetate <sup>1</sup>	ND		ug/l	10	2.9
4-Methyl-2-pentanone <sup>1</sup>	ND		ug/l	10	2.4
2-Hexanone <sup>1</sup>	ND		ug/l	10	2.5
Acrolein <sup>1</sup>	ND		ug/l	8.0	1.9
Acrylonitrile <sup>1</sup>	ND		ug/l	10	1.9
Methyl tert butyl ether <sup>1</sup>	ND		ug/l	10	0.58
Dibromomethane <sup>1</sup>	ND		ug/l	1.0	1.0
1,4-Dioxane <sup>1</sup>	ND		ug/l	2000	490
tert-Butyl Alcohol <sup>1</sup>	ND		ug/l	100	6.0
Tertiary-Amyl Methyl Ether <sup>1</sup>	ND		ug/l	20	0.26

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	97		80-120
Fluorobenzene	101		80-120
4-Bromofluorobenzene	99		80-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG620114-1								
Methylene chloride	101		-		70-111	-		30
1,1-Dichloroethane	97		-		78-116	-		30
Chloroform	99		-		86-111	-		30
Carbon tetrachloride	102		-		60-112	-		30
1,2-Dichloropropane	99		-		83-113	-		30
Dibromochloromethane	99		-		58-129	-		30
1,1,2-Trichloroethane	96		-		80-118	-		30
2-Chloroethylvinyl ether	89		-		69-124	-		30
Tetrachloroethene	92		-		80-126	-		30
Chlorobenzene	96		-		80-126	-		30
Trichlorofluoromethane	91		-		83-128	-		30
1,2-Dichloroethane	98		-		82-110	-		30
1,1,1-Trichloroethane	98		-		72-109	-		30
Bromodichloromethane	103		-		71-120	-		30
trans-1,3-Dichloropropene	96		-		73-106	-		30
cis-1,3-Dichloropropene	99		-		78-111	-		30
Bromoform	97		-		45-131	-		30
1,1,2,2-Tetrachloroethane	97		-		81-122	-		30
Benzene	102		-		84-116	-		30
Toluene	97		-		83-121	-		30
Ethylbenzene	102		-		84-123	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG620114-1								
Chloromethane	95		-		70-144	-		30
Bromomethane	83		-		63-141	-		30
Vinyl chloride	97		-		56-118	-		30
Chloroethane	95		-		74-130	-		30
1,1-Dichloroethene	97		-		77-116	-		30
trans-1,2-Dichloroethene	96		-		81-121	-		30
cis-1,2-Dichloroethene <sup>1</sup>	97		-		85-110	-		30
Trichloroethene	98		-		84-118	-		30
1,2-Dichlorobenzene	97		-		78-128	-		30
1,3-Dichlorobenzene	94		-		77-125	-		30
1,4-Dichlorobenzene	98		-		77-125	-		30
p/m-Xylene <sup>1</sup>	101		-		81-121	-		30
o-Xylene <sup>1</sup>	99		-		81-124	-		30
Xylene (Total) <sup>1</sup>	101		-		81-122	-		30
Styrene <sup>1</sup>	102		-		84-133	-		30
Acetone <sup>1</sup>	106		-		40-160	-		30
Carbon disulfide <sup>1</sup>	101		-		54-134	-		30
2-Butanone <sup>1</sup>	99		-		57-116	-		30
Vinyl acetate <sup>1</sup>	96		-		40-160	-		30
4-Methyl-2-pentanone <sup>1</sup>	100		-		79-125	-		30
2-Hexanone <sup>1</sup>	94		-		78-120	-		30

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG620114-1								
Acrolein <sup>1</sup>	117		-		40-160	-		30
Acrylonitrile <sup>1</sup>	100		-		66-123	-		30
Methyl tert butyl ether <sup>1</sup>	95		-		57-126	-		30
Dibromomethane <sup>1</sup>	96		-		65-126	-		30
1,4-Dioxane <sup>1</sup>	95		-		74-121	-		30
tert-Butyl Alcohol <sup>1</sup>	95		-		52-114	-		30
Tertiary-Amyl Methyl Ether <sup>1</sup>	93		-		66-111	-		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Pentafluorobenzene	103				80-120
Fluorobenzene	104				80-120
4-Bromofluorobenzene	97				80-120

## Matrix Spike Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312612

Project Number: 170229701

Report Date: 07/10/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620114-4 QC Sample: L1312464-06 Client ID: MS Sample												
Methylene chloride	ND	20	20	101		-	-		70-111	-		30
1,1-Dichloroethane	ND	20	20	100		-	-		78-116	-		30
Chloroform	ND	20	20	101		-	-		86-111	-		30
Carbon tetrachloride	ND	20	22	112		-	-		60-112	-		30
1,2-Dichloropropane	ND	20	21	104		-	-		83-113	-		30
Dibromochloromethane	ND	20	21	106		-	-		58-129	-		30
1,1,2-Trichloroethane	ND	20	21	105		-	-		80-118	-		30
2-Chloroethylvinyl ether	ND	20	20	102		-	-		69-124	-		30
Tetrachloroethene	ND	20	20	98		-	-		80-126	-		30
Chlorobenzene	ND	20	18	93		-	-		80-126	-		30
Trichlorofluoromethane	ND	20	20	99		-	-		83-128	-		30
1,2-Dichloroethane	ND	20	20	101		-	-		82-110	-		30
1,1,1-Trichloroethane	ND	20	21	104		-	-		72-109	-		30
Bromodichloromethane	ND	20	21	104		-	-		71-120	-		30
trans-1,3-Dichloropropene	ND	20	20	101		-	-		73-106	-		30
cis-1,3-Dichloropropene	ND	20	20	102		-	-		78-111	-		30
Bromoform	ND	20	20	102		-	-		45-131	-		30
1,1,2,2-Tetrachloroethane	ND	20	20	100		-	-		81-122	-		30
Benzene	ND	20	21	106		-	-		84-116	-		30
Toluene	ND	20	21	104		-	-		83-121	-		30
Ethylbenzene	ND	20	20	100		-	-		84-123	-		30

## Matrix Spike Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312612

Project Number: 170229701

Report Date: 07/10/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620114-4 QC Sample: L1312464-06 Client ID: MS Sample												
Chloromethane	ND	20	19	94		-	-		70-144	-		30
Bromomethane	ND	20	16	78		-	-		63-141	-		30
Vinyl chloride	ND	20	20	99		-	-		56-118	-		30
Chloroethane	ND	20	19	97		-	-		74-130	-		30
1,1-Dichloroethene	ND	20	20	102		-	-		77-116	-		30
trans-1,2-Dichloroethene	ND	20	20	100		-	-		81-121	-		30
cis-1,2-Dichloroethene <sup>1</sup>	ND	20	20	100		-	-		85-110	-		30
Trichloroethene	ND	20	20	101		-	-		84-118	-		30
1,2-Dichlorobenzene	ND	20	19	95		-	-		78-128	-		30
1,3-Dichlorobenzene	ND	20	18	91		-	-		77-125	-		30
1,4-Dichlorobenzene	ND	20	19	95		-	-		77-125	-		30
p/m-Xylene <sup>1</sup>	ND	40	40	100		-	-		81-121	-		30
o-Xylene <sup>1</sup>	ND	20	19	97		-	-		81-124	-		30
Xylene (Total) <sup>1</sup>	ND	60	59	99		-	-		81-122	-		30
Styrene <sup>1</sup>	ND	20	20	100		-	-		84-133	-		30
Acetone <sup>1</sup>	ND	50	58	117		-	-		40-160	-		30
Carbon disulfide <sup>1</sup>	ND	20	20	100		-	-		54-134	-		30
2-Butanone <sup>1</sup>	ND	50	37	74		-	-		57-116	-		30
Vinyl acetate <sup>1</sup>	ND	40	28	70		-	-		40-160	-		30
4-Methyl-2-pentanone <sup>1</sup>	ND	50	60	120		-	-		79-125	-		30
2-Hexanone <sup>1</sup>	ND	50	56	112		-	-		78-120	-		30

## Matrix Spike Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312612

Project Number: 170229701

Report Date: 07/10/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620114-4 QC Sample: L1312464-06 Client ID: MS Sample												
Acrolein <sup>1</sup>	ND	40	15	36	Q	-	-		40-160	-		30
Acrylonitrile <sup>1</sup>	ND	40	44	110		-	-		66-123	-		30
Dibromomethane <sup>1</sup>	ND	20	20	99		-	-		65-126	-		30

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
4-Bromofluorobenzene	91				80-120
Fluorobenzene	100				80-120
Pentafluorobenzene	99				80-120

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620114-3 QC Sample: L1312612-01 Client ID: LB4OW_070213						
Chloroform	ND	ND	ug/l	NC		30
Carbon tetrachloride	ND	ND	ug/l	NC		30
Tetrachloroethene	ND	ND	ug/l	NC		30
1,1,1-Trichloroethane	ND	ND	ug/l	NC		30
Benzene	ND	ND	ug/l	NC		30
Toluene	ND	ND	ug/l	NC		30
Ethylbenzene	ND	ND	ug/l	NC		30
1,4-Dichlorobenzene	ND	ND	ug/l	NC		30
p/m-Xylene <sup>1</sup>	ND	ND	ug/l	NC		30
o-Xylene <sup>1</sup>	ND	ND	ug/l	NC		30
Xylene (Total) <sup>1</sup>	ND	ND	ug/l	NC		30
Methyl tert butyl ether <sup>1</sup>	ND	ND	ug/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
Pentafluorobenzene	93		94		80-120
Fluorobenzene	98		98		80-120
4-Bromofluorobenzene	99		96		80-120

# SEMIVOLATILES

**Project Name:** 546 W 44TH ST**Lab Number:** L1312612**Project Number:** 170229701**Report Date:** 07/10/13**SAMPLE RESULTS**

**Lab ID:** L1312612-01  
**Client ID:** LB4OW\_070213  
**Sample Location:** NY, NY  
**Matrix:** Water  
**Analytical Method:** 5,625  
**Analytical Date:** 07/09/13 13:14  
**Analyst:** JB

**Date Collected:** 07/02/13 14:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified  
**Extraction Method:** EPA 625  
**Extraction Date:** 07/06/13 14:21

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
1,2,4-Trichlorobenzene	ND		ug/l	5.0	1.7	1
Naphthalene	ND		ug/l	5.0	1.6	1
Phenol	ND		ug/l	7.0	0.90	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	92		43-120
2,4,6-Tribromophenol	90		10-120
4-Terphenyl-d14	96		33-120

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

**Method Blank Analysis**  
**Batch Quality Control**

**Analytical Method:** 5,625  
**Analytical Date:** 07/09/13 11:35  
**Analyst:** JB

**Extraction Method:** EPA 625  
**Extraction Date:** 07/06/13 14:21

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG620087-1					
1,2,4-Trichlorobenzene	ND		ug/l	5.0	1.7
Naphthalene	ND		ug/l	5.0	1.6
Phenol	ND		ug/l	7.0	0.90

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	49		21-120
Phenol-d6	29		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	80		43-120
2,4,6-Tribromophenol	76		10-120
4-Terphenyl-d14	97		33-120

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG620087-2								
1,2,4-Trichlorobenzene	80		-		39-98	-		30
Naphthalene	80		-		40-140	-		30
Phenol	40		-		12-110	-		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	56				21-120
Phenol-d6	40				10-120
Nitrobenzene-d5	88				23-120
2-Fluorobiphenyl	97				43-120
2,4,6-Tribromophenol	87				10-120
4-Terphenyl-d14	89				33-120

## Matrix Spike Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312612

Project Number: 170229701

Report Date: 07/10/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620087-3 QC Sample: L1312612-01 Client ID: LB4OW_070213												
1,2,4-Trichlorobenzene	ND	100	90	90		-	-		39-98	-		30
Naphthalene	ND	100	87	87		-	-		40-140	-		30
Phenol	ND	100	71	71		-	-		12-110	-		30

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
2,4,6-Tribromophenol	98				10-120
2-Fluorobiphenyl	104				43-120
2-Fluorophenol	79				21-120
4-Terphenyl-d14	100				33-120
Nitrobenzene-d5	87				23-120
Phenol-d6	73				10-120

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Semivolatiles Organics by GC/MS - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620087-4 QC Sample: L1312612-01 Client ID: LB4OW_070213						
1,2,4-Trichlorobenzene	ND	ND	ug/l	NC		30
Naphthalene	ND	ND	ug/l	NC		30
Phenol	ND	ND	ug/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		64		21-120
Phenol-d6	31		51		10-120
Nitrobenzene-d5	77		70		23-120
2-Fluorobiphenyl	92		80		43-120
2,4,6-Tribromophenol	90		80		10-120
4-Terphenyl-d14	96		90		33-120

# PCBS

**Project Name:** 546 W 44TH ST**Lab Number:** L1312612**Project Number:** 170229701**Report Date:** 07/10/13**SAMPLE RESULTS**

Lab ID: L1312612-01  
 Client ID: LB4OW\_070213  
 Sample Location: NY, NY  
 Matrix: Water  
 Analytical Method: 5,608  
 Analytical Date: 07/08/13 15:26  
 Analyst: KB

Date Collected: 07/02/13 14:00  
 Date Received: 07/02/13  
 Field Prep: Not Specified  
 Extraction Method: EPA 608  
 Extraction Date: 07/06/13 14:14  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 07/07/13  
 Cleanup Method2: EPA 3660B  
 Cleanup Date2: 07/07/13

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Polychlorinated Biphenyls by GC - Westborough Lab						
Aroclor 1016	ND		ug/l	0.050	0.021	1
Aroclor 1221	ND		ug/l	0.050	0.028	1
Aroclor 1232	ND		ug/l	0.050	0.012	1
Aroclor 1242	ND		ug/l	0.050	0.014	1
Aroclor 1248	ND		ug/l	0.050	0.014	1
Aroclor 1254	ND		ug/l	0.050	0.022	1
Aroclor 1260	ND		ug/l	0.050	0.023	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	58		30-150
Decachlorobiphenyl	67		30-150

**Project Name:** 546 W 44TH ST**Lab Number:** L1312612**Project Number:** 170229701**Report Date:** 07/10/13

**Method Blank Analysis  
Batch Quality Control**

Analytical Method: 5,608  
 Analytical Date: 07/08/13 16:03  
 Analyst: KB

Extraction Method: EPA 608  
 Extraction Date: 07/06/13 14:14  
 Cleanup Method1: EPA 3665A  
 Cleanup Date1: 07/07/13  
 Cleanup Method2: EPA 3660B  
 Cleanup Date2: 07/07/13

Parameter	Result	Qualifier	Units	RL	MDL
Polychlorinated Biphenyls by GC - Westborough Lab for sample(s): 01 Batch: WG620091-1					
Aroclor 1016	ND		ug/l	0.050	0.021
Aroclor 1221	ND		ug/l	0.050	0.028
Aroclor 1232	ND		ug/l	0.050	0.012
Aroclor 1242	ND		ug/l	0.050	0.014
Aroclor 1248	ND		ug/l	0.050	0.014
Aroclor 1254	ND		ug/l	0.050	0.022
Aroclor 1260	ND		ug/l	0.050	0.023

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	65		30-150
Decachlorobiphenyl	50		30-150

## Matrix Spike Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Lab Number: L1312612

Project Number: 170229701

Report Date: 07/10/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620091-3 QC Sample: L1312612-01 Client ID: LB4OW_070213												
Aroclor 1016	ND	1.25	1.12	90		-	-		40-126	-		30
Aroclor 1260	ND	1.25	1.18	94		-	-		40-127	-		30

Surrogate	MS		MSD		Acceptance Criteria
	% Recovery	Qualifier	% Recovery	Qualifier	
2,4,5,6-Tetrachloro-m-xylene	71				30-150
Decachlorobiphenyl	78				30-150

### Lab Control Sample Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 Batch: WG620091-2								
Aroclor 1016	83		-		40-126	-		30
Aroclor 1260	83		-		40-127	-		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	60				30-150
Decachlorobiphenyl	57				30-150

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Polychlorinated Biphenyls by GC - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620091-4 QC Sample: L1312612-01 Client ID: LB4OW_070213						
Aroclor 1016	ND	ND	ug/l	NC		30
Aroclor 1221	ND	ND	ug/l	NC		30
Aroclor 1232	ND	ND	ug/l	NC		30
Aroclor 1242	ND	ND	ug/l	NC		30
Aroclor 1248	ND	ND	ug/l	NC		30
Aroclor 1254	ND	ND	ug/l	NC		30
Aroclor 1260	ND	ND	ug/l	NC		30

Surrogate	%Recovery	Qualifier	%Recovery	Qualifier	Acceptance Criteria
2,4,5,6-Tetrachloro-m-xylene	58		58		30-150
Decachlorobiphenyl	67		66		30-150

## METALS

Project Name: 546 W 44TH ST

Lab Number: L1312612

Project Number: 170229701

Report Date: 07/10/13

## SAMPLE RESULTS

Lab ID: L1312612-01

Date Collected: 07/02/13 14:00

Client ID: LB4OW\_070213

Date Received: 07/02/13

Sample Location: NY, NY

Field Prep: Not Specified

Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
<b>Total Metals - Westborough Lab</b>											
Cadmium, Total	ND		mg/l	0.005	0.001	1	07/08/13 15:00	07/10/13 09:45	EPA 3005A	19,200.7	TT
Copper, Total	0.006	J	mg/l	0.010	0.002	1	07/08/13 15:00	07/10/13 09:45	EPA 3005A	19,200.7	TT
Lead, Total	0.019		mg/l	0.010	0.002	1	07/08/13 15:00	07/10/13 09:45	EPA 3005A	19,200.7	TT
Mercury, Total	ND		mg/l	0.0002	0.0001	1	07/03/13 08:40	07/06/13 10:13	EPA 245.1	3,245.1	KL
Nickel, Total	ND		mg/l	0.025	0.004	1	07/08/13 15:00	07/10/13 09:45	EPA 3005A	19,200.7	TT
Zinc, Total	ND		mg/l	0.050	0.007	1	07/08/13 15:00	07/10/13 09:45	EPA 3005A	19,200.7	TT



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

## Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01 Batch: WG619340-1									
Mercury, Total	ND	mg/l	0.0002	0.0001	1	07/03/13 08:40	07/06/13 09:44	3,245.1	KL

### Prep Information

Digestion Method: EPA 245.1

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Westborough Lab for sample(s): 01 Batch: WG620138-1									
Cadmium, Total	ND	mg/l	0.005	0.001	1	07/08/13 15:00	07/10/13 09:38	19,200.7	TT
Copper, Total	ND	mg/l	0.010	0.002	1	07/08/13 15:00	07/10/13 09:38	19,200.7	TT
Lead, Total	ND	mg/l	0.010	0.002	1	07/08/13 15:00	07/10/13 09:38	19,200.7	TT
Nickel, Total	ND	mg/l	0.025	0.004	1	07/08/13 15:00	07/10/13 09:38	19,200.7	TT
Zinc, Total	ND	mg/l	0.050	0.007	1	07/08/13 15:00	07/10/13 09:38	19,200.7	TT

### Prep Information

Digestion Method: EPA 3005A

## Lab Control Sample Analysis

Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
Total Metals - Westborough Lab Associated sample(s): 01 Batch: WG619340-2								
Mercury, Total	94		-		85-115	-		
Total Metals - Westborough Lab Associated sample(s): 01 Batch: WG620138-2								
Cadmium, Total	88		-		85-115	-		
Copper, Total	91		-		85-115	-		
Lead, Total	93		-		85-115	-		
Nickel, Total	88		-		85-115	-		
Zinc, Total	86		-		85-115	-		

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01    QC Batch ID: WG619340-4    QC Sample: L1312265-01    Client ID: MS Sample												
Mercury, Total	0.0045	0.005	0.0079	68	Q	-	-		70-130	-		20
Total Metals - Westborough Lab Associated sample(s): 01    QC Batch ID: WG620138-4    QC Sample: L1312612-01    Client ID: LB4OW_070213												
Cadmium, Total	ND	0.051	0.044	86		-	-		75-125	-		20
Copper, Total	0.006J	0.25	0.232	93		-	-		75-125	-		20
Lead, Total	0.019	0.51	0.458	86		-	-		75-125	-		20
Nickel, Total	ND	0.5	0.421	84		-	-		75-125	-		20
Zinc, Total	ND	0.5	0.422	84		-	-		75-125	-		20

## Lab Duplicate Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619340-3 QC Sample: L1312265-01 Client ID: DUP Sample						
Mercury, Total	0.0045	0.0043	mg/l	5		20
Total Metals - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620138-3 QC Sample: L1312612-01 Client ID: LB4OW_070213						
Cadmium, Total	ND	ND	mg/l	NC		20
Copper, Total	0.006J	0.006J	mg/l	NC		20
Lead, Total	0.019	0.019	mg/l	1		20
Nickel, Total	ND	ND	mg/l	NC		20
Zinc, Total	ND	ND	mg/l	NC		20

# **INORGANICS & MISCELLANEOUS**

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

**SAMPLE RESULTS**

**Lab ID:** L1312612-01  
**Client ID:** LB4OW\_070213  
**Sample Location:** NY, NY  
**Matrix:** Water

**Date Collected:** 07/02/13 14:00  
**Date Received:** 07/02/13  
**Field Prep:** Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
<b>General Chemistry - Westborough Lab</b>										
Solids, Total	1800		mg/l	10	NA	1	-	07/03/13 11:25	30,2540B	DW
Solids, Total Suspended	36.		mg/l	5.0	NA	1	-	07/03/13 11:50	30,2540D	DW
Chloride	390		mg/l	10	2.1	10	-	07/09/13 16:42	30,4500CL-E	LA
pH (H)	7.0		SU	-	NA	1	-	07/03/13 03:00	30,4500H+-B	DE
Nitrogen, Nitrate/Nitrite	20.		mg/l	1.0	0.15	10	-	07/04/13 00:07	44,353.2	DB
Total Nitrogen	20.		mg/l	1.0	0.99	3.3	-	07/05/13 10:19	41,-	JO
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	0.102	1	07/03/13 08:26	07/03/13 13:27	30,4500N-C	JO
CBOD, 5 day	ND		mg/l	2.0	NA	1	07/04/13 03:50	07/09/13 07:30	30,5210B	DE
Non-Polar Material by EPA 1664	ND		mg/l	4.00	0.860	1	07/09/13 10:30	07/09/13 14:20	74,1664A	JO
Flash Point	>150		deg F	70	NA	1	-	07/05/13 09:40	1,1010	ST
Chromium, Hexavalent	ND		mg/l	0.010	0.001	1	07/03/13 00:30	07/03/13 00:59	30,3500CR-D	EL



**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

**Method Blank Analysis**  
**Batch Quality Control**

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619293-1										
Chromium, Hexavalent	ND		mg/l	0.010	0.001	1	07/03/13 00:30	07/03/13 00:58	30,3500CR-D	EL
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619338-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	07/03/13 11:50	30,2540D	DW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619339-1										
Solids, Total	ND		mg/l	10	NA	1	-	07/03/13 11:25	30,2540B	DW
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619362-1										
Nitrogen, Total Kjeldahl	ND		mg/l	0.300	0.034	1	07/03/13 08:26	07/03/13 13:09	30,4500N-C	JO
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619576-1										
Nitrogen, Nitrate/Nitrite	ND		mg/l	0.10	0.015	1	-	07/03/13 23:25	44,353.2	DB
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG619591-1										
CBOD, 5 day	ND		mg/l	2.0	NA	1	07/04/13 03:50	07/09/13 07:30	30,5210B	DE
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG620180-1										
Chloride	ND		mg/l	1.0	0.21	1	-	07/09/13 16:04	30,4500CL-E	LA
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG620380-1										
Non-Polar Material by EPA 1664	ND		mg/l	4.00	0.860	1	07/09/13 10:30	07/09/13 14:20	74,1664A	JO

## Lab Control Sample Analysis

### Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	LCS		LCSD		%Recovery Limits	RPD	Qual	RPD Limits
	%Recovery	Qual	%Recovery	Qual				
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619293-2								
Chromium, Hexavalent	98		-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619314-1								
pH	100		-		99-101	-		5
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619339-2								
Solids, Total	96		-		81-113	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619362-2								
Nitrogen, Total Kjeldahl	104		-		78-122	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619576-2								
Nitrogen, Nitrate/Nitrite	100		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619591-2								
CBOD, 5 day	79		-		47-104	-		49
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG619780-1								
Flash Point	102		-			-		

## Lab Control Sample Analysis

Batch Quality Control

Project Name: 546 W 44TH ST

Project Number: 170229701

Lab Number: L1312612

Report Date: 07/10/13

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG620180-2					
Chloride	103	-	90-110	-	
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG620380-2					
Non-Polar Material by EPA 1664	85	-	64-132	-	34

### Matrix Spike Analysis Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Qual	MSD Found	MSD %Recovery	MSD Qual	Recovery Limits	RPD	RPD Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619293-6 QC Sample: L1312612-01 Client ID: LB4OW_070213												
Chromium, Hexavalent	ND	0.1	0.103	103		-	-		85-115	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619362-4 QC Sample: L1312231-03 Client ID: MS Sample												
Nitrogen, Total Kjeldahl	1.14	8	6.10	62	Q	-	-		77-111	-		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619576-4 QC Sample: L1312486-02 Client ID: MS Sample												
Nitrogen, Nitrate/Nitrite	0.51	4	4.5	99		-	-		80-120	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619591-4 QC Sample: L1312502-01 Client ID: MS Sample												
CBOD, 5 day	3.4	100	97	94		-	-		36-125	-		49
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620180-4 QC Sample: L1312612-01 Client ID: LB4OW_070213												
Chloride	390	20	410	100		-	-		58-140	-		7

## Lab Duplicate Analysis

### Batch Quality Control

**Project Name:** 546 W 44TH ST  
**Project Number:** 170229701

**Lab Number:** L1312612  
**Report Date:** 07/10/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619293-5 QC Sample: L1312612-01 Client ID: LB4OW_070213						
Chromium, Hexavalent	ND	ND	mg/l	NC		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619314-3 QC Sample: L1312612-01 Client ID: LB4OW_070213						
pH (H)	7.0	7.0	SU	0		5
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619339-3 QC Sample: L1312142-01 Client ID: DUP Sample						
Solids, Total	2300	2200	mg/l	4		16
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619362-3 QC Sample: L1312231-03 Client ID: DUP Sample						
Nitrogen, Total Kjeldahl	1.14	1.19	mg/l	4		24
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619576-3 QC Sample: L1312486-02 Client ID: DUP Sample						
Nitrogen, Nitrate/Nitrite	0.51	0.52	mg/l	2		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG619591-3 QC Sample: L1312460-01 Client ID: DUP Sample						
CBOD, 5 day	73.	58.	mg/l	23		49
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620180-3 QC Sample: L1312612-01 Client ID: LB4OW_070213						
Chloride	390	400	mg/l	3		7
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG620380-3 QC Sample: L1312612-01 Client ID: LB4OW_070213						
Non-Polar Material by EPA 1664	ND	1.83J	mg/l	NC		34

**Project Name:** 546 W 44TH ST  
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### Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

#### Cooler Information Custody Seal

##### Cooler

A Absent

#### Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1312612-01A	Vial Na2S2O3 preserved	A	N/A	2.6	Y	Absent	624-NYDEP(3)
L1312612-01B	Vial Na2S2O3 preserved	A	N/A	2.6	Y	Absent	624-NYDEP(3)
L1312612-01C	Vial Na2S2O3 preserved	A	N/A	2.6	Y	Absent	624-NYDEP(3)
L1312612-01D	Plastic 1000ml unpreserved	A	7	2.6	Y	Absent	TSC-2540(7),CL-4500(28),CBOD5(2)
L1312612-01E	Plastic 1000ml unpreserved	A	7	2.6	Y	Absent	HEXCR-3500(1),PH-4500(.01)
L1312612-01F	Plastic 1000ml unpreserved	A	7	2.6	Y	Absent	TSS-2540(7)
L1312612-01G	Plastic 500ml HNO3 preserved	A	<2	2.6	Y	Absent	NI-UI(180),ZN-UI(180),HG-U(28),CD-UI(180),CU-UI(180),PB-UI(180)
L1312612-01H	Plastic 500ml H2SO4 preserved	A	<2	2.6	Y	Absent	TKN-4500(28),NO3/NO2-353(28),TNITROGEN(28)
L1312612-01I	Amber 1000ml Na2S2O3	A	7	2.6	Y	Absent	NYPGB-608-2L(7)
L1312612-01J	Amber 1000ml Na2S2O3	A	7	2.6	Y	Absent	NYPGB-608-2L(7)
L1312612-01K	Amber 1000ml Na2S2O3	A	7	2.6	Y	Absent	NYPGB-608-2L(7)
L1312612-01L	Amber 1000ml Na2S2O3	A	7	2.6	Y	Absent	NYPGB-608-2L(7)
L1312612-01M	Amber 1000ml Na2S2O3	A	7	2.6	Y	Absent	625-NYDEP(7)
L1312612-01N	Amber 1000ml Na2S2O3	A	7	2.6	Y	Absent	625-NYDEP(7)
L1312612-01O	Amber 1000ml HCl preserved	A	N/A	2.6	Y	Absent	NYTPH-1664(28)
L1312612-01P	Amber 1000ml HCl preserved	A	N/A	2.6	Y	Absent	NYTPH-1664(28)
L1312612-01Q	Amber 500ml unpreserved	A	7	2.6	Y	Absent	FLASH()

\*Values in parentheses indicate holding time in days

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**Report Date:** 07/10/13

## GLOSSARY

### Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

### Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

### Terms

**Analytical Method:** Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

### Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than five times (5x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The RPD between the results for the two columns exceeds the method-specified criteria; however, the lower value has been reported

**Report Format:** DU Report with "J" Qualifiers



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**Data Qualifiers**

due to obvious interference.

- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- J** - Estimated value. The Target analyte concentration is below the quantitation limit (RL), but above the Method Detection Limit (MDL) or Estimated Detection Limit (EDL) for SPME-related analyses. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the method detection limit (MDL) for the sample, or estimated detection limit (EDL) for SPME-related analyses.

Report Format: DU Report with "J" Qualifiers

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## REFERENCES

- 1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.
- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.
- 5 Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).
- 19 Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.
- 30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.
- 41 Alpha Analytical Labs Internally-developed Performance-based Method.
- 44 Methods for the Determination of Inorganic Substances in Environmental Samples, EPA/600/R-93/100, August 1993.
- 74 Method 1664, Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.

## LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



**C** **A** **r** **S**  
Last revised July 2, 2013 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.  
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

**C** **D** **r** **S** **Certificate/Lab ID: PH-0574. NELAP Accredited Solid Waste/Soil.**

*Drinking Water (Inorganic Parameters:* Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Silver, Sodium, Thallium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. *Organic Parameters:* Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). *Microbiology Parameters:* Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223, Enumeration and P/A), E. Coli. – Colilert (SM9223, Enumeration and P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform-EC Medium (SM 9221E).

*Wastewater/Non-Potable Water (Inorganic Parameters:* Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. *Organic Parameters:* PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. *Microbiology Parameters:* Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), E. Coli – Colilert (SM9223 Enumeration), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterococcus - Enterolert.

*Solid Waste/Soil (Inorganic Parameters:* pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. *Organic Parameters:* PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics (SW 8260), Acid Extractables (Phenols) (SW 8270), Benzidines (SW 8270), Phthalates (SW 8270), Nitrosamines (SW 8270), Nitroaromatics & Cyclic Ketones (SW 8270), PAHs (SW 8270), Haloethers (SW 8270), Chlorinated Hydrocarbons (SW 8270). )

**S** **D** **r** **S** **Certificate/Lab ID: 003155. NELAP Accredited.**

*Drinking Water (Inorganic Parameters:* SM2120B, 2320B, 2510B, 2540C, SM4500CN-CE, 4500F-C, 4500H-B, 4500NO3-F, 5310C, EPA 200.7, 200.8, 245.1, 300.0. *Organic Parameters:* EPA 504.1, 524.2.)

*Wastewater/Non-Potable Water (Inorganic Parameters:* SM2120B, 2310B, 2320B, 2340B, 2510B, 2540B, 2540C, 2540D, SM4500CL-E, 4500CN-E, 4500F-C, 4500H-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-E, 4500S-D, 4500SO3-B, 5210B, 5220D, 5310C, 5540C, EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1. *Organic Parameters:* EPA 608, 624, 625.)

*Hazardous and Solid Waste (Inorganic Parameters:* EPA 1010A, 1030, 1311, 1312, 6010C, 6020A, 7196A, 7470A, 7471B, 9012B, 9014, 9038, 9040C, 9045D, 9050A, 9065, 9251. *Organic Parameters:* 8011 (NPW only), 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8315A, 8330.)

**M** **D** **r** **S** **Certificate/Lab ID: 2009024.**

*Drinking Water (Inorganic Parameters:* SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2120B, 2130B, 2320B, 2510C, 2540C, 4500CI-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, 5310C, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. *Organic Parameters:* 504.1, 524.2.)

*Wastewater/Non-Potable Water (Inorganic Parameters:* EPA 120.1, 1664A, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 8315A, 9010C, SM2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CI-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-C, 4500NH3-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-B, 4500P-E, 4500S2-D, 4500SO3-B, 5540C, 5210B, 5220D, 5310C, 9010B, 9030B, 9040C, 7470A, 7196A, 2340B, EPA 200.7, 6010C, 200.8, 6020A, 245.1, 1311, 1312, 3005A, Enterolert, 9223B, 9222D. *Organic Parameters:* 608, 624, 625, 8011, 8081B, 8082A, 8330, 8151A, 8260C, 8270D, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)



9050A, 9065, 9251. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5035L, 5035H, NJ EPH.)

**Norfolk Drinking Water** Certificate/Lab ID: 11148. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.1, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO<sub>3</sub>-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH<sub>3</sub>-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO<sub>3</sub>-F, 4500-NO<sub>2</sub>-B, 4500P-E, 2340B, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010C, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 7470A, SM2120B, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 8315A, 3005A, 3015, 9010C, 9030B. Organic Parameters: EPA 624, 8260C, 8270D, 8270D-SIM, 625, 608, 8081B, 8151A, 8330, 8082A, EPA 3510C, 5030B, 8015C, 8011.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, EPA 6010C, 6020A, 7196A, 7471B, 8315A, 9012B, 9014, 9065, 9050A, 9038, 9251, EPA 1311, 1312, 3005A, 3050B, 9010C, 9030B, 9040C, 9045D. Organic Parameters: EPA 8260C, 8270D, 8270D-SIM, 8015C, 8081B, 8151A, 8330, 8082A, 3540C, 3546, 3580A, 5035A-H, 5035A-L.)

**Norfolk County Drinking Water** Certificate/Lab ID : 666. (Inorganic Parameters: SM2310B, 2320B, 4500Cl-E, 4500Cn-E, 9012B, 9014, Lachat 10-204-00-1-X, 1010A, 1030, 4500NO<sub>3</sub>-F, 353.2, 4500P-E, 4500SO<sub>4</sub>-E, 300.0, 4500S-D, 5310B, 5310C, 6010C, 6020A, 200.7, 200.8, 3500Cr-B, 7196A, 245.1, 7470A, 7471B, 1311,1312. Organic Parameters: 608, 8081B, 8082A, 624, 8260B, 625, 8270D, 8151A, 8015C, 504.1, MA-EPH, MA-VPH.)

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

**Drinking Water** Certificate/Lab ID : 68-03671. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: 200.7, 200.8, 300.0, 332.0, 2120B, 2320B, 2510B, 2540C, 4500-CN-CE, 4500F-C, 4500H+-B, 4500NO<sub>3</sub>-F, 5310C. Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1312, 3005A,3015, 3060A, 200.7, 200.8, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE, 245.1, 300.0, 350.1, 350.2, 351.1, 353.2, 420.1, 6010C, 6020A, 7196A, 7470A, 9030B, 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 3500Cr-D, 426C, 4500CN-CE, 4500Cl-E, 4500F-B, 4500F-C, 4500H+-B, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>-B, 4500NO<sub>3</sub>-F, 4500S-D, 4500SO<sub>3</sub>-B, 5310BCD, 5540C, 9010C, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, 8015C, NJ-EPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3005A, 3050B, 3060A, 6010C, 6020A, 7196A, 7471B, 9010C, 9012B, 9014, 9040B, 9045D, 9050A, 9065, SM 4500NH<sub>3</sub>-BH, 9030B, 9038, 9251. Organic Parameters: 3540C, 3546, 3580A, 3620C, 3630C, 5035, 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, NJ-EPH.)

**Rock Island Drinking Water** Certificate/Lab ID: LAO00065. **NELAP Accredited via NJ-DEP.**

Refer to MA-DEP Certificate for Potable and Non-Potable Water.

Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

**Tarrant County Drinking Water** Certificate/Lab ID: T104704476. **NELAP Accredited.**

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>B, 4500P-E, 4500 S<sup>2-</sup> D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

**Franklin County Drinking Water** Certificate/Lab ID: 460195. **NELAP Accredited.**

Drinking Water (Inorganic Parameters: EPA 200.7, 200.8, 300.0, 2510B, 2120B, 2540C, 4500CN-CE, 245.1, 2320B, 4500F-C, 4500NO<sub>3</sub>-F, 4500H+B, 5310C. Organic Parameters: EPA 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 351.2, 3005A, 3015, 1312, 6010B, 6010C, 3060A, 353.2, 420.1, 2340B, 6020, 6020A, SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X, 7196A, 7470A, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 3500Cr-D, 426C, 4500Cl-E, 4500F-B, 4500F-C, 4500NH<sub>3</sub>-H, 4500NO<sub>2</sub>-B, 4500NO<sub>3</sub>-F, 4500 SO<sub>3</sub>-B, 4500H-B, 4500PE, 510AC, 5210B, 5310B 5310C, 5540C, 9010Cm

9030B, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 8260B, 608, 624, 625, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330, )

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 1010A, 1030, 3060A, 3050B, 1311, 1312, 6010B, 6010C, 6020, , 7196A, 7471A, 7471B, 6020A, 9010C, 9012B, 9030B, 9014, 9038, 9040C, 9045D, 9251, 9050A, 9065. Organic Parameters: EPA 5030B, 5035, 3540C, 3546, 3550B, 3580A, 3620C, 3630C, 6020A, 8260B, 8260C, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330.)

**D** **r** **o** **D** **L** **A** **B** Certificate/Lab ID: L2217.

*Drinking Water* (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

*Non-Potable Water* (Inorganic Parameters: EPA 200.7, 200.8, 6010B, 6010C, 6020, 6020A, 245.1, 245.2, 7470A, 9040B, 9010B, 180.1, 300.0, 332.0, 6860, 353.2, 410.4, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500NO3-F, 4500CL-D, 5220D, 5310C, 2130B, 2320B, 2540C, 3005A, 3015, 9010B, 9056, 7196A, 3500-Cr-D. Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A, 8082, 8082A, 8081A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

*Solid & Hazardous Waste* (Inorganic Parameters: EPA 200.7, 6010B, 6010C, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9010B, 9012A, 9040B, 9045C, 3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330A/B-prep, 8082, 8082A, 8081A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

**T** **o** **o** **r** **o** **N** **E** **L** **A** **T** **N** **I** **S** **o** **o** **A** **r** **o**

**E** **A** Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether. **E** **A** **B** 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **E** **A** **N** **o** **o** **r** **o** **r** Iodomethane (methyl iodide), Methyl methacrylate. **E** **A** **S** **o** **r** **o** Tert-amyl methyl ether (TAME), Diisopropyl ether (DIPE), Azobenzene. **E** **A** **A** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **E** **A** **C** Methyl naphthalene, Dimethyl naphthalene, Total Methylnaphthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine. **E** **A** **o** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, TKN in a soil matrix, NO<sub>2</sub> in a soil matrix, NO<sub>3</sub> in a soil matrix. **E** **A** **o** Total Petroleum Hydrocarbons, Oil & Grease.



## **APPENDIX 3**

# **CONSTRUCTION HEALTH AND SAFETY PLAN**

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# CONSTRUCTION HEALTH AND SAFETY PLAN

for

**546 West 44<sup>th</sup> Street  
New York, New York**

**NYC VCP Project No. 14CVCP162M**

**NYCOER Project No. 13EH-N396M**

*Prepared For:*

**CREF 546 West 44th Street, LLC**

**1980 Post Oak Boulevard, Suite 1600**

**Houston, TX 77056**

*Prepared By:*

**Langan Engineering, Environmental, Surveying  
and Landscape Architecture, D.P.C.**

**21 Penn Plaza**

**360 West 31<sup>st</sup> Street, 8<sup>th</sup> Floor**

**New York, New York 10001**

**August 2013**

**170229701**

***LANGAN***

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## **SECTION 1 CONSTRUCTION HEALTH AND SAFETY PLAN (CHASP) SUMMARY**

### **Emergency Contacts:**

Emergency contacts are listed on Table 1.

### **Emergency Procedures:**

Emergency procedures are described in Section 7.3.1.

### **Site Specific Hazards and Training:**

Hazards specific to the 546 West 44<sup>th</sup> St New York, New York ("Site") are described in Section 3. The Site Safety Coordinator (SSC) will be responsible for providing Site-specific training to personnel that work at the Site. This training will cover but is not limited to the following topics:

- Names of personnel responsible for Site safety and health;
- Hazards potentially present at the Site;
- Proper use of personal protective equipment (PPE);
- Work practices by which the employee can minimize risk from hazards;
- Acute effects of compounds at the Site; and
- Decontamination procedures.

Personnel will be required to sign and date the Site-specific Training Form provided in Appendix B prior to working on Site.

### **General Health and Safety Requirements:**

Personnel will be required to sign and date the Construction Health and Safety Plan (CHASP) and Remedial Action Plan (RAP) Acceptance Form provided in Appendix B prior to working on Site.

### **Personnel Protective Equipment:**

**Level D** protection will be worn for initial entry on Site and for all activities except as noted in Section 4. Level D protection will consist of:

- Standard work clothes;
- Steel-toe safety boots;

- Safety glasses or goggles (must be worn when splash hazard is present);
- Nitrile outer gloves and polyvinyl chloride (PVC) or nitrile inner gloves (must be worn during all sampling activities); and
- Hard hat (must be worn during all Site activities).

**Modified Level D** protection may be required under conditions where potential contact of the skin or clothes with significant contamination occurs. Modified Level D is the same as Level D, but includes Tyvek coveralls and disposable polyethylene over boots.

**Level C** protection, unless otherwise specified in Section 4, will consist of Level D equipment and the following additional equipment:

- Full-face or half-mask air-purifying respirator (APR) or powered air purifier (PAPR), depending on presence and abundance of airborne toxic constituents of concern;
- Combination high efficiency particulate air filter (HEPA) filter/organic vapor cartridges;
- Tyvek coveralls (must be worn if particulate hazard present);
- PE-coated Tyvek coveralls (if liquid contamination present);
- Steel-toe safety boots;
- Nitrile outer gloves and PVC or nitrile inner gloves (must be worn during all sampling activities); and
- Hard hat (must be worn during all Site activities).

**Level B** protection, unless otherwise specified in Section 4, will consist of Level D equipment and the following additional equipment:

- Hard hat (must be worn during all Site activities);
- Positive Pressure self-contained breathing apparatus (SCBA) or positive pressure air line and respirator with escape SCBA;
- PE-coated Tyvek coverall;
- Nitrile outer and PVC or nitrile inner gloves (must be worn during all sampling activities); and
- Nitrile boot covers.

If the concentration of total volatile organics, as measured with a photoionization detector (PID) equals or exceeds the specified action levels, all field personnel at the Site and associated with the project will immediately retreat to a location up-wind of the source of contamination. At this point the SSC must consult with the Langan Health and Safety Officer (HSO) to discuss appropriate actions.

**Air Monitoring:**

Air monitoring requirements are discussed in Section 7.4 and a summary of the action levels and restrictions is presented in Table 2.

**FIGURE 1: MAP / ROUTE to HOSPITAL  
(St. Luke's - Roosevelt Hospital)**

**Site Location:** 546 West 44<sup>th</sup> Street New York, NY 10001

**Hospital Location:** 1000 10th Avenue  
New York, NY 10019-1147  
Information Line (212) 523-4000  
Emergency Room (212) 523-6800



**Route to Hospital:**

From Site at **546 West 44<sup>th</sup> Street** New York, New York to **St. Luke's-Roosevelt Hospital** located at **1000 10<sup>th</sup> Avenue**, New York, New York.

- |  |        |
|--|--------|
| 1. Head <b>southeast</b> on <b>W 44<sup>th</sup> Street</b> toward <b>10<sup>th</sup> Avenue</b> | 0.1 mi |
| 2. Turn left at the 1st cross street onto <b>10<sup>th</sup> Avenue</b>                          | 0.1 mi |
| 3. Take the 2nd right onto <b>W 42<sup>nd</sup> Street</b>                                       | 0.7 mi |
| 4. End at <b>1000 10<sup>th</sup> Avenue</b>   | --     |

**Total Estimated Time:** 9 minutes

**Total Estimated Distance:** 0.9 miles

**TABLE 1  
 EMERGENCY CONTACTS**

In the event of any situation or unplanned occurrence requiring assistance, the appropriate contact(s) should be made from the list below. For emergency situations, contact should first be made with the Field Team Leader (FTL) (or designee) and the SSC, who will notify emergency personnel who will then contact the appropriate response teams. This emergency contacts list must be in an easily accessible location at the Site.

<b><u>Emergency Contacts:</u></b>	<b><u>Phone Number</u></b>
Fire Department:	911
Police:	911
New York City-Long Island One Call Center: (3 day notice required for utility mark outs)	(800) 272-4480
Poison Control Center:	(800) 222-1222
Pollution Toxic Chemical Oil Spills:	(800) 424-8802
<b><u>Medical Emergency:</u></b>	
Ambulance Service:	911
Hospital Name:	St. Luke's – Roosevelt Hospital
Hospital Phone Number:	(212) 523-4000
Hospital Address:	1000 10 <sup>th</sup> Avenue New York, NY 10019-1147
Route to Hospital:	See Page 4, 5, and 6
Travel Time From Site:	9 minutes
<b><u>Langan Contacts:</u></b>	
Senior Associate:	Joel Landes, P.E. (212) 479-5404
Project Manager (PM):	Mimi Raygorodetsky (212) 479-5441
Health and Safety Officer:	Tony Moffa (215) 756-2523
Site Safety Coordinator:	Jennifer Armstrong (212) 479-5537
Field Team Leader:	Elodie Bourbon (cell) (917) 410-1356
Quality Assurance Officer (QAO):	Ilkay Cam-Spanos (212) 479-5410

**TABLE 2**  
**SUMMARY OF ACTION LEVELS AND RESTRICTIONS**

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**Conditions for Level D:**

All areas

- PID readings < 25 parts per million (ppm) and benzene < 1 ppm,
- No visible fugitive dust emissions from Site activities,
- Oxygen readings > 19.5% to 21.5%.

**Conditions for Level C:**

All areas

- PID readings > 25 ppm (sustained for 15 minutes in the breathing zone) to 200 ppm and benzene < 5 ppm,
- Any visible fugitive dust emissions from Site activities that disturb contaminated soil,
- Oxygen readings > 19.5% to 21.5%.

**Conditions for Level B (or retreat):**

All areas

- PID readings > 200 ppm or benzene > 25 ppm,
- Visible fugitive dust emissions from Site activities cloud the surrounding air,
- Oxygen readings < 19.5%.

## **SECTION 2 INTRODUCTION**

### **2.1 Purpose and Policy**

This CHASP has been developed by Langan Engineering, Environmental, Surveying and Landscape Architecture, D.P.C. (Langan) to comply with Occupational Safety and Health Administration (OSHA) Standard 29 Code of Federal Regulations (CFR) 1910.120, Hazardous Waste Operations and Emergency Response.

The purpose of the CHASP is to establish personnel protection standards and mandatory safety practices and procedures for the remediation activities at the Site which may include the potential encounter with: (1) non-hazardous soil that exceeds several New York State Department of Environmental Conservation (NYSDEC) 6 NYCRR Part 375 Soil Cleanup Objectives (SCO) for volatile organic compounds (VOCs); semi-volatile organic compounds (SVOC) and metals; and (2) non-hazardous groundwater exceeding NYSDEC Ambient Water Quality Standards and Guidance Values (SGV) for VOCs. This CHASP also considers the potential for hazardous soil, should it be encountered during waste characterization. This plan assigns responsibilities, establishes standard operating procedures, and provides for contingencies that may arise while operations are being conducted during the construction operations at the Site.

The provisions of the plan are mandatory for all on-site personnel. Any supplemental plans used by subcontractors shall conform to this plan at a minimum. All personnel who engage in project activities must be familiar with this plan, comply with its requirements, and sign the Plan Acceptance Form (Appendix B, page number B-5), prior to working on the Site. The Plan Acceptance Form must be submitted to the Langan HSO. In addition to this plan, all work shall be performed in accordance with all applicable federal, state, and local regulations.

### **2.2 Site Background**

#### **2.2.1 Site Description**

The Site is located at 546 West 44th Street, New York, New York and is in the West Clinton section of Manhattan. The Site is identified as Block 1072, Lot 50 on the New York City Tax Map. The Site has an area of approximately 27,615 square feet and is bounded by West 44th Street to the north, a six-story building under construction to the to the east, West 43rd Street to the south, and a seven-story industrial building to the west.

The Site is used as a parking lot and is improved with a two-story garage building with a basement in the southwestern portion of the Site and an asphalt-paved parking lot over the remainder of the Site.

### **2.2.2 Proposed Development**

Proposed development of the Site will consist of residential use and will include two 14-story residential buildings fronting West 43rd Street and West 44th Street, each with a partial cellar, and a landscaped area at cellar grade, a landscaped area at sidewalk grade and a covered breezeway at sidewalk grade between the two proposed buildings. The current zoning designation is R-9. The proposed use is consistent with existing zoning for the property.

### **2.2.3 Environmental Conditions**

A summary of Site environmental conditions is presented below. Data has been gathered from previous site investigations. Site conditions include:

1. Surface elevation of the property ranges from approximately elevation (el.) 16.0 to el. 17.7<sup>1</sup>.
2. Groundwater was measured during the RI at elevations ranging from el. 0.52 to el. 4.39. Depth to groundwater was measured during the RI at approximately 12.7 to 16.5 feet below sidewalk grade. Groundwater at the Site appears to be perched above the bedrock interface in many areas of the Site with true groundwater located between approximately 15 and 16.5 feet below sidewalk grade (true groundwater was measured in two surveyed geotechnical observation wells).
3. Inferred groundwater flow is generally to the south beneath the Site based on previous investigations conducted by Langan at the adjoining city block to the north of the Site.
4. Depth to weathered bedrock/bedrock is approximately 1 to 34 feet below sidewalk grade. Bedrock is shallow in the northeastern portion of the Site and dips to the west and south.
5. The stratigraphy of the Site, from the surface down, consists of approximately 1 to 20 feet of historic urban fill material underlain by bedrock (in the northeast) or by sand, silt, and bedrock (in the northwest and southwest).

---

<sup>1</sup> Survey prepared by Roguski Land Survey, P.C. and dated February 20, 2012. Datum is Borough President of Manhattan Datum (BPMD) which is 2.75 feet above mean sea level at Sandy Hook New Jersey as defined by the United States Geologic Survey (USGS NGVD 1929).

6. Soil/fill samples collected and analyzed as a part of the 2013 RI revealed the following relative to the applicable soil and groundwater standards for the Site<sup>2</sup>:
- a. VOCs – one or more volatile organic compounds (VOC) were detected in 9 of the 11 soil samples collected. However, no VOC was detected at a level exceeding the Unrestricted Use SCOs.
  - b. SVOCs – multiple SVOCs, specifically PAHs, exceeded the Unrestricted Use SCOs and the Restricted-Residential Use SCOs at three of seven soil boring locations (B9, B10, and B13) in the eastern portion of the Site. The SVOCs were detected in surficial fill material collected from the 0-to-2 foot interval or above bedrock at these locations and included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)Anthracene, and indeno(1,2,3-cd)pyrene. These exceedances are attributed to fill material.
  - c. Metals – Metals exceeded the Unrestricted Use SCOs and/or Restricted Residential Use SCOs in five of the seven soil boring locations (B7, B9, B11A, B12, and B13) at one or more sample collection depth interval, including: arsenic, barium, cadmium, chromium (trivalent), copper, lead, mercury, selenium, and zinc. Metal exceedances appear to be distributed throughout the Site at varying depth intervals at concentrations typical of fill material in New York City and are likely associated with the quality of the fill at the Site. One metal, copper, collected in the native soil at development depth exceeds the Unrestricted SCOs in one soil boring (B12); this metal was detected at a concentration slightly above the Eastern USA background concentration range<sup>3</sup>.
  - d. Pesticides – One pesticide, dieldrin, exceeded its Unrestricted Use SCO in the surficial fill material collected from the 0-to-2 foot interval of one soil boring location (B7) in the northern portion of the Site. The presence of

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<sup>2</sup> Soil analytical results are compared to NYSDEC 6 NYCRR Part 375 Unrestricted Use Soil Cleanup Objectives (SCO) and Restricted-Residential Use SCOs. Groundwater analytical results are compared to the NYSDEC Division of Water Technical and Operation Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) for Class GA groundwater. Soil vapor results are compared to New York State Department of Health (NYSDOH) Air Guidance Values (AGV),

<sup>3</sup> NYSDEC Technical and Administrative Guidance Memorandum 4046 lists the Eastern USA Background concentration for copper at 1-50 ppm.

pesticides is attributed to historic fill quality, as the Site history does not indicate that the Site was ever landscaped (a condition where pesticides might have been applied).

- e. PCBs – One PCB, aroclor 1260, exceeded its Unrestricted Use SCO in the surficial fill material collected from the 0-to-2 foot interval of one soil boring location (B7) in the northern portion of the Site. The presence of pesticides is attributed to historic fill quality as nothing in the Site history suggests a historic use involving PCBs.
7. Only one groundwater sample was collected in the southwestern portion of the Site during the RI because of poor well recovery at the other locations (likely because most wells were installed in perched groundwater). The groundwater sample collected during the RI showed metal exceedances of NYSDEC TOGS AWQS for Class GA. Two metals, magnesium and manganese, were detected above the GQS in the groundwater sample. Three VOCs, acetone, chloroform, and tetrachloroethene, were detected in the groundwater sample, but at concentrations below NYSDEC TOGS AWQS for Class GA. SVOCs, PCBs, and pesticides were not detected in the groundwater sample.
8. Soil vapor samples collected during the RI identified VOCs above the NYSDOH AGV. Soil vapor concentrations of tetrachloroethene (PCE) and trichloroethene (TCE) were detected above the AGV in one soil vapor sample (SV-5) in the northeast corner of the existing building. PCE was also detected in selected soil samples and in the groundwater sample from the corresponding boring/monitoring well location, below at concentrations below regulatory criteria. Contaminant concentrations in soil vapor may be attributed to the historic auto and truck repair use at the Site or to the historic uses of surrounding properties.

### **2.3 Scope of Work**

The remediation activities will primarily consist of soil excavation and off-site disposal, air monitoring, and collection of endpoint soil samples. The proposed remedial action will consist of:

1. Preparation of a Community Protection Statement and performance of all required NYC VCP citizen participation activities according to an approved Citizen Participation Plan.

2. Completion of a Waste Characterization Study prior to excavation activities. Waste characterization soil samples will be collected at a frequency of approximately one composite sample per approximately 800 to 1,000 cubic yards of material to be excavated. A Waste Characterization Report documenting sample procedures, location, analytical results shall be submitted to OER.
3. Performing air monitoring in accordance with the Community Air Monitoring Program (CAMP) for particulates and volatile organic carbon compounds.
4. Establishment of Site-specific SCOs for contaminants of concern. Soil/fill exceeding SCOs will be excavated and removed.
5. Site mobilization involving Site security setup, equipment mobilization, utility mark outs and marking & staking excavation areas.
6. Dewatering and discharge to the municipal sewer system after obtaining a permit to discharge to the City sewer system.
7. Excavation and removal of soil/fill exceeding site-specific SCOs. Screening of excavated soil/fill during intrusive work for indications of contamination by visual means, odor, and monitoring with a PID.
8. Management of excavated materials including temporarily stockpiling and segregating to prevent co-mingling of contaminated material and non-contaminated materials as described in Appendix 2.
9. Transportation and off-site disposal of soil/fill material at permitted facilities in accordance with all applicable laws and regulations for handling, transport, and disposal, and this plan. Sampling and analysis of excavated media as required by disposal facilities.
10. Removal of underground storage tanks and closure of petroleum spills, if encountered, in compliance with applicable local, State and Federal laws and regulations.

11. Collection and analysis of end-point samples to determine the performance of the remedy with respect to attainment of SCOs.
12. Import of materials to be used for backfill and cover in compliance with this plan and in accordance with applicable laws and regulations.
13. Installation of a waterproofing/vapor barrier system (with a minimum thickness of 20 mils) as per manufacturer's specifications beneath the building slabs and along subsurface sidewalls.
14. Construction and maintenance of an engineered composite cover consisting of concrete or asphalt pavement, building slab, or two feet of certified clean fill/top soil imported from an OER-approved source with an underlying demarcation barrier for soil-capped areas to prevent human exposure to residual soil/fill remaining at the Site.
15. Performance of all activities required for the remedial action, including permitting requirements and pretreatment requirements, in compliance with applicable laws and regulations.
16. Implementation of storm-water pollution prevention measures in compliance with applicable laws and regulations. Maintain records as described in this RAWP, including waste disposal manifests, clean fill/top soil sampling results, and appropriate health and safety forms and documentation.
17. Submission of a Remedial Closure Report (RCR) that describes remedial activities, certifies remedial requirements were achieved, describes ECs implemented at the Site, and lists deviations from this RAWP, if applicable.
18. Submission of an approved Site Management Plan (SMP) in the RCR for long-term management of residual historic fill, including plans for inspection and certification of Engineering and Institutional Controls and reporting at a specified frequency.

## **2.4 Langan Project Team Organization**

Table 3 describes the responsibilities of Langan on-site personnel associated with this project. The names of principal personnel associated with this project are:

Senior Associate:	Joel Landes, P.E.	(212) 479-5404
Project Manager:	Mimi Raygorodetsky	(212) 479-5441
Health & Safety Officer:	Tony Moffa	(215) 756-2523
Site Safety Coordinator:	Jennifer Armstrong	(212) 479-5537
Field Team Leader:	Elodie Bourbon	(917) 410-1356
Quality assurance Officer:	Ilkay Cam-Spanos	(212) 479-5410

All Langan personnel have been appropriately trained in first aid and hazardous waste safety procedures, including the operating and fitting of PPE, and are experienced with the field operations planned for this Site.

**TABLE 3**  
**ON-SITE PERSONNEL AND RESPONSIBILITIES**

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**Project Manager** - Assumes total control over Site activities; reports to upper-level management; and has authority to direct response operations.

**Responsibilities:**

- Prepares and organizes the background review of the situation, the RAP, the Site CHASP, and the field team.
- Obtains permission for Site access and coordinates activities with appropriate officials.
- Ensures that the RAP is executed and on schedule.
- Briefs the field team on their specific assignments.
- Coordinates with the HSO to ensure that health and safety requirements are met.
- Prepares the final report and support files on the response activities.
- Serves as the liaison with public officials.

**Site Safety Coordinator** - Advises the HSO and PM on all aspects of health and safety on-site; and stops work if any operation threatens worker or public health or safety.

**Responsibilities:**

- Ensures that all necessary health and safety equipment is available on-site. Ensures that all equipment is functional.
- Periodically inspects protective clothing and equipment.
- Ensures that protective clothing and equipment are properly stored and maintained.
- Controls entry and exit at the Access Control Points.
- Coordinates health and safety program activities with the HSO.
- Confirms each team member's suitability for work based on a physician's recommendation.
- Monitors the work parties for signs of stress, such as cold exposure, heat stress, and fatigue.
- Implements the Site CHASP.
- Conducts periodic inspections to determine if the Site CHASP is being followed.
- Enforces the "buddy" system.

**TABLE 3 - CONTINUED**  
**ON-SITE PERSONNEL AND RESPONSIBILITIES**

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**Site Safety Coordinator Responsibilities (continued):**

- Knows emergency procedures, evacuation routes, and the telephone numbers of the ambulance, local hospital, poison control center, fire department, and police department.
- Notifies, when necessary, local public emergency officials.
- Coordinates emergency medical care.
- Sets up decontamination lines and the decontamination solutions appropriate for the type of chemical contamination on the Site.
- Controls the decontamination of all equipment, personnel, and samples from the contaminated areas.
- Assures proper disposal of contaminated clothing and materials.
- Ensures that all required equipment is available.
- Advises medical personnel of potential exposures and consequences.
- Notifies emergency response personnel by telephone or radio in the event of an emergency.

**Field Team Leader** - Advises the PM on all aspects of health and safety on-site; stops work if any operation threatens worker or public health or safety; and is directly responsible for the field team and the safety of Site operations.

**Responsibilities:**

- Manages field operations.
- Executes the RAP and schedule.
- Enforces safety procedures.
- Coordinates with the SSC in determining protection level.
- Enforces Site control.
- Documents field activities and sample collection.
- Serves as a liaison with public officials.

**WORK TEAM** - Operators, laborers, samplers; and the work party must consist of at least two people.

**Responsibilities:**

- Safely completes the on-site tasks required to fulfill the RAP.
- Complies with Site CHASP.
- Notifies SSC or supervisor of suspected unsafe condition.

## **SECTION 3      RISK ANALYSIS**

### **3.1      CHEMICAL HAZARDS**

Known or suspected contaminants at the Site include VOCs, SVOCs, and metals, pesticides, and PCBs. Other compounds that may be encountered are site equipment fuels (gasoline, diesel, etc.), and/or No. 6 fuel oil and PCBs from historic Site use. Relevant properties of these compounds are outlined in Table 4 and Material Safety Data Sheets (MSDS) for these substances are included in Appendix C.

Dust will be monitored with a real-time DusTRAK aerosol monitor and a PID will be used to monitor for volatile compounds.

In addition to the compounds detected on-site, some of the solvents used in decontamination of equipment are potentially hazardous to human health if they are not used properly. MSDS for detected soil contaminants as well as decontamination solvents that will be used on site are included in Appendix C.

**TABLE 4  
 RELEVANT PROPERTIES OF VOLATILES, METALS, AND  
 SEMI-VOLATILES KNOWN OR SUSPECTED AT THE SITE**

<b>Compound (Synonym)</b>	<b>OSHA PEL<sup>(1)</sup> (ppm)</b>	<b>IDLH (ppm)</b>	<b>LEL (%)</b>	<b>Odor Threshold<sup>(2)</sup> (ppm)</b>	<b>Odor Character</b>	<b>Vapor Pressure (mm Hg)</b>	<b>Physical State</b>	<b>Detectable w/ 10.6 eV lamp PID (I.P. eV)</b>
Tetrachlorethene	25	150	NA	NA	Sweet	14	NonCombustible Liquid	Yes
Trichloroethene	50	1000	8	NA	Sweet	58	Combustible Liquid	Yes
Benzene	1	500	1.2	NA	Aromatic	75	Flammable Liquid	Yes
Mercury(Hg)	0.01 mg/m3	10 mg/m3	NA	NA	Odorless	0.0012	Noncombustible Liquid	NA
Arsenic	NA	5 mg/m3 (CA)	NA	NA	Odorless	0 (approx.)	Noncombustible Solid	NA
Lead (Pb)	0.05 mg/m3	100 mg/m3	NA	NA	Odorless	0 (approx.)	Noncombustible Solid	NA
Nickel	1 mg/m3	10 mg/m3 (Ca)	NA	NA	Odorless	0 (approx.)	Noncombustible Solid	NA
Copper	1 mg/m3	100 mg/m3	NA	NA	NA	NA	Solid	NA

Antimony	0.5 mg/m3	50 mg/m3	NA	NA	NA	0 (approx.)	Noncombustible Solid	NA
Iron	NA	NA	NA	NA	NA	0 (approx.)	Noncombustible Solid	NA
Manganese	5 mg/m3	500 mg/m3	NA	NA	NA	0 (approx.)	Combustible Solid	NA
Sodium	NA	NA	NA	NA	NA	NA	Combustible Solid	NA

(1) 29 CFR 1910, June 30, 1993 (8-hour Time weighted average unless otherwise specified.)

[IDLH] Immediately dangerous to life or health

[CA] Suspect carcinogen - Minimize all possible exposure

Detectable

## **3.2 RADIATION HAZARDS**

No radiation hazards are known or expected at the Site.

## **3.3 BIOLOGICAL HAZARDS**

### **3.3.1 Animals**

During Site operations, animals such as dogs, pigeons, sea gulls, mice, and rats may be encountered. Workers will use discretion and avoid all contact with animals. Bites and scratches from dogs can be painful and if the animal is rabid, the potential for contracting rabies exists. Contact with rat and mice droppings may lead to contracting hantavirus. Inhalation of dried pigeon droppings may lead to psittacosis; cryptococcosis and histoplasmosis are also diseases associated with exposure to dried bird droppings but these are less likely to occur in this occupational setting.

### **3.3.2 Insects**

Insects, including bees, wasps, hornets, mosquitoes, and spiders, may be present at this Site. Some individuals may have a severe allergic reaction to an insect bite or sting that can result in a life threatening condition. In addition, mosquito bites may lead to St. Louis encephalitis or West Nile encephalitis. Personnel that have been bitten or stung by an insect at the Site should notify the HSO or SSC of such immediately. The following is a list of preventive measures:

- Apply insect repellent prior to fieldwork and or as often as needed throughout the shift.
- Wear proper protective clothing (work boots, socks, and light colored pants).
- When walking in wooded areas, to the extent possible avoid contact with bushes, tall grass, or brush.
- Field personnel who may have insect allergies (e.g., bee sting) should provide this information to the HSO or SSC prior to commencing work and will have allergy medication on Site.

The HSO or SSC will instruct the project personnel in the recognition and procedures for encountering potentially hazardous insects at the Site.

### **3.4 PHYSICAL HAZARDS**

#### **3.4.1 Explosion**

No explosive hazards are expected for the scope of work at this Site.

#### **3.4.2 Heat Stress**

The use of Level C protective equipment, or greater, may create heat stress. Monitoring of personnel wearing personal protective clothing should commence when the ambient temperature is 72 °F or above. Table 5 presents the suggested frequency for such monitoring. Monitoring frequency should increase as ambient temperature increases or as slow recovery rates are observed. Refer to the Table 6 below to assist in assessing when the risk for heat related illness is likely. To use this table, the ambient temperature and relative humidity must be obtained (a regional weather report should suffice). Heat stress monitoring should be performed by the SSC, who shall be able to recognize symptoms related to heat stress.

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 99.6°F (37.6°C), 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 99.6°F.
  - If oral temperature still exceeds 99.6°F (37.6°C) 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 100.6°F (38.1°C).

**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, i.e., 8 fluid ounces (0.23 liters) of water must be ingested for approximately every 8 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 50° to 60°F (10° to 16.6°C).
  - Provide small disposal cups that hold about 4 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.

### **3.4.3 Cold-Related Illness**

If work on this project begins in the winter months, thermal injury due to cold exposure can become a problem for field personnel. Systemic cold exposure is referred to as hypothermia. Local cold exposure is generally called frostbite.

**Hypothermia:** Hypothermia is defined as a decrease in the patient core temperature below 96°F. The body temperature is normally maintained by a combination of central (brain and spinal cord) and peripheral (skin and muscle) activity. Interference with any of these mechanisms can result in hypothermia, even in the absence of what normally is considered a "cold" ambient temperature. Symptoms of hypothermia include: shivering, apathy, listlessness, sleepiness, and unconsciousness.

**Frostbite:** Frostbite is both a general and medical term given to areas of local cold injury. Unlike systemic hypothermia, frostbite rarely occurs unless the ambient temperatures are less than freezing and usually less than 20°F. Symptoms of frostbite are: a sudden blanching or whitening of the skin; the skin has a waxy or white appearance and is firm to the touch; tissues are cold, pale, and solid.

**Prevention of Cold-Related Illness:** To prevent cold-related illness:

- Educate workers to recognize the symptoms of frostbite and hypothermia.
- Identify and limit known risk factors.
- 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.
- Start (oral) temperature recording at the job Site:
  - At the SSC or FTL'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, two times per shift, under unusually hazardous conditions (e.g., wind-chill less than 20°F, or wind-chill less than 30°F with precipitation).
  - As a screening measure whenever any one worker on the Site develops hypothermia.

Any person developing moderate hypothermia (a core temperature of 92oF) cannot return to work for 48 hours.

**TABLE 5**  
**SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORING**  
**FOR FIT AND ACCLIMATED WORKERS<sup>1</sup>**

<b>Adjusted Temperature<sup>2</sup></b>	<b>Normal Work Ensemble<sup>3</sup></b>	<b>Impermeable Ensemble</b>
90°F or above (32.2°C) or above	After each 45 min. of work	After each 15 min. of work
87.5°F (30.8°-32.2°C)	After each 60 min. of work	After each 30 min. of work
82.5°-87.5°F (28.1°-30.8°C)	After each 90 min. of work	After each 60 min. of work
77.5°-82.5°F (25.3°-28.1°C)	After each 120 min. of work	After each 90 min. of work
72.5°-77.5°F (22.5°-25.3°C)	After each 150 min. of work	After each 120 min. of work

- 1 For work levels of 250 kilocalories/hour.
- 2 Calculate the adjusted air temperature (ta adj) by using this equation:  $ta\ adj\ ^\circ F = ta\ ^\circ F + (13 \times \% \text{ sunshine})$ . Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow. (100 percent sunshine = no cloud cover and a sharp, distinct shadow; 0 percent sunshine = no shadows.)
- 3 A normal work ensemble consists of cotton coveralls or other cotton clothing with long sleeves and pants.

**TABLE 6 - HEAT INDEX**  
**ENVIRONMENTAL TEMPERATURE (Fahrenheit)**

RELATIVE HUMIDITY	70	75	80	85	90	95	100	105	110	115	120
	<b>APPARENT TEMPERATURE*</b>										
<b>0%</b>	64	69	73	78	83	87	91	95	99	103	107
<b>10%</b>	65	70	75	80	85	90	95	100	105	111	116
<b>20%</b>	66	72	77	82	87	93	99	105	112	120	130
<b>30%</b>	67	73	78	84	90	96	104	113	123	135	148
<b>40%</b>	68	74	79	86	93	101	110	123	137	151	
<b>50%</b>	69	75	81	88	96	107	120	135	150		
<b>60%</b>	70	76	82	90	100	114	132	149			
<b>70%</b>	70	77	85	93	106	124	144				
<b>80%</b>	71	78	86	97	113	136					
<b>90%</b>	71	79	88	102	122						
<b>100%</b>	72	80	91	108							

\*Combined Index of Heat and Humidity...what it "feels like" to the body  
 Source: National Oceanic and Atmospheric Administration

How to use Heat Index:

1. Across top locate Environmental Temperature
2. Down left side locate Relative Humidity
3. Follow across and down to find Apparent Temperature
4. Determine Heat Stress Risk on chart at right

Note: Exposure to full sunshine can increase Heat Index values by up to 15 degrees F.

Apparent Temperature	Heat Stress Risk with Physical Activity and/or Prolonged Exposure
90-105	Heat Cramps or Heat Exhaustion Possible
105-130	Heat Cramps or Heat Exhaustion Likely, Heat Stroke Possible
>130	Heatstroke Highly Likely

#### **3.4.4 Noise**

Work activities during the proposed construction activities may be conducted at locations with high noise levels from the operation of equipment. Hearing protection (e.g., ear plugs, headphones) will be used as necessary.

#### **3.4.5 Lifting**

Lifting/carrying of equipment and materials and shoveling soil may cause strains. Safe lifting and general material handling techniques should be exercised.

#### **3.4.6 Falling Hazards**

Soil material, crushed stone, tools, etc. may fall from power shovels, front-end loaders, etc. Hard hats are to be worn at all times while in work zones.

#### **3.4.7 Working near Heavy Machinery**

Care should be exercised when working near heavy machinery such as an excavator. Workers should always stay in view of the equipment operator; give equipment wide berth. Clear communications signals, including hand signals, should be established prior to commencement of work and the equipment should have a back-up alarm.

#### **3.4.8 Hand and Power Tools**

Hand and/or power tools may be used during the course of the work. The use of hand and power tools can present a variety of hazards, including physical harm from being struck by flying objects, being cut or struck by the tool, fire, and electrocution. Ground Fault Circuit Interrupters (GFCI) are required for all portable tools.

#### **3.4.9 Slips, Trips, and Fall Hazards**

Care should be exercised when walking at the Site, especially when carrying equipment. The presence of surface debris, uneven surfaces, pits, facility equipment, and soil piles contribute to tripping hazards and fall hazards. To the extent possible, all hazards should be identified and marked on the Site, with hazards communicated to all workers in the area.

#### **3.4.10 Utilities (Electrocution and Fire Hazards)**

The possibility of encountering underground utilities poses fire, explosion, and electrocution hazards. All intrusive work will be preceded by notification of the subsurface work to the NY One Call Center. Potential adverse effects of electrical hazards include burns and electrocution, which could result in death.

### **3.5 TASK HAZARD ANALYSIS**

#### **3.5.1 Excavation and Soil Sampling**

Excavation and soil sampling activities are inherently dangerous. Special attention should be given to establishing the location of any underground utilities prior to excavating.

Chemical exposure may occur as these activities progress across the Site, where workers may be exposed to contaminants in the excavated soils, encountered groundwater, or products used on-site including gasoline, diesel, and motor oil. Also, sampling of both in-situ and stockpiled soils presents similar potential exposure hazard. Activities will be conducted initially in Level D but may be upgraded to Modified Level D. Although not anticipated, there will be a Level C and B contingency should pockets of contaminants be brought to the surface and breathing zone air becomes contaminated.

If evidence of historic or unknown contamination is encountered during remediation activities or other contaminated materials, such as oily materials, high PID readings, etc., the SSC will make a determination of the appropriate level of personnel protection.

#### **3.5.2 Dewatering Activities and Groundwater Sampling**

The following hazards are associated with dewatering activities and sampling of contaminated groundwater:

- Splash hazards (eye hazard);
- Contaminated groundwater (chemical exposure hazard); and
- Potential exposure to pump components (electrical and mechanical hazard).

Activities will be conducted initially in Level D but may be upgraded to Modified Level D.

## **SECTION 4 PERSONNEL PROTECTION AND MONITORING**

### **4.1 OSHA TRAINING**

All on-site personnel who will be actively involved in intrusive activities (e.g., soil handling, excavation, sampling, and dewatering) for hazardous waste must have completed hazardous waste operations-related training, as required by OSHA Regulations 29 CFR 1910.120. Personnel who completed this training more than 12 months prior to the start of the project must have completed an 8-hour refresher course within the past 12 months. Documentation of OSHA training for project personnel must be provided to Langan prior to starting work should hazardous material be identified at the Site.

### **4.2 SITE-SPECIFIC TRAINING**

The SSC will be responsible for developing a Site-specific occupational hazard training program and providing training to all personnel that are to work at the Site. This training will be conducted prior to starting field work and will consist of the following topics:

- Names of personnel responsible for Site safety and health.
- Hazards potentially present at the Site.
- Proper use of PPE.
- Requirements of this CHASP.
- Work practices by which the employee can minimize risk from hazards. This may include a specific review of heavy equipment safety, safety during inclement weather, changes in common escape rendezvous point, Site security measures, or other Site-specific issues that need to be addressed before work begins.
- Safe use of engineering controls and equipment on the Site.
- Acute effects of compounds present at the Site.
- Decontamination procedures.

Upon completion of Site-specific training, workers will sign the Site-Specific Training Form provided in Appendix B. A copy of the completed Site-Specific Training Form will be included in the project files for future reference.

### **4.3 MONITORING REQUIREMENTS**

Based on the existing site data, it is not expected that significant levels of organic vapors will be encountered during the site work. However, worker air monitoring and community air monitoring (as described in Section 7.4) will be conducted at the start of field work.

Fugitive dust generation that could affect site workers, site occupants, or the public will be monitored with real time field instrumentation.

VOCs will be monitored with a PID (MiniRAE 2000 or equivalent) in accordance with the CHASP with an action level of 25 ppm in the absence of benzene. If the action level is exceeded and adequate ventilation cannot be provided, work will cease and the potential affected portion of the work area will be evacuated until adequate mechanical ventilation can be set up to control the hazard. Level C respiratory protection may be donned in accordance with the CHASP if untrained personnel are not present and the action level is exceeded.

A PID will be used to monitor for organic vapors in the breathing zone and to screen soil samples. Air monitoring results will be recorded in the field book during investigation activities and made available for review.

### **4.4 SUMMARY OF ACTION LEVELS AND RESTRICTIONS**

A PID such as the RaeSystems MiniRae 2000, equipped with a 10.6 eV lamp shall be used to screen for total VOCs. All readings pertain to sustained readings for 15 minutes in the worker breathing zone. The following conditions shall apply to each level of protection.

#### **Conditions for Level D:**

All areas:

- PID readings < 25 ppm and benzene < 1 ppm,
- No visible fugitive dust emissions from Site activities,
- Oxygen readings >19.5% to 21.5%.

#### **Conditions for Level C:**

All areas:

- PID readings > 25 ppm (sustained for 15 minutes in the breathing zone) to 200 ppm and benzene < 5ppm,
- Any visible fugitive dust emissions from Site activities that disturb contaminated soil.
- Oxygen readings > 19.5% to 21.5%.

#### **Conditions for Level B (or retreat):**

All areas:

- PID readings > 500 ppm or benzene > 25 ppm,

- Visible fugitive dust emissions from Site activities cloud the surrounding air,
- Oxygen readings < 19.5%.

#### **4.4.1 Level D and Modified Level D**

Level D protection will be worn for initial entry on-site and initially for all activities. Level D protection will consist of:

- Standard work clothes;
- Steel-toe safety boots;
- Safety glasses or goggles (must be worn when splash hazard is present);
- Nitrile outer gloves and PVC or nitrile inner gloves (must be worn during all sampling activities); and
- Hard hat (must be worn during all Site activities).

Modified Level D is the same as Level D but includes Tyvek coveralls and disposable PE over boots to contact with the skin or clothes if significant contamination is present in subsurface materials.

#### **4.4.2 Level C**

The level of personal protection will be upgraded to Level C if the concentration of volatile organic compounds which can be detected with a PID in the breathing zone equals or exceeds the specified action limits and the contaminants of concern have characteristic warning properties appropriate for air purifying respirators (e.g. taste, odor). Level C protection will consist of the following equipment:

- Full-face or half-mask APR or PAPR, depending on presence and abundance of airborne toxic constituents of concern;
- Combination HEPA filter/organic vapor cartridges;
- Tyvek coveralls (must be worn if particulate hazard present);
- PE-coated Tyvek coveralls (if liquid contamination present);
- Steel-toe safety boots;
- Nitrile outer gloves and PVC or nitrile inner gloves (must be worn during all sampling activities); and
- Hard hat (must be worn during all Site activities).

Cartridges will be disposed at the end of each day's use.

#### **4.4.3 Level B (Retreat)**

If the concentration of volatile organics which can be detected with a PID equals or exceeds the specified action levels, or oxygen levels decrease below 19.5%, all field personnel associated with the project will immediately retreat to a location up-wind of the source of contamination. At this point the SSC must consult with the Langan HSO to discuss appropriate actions.

#### 4.4.4 OSHA Requirements for PPE

All PPE used during the course of this field investigation 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 1910.136 29 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).

Based on performance criteria of air purifying respirators, they cannot be worn under the following conditions:

- Oxygen deficiency;
- Immediately Dangerous to Life and Health (IDLH) concentrations;
- High relative humidity; and
- If contaminant levels exceed designated use concentrations.

## **SECTION 5      WORK ZONES AND DECONTAMINATION**

### **5.1      SITE WORK ZONES**

To reduce the spread of contaminated materials by workers from the contaminated areas to the clean areas, work zones will be delineated at the Site. The flow of personnel between the zones should be controlled. The establishment of the work zones will help ensure that personnel are properly protected against the hazards present where they are working, and ensure that work activities and contamination are confined to the appropriate areas. The work zones described below will be implemented for localized hot spots (i.e., potentially contaminated areas discovered during excavation activities) and may be modified in the field depending on field conditions. Remaining on-site soils are primarily expected to be typical of historic urban fill, and mass excavation of the Site is expected; therefore the establishment of work zones (hot, warm, and cold) for the mass excavation is not deemed necessary.

#### **5.1.1      Hot Zone**

Hot zones are not expected for this excavation. If hot zones are encountered, site personnel will establish a 25-ft radius around the hot spot excavation, where possible. Barrier walls will be established at the perimeter of the hot spot area where the perimeter is shared with an area accessible to the public. Unprotected onlookers should be located 25 ft upwind of the activities. All personnel within the hot zone must don the appropriate levels of personal protection as set forth by the SSC. It is not anticipated that Level C or higher will be required for this Site.

All personnel within the hot zone will be required to use the specified level of protection. No food, drink, or smoking will be allowed in the hot or warm zones.

#### **5.1.2      Warm Zone**

Should PID action levels be exceeded or indications of contamination (by sight or odor) be encountered, a warm zone will be established and utilized during the field activities. This zone will be established between the hot zone and the cold zone (discussed below), and will include the personnel and equipment necessary for decontamination of equipment and personnel exiting the hot zone. Personnel and equipment in the hot zone must pass through this zone before entering the cold zone. This zone should always be located upwind of the hot zone.

### **5.1.3 Cold Zone**

The cold zone will include the remaining areas of the job Site. Break areas and support facilities (include equipment storage and maintenance areas) will be located in this zone. No equipment or personnel will be permitted to enter the cold zone from the hot zone without passing through the decontamination station in the warm zone. Eating, smoking, and drinking will be allowed only in this area.

## **5.2 DECONTAMINATION**

Generally, any water used in decontamination procedures will be placed in containers, temporarily stored on-site, and properly characterized and disposed.

### **5.2.1 Decontamination of Personnel**

Decontamination of personnel will be necessary if Level C or Level B protection is used, which is not anticipated based on current knowledge of the Site history. Decontamination will not be necessary if only Level D protection is used. However, disposable gloves used during sampling activities should be removed and bagged; personnel should be encouraged to remove clothing and shower as soon as is practicable at the end of the day. All clothing should be machine-washed. All personnel will wash hands and face prior to eating and before and after using the restroom.

### **5.2.2 Decontamination of Field Equipment**

Decontamination of field equipment will be necessary for all equipment in contact with contaminated materials. Decontamination activities shall be performed in a designated area lined with PE sheeting designed to collect the decontamination rinsate or over a contaminated portion of the site (i.e., cleaning an excavator bucket over a section of Site soil that will be part of future removal). Equipment to be decontaminated includes, but is not limited to, excavators, pumping equipment, hand tools, trucks, loaders and bull dozers.

## **5.3 REMEDIAL ACTIVITY-DERIVED WASTE**

All PPE related remedial activity-derived waste materials (e.g., PPE, decontamination waste) will be placed in labeled containers and appropriately disposed. Contaminated soil will be kept moist, properly characterized and disposed off-site. Stockpiling of contaminated materials will only occur temporarily and if adequate space exists.

## **SECTION 6      SAMPLE SHIPMENT**

### **6.1      NON-HAZARDOUS SAMPLES**

Samples collected at the Site will be classified as environmental samples.

#### **6.1.1      Environmental Samples**

In general, non-hazardous environmental soil or groundwater samples that are collected are not expected to contain high levels of hazardous materials, and are submitted for environmental testing.

Sample containers must have a completed sample identification tag and the outside container must be marked "Environmental Sample". The sample tag will be legibly written and completed with an indelible pencil or waterproof ink. The information will also be recorded in a log book. At a minimum, it will include:

- Exact location of sample;
- Time and date sample was collected;
- Name of sampler witnesses (if necessary);
- Project codes, sample station number, and identifying code (if applicable);
- Type of sample (if known);
- Laboratory number (if applicable); and
- Any other pertinent information.

Environmental samples will be packaged and shipped according to the following procedure:

1. Place sample container, properly identified and with a sealed lid, in a PE bag, and seal bag;
2. Place sample in a fiberboard container or metal picnic cooler which has been lined with a large PE bag;
3. Pack cooler with ice to maintain temperature of 4°C;
4. Pack with enough noncombustible, absorbent, cushioning material to minimize the possibility of the container breaking;
5. Seal large bag; and
6. Seal or close outside container.

The appropriate side of the container must be marked "This End Up" and arrows should be drawn accordingly. No Department of Transportation (DOT) marking labeling is required. No DOT shipping papers are required. There are no DOT restrictions on mode of transportation.

## **6.2 HAZARDOUS SAMPLES**

Should hazardous materials be encountered or sampled at the Site, the following procedures will be implemented. Personnel who must complete a Hazardous Goods Airway Bill must first be DOT trained and certified every two years. Drummed waste samples, tank samples, sludge samples, and grossly contaminated soil samples will be shipped as DOT Hazardous Materials. The designation "Flammable Liquid" or "Flammable Solid" will be used. The samples will be transported as follows:

1. Collect sample in a 16 ounce or smaller glass or PE container with nonmetallic Teflon-lined screw cap. Allow sufficient air space (approximately 10% by volume) so container is not liquid full at 54°C (130°F). If collecting a solid material, the container plus contents should not exceed 1 pound net weight. If sampling for volatile organic analysis, fill volatile organic analysis (VOA) container to septum but place the VOA container inside a 16 ounce or smaller container so the required air space may be provided. Large quantities, up to 3.786 liters (1 gallon), may be collected if the sample's flash point is 23°C (75°F) or higher. In this case, the flash point must be marked on the outside container (e.g., carton, cooler), and shipping papers should state that "Flash point is 73°F or higher."
2. Seal sample and place in a 4-mil thick PE bag, one sample per bag.
3. Place sealed bag inside a metal can with noncombustible, absorbent cushioning material (e.g., vermiculite or earth) to prevent breakage, one bag per can. Pressure-close the can and use clips, tape or other positive means to hold the lid securely.
4. Mark the can with:
  - Name and address of originator.
  - "Flammable Liquid N.O.S. UN 1993" (or "Flammable Solid N.O.S. UN 1325).
  - NOTE: UN numbers are now required in proper shipping names.
5. Place one or more metal cans in a strong outside container such as a picnic cooler or fiberboard box. Preservatives are not used for hazardous waste Site samples.
6. Prepare for shipping:
  - "Flammable Liquid, N.O.S. UN 1993" or "Flammable Solid, N.O.S. UN 1325";  
"Cargo Aircraft Only" (if more than 1 quart net per outside package); Limited

Quantity" or "Ltd. Qty."; "Laboratory Samples"; "Net Weight \_\_\_" or "Net Volume \_\_\_" (of hazardous contents) should be indicated on shipping papers and on outside of shipping container.

- "This Side Up" or "This End Up" should also be on container.
  - Sign shipper certification.
7. Stand by for possible carrier requests to open outside containers for inspection or modify packaging. It is wise to contact carrier before packing to ascertain local packaging requirements and not to leave area before the carrier vehicle (aircraft, truck) is on its way. The International Air Transport Association's Dangerous Goods regulations will need to be followed for using FedEx for the shipment of hazardous samples.

### **6.3 SHIPPING PAPERS**

A blank Langan shipping paper should be filled out and maintained within the driver's reach, whenever a Langan employee carries hazardous materials in a vehicle in quantities above those allowed for Materials of Trade (MOT). Such materials may include more than 8 gallons of the following:

- Gasoline (for use in a generator) UN 1203, Guide #27;
- Methanol (for use in decontamination procedures) UN 1230, Guide #28;
- Nitric Acid (for use in decontamination procedures) UN 1760, Guide #60; and
- Hydrochloric Acid (for use in decontamination procedures) UN 1789, Guide #60.

Other materials may include the following:

- > 220 pounds of compressed Gas [Air, Compressed] (calibration gas for the PID, or Grade D breathing air for Level B work) UN 1002, Class 2.2; and
- Other hazardous materials as defined by the DOT.

Appropriate MSDSs should be maintained with the shipping papers and/or the pocket DOT Emergency Response Guidebook.

## **SECTION 7 ACCIDENT PREVENTION AND CONTINGENCY PLAN**

### **7.1 ACCIDENT PREVENTION**

#### **7.1.1 Site-Specific Training**

All field personnel will receive health and safety training prior to the initiation of any Site activities. The Site-specific training form provided in Appendix B must be signed, dated, and returned to the SSC. On a day-to-day basis, individual personnel should be constantly alert for indicators of potentially hazardous situations and for signs and symptoms in themselves and others that warn of hazardous conditions and exposures. Rapid recognition of dangerous situations can avert an emergency. Before daily work assignments, a regular meeting should be held. Discussion should include:

- Tasks to be performed;
- Time constraints (e.g., rest breaks, cartridge changes);
- Hazards that may be encountered, including their effects, how to recognize symptoms or monitor them, concentration limits, or other danger signals; and
- Emergency procedures.

#### **7.1.2 Vehicles and Heavy Equipment**

Working with large motor vehicles and heavy equipment could be a major hazard at this Site. Injuries can result from equipment hitting or running over personnel, impacts from flying objects, or overturning of vehicles. Vehicle and heavy equipment design and operation will be in accordance with 29 CFR, Subpart O, 1926.600 through 1926.602. In particular, the following precautions will be utilized to help prevent injuries/accidents.

- Brakes, hydraulic lines, light signals, fire extinguishers, fluid levels, steering, tires, horn, and other safety devices will be checked at the beginning of each shift.
- Large construction motor vehicles will not be backed up unless:
  - The vehicle has a reverse signal alarm audible above the surrounding noise level; or
  - The vehicle is backed up only when an observer signals that it is safe to do so.
- Heavy equipment or motor vehicle cable will be kept free of all nonessential items, and all loose items will be secured.
- Large construction motor vehicles and heavy equipment will be provided with necessary safety equipment (such as seat belts, roll-over protection, emergency shut-off in case of roll-over, backup warning lights, and audible alarms).

- Blades and buckets will be lowered to the ground and parking brakes will be set before shutting off any heavy equipment or vehicles.

## **7.2 SPILL CONTROL PLAN**

All personnel must take every precaution to minimize the potential for spills during Site operations. Any spill shall be reported immediately to the SSC. Spill control apparatus (sorbent materials) will be located on-site. All materials used for the cleanup of spills will be containerized and labeled separately from other wastes.

## **7.3 CONTINGENCY PLAN**

### **7.3.1 Emergency Procedures**

In the event that an emergency develops on-site, the procedures delineated herein are to be immediately followed. Emergency conditions are considered to exist if:

- Any member of the field crew is involved in an accident or experiences any adverse effects or symptoms of exposure while on-site.
- A condition is discovered that suggests the existence of a situation more hazardous than anticipated.

General emergency procedures, and specific procedures for personal injury, chemical exposure and radiation exposure, are described below.

### **7.3.2 Chemical Exposure**

If a member of the field crew demonstrates symptoms of chemical exposure the procedures outlined below should be followed:

- Another team member (buddy) should remove the individual from the immediate area of contamination. The buddy should communicate to FTL (via voice and hand signals) of the chemical exposure. The FTL should contact the appropriate emergency response agency.
- Precautions should be taken to avoid exposure of other individuals to the chemical.
- If the chemical is on the individual's clothing, the chemical should be neutralized or removed if it is safe to do so.
- If the chemical has contacted the skin, the skin should be washed with copious amounts of water.
- In case of eye contact, an emergency eye wash should be used. Eyes should be washed for at least 15 minutes.

- All chemical exposure incidents must be reported in writing to the HSO. The SSC or FTL is responsible for completing the accident report.

### **7.3.3 Personal Injury**

In case of personal injury at the Site, the following procedures should be followed:

- Another team member (buddy) should signal the FTL that an injury has occurred.
- A field team member trained in first aid can administer treatment to an injured worker.
- The victim should then be transported to the nearest hospital or medical center. If necessary, an ambulance should be called to transport the victim.
- For less severe cases, the individual can be taken to the Site dispensary.
- The FTL or SSC is responsible for making certain that an Accident Report Form is completed. This form is to be submitted to the HSO. Follow-up action should be taken to correct the situation that caused the accident.
- Any incident (near miss, property damage, first aid, medical treatment, etc.) must be reported.

A first-aid kit and blood-borne pathogens kit will be kept on-site during the field activities.

### **7.3.4 Evacuation Procedures**

- The FTL will initiate evacuation procedures by signaling to leave the Site.
- All personnel in the work area should evacuate the area and meet in the common designated area.
- All personnel suspected to be in or near the contract work area should be accounted for and the whereabouts or missing persons determined immediately.
- The FTL will then give further instruction.

### **7.3.5 Procedures Implemented in the Event of a Major Fire, Explosion, or Emergency**

- Notify the paramedics and/or fire department, as necessary.
- Signal the evacuation procedure previously outlined and implement the entire procedure.
- Isolate the area.
- Stay upwind of any fire.
- Keep the area surrounding the problem source clear after the incident occurs.
- Complete Accident Report Form and distribute to appropriate personnel.

## **7.4 ODOR, VAPOR AND DUST MONITORING AND RESPONSE**

### **7.4.1 Work Zone Area Monitoring**

The contractor is responsible for completing their own health and safety plan. General contractor and sub-contractor site worker monitoring will be the responsibility of the respective contractor.

#### **VOC**

Monitoring for VOCs will be conducted during all ground intrusive activities (i.e., excavation) and other operations involving materials containing VOCs. The following actions will be taken based on organic vapor levels measured:

- If total organic vapor levels exceed 5 ppm above background for a 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 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. After these steps work activities will resume provided that the total organic vapor outside the hot zone is below 5 ppm above background for a 15-minute average.
- If the total organic vapor level is above 25 ppm at the perimeter of the hot zone, activities will be shutdown.

#### **Dust**

Particulate or dust will be monitored using real-time field instrumentation (e.g., DustTRAK) during earthwork operations. The NYSDEC defines fugitive dust as particulate matter that is not from a specific source and could include discrete particles, droplets, and solids over a wide range of sizes.

Based on the air monitoring results, dust suppression may need to be implemented. This could include the following:

- Applying water to the excavation surface
- Wetting equipment
- Spraying work area
- Utilizing alternate work methods
- Implementing site speed restrictions

Monitoring results shall be kept in a logbook and used to initiate additional dust control measures as necessary.

#### **7.4.2 Community Air Monitoring Plan (CAMP)**

Real-time air monitoring for VOCs and particulate levels at the perimeter of the exclusion zone or work area will be performed. Continuous monitoring will be performed for all ground intrusive activities and during the handling of contaminated or potentially contaminated soil or groundwater. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pit excavation or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be performed during the collection of soil and groundwater samples. Periodic monitoring during sample collection, for instance, will consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. Depending upon the proximity of potentially exposed individuals, continuous monitoring may be performed during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence. Exceedances of action levels observed during performance of the CAMP will be reported to the OER Project Manager and included in the Daily Report.

#### **VOC Monitoring, Response Levels, and Actions**

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

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

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

All 15-minute readings must be recorded, downloaded at the end of the day and made available for OER personnel to review. Instantaneous readings, if any, used for decision purposes will also be recorded.

### **Particulate Monitoring, Response Levels, and Actions**

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

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

particulate concentration to within 150 mcg/m<sup>3</sup> of the upwind level and in preventing visible dust migration.

All readings will be recorded, downloaded at the end of the day and made available for OER personnel to review.

## **Appendix A**

### **Air Monitoring Equipment Calibration and Maintenance**

All monitoring instruments must be calibrated and maintained periodically. Calibration and on-site maintenance records will be kept in the field log book. The operator must understand the limitations and possible sources of errors for each instrument. It is important that the operator checks that the instrument responds properly to the substances it was designed to monitor. Portable air quality monitoring equipment that measures total ionizables present such as the RaeSystems MiniRae 2000 (or equivalent) photoionization detector (PID) must be calibrated at least once each day. DusTRAK aerosol monitors must be calibrated daily. The specific instructions for calibration and maintenance provided for each instrument should be followed.

## **Appendix B**

### **Forms for Health and Safety Related Activity**

**Note:** The OSHA Job Safety and Health Protection Poster must be posted prominently during field activities. The following page is an example of the poster to be used in the field. The actual poster must be an 11 inch by 17 inch size version of this page. The OSHA 300 Log of injuries and illnesses is maintained in the home office of each Langan employee.

# You Have a Right to a Safe and Healthful Workplace. **IT'S THE LAW!**

- You have the right to notify your employer or OSHA about workplace hazards. You may ask OSHA to keep your name confidential.
- You have the right to request an OSHA inspection if you believe that there are unsafe and unhealthful conditions in your workplace. You or your representative may participate in the inspection.
- You can file a complaint with OSHA within 30 days of discrimination by your employer for making safety and health complaints or for exercising your rights under the *OSH Act*.
- You have a right to see OSHA citations issued to your employer. Your employer must post the citations at or near the place of the alleged violation.
- Your employer must correct workplace hazards by the date indicated on the citation and must certify that these hazards have been reduced or eliminated.
- You have the right to copies of your medical records or records of your exposure to toxic and harmful substances or conditions.
- Your employer must post this notice in your workplace.



The *Occupational Safety and Health Act of 1970 (OSH Act)*, P.L. 91-596, assures safe and healthful working conditions for working men and women throughout the Nation. The Occupational Safety and Health Administration, in the U.S. Department of Labor, has the primary responsibility for administering the *OSH Act*. The rights listed here may vary depending on the particular circumstances. To file a complaint, report an emergency, or seek OSHA advice, assistance, or products, call 1-800-321-OSHA or your nearest OSHA office: • Atlanta (404) 562-2300 • Boston (617) 565-9860 • Chicago (312) 353-2220 • Dallas (214) 767-4731 • Denver (303) 844-1600 • Kansas City (816) 426-5861 • New York (212) 337-2378 • Philadelphia (215) 861-4900 • San Francisco (415) 975-4310 • Seattle (206) 553-5930. Teletypewriter (TTY) number is 1-877-889-5627. To file a complaint online or obtain more information on OSHA federal and state programs, visit OSHA's website at [www.osha.gov](http://www.osha.gov). If your workplace is in a state operating under an OSHA-approved plan, your employer must post the required state equivalent of this poster.

## 1-800-321-OSHA [www.osha.gov](http://www.osha.gov)

U.S. Department of Labor  • Occupational Safety and Health Administration • OSHA 3165

Project Name: \_\_\_\_\_

**Injured or Ill Employee**

1. Name \_\_\_\_\_ Social Security # \_\_\_\_\_  
(First) (Middle) (Last)

2. Home Address \_\_\_\_\_  
(No. and Street) (City or Town) (State and Zip)

3. Age \_\_\_\_\_ 4. Sex: Male ( ) Female ( )

5. Occupation \_\_\_\_\_  
(Specific job title, not the specific activity employee was performing at time of injury)

6. Department \_\_\_\_\_  
(Enter name of department in which injured person is employed, even though they may have been temporarily working in another department at the time of injury)

**Employer**

7. Name \_\_\_\_\_

8. Mailing Address \_\_\_\_\_  
(No. and Street) (City or Town) (State and Zip)

9. Location (if different from mailing address) \_\_\_\_\_  
\_\_\_\_\_

**The Accident or Exposure to Occupational Illness**

10. Place of accident or exposure \_\_\_\_\_  
(No. and Street) (City or Town) (State and Zip)

11. Was place of accident or exposure on employer's premises? \_\_\_\_\_(Yes/No)

12. What was the employee doing when injured? \_\_\_\_\_  
\_\_\_\_\_

(Be specific - was employee using tools or equipment or handling material?)

13. How did the accident occur? \_\_\_\_\_  
(Describe fully the events that resulted in the injury or occupational illness. Tell what happened and how. Name objects and substances involved. Give details on all factors that led to accident. Use separate sheet if needed)

14. Time of accident \_\_\_\_\_

15. Date of injury or initial diagnosis of occupational illness \_\_\_\_\_

16. WITNESS  
TO ACCIDENT

_____	_____	_____
(Name)	(Affiliation)	(Phone No.)
_____	_____	_____
(Name)	(Affiliation)	(Phone No.)
_____	_____	_____
(Name)	(Affiliation)	(Phone No.)

**Occupational Injury or Occupational Illness**

17. Describe the injury or illness in detail; indicate part of body affected.

\_\_\_\_\_

18. Name the object or substance that directly injured the employee. (For example, object that struck employee; the vapor or poison inhaled or swallowed; the chemical or radiation that irritated the skin; or in cases of strains, hernias, etc., the object the employee was lifting, pulling, etc.)

\_\_\_\_\_

19. Did the accident result in employee fatality? \_\_\_\_\_ (Yes or No)

20. Number of lost workdays \_\_\_\_/restricted workdays \_\_\_\_ resulting from injury or illness?

**Other**

21. Did you see a physician for treatment? \_\_\_\_\_ (Yes or No) \_\_\_\_\_ (Date)

22. Name and address of physician \_\_\_\_\_

\_\_\_\_\_

23. If hospitalized, name and address of hospital \_\_\_\_\_

\_\_\_\_\_

Date of report \_\_\_\_\_ Prepared by \_\_\_\_\_

Official position \_\_\_\_\_

I have read and agree to abide by the contents of the Remedial Action Plan and Health and Safety Plan for the following project:

\_\_\_\_\_  
(Project Title)

\_\_\_\_\_  
(Project Number)

Furthermore, I have read and am familiar with the Remedial Action Plan or proposal that describes the field work to be conducted and the procedures to be utilized in the conduct of this work.

<b>Name (print)</b>	<b>Signature</b>	<b>Date</b>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

- 1. For Langan employees only.**
- 2. Place in project Health and Safety File as soon as possible.**

I hereby confirm that Site-specific health and safety training has been conducted by the Site Health and Safety Officer that 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)

**Name (print)**

**Signature**

**Date**

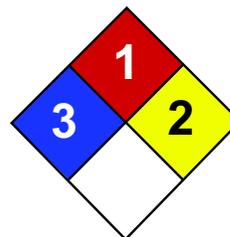
_____	_____	_____
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_____	_____	_____
_____	_____	_____
_____	_____	_____

1. **For all Langan and subcontract employees on-site.**
2. **Place in project Health and Safety File as soon as possible.**

## **Appendix C**

### **Material Safety Data Sheets**

- Benzo (a) anthracene
- Benzo (a) pyrene
- Benzo (b) fluoranthene
- Benzo (k) fluoranthene
- Chrysene
- Dibenzo (a,h) anthracene
- Indeno (1,2,3-cd) pyrene
- Arsenic
- Barium
- Cadmium
- Chromium
- Copper
- Lead
- Mercury
- Zinc
- Diesel Fuel
- Gasoline
- Motor Oil
- Isobutylene Gas in Air, 100 ppm
- Tetrachloroethene (PCE)
- Trichloroethene (TCE)
- PCBs



Health	3
Fire	1
Reactivity	2
Personal Protection	E

## Material Safety Data Sheet

### Arsenic MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Arsenic

**Catalog Codes:** SLA1006

**CAS#:** 7440-38-2

**RTECS:** CG0525000

**TSCA:** TSCA 8(b) inventory: Arsenic

**CI#:** Not applicable.

**Synonym:**

**Chemical Name:** Arsenic

**Chemical Formula:** As

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

#### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Arsenic	7440-38-2	100

**Toxicological Data on Ingredients:** Arsenic: ORAL (LD50): Acute: 763 mg/kg [Rat]. 145 mg/kg [Mouse].

#### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant).

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified A1 (Confirmed for human.) by ACGIH. **MUTAGENIC EFFECTS:** Not available.

**TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance is toxic to kidneys, lungs, the nervous system, mucous membranes. Repeated or prolonged exposure to the substance can produce target organs damage.

#### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:** Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

**Serious Skin Contact:** Not available.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Some metallic oxides.

**Fire Hazards in Presence of Various Substances:** Flammable in presence of open flames and sparks, of heat, of oxidizing materials.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:**

Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits highly toxic fumes.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

**Precautions:**

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents, acids, moisture.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

TWA: 0.01 from ACGIH (TLV) [United States] [1995] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Lustrous solid.)

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 74.92 g/mole

**Color:** Silvery.

**pH (1% soln/water):** Not applicable.

**Boiling Point:** Not available.

**Melting Point:** Sublimation temperature: 615°C (1139°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 5.72 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Insoluble in cold water, hot water.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Reactive with oxidizing agents, acids, moisture.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 145 mg/kg [Mouse].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH. Causes damage to the following organs: kidneys, lungs, the nervous system, mucous membranes.

**Other Toxic Effects on Humans:**

Very hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:** Not available.

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are as toxic as the original product.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

## Section 14: Transport Information

**DOT Classification:** CLASS 6.1: Poisonous material.

**Identification:** : Arsenic UNNA: UN1558 PG: II

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Arsenic California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Arsenic Pennsylvania RTK: Arsenic Massachusetts RTK: Arsenic TSCA 8(b) inventory: Arsenic

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:****WHMIS (Canada):**

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**

R22- Harmful if swallowed. R45- May cause cancer.

**HMIS (U.S.A.):**

**Health Hazard:** 3

**Fire Hazard:** 1

**Reactivity:** 2

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 3

**Flammability:** 1

**Reactivity:** 2

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

**Section 16: Other Information****References:**

-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérigènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 04:16 PM

**Last Updated:** 11/06/2008 12:00 PM

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MSDS # 84.00

**Barium Metal****Section 1: Product and Company Identification****Barium Metal****Synonyms/General Names:** Barium**Product Use:** For educational use only**Manufacturer:** Columbus Chemical Industries, Inc., Columbus, WI 53925.**24 Hour Emergency Information Telephone Numbers****CHEMTREC (USA): 800-424-9300****CANUTEC (Canada): 613-424-6666**

ScholarAR Chemistry; 5100 W. Henrietta Rd, Rochester, NY 14586; (866) 260-0501; www.Scholarchemistry.com

**Section 2: Hazards Identification***Soft, silvery, lustrous metal immersed in heavy mineral oil; no odor.***HMIS (0 to 4)**

<b>Health</b>	<b>3</b>
<b>Fire Hazard</b>	<b>3</b>
<b>Reactivity</b>	<b>2</b>

**WARNING!** Flammable solid, dangerous when wet, highly toxic by ingestion.

Flammable solid, keep away from all ignition sources. Contact with water produces flammable gas.

Target organs: Central nervous system, kidneys.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Section 3: Composition / Information on Ingredients**

Barium Metal (7440-39-3), 100%

**Section 4: First Aid Measures***Always seek professional medical attention after first aid measures are provided.***Eyes:** Immediately flush eyes with excess water for 15 minutes, lifting lower and upper eyelids occasionally.**Skin:** Immediately flush skin with excess water for 15 minutes while removing contaminated clothing.**Ingestion:** Call Poison Control immediately. Rinse mouth with cold water. Give victim 1-2 tbsps of activated charcoal mixed with 8 oz water.**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration.**Section 5: Fire Fighting Measures**

Flammable solid. When heated to decomposition, emits acrid fumes and explosive hydrogen gas.

**Protective equipment and precautions for firefighters:** Do Not Use carbon dioxide, foam, water or halogenated extinguishing agents. Use class D extinguisher or smother with dry sand, dry clay, dry ground limestone or dry graphite. Firefighters should wear full fire fighting turn-out gear and respiratory protection (SCBA).  
Material is not sensitive to mechanical impact or static discharge.**Section 6: Accidental Release Measures**

Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Remove all ignition sources and ventilate area. Sweep up spill and place material in a dry container for disposal. See Section 13 for disposal information.

**Section 7: Handling and Storage****Red****Handling:** Use with adequate ventilation and do not breathe dust or vapor. Avoid contact with skin, eyes, or clothing. Wash hands thoroughly after handling.**Storage:** Store in Flammable Area [Red Storage] with other flammable materials and away from any strong oxidizers. Store in a dedicated flammables cabinet. Store in a cool, dry, well-ventilated, locked store room away from incompatible materials.**Section 8: Exposure Controls / Personal Protection**Use ventilation to keep airborne concentrations below exposure limits. Have approved eyewash facility, safety shower, and fire extinguishers readily available. Wear chemical splash goggles and chemical resistant clothing such as gloves and aprons. Wash hands thoroughly after handling material and before eating or drinking. Use NIOSH-approved respirator with a dust cartridge. Exposure guidelines: Barium compounds: OSHA PEL: 0.5 mg/m<sup>3</sup> and ACGIH TLV: 0.5 mg/m<sup>3</sup>, STEL: N/A.

**Section 9: Physical and Chemical Properties**

<b>Molecular formula</b>	Ba.	<b>Appearance</b>	Silver metal in heavy mineral oil.
<b>Molecular weight</b>	137.33.	<b>Odor</b>	No odor.
<b>Specific Gravity</b>	3.62 g/mL @ 20°C..	<b>Odor Threshold</b>	N/A.
<b>Vapor Density (air=1)</b>	N/A.	<b>Solubility</b>	Reacts violently with water.
<b>Melting Point</b>	850°C.	<b>Evaporation rate</b>	N/A ( <i>Butyl acetate = 1</i> ).
<b>Boiling Point/Range</b>	1695°C.	<b>Partition Coefficient</b>	N/A ( <i>log P<sub>ow</sub></i> ).
<b>Vapor Pressure (20°C)</b>	N/A.	<b>pH</b>	N/A.
<b>Flash Point:</b>	N/A.	<b>UEL</b>	N/A.
<b>Autoignition Temp.:</b>	N/A.	<b>LEL</b>	N/A.

N/A = Not available or applicable

**Section 10: Stability and Reactivity**

Avoid heat and ignition sources

**Stability:** Stable under normal conditions of use.**Incompatibility:** Water, acids, chlorine, iodine, bromine and oxidizing agents.**Shelf life:** Indefinite if stored properly.**Section 11: Toxicology Information****Acute Symptoms/Signs of exposure:** *Eyes:* Stinging pain, burns, watering of eyes, inflammation of eyelids and conjunctivitis. Avoid looking at burning magnesium. *Skin:* Irritation, redness, burns. Powdered metal ignites readily on skin causing burns.**Ingestion:** Nausea, vomiting and headache. **Inhalation:** Rapid irregular breathing, headache, burns to mucous membranes. Inhalation of dust or fumes causes metal fume fever.**Chronic Effects:** Repeated/prolonged skin contact may cause dryness or rashes.**Sensitization:** none expected*Barium: LD50 [oral, rat]; Not Available; LC50 [rat]; Not Available; LD50 Dermal [rabbit]; Not Available*  
*Material has not been found to be a carcinogen nor produce genetic, reproductive, or developmental effects.***Section 12: Ecological Information****Ecotoxicity (aquatic and terrestrial):** LC50 – 500mg/l – 96h – Cyprinodon variegates.**Section 13: Disposal Considerations**

Check with all applicable local, regional, and national laws and regulations. Local regulations may be more stringent than regional or national regulations. Use a licensed chemical waste disposal firm for proper disposal.

**Section 14: Transport Information**

<b>DOT Shipping Name:</b>	Barium.	<b>Canada TDG:</b>	Barium .
<b>DOT Hazard Class:</b>	4.3, pg II.	<b>Hazard Class:</b>	4.3, pg II.
<b>Identification Number:</b>	UN1400.	<b>UN Number:</b>	UN1400.

**Section 15: Regulatory Information****EINECS:** Listed (231-149.1) .**WHMIS Canada:** B6:D2B: Reactive Flammable: Toxic Material.**TSCA:** All components are listed or are exempt.**California Proposition 65:** Not listed.*The product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.***Section 16: Other Information****Current Issue Date:** December 19, 2011

*Disclaimer: Scholar Chemistry and Columbus Chemical Industries, Inc., ("S&C") believes that the information herein is factual but is not intended to be all inclusive. The information relates only to the specific material designated and does not relate to its use in combination with other materials or its use as to any particular process. Because safety standards and regulations are subject to change and because S&C has no continuing control over the material, those handling, storing or using the material should satisfy themselves that they have current information regarding the particular way the material is handled, stored or used and that the same is done in accordance with federal, state and local law. S&C makes no warranty, expressed or implied, including (without limitation) warranties with respect to the completeness or continuing accuracy of the information contained herein or with respect to fitness for any particular use.*

# SAFETY DATA SHEET

Based on Directive 2001/58/EC et seq. of the Commission of the European Communities

## BENZO[b]FLUORANTHENE

### 1. Identification of the substance/preparation and of the company/undertaking

#### 1.1 Identification of the substance or preparation:

**Synonyms:** benz[e]acephenanthrylene

<b>CAS No.</b>	: 205-99-2	<b>BCR number</b>	: BCR-47
<b>EC index No.</b>	: 601-034-00-4	<b>NFPA code</b>	: N.D.
<b>EINECS No.</b>	: 205-911-9	<b>Molecular weight</b>	: 252.32
<b>RTECS No.</b>	: CU1400000	<b>Formula</b>	: C <sub>20</sub> H <sub>12</sub>

#### 1.2 Use of the substance or the preparation:

Certified reference material for laboratory use only

#### 1.3 Company/undertaking identification:

Institute for Reference Materials and Measurements  
Retieseweg  
B-2440 Geel  
Tel. : +32 14 57 12 11  
Fax : +32 14 58 42 73

#### 1.4 Telephone number for emergency:

+32 70 245 245  
Antigifcentrum  
p/a Militair Hospitaal Koningin Astrid, Bruynstraat, B-1120 Brussel

### 2. Composition/information on ingredients

Hazardous ingredients	CAS No. EINECS No.	Conc. in %	Hazard symbol	Risks (R-phrases)
benzo[b]fluoranthene	205-99-2 205-911-9	100	T;N	45-50/53 (1)

(1) For R-phrases in full: see heading 16

### 3. Hazards identification

- May cause cancer
- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### 4. First aid measures

#### 4.1 Eye contact:

- Consult a doctor/medical service if irritation persists
- Rinse immediately with water
- Do not apply neutralizing agents

#### 4.2 Skin contact:

- Consult a doctor/medical service if irritation persists
- Wash with water and soap
- Remove clothing before washing
- Do not apply (chemical) neutralizing agents

#### 4.3 After inhalation:

- Consult a doctor/medical service if breathing problems develop
- Remove the victim into fresh air
- Unconscious: maintain adequate airway and respiration

#### 4.4 After ingestion:

- Consult a doctor/medical service if you feel unwell

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Technische Schoolstraat 43 A, B-2440 Geel  
☎ +32 14 58 45 47 <http://www.big.be> E-mail: [info@big.be](mailto:info@big.be)

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MSDS established :  
Reference number : BIG\18244GB  
Reason for revision : Directive 2001/58/EC  
Revision date : 28-02-2002  
Revision number : 001

## BENZO[b]FLUORANTHENE

- Immediately give lots of water to drink
- Never give water to an unconscious person
- Do not induce vomiting

# BENZO[b]FLUORANTHENE

## 5. Fire-fighting measures

### 5.1 Suitable extinguishing media:

- Water spray
- Polymer foam
- ABC powder
- Carbon dioxide

### 5.2 Unsuitable extinguishing media:

- Solid water jet ineffective as extinguishing medium

### 5.3 Special exposure hazards:

- Not easily combustible
- Upon combustion CO and CO<sub>2</sub> are formed

### 5.4 Instructions:

- Take account of toxic firefighting water
- Use firefighting water moderately and contain it

### 5.5 Special protective equipment for firefighters:

- Heat/fire exposure: compressed air/oxygen apparatus
- Dust cloud production: compressed air/oxygen apparatus

## 6. Accidental release measures

### 6.1 Personal protection/precautions: see 8.1/8.3/10.3

### 6.2 Environmental precautions:

- Prevent soil and water pollution
- Substance must not be discharged into the sewer
- Dam up the solid spill

### 6.3 Methods for cleaning up:

- Stop dust cloud by covering with sand/earth
- Carefully collect the spill/leftovers
- Scoop solid spill into closing containers
- Take collected spill to manufacturer/competent authority
- Clean contaminated surfaces with an excess of water
- Wash clothing and equipment after handling

## 7. Handling and storage

### 7.1 Handling:

- Observe strict hygiene
- Avoid prolonged and repeated contact with skin
- Avoid raising dust
- Do not discharge the waste into the drain
- Clean contaminated clothing

### 7.2 Storage:

- Keep container tightly closed.
- Store in a cool area
- Store in a dry area
- Store in a dark area
- Keep away from: heat sources, ignition sources, oxidizing agents, acids

**Storage temperature** : N.D. °C  
**Quantity limits** : N.D. kg  
**Storage life** : N.D.  
**Materials for packaging** : N.D.

### 7.3 Specific uses: N.D.

# BENZO[b]FLUORANTHENE

## 8. Exposure controls/Personal protection

### 8.1 Exposure limit values:

TLV-TWA	:	not listed
TLV-STEL	:	not listed
TLV-Ceiling	:	not listed
OES-LTEL	:	not listed
OES-STEL	:	not listed
MEL-LTEL	:	not listed
MEL-STEL	:	not listed
MAK	:	not listed
TRK	:	not listed
MAC-TGG 8 h	:	not listed
MAC-TGG 15 min.	:	not listed
MAC-Ceiling	:	not listed
VME-8 h	:	not listed
VLE-15 min.	:	not listed
GWBB-8 h	:	not listed
GWK-15 min.	:	not listed
Momentary value	:	not listed

### Sampling methods:

- Benzo(b)fluoranthene (Polynuclear aromatic hydrocarbons) NIOSH 5515
- Benzo(b)fluoranthene (Polynuclear aromatic hydrocarbons) NIOSH 5506

### 8.2 Exposure controls:

#### 8.2.1 Occupational exposure controls:

- Measure the concentration in the air regularly
- Work under local exhaust/ventilation

#### 8.2.2 Environmental exposure controls: see 13

### 8.3 Personal protection:

#### 8.3.1 respiratory protection:

- Dust production: dust mask with filter type P3
- High dust production: compressed air/oxygen apparatus

#### 8.3.2 hand protection:

- Gloves
- Suitable materials: No data available
- Breakthrough time: N.D.

#### 8.3.3 eye protection:

- Safety glasses
- In case of dust production: protective goggles

#### 8.3.4 skin protection:

- Protective clothing
- In case of dust production: head/neck protection
- Suitable materials: No data available

# BENZO[b]FLUORANTHENE

## 9. Physical and chemical properties

### 9.1 General information:

Appearance (at 20°C) : Crystalline solid / Needles  
Odour : Odourless  
Colour : Colourless to off-white

### 9.2 Important health, safety and environmental information:

pH value : N.D.  
Boiling point/boiling range : N.D. °C  
Flashpoint : N.D. °C  
Explosion limits : N.D. vol% ( °C)  
Vapour pressure (at 20°C) : 0.00000067 hPa  
Vapour pressure (at 50°C) : N.D. hPa  
Relative density (at 20°C) : N.D.  
Water solubility : 0.00000012 g/100 ml  
Soluble in : Acetone, oils/fats  
Relative vapour density : N.D.  
Viscosity : N.D. Pa.s  
Partition coefficient n-octanol/water : 6.57  
Evaporation rate : N.D.  
ratio butyl acetate : N.D.  
ratio ether : N.D.

### 9.3 Other information:

Melting point/melting range : 168 °C  
Auto-ignition point : N.D. °C  
Saturation concentration : N.D. g/m<sup>3</sup>

## 10. Stability and reactivity

### 10.1 Conditions to avoid/reactivity:

- Stable under normal conditions

### 10.2 Materials to avoid:

- Keep away from: heat sources, ignition sources, oxidizing agents, acids

### 10.3 Hazardous decomposition products:

- Upon combustion CO and CO<sub>2</sub> are formed  
- Reacts violently with (strong) oxidizers  
- Decomposes on exposure to (strong) acids

# BENZO[b]FLUORANTHENE

## 11. Toxicological information

### 11.1 Acute toxicity:

LD50 oral rat	: N.D.	mg/kg
LD50 dermal rat	: N.D.	mg/kg
LD50 dermal rabbit	: N.D.	mg/kg
LC50 inhalation rat	: N.D.	mg/l/4 h
LC50 inhalation rat	: N.D.	ppm/4 h

### 11.2 Chronic toxicity:

benzo[b]fluoranthene

EC carc. cat.	: 2
EC muta. cat.	: not listed
EC repr. cat.	: not listed
Carcinogenicity (TLV)	: A2
Carcinogenicity (MAC)	: K
Carcinogenicity (VME)	: not listed
Carcinogenicity (GWBB)	: not listed
Carcinogenicity (MAK)	: 2
Mutagenicity (MAK)	: not listed
Teratogenicity (MAK)	: -
IARC classification	: 2B

11.3 Routes of exposure: ingestion, inhalation, eyes and skin  
Caution! Substance is absorbed through the skin

### 11.4 Acute effects/symptoms:

- AFTER SKIN CONTACT  
Slight irritation

### 11.5 Chronic effects:

- Probably human carcinogenic
- Not classified as toxic to reproduction (EC)
- ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:  
No specific information available
- SIMILAR PRODUCTS CAUSE FOLLOWING SYMPTOMS:  
Feeling of weakness  
Cracking of the skin  
Skin rash/inflammation  
Photoallergy  
Skin cancer  
Lung tissue affection/degeneration  
Enlargement/affection of the liver  
Affection of the renal tissue

# BENZO[b]FLUORANTHENE

## 12. Ecological information

### 12.1 Ecotoxicity:

- - No data available

### 12.2 Mobility:

- Volatile organic compounds (VOC): 0%
- Photolysis in water
- Forming sediments in water
- Insoluble in water

For other physicochemical properties see heading 9.

### 12.3 Persistence and degradability:

- biodegradation BOD<sub>5</sub> : N.D. % ThOD
- water : - Not readily biodegradable in water  
- test: E 1/2 > 100 d.
- soil : T  $\frac{1}{2}$ : > 87 days

### 12.4 Bioaccumulative potential:

- log P<sub>ow</sub> : 6.57
- BCF : 168 h : 2800 (LAMELLIBRANCHIATA)
- Highly bioaccumulative

### 12.5 Other adverse effects:

- WGK : 3 (Classification based on the R-phrases in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 17 May 1999)
- Effect on the ozone layer : Not dangerous for the ozone layer (Council Regulation (EC) No 3093/94, O.J. L333 of 22/12/94)
- Greenhouse effect : no data available
- Effect on waste water purification : no data available

## 13. Disposal considerations

### 13.1 Provisions relating to waste:

- Waste material code (91/689/EEC, Council Decision 201/118/EC, O.J. L47 of 16/2/2001): 16 05 06 (laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory)
- Waste material code (Flanders): 001, 045, 691
- Waste code (Germany): 59302
- Hazardous waste (91/689/EEC)

### 13.2 Disposal methods:

- Dissolve or mix with a combustible solvent
- Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber
- Do not discharge into surface water (2000/60/EEC, Council Decision 2455/2001/EC, O.J. L331 of 15/12/2001)

### 13.3 Packaging/Container:

- Waste material code packaging (91/689/EEC, Council Decision 2001/118/EC, O.J. L47 of 16/2/2001): 15 01 10 (packaging containing residues of or contaminated by dangerous substances)

# BENZO[b]FLUORANTHENE

## 14. Transport information

90

3077

- 14.1 Classification of the substance in compliance with UN Recommendations
- |                      |  |
|----------------------|--|
| UN number            | : 3077   |
| CLASS                | : 9  |
| SUB RISKS            | : -  |
| PACKING              | : III  |
| PROPER SHIPPING NAME | : UN 3077, Environmentally hazardous substance, solid, n.o.s. (benz[e]acephenanthrylene) |
- 14.2 ADR (transport by road)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.3 RID (transport by rail)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.4 ADNR (transport by inland waterways)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.5 IMDG (maritime transport)
- |                  |       |
|------------------|-------|
| CLASS            | : 9   |
| SUB RISKS        | : -   |
| PACKING          | : III |
| MFAG             | : -   |
| EMS              | : -   |
| MARINE POLLUTANT | : P   |
- 14.6 ICAO (air transport)
- |   |       |
|---|-------|
| CLASS                                   | : 9   |
| SUB RISKS                               | : -   |
| PACKING                                 | : III |
| PACKING INSTRUCTIONS PASSENGER AIRCRAFT | :     |
| PACKING INSTRUCTIONS CARGO AIRCRAFT     | :     |
- 14.7 Special precautions in connection with transport : none

When substances and their packaging meet the conditions established by ADR/RID/ADNR in chapter 3.4, **only** the following prescriptions shall be complied with:  
each package shall display a diamond-shaped figure with the following inscription:  
- 'UN 3077'  
or, in the case of different goods with different identification numbers within a single package:  
- the letters 'LQ'

# BENZO[b]FLUORANTHENE

## 15. Regulatory information

Enumerated in substance list Annex I of directive 67/548/EEC et sequens



Toxic



Dangerous for the environment

- R45 : May cause cancer  
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- S53 : Avoid exposure - obtain special instructions before use  
S45 : In case of accident or if you feel unwell, seek medical advice (show the label where possible)  
S60 : This material and/or its container must be disposed of as hazardous waste  
S61 : Avoid release to the environment. Refer to special instructions/safety data sheets.

## 16. Other information

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**N.A.** = NOT APPLICABLE  
**N.D.** = NOT DETERMINED  
**\*** = INTERNAL CLASSIFICATION

### Full text of any R-phrases referred to under heading 2:

- R45 : May cause cancer  
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### Exposure limits:

**TLV** : Threshold Limit Value - ACGIH USA 2000  
**OES** : Occupational Exposure Standards - United Kingdom 1999  
**MEL** : Maximum Exposure Limits - United Kingdom 1999  
**MAK** : Maximale Arbeitsplatzkonzentrationen - Germany 2001  
**TRK** : Technische Richtkonzentrationen - Germany 2001  
**MAC** : Maximale aanvaarde concentratie - The Netherlands 2002  
**VME** : Valeurs limites de Moyenne d'Exposition - France 1999  
**VLE** : Valeurs limites d'Exposition à court terme - France 1999  
**GWBB** : Grenswaarde beroepsmatige blootstelling - Belgium 1998  
**GWK** : Grenswaarde kortstondige blootstelling - Belgium 1998  
**EC** : Indicative occupational exposure limit values - directive 2000/39/EC

### Chronic toxicity:

**K** : List of the carcinogenic substances and processes - The Netherlands 2002

## BCR-048R: benzo[k]fluoranthene

### 1. Identification of the substance/preparation and of the company/undertaking

#### 1.1 Identification of the substance or preparation:

Product name: BCR-048R: benzo[k]fluoranthene  
CAS number 207-08-9  
EC index number 601-036-00-5  
EINECS number 205-916-6  
RTECS number DF6350000  
Molecular mass 252.32 g/mol  
Formula C20H12

#### 1.2 Use of the substance/preparation:

Certified reference material for laboratory use only

#### 1.3 Company/undertaking identification:

Institute for Reference Materials and Measurements  
Retieseweg  
B-2440 Geel  
Tel: +32 14 57 12 11  
Fax: +32 14 59 04 06  
JRC-IRMM-RM-Sales@ec.europa.eu

#### 1.4 Emergency telephone:

Poison Centre: +32 70 245 245

### 2. Hazards identification

NFPA: 1-1-2(\*)

#### DSD/DPD

May cause cancer  
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

#### Other hazards

Its dust is explosive with air  
Dust cloud can be ignited by a spark  
Slightly irritant to skin  
Slightly irritant to eyes  
Caution! Substance is absorbed through the skin  
No certainty about human mutagenic properties  
Highly bioaccumulative  
Not readily biodegradable in water

#### CLP

Carc. 1B May cause cancer. (H350)  
Aquatic Acute 1 Very toxic to aquatic life. (H400)  
Aquatic Chronic 1 Very toxic to aquatic life with long lasting effects. (H410)

#### Other hazards

Its dust is explosive with air  
Dust cloud can be ignited by a spark  
Slightly irritant to skin  
Slightly irritant to eyes  
Caution! Substance is absorbed through the skin  
No certainty about human mutagenic properties  
Highly bioaccumulative  
Not readily biodegradable in water

# BCR-048R: benzo[k]fluoranthene

## 3. Composition/information on ingredients

Name	CAS No EINECS/ELINCS	Conc.	Classification according to DSD/DPD	Classification according to CLP	Note
benzo[k]fluoranthene	207-08-9 205-916-6		Carc. Cat. 2; R45 N; R50-53	Carc. 1B; H350 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	

## 4. First aid measures

### 4.1 After inhalation:

Remove the victim into fresh air  
Respiratory problems: consult a doctor/medical service

### 4.2 Skin contact:

Rinse with water  
Do not apply (chemical) neutralizing agents  
Take victim to a doctor if irritation persists

### 4.3 Eye contact:

Rinse with water  
Do not apply neutralizing agents  
Take victim to an ophthalmologist if irritation persists

### 4.4 After ingestion:

Rinse mouth with water  
Immediately after ingestion: give lots of water to drink  
Do not induce vomiting  
Consult a doctor/medical service if you feel unwell

## 5. Fire-fighting measures

### 5.1 Suitable extinguishing media:

Water spray  
Polyvalent foam  
ABC powder  
Carbon dioxide

### 5.2 Unsuitable extinguishing media:

No unsuitable extinguishing media known

### 5.3 Special exposure hazards:

Heating increases the fire hazard  
Dust cloud can be ignited by a spark  
Upon combustion CO and CO<sub>2</sub> are formed

### 5.4 Instructions:

Take account of toxic fire-fighting water  
Use water moderately and if possible collect or contain it

### 5.5 Special protective equipment for fire-fighters:

Gloves  
Protective clothing  
Heat/fire exposure: compressed air/oxygen apparatus

## 6. Accidental release measures

### 6.1 Personal precautions:

See heading 8.2

### 6.2 Environmental precautions:

Dam up the solid spill  
Prevent soil and water pollution  
Prevent spreading in sewers

# BCR-048R: benzo[k]fluoranthene

See heading 13

## 6.3 Methods for cleaning up:

- Scoop solid spill into closing containers
- Carefully collect the spill/leftovers
- Clean contaminated surfaces with an excess of water
- Take collected spill to manufacturer/competent authority
- Wash clothing and equipment after handling

## 7. Handling and storage

### 7.1 Handling:

- Avoid raising dust
- Warning! Avoid exposure
- Keep away from naked flames/heat
- Obtain special instructions before use
- Observe strict hygiene
- Keep container tightly closed
- Do not discharge the waste into the drain

### 7.2 Storage:

#### Safe storage requirements:

- Store in a cool area
- Store in a dry area
- Keep container in a well-ventilated place
- Keep locked up
- Unauthorized persons are not admitted
- Meet the legal requirements

#### Keep away from:

- oxidizing agents
- (strong) acids

### 7.3 Specific use(s):

See information supplied by the manufacturer for the identified use(s)

## 8. Exposure controls/Personal protection

### 8.1 Exposure limit values:

#### 8.1.1 Occupational exposure:

If limit values are applicable and available these will be listed below.

#### 8.1.2 Sampling methods:

Product name	Test	Number	Sampling method	Remarks
Benz(a)Anthracene	OSHA	CSI		
Benz(a)Anthracene (Polynuclear aromatic hydrocarbons)	NIOSH	5506	adsorption tubes	
Benz(a)Anthracene (Polynuclear aromatic hydrocarbons)	NIOSH	5515	adsorption tubes	

### 8.2 Exposure controls:

#### 8.2.1 Occupational exposure controls:

- Measure the concentration in the air regularly
- Carry operations in the open/under local exhaust/ventilation or with respiratory protection

#### Personal protective equipment:

- Respiratory protection:
  - Dust production: dust mask with filter type P3
- Hand protection:
  - Gloves
- Eye protection:
  - Safety glasses
  - In case of dust production: protective goggles
- Skin protection:
  - Protective clothing

#### 8.2.2 Environmental exposure controls:

# BCR-048R: benzo[k]fluoranthene

See headings 6.2, 6.3 and 13

## 9. Physical and chemical properties

### 9.1 General information:

Physical form	Crystalline solid Needles
Colour	Light yellow

### 9.2 Important health, safety and environmental information:

Boiling point	480 °C
Vapour pressure (20°C)	< 0.00001 hPa
Solubility in water	< 0.00001 g/100 ml
Solubility in solvents	Soluble in ethanol Soluble in acetic acid Soluble in oils/fats
Log Pow	6.84

### 9.3 Other information:

Melting point	217 °C
---------------	--------

## 10. Stability and reactivity

### 10.1 Conditions to avoid:

#### Possible fire hazard

heat sources  
ignition sources

#### Stability

No data available

#### Reactions

Reacts violently with (strong) oxidizers

### 10.2 Materials to avoid:

oxidizing agents  
(strong) acids

### 10.3 Hazardous decomposition products:

Upon combustion CO and CO<sub>2</sub> are formed

## 11. Toxicological information

### 11.1 Acute toxicity:

No (test) data available.

### 11.2 Chronic toxicity:

Probably human carcinogenic  
No certainty about human mutagenic properties  
Not classified as toxic to reproduction (EC)

BCR-048R: benzo[k]fluoranthene

EC carc cat	2
Listed in SZW - List of carcinogenic substances	yes
IARC - classification	2B
MAK - Krebszeugend Kategorie	2
MAK - Keimzellmutagen Kategorie	3B
MAK - Schwangerschaft Gruppe	-
CLP carc cat	category 1B

### 11.3 Acute effects/symptoms:

#### Inhalation:

No data available

#### Skin contact:

Revision number: 0200

Product number: 49287

Reference number: BCR-048R

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# BCR-048R: benzo[k]fluoranthene

Slight irritation

**Eye contact:**

Slight irritation

**Ingestion:**

No data available

**11.4 Chronic effects:**

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:

No specific information available

SIMILAR PRODUCTS CAUSE FOLLOWING SYMPTOMS:

Feeling of weakness

Cracking of the skin

Skin rash/inflammation

Photoallergy

Skin cancer

Lung tissue affection/degeneration

Enlargement/affection of the liver

Affection of the renal tissue

## 12. Ecological information

**12.1 Ecotoxicity:**

No (test) data available.

**12.2 Mobility:**

Volatile organic compounds (VOC)

0 %

Solubility in/reaction with water

Insoluble in water

Water physicochemical processes

Forming sediments in water

Soil physicochemical processes

Adsorbs into the soil

**12.3 Persistence and degradability:**

Water abiotic degradation processes

Ozonation in water

Half-life soil

65 - 1400 days

Not readily biodegradable in water

**12.4 Bioaccumulative potential:**

Log Pow

6.84

Highly bioaccumulative

**12.5 Results of PBT assessment:**

Not applicable, based on available data

**12.6 Other adverse effects:**

Not dangerous for the ozone layer (Council Regulation (EC) no 1005/2009)

## 13. Disposal considerations

**13.1 Provisions relating to waste:**

Waste material code (Directive 2008/98/EC, decision 2001/118/EC)

16 05 06\* : laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals

Depending on branch of industry and production process, also other EURAL codes may be applicable

Hazardous waste according to Directive 2008/98/EC

**13.2 Disposal methods:**

Dissolve or mix with a combustible solvent

Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery

Remove waste in accordance with local and/or national regulations

Do not discharge into surface water (2000/60/EC, Council decision 2455/2001/EC, O.J. L331 of 15/12/2001)

**13.3 Packaging/Container:**

Waste material code packaging (Directive 2008/98/EC)

15 01 10\* : packaging containing residues of or contaminated by dangerous substances

**{13.4 Entsorgung verschmutzter Gebinde:}**

# BCR-048R: benzo[k]fluoranthene

## 14. Transport information

### ADR

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ADR	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Hazard identification number	90
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

### RID

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name RID	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

### ADNR

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ADNR	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Classification code	M7
Labels	9
Environmentally hazardous substance mark	yes

### IMO

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name IMO	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Labels	9
Marine pollutant	P
Environmentally hazardous substance mark	yes

### ICAO

Proper shipping name	Environmentally hazardous substance, solid, n.o.s.
Techn./chem. name ICAO	benzo[k]fluoranthene
UN number	3077
Class	9
Packing group	III
Labels	9
Environmentally hazardous substance mark	yes

## 15. Regulatory information

### 15.1 EU Legislation:

# BCR-048R: benzo[k]fluoranthene

## DSD/DPD

Enumerated in substance list Annex I of directive 67/548/EEC et sequens



Dangerous for the environment

## R-phrases

45	May cause cancer
50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

## S-phrases

53	Avoid exposure - obtain special instructions before use
45	In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
60	This material and its container must be disposed of as hazardous waste
61	Avoid release to the environment. Refer to special instructions/safety data sheets.

## Additional recommendations

	Restricted to professional users.
--	-----------------------------------

## CLP

Classification and labelling according to Regulation (EC) No 1272/2008 – Annex VI and after evaluation of available test data



## Signal word

Dgr	Danger
-----	--------

## H-statements

H350	May cause cancer.
H410	Very toxic to aquatic life with long lasting effects.

## P-statements

P202	Do not handle until all safety precautions have been read and understood.
P281	Use personal protective equipment as required.
P273	Avoid release to the environment.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P391	Collect spillage.
P405	Store locked up.

## Supplemental information

	Restricted to professional users.
--	-----------------------------------

## 15.2 National provisions:

## 15.3 Specific community rules:

Enumerated in Annex XVII of Regulation (EC) No. 1907/2006: Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles.

### Legislation

EG/552/2009

EG/552/2009

### Reference legislation

See column 1: 28.

See column 1: 50. g)

## 16. Other information

# BCR-048R: benzo[k]fluoranthene

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question.

Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult your BIG licence agreement for details.

(\*) = INTERNAL CLASSIFICATION (NFPA)

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive

DPD Dangerous Preparation Directive

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

Full text of any R-phrases referred to under headings 2 and 3:

R45	May cause cancer
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

Full text of any H-statements referred to under headings 2 and 3:

H350	May cause cancer.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

Full text of any classes referred to under headings 2 and 3:

Aquatic Acute	Hazardous to the aquatic environment - acute
Aquatic Chronic	Hazardous to the aquatic environment - chronic
Carc.	Carcinogenicity

# SAFETY DATA SHEET

Based on Directive 2001/58/EC et seq. of the Commission of the European Communities

## BENZ[a]ANTHRACENE

### 1. Identification of the substance/preparation and of the company/undertaking

#### 1.1 Identification of the substance or preparation:

**Synonyms:** benzo(a)anthracene

<b>CAS No.</b>	: 56-55-3	<b>BCR number</b>	: BCR-271
<b>EC index No.</b>	: 601-033-00-9	<b>NFPA code</b>	: N.D.
<b>EINECS No.</b>	: 200-280-6	<b>Molecular weight</b>	: 228.30
<b>RTECS No.</b>	: CV9275000	<b>Formula</b>	: C18H12

#### 1.2 Use of the substance or the preparation:

Certified reference material for laboratory use only

#### 1.3 Company/undertaking identification:

Institute for Reference Materials and Measurements  
Retieseweg  
B-2440 Geel  
Tel. : +32 14 57 12 11  
Fax : +32 14 58 42 73

#### 1.4 Telephone number for emergency:

+32 70 245 245  
Antigifcentrum  
p/a Militair Hospitaal Koningin Astrid, Bruynstraat, B-1120 Brussel

### 2. Composition/information on ingredients

Hazardous ingredients	CAS No. EINECS No.	Conc. in %	Hazard symbol	Risks (R-phrases)
Benzo[a]anthracene	56-55-3 200-280-6	100	T;N	45-50/53 (1)

(1) For R-phrases in full: see heading 16

### 3. Hazards identification

- May cause cancer
- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### 4. First aid measures

#### 4.1 Eye contact:

- Consult a doctor/medical service if irritation persists
- Rinse immediately with water

#### 4.2 Skin contact:

- Consult a doctor/medical service if irritation persists
- Wash with water and soap
- Remove clothing before washing

#### 4.3 After inhalation:

- Consult a doctor/medical service if breathing problems develop
- Remove the victim into fresh air
- Unconscious: maintain adequate airway and respiration

#### 4.4 After ingestion:

- Consult a doctor/medical service if you feel unwell
- Immediately give lots of water to drink
- Never give water to an unconscious person

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MSDS established :  
Reference number : BIG\18241GB  
Reason for revision : Directive 2001/58/EC  
Revision date : 28-03-2002  
Revision number : 001

# BENZ[a]ANTHRACENE

# BENZ[a]ANTHRACENE

## 5. Fire-fighting measures

- 5.1 **Suitable extinguishing media:**
- Water spray
  - Alcohol foam
  - Polymer foam
  - ABC powder
  - Carbon dioxide
- 5.2 **Unsuitable extinguishing media:**
- Solid water jet ineffective as extinguishing medium
- 5.3 **Special exposure hazards:**
- Not easily combustible
  - Upon combustion CO and CO<sub>2</sub> are formed
- 5.4 **Instructions:**
- Take account of toxic firefighting water
  - Use firefighting water moderately and contain it
- 5.5 **Special protective equipment for firefighters:**
- Heat/fire exposure: compressed air/oxygen apparatus
  - Dust cloud production: compressed air/oxygen apparatus

## 6. Accidental release measures

- 6.1 **Personal protection/precautions:** see heading 8.1/8.3/10.3
- 6.2 **Environmental precautions:**
- Prevent soil and water pollution
  - Substance must not be discharged into the sewer
  - Dam up the solid spill
- 6.3 **Methods for cleaning up:**
- Stop dust cloud by covering with sand/earth
  - Carefully collect the spill/leftovers
  - Scoop solid spill into closing containers
  - Take collected spill to manufacturer/competent authority
  - Clean contaminated surfaces with an excess of water
  - Wash clothing and equipment after handling

## 7. Handling and storage

- 7.1 **Handling:**
- Observe strict hygiene
  - Avoid prolonged and repeated contact with skin
  - Avoid raising dust
  - Do not discharge the waste into the drain
  - Remove contaminated clothing immediately
- 7.2 **Storage:**
- Keep container tightly closed. Store in a cool area. Store in a dry area.
  - Store in a dark area.
  - Keep away from: heat sources, ignition sources, oxidizing agents, acids
- |                            |   |      |    |
|----------------------------|---|------|----|
| <b>Storage temperature</b> | : | N.D. | °C |
| <b>Quantity limits</b>     | : | N.D. | kg |
| <b>Storage life</b>        | : | N.D. |    |
- Materials for packaging** :
- suitable :no data available
  - to avoid :no data available
- 7.3 **Specific uses:**
- See information supplied by the manufacturer

# BENZ[a]ANTHRACENE

## 8. Exposure controls/Personal protection

### 8.1 Exposure limit values:

TLV-TWA	:	mg/m <sup>3</sup>	-	ppm
TLV-STEL	:	mg/m <sup>3</sup>	-	ppm
TLV-Ceiling	:	mg/m <sup>3</sup>		ppm
OES-LTEL	:	mg/m <sup>3</sup>		ppm
OES-STEL	:	mg/m <sup>3</sup>		ppm
MAK	:	mg/m <sup>3</sup>		ppm
TRK	:	mg/m <sup>3</sup>		ppm
MAC-TGG 8 h	:	mg/m <sup>3</sup>		
MAC-TGG 15 min.	:	mg/m <sup>3</sup>		
MAC-Ceiling	:	mg/m <sup>3</sup>		
VME-8 h	:	mg/m <sup>3</sup>		ppm
VLE-15 min.	:	mg/m <sup>3</sup>		ppm
GWBB-8 h	:	mg/m <sup>3</sup>		ppm
GWK-15 min.	:	mg/m <sup>3</sup>		ppm
Momentary value	:	mg/m <sup>3</sup>		ppm
EC	:	mg/m <sup>3</sup>		ppm
EC-STEL	:	mg/m <sup>3</sup>		ppm

### Sampling methods:

- Benz(a)Anthracene (Polynuclear aromatic hydrocarbons) NIOSH 5506
- Benz(a)Anthracene (Polynuclear aromatic hydrocarbons) NIOSH 5515
- Benz(a)Anthracene OSHA CSI

### 8.2 Exposure controls:

#### 8.2.1 Occupational exposure controls:

- Measure the concentration in the air regularly
- Work under local exhaust/ventilation

#### 8.2.2 Environmental exposure controls: see heading 13

### 8.3 Personal protection:

#### 8.3.1 respiratory protection:

- Dust production: dust mask with filter type P3
- High dust production: compressed air/oxygen apparatus

#### 8.3.2 hand protection:

- Gloves
- Suitable materials: No data available
- Breakthrough time: N.D.

#### 8.3.3 eye protection:

- Safety glasses
- In case of dust production: protective goggles

#### 8.3.4 skin protection:

- Protective clothing
- In case of dust production: head/neck protection
- Suitable materials: No data available

# BENZ[a]ANTHRACENE

## 9. Physical and chemical properties

### 9.1 General information:

Appearance (at 20°C)	: Crystalline solid / Scales
Odour	: Odourless
Colour	: Colourless to fluorescent yellow-green

### 9.2 Important health, safety and environmental information:

pH value	: N.D.	
Boiling point/boiling range	: N.A.	°C
Flashpoint	: N.D.	°C
Explosion limits	: N.D.	vol% ( °C)
Vapour pressure (at 20°C)	: 0.00007	hPa
Vapour pressure (at 50°C)	: N.D.	hPa
Relative density (at 20°C)	: 1.3	
Water solubility	: 0.00001	g/100 ml
Soluble in	: Ether, acetone, oils/fats	
Relative vapour density	: N.D.	
Viscosity	: N.D.	Pa.s
Partition coefficient n-octanol/water	: 5.61/5.79	
Evaporation rate		
ratio to butyl acetate	: N.D.	
ratio to ether	: N.D.	

### 9.3 Other information:

Melting point/melting range	: 160	°C
Auto-ignition point	: N.D.	°C
Saturation concentration	: N.D.	g/m <sup>3</sup>

## 10. Stability and reactivity

### 10.1 Conditions to avoid/reactivity:

- Stable under normal conditions

### 10.2 Materials to avoid:

- Keep away from: heat sources, ignition sources, oxidizing agents, acids

### 10.3 Hazardous decomposition products:

- Upon combustion CO and CO<sub>2</sub> are formed  
- Reacts violently with (strong) oxidizers  
- Decomposes on exposure to (strong) acids

## 11. Toxicological information

### 11.1 Acute toxicity:

LD50 oral rat	: N.D.	mg/kg
LD50 dermal rat	: N.D.	mg/kg
LD50 dermal rabbit	: N.D.	mg/kg
LC50 inhalation rat	: N.D.	mg/l/4 h
LC50 inhalation rat	: N.D.	ppm/4 h

# BENZ[a]ANTHRACENE

## 11.2 Chronic toxicity:

EC carc. cat. : 2  
EC muta. cat. : not listed  
EC repr. cat. : not listed

Carcinogenicity (TLV) : A2  
Carcinogenicity (MAC) : K  
Carcinogenicity (VME) : not listed  
Carcinogenicity (GWBB) : not listed

Carcinogenicity (MAK) : 2  
Mutagenicity (MAK) : not listed  
Teratogenicity (MAK) : -

IARC classification : 2A

11.3 Routes of exposure: ingestion, inhalation, eyes and skin  
Caution! Substance is absorbed through the skin

## 11.4 Acute effects/symptoms:

**AFTER SKIN CONTACT**  
- Slight irritation

## 11.5 Chronic effects:

- Probably human carcinogenic  
- Mutagenicity: AMES test positive  
- Probably human mutagenic

ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:  
- No specific information available

SIMILAR PRODUCTS CAUSE FOLLOWING SYMPTOMS:  
- Feeling of weakness  
- Photoallergy  
- Skin rash/inflammation  
- Cracking of the skin  
- Skin cancer  
- Lung tissue affection/degeneration  
- Enlargement/affection of the liver  
- Affection of the renal tissue

## 12. Ecological information

### 12.1 Ecotoxicity:

- LC50 (65 h) : 0.0018 mg/l (PIMEPHALES PROMELAS)  
- EC50 (96 h) : 0.01 mg/l (DAPHNIA PULEX)

### 12.2 Mobility:

- Volatile organic compounds (VOC): 0%  
- Photolysis in water  
- Ozonation in water  
- Insoluble in water

For other physicochemical properties see heading 9.

### 12.3 Persistence and degradability:

- biodegradation BOD<sub>5</sub> : N.D. % ThOD  
- water : - Not readily biodegradable in water  
- soil : T  $\frac{1}{2}$ : > 100 days

### 12.4 Bioaccumulative potential:

- log P<sub>ow</sub> : 5.61/5.79  
- BCF : 72 h : 350 (LEUCISCUS IDUS)  
- Highly bioaccumulative

# BENZ[a]ANTHRACENE

## 12.5 Other adverse effects:

- **WGK** : 3 (Classification based on the R-phrases in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 17 May 1999)
- **Effect on the ozone layer** : Not dangerous for the ozone layer (Council Regulation (EC) 3093/94)
- **Greenhouse effect** : no data available
- **Effect on waste water purification** : no data available

## 13. Disposal considerations

### 13.1 Provisions relating to waste:

- Waste material code (91/689/EEC, Council Decision 2001/118/EC, O.J. L47 of 16/2/2001): 16 05 06 (laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory chemicals)
- Waste material code (Flanders): 001, 045, 691
- Waste code (Germany): 59302
- Hazardous waste (91/689/EEC)

### 13.2 Disposal methods:

- Dissolve or mix with a combustible solvent
- Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber
- Do not discharge into surface water (2000/60/EEC, Council Decision 2455/2001/EC)

### 13.3 Packaging/Container:

- Waste material code packaging (91/689/EEC, Council Decision 2001/118/EC, O.J. L47 of 16/2/2001): 15 01 10 (packaging containing residues of or contaminated by dangerous substances)

# BENZ[a]ANTHRACENE

## 14. Transport information

90

3077

- 14.1 Classification of the substance in compliance with UN Recommendations
- |                      |  |
|----------------------|--|
| UN number            | : 3077   |
| CLASS                | : 9  |
| SUB RISKS            | : -  |
| PACKING              | : III  |
| PROPER SHIPPING NAME | : UN 3077, Environmentally hazardous substance, solid, n.o.s. (benzo[a]anthracene) |
- 14.2 ADR (transport by road)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.3 RID (transport by rail)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.4 ADNR (transport by inland waterways)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.5 IMDG (maritime transport)
- |                  |       |
|------------------|-------|
| CLASS            | : 9   |
| SUB RISKS        | : -   |
| PACKING          | : III |
| MFAG             | : -   |
| EMS              | : -   |
| MARINE POLLUTANT | : P   |
- 14.6 ICAO (air transport)
- |   |       |
|---|-------|
| CLASS                                   | : 9   |
| SUB RISKS                               | : -   |
| PACKING                                 | : III |
| PACKING INSTRUCTIONS PASSENGER AIRCRAFT | :     |
| PACKING INSTRUCTIONS CARGO AIRCRAFT     | :     |
- 14.7 Special precautions in connection with transport : none
- 14.8 Limited quantities (LQ) :

When substances and their packaging meet the conditions established by ADR/RID/ADNR in chapter 3.4, **only** the following prescriptions shall be complied with:  
each package shall display a diamond-shaped figure with the following inscription:  
- 'UN 3077'  
or, in the case of different goods with different identification numbers within a single package:  
- the letters 'LQ'

# BENZ[a]ANTHRACENE

## 15. Regulatory information

Enumerated in substance list Annex I of directive 67/548/EEC et sequens



Toxic



Dangerous for the environment

- R45 : May cause cancer  
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- S53 : Avoid exposure - obtain special instructions before use  
S45 : In case of accident or if you feel unwell, seek medical advice (show the label where possible)  
S60 : This material and/or its container must be disposed of as hazardous waste  
S61 : Avoid release to the environment. Refer to special instructions/safety data sheets.

## 16. Other information

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

N.A. = NOT APPLICABLE  
N.D. = NOT DETERMINED  
\* = INTERNAL CLASSIFICATION

### Full text of any R-phrases referred to under heading 2:

- R45 : May cause cancer  
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### Exposure limits:

TLV : Threshold Limit Value - ACGIH USA 2000  
OES : Occupational Exposure Standards - United Kingdom 1999  
MEL : Maximum Exposure Limits - United Kingdom 1999  
MAK : Maximale Arbeitsplatzkonzentrationen - Germany 2001  
TRK : Technische Richtkonzentrationen - Germany 2001  
MAC : Maximale aanvaarde concentratie - The Netherlands 2002  
VME : Valeurs limites de Moyenne d'Exposition - France 1999  
VLE : Valeurs limites d'Exposition à court terme - France 1999  
GWBB : Grenswaarde beroepsmatige blootstelling - Belgium 1998  
GWK : Grenswaarde kortstondige blootstelling - Belgium 1998  
EC : Indicative occupational exposure limit values - directive 2000/39/EC

### Chronic toxicity:

K : List of the carcinogenic substances and processes - The Netherlands 2002

# Material Safety Data Sheet

Benzo[a]pyrene, 98%

ACC# 37175

## Section 1 - Chemical Product and Company Identification

**MSDS Name:** Benzo[a]pyrene, 98%

**Catalog Numbers:** AC105600000, AC105600010, AC105601000, AC377200000, AC377200010, AC377201000 AC377201000

**Synonyms:** 3,4-Benzopyrene; 3,4-Benzpyrene; Benzo[def]chrysene.

**Company Identification:**

Acros Organics N.V.  
One Reagent Lane  
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

## Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
50-32-8	Benzo[a]pyrene	>96	200-028-5

## Section 3 - Hazards Identification

### EMERGENCY OVERVIEW

Appearance: yellow to brown powder.

**Danger!** May cause harm to the unborn child. May impair fertility. May cause eye, skin, and respiratory tract irritation. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Cancer hazard. May cause allergic skin reaction. May cause heritable genetic damage.

**Target Organs:** Reproductive system, skin.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation. May be harmful if absorbed through the skin. May cause an allergic reaction in certain individuals.

**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.

**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. May be harmful if inhaled.

**Chronic:** May cause cancer in humans. May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects.

## Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** Not available.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 0; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs

Benzo[a]pyrene	0.2 mg/m3 TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m3 TWA (cyclohexane-extractable fraction) (listed under Coal tar pitches).80 mg/m3 IDLH (listed under Coal tar pitches).	0.2 mg/m3 TWA (as benzene soluble fraction) (listed under Coal tar pitches).
----------------	---	---	--

**OSHA Vacated PELs:** Benzo[a]pyrene: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Powder

**Appearance:** yellow to brown

**Odor:** faint aromatic odor

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:**Not available.

**Viscosity:** Not available.

**Boiling Point:** 495 deg C @ 760 mm Hg

**Freezing/Melting Point:**175 - 179 deg C

**Decomposition Temperature:**Not available.

**Solubility:** 1.60x10<sup>-3</sup> mg/l @25°C

**Specific Gravity/Density:**Not available.

**Molecular Formula:**C<sub>20</sub>H<sub>12</sub>

**Molecular Weight:**252.31

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Dust generation.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 50-32-8: DJ3675000

**LD50/LC50:**

Not available.

**Carcinogenicity:**

CAS# 50-32-8:

- **ACGIH:** A2 - Suspected Human Carcinogen
- **California:** carcinogen, initial date 7/1/87
- **NTP:** Suspect carcinogen
- **IARC:** Group 1 carcinogen (listed as Coal tar pitches).

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** Adverse reproductive effects have occurred in experimental animals.

**Mutagenicity:** Mutagenic effects have occurred in humans. Mutagenic effects have occurred in experimental animals.

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:**

CAS# 50-32-8: waste number U022.

## Section 14 - Transport Information

	<b>US DOT</b>	<b>Canada TDG</b>
<b>Shipping Name:</b>	NOT REGULATED FOR DOMESTIC TRANSPORT	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOL (Benzo{a} pyrene)
<b>Hazard Class:</b>		9
<b>UN Number:</b>		UN3077
<b>Packing Group:</b>		III

## Section 15 - Regulatory Information

**US FEDERAL**

**TSCA**

CAS# 50-32-8 is listed on the TSCA inventory.

**Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

CAS# 50-32-8: 1 lb final RQ; 0.454 kg final RQ

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 50-32-8: immediate, delayed.

**Section 313**

This material contains Benzo[a]pyrene (CAS# 50-32-8, >96%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR

**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

CAS# 50-32-8 is listed as a Priority Pollutant under the Clean Water Act.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 50-32-8 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

**California Prop 65****The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:**

WARNING: This product contains Benzo[a]pyrene, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 50-32-8: 0.06  $\mu$ g/day NSRL

**European/International Regulations****European Labeling in Accordance with EC Directives****Hazard Symbols:**

T N

**Risk Phrases:**

R 43 May cause sensitization by skin contact.

R 45 May cause cancer.

R 46 May cause heritable genetic damage.

R 60 May impair fertility.

R 61 May cause harm to the unborn child.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases:**

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

- S 53 Avoid exposure - obtain special instructions before use.  
S 60 This material and its container must be disposed of as hazardous waste.  
S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

**WGK (Water Danger/Protection)**

CAS# 50-32-8: No information available.

**Canada - DSL/NDSL**

CAS# 50-32-8 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

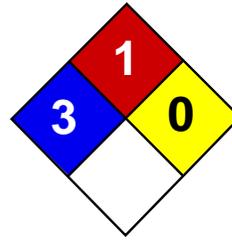
CAS# 50-32-8 is listed on the Canadian Ingredient Disclosure List.

<b>Section 16 - Additional Information</b>
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**MSDS Creation Date:** 9/02/1997

**Revision #7 Date:** 6/30/2006

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*



Health	3
Fire	1
Reactivity	0
Personal Protection	E

# Material Safety Data Sheet

## Cadmium MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Cadmium

**Catalog Codes:** SLC3484, SLC5272, SLC2482

**CAS#:** 7440-43-9

**RTECS:** EU9800000

**TSCA:** TSCA 8(b) inventory: Cadmium

**CI#:** Not applicable.

**Synonym:**

**Chemical Name:** Cadmium

**Chemical Formula:** Cd

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Cadmium	7440-43-9	100

**Toxicological Data on Ingredients:** Cadmium: ORAL (LD50): Acute: 2330 mg/kg [Rat.]. 890 mg/kg [Mouse]. DUST (LC50): Acute: 50 ppm 4 hour(s) [Rat].

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant). Severe over-exposure can result in death.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP.

**MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance is toxic to kidneys, lungs, liver. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

### Section 4: First Aid Measures

**Eye Contact:** No known effect on eye contact, rinse with water for a few minutes.

**Skin Contact:**

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

**Serious Skin Contact:** Not available.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion:**

Do not induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** 570°C (1058°F)

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Some metallic oxides.

**Fire Hazards in Presence of Various Substances:**

Non-flammable in presence of open flames and sparks, of heat, of oxidizing materials, of reducing materials, of combustible materials, of moisture.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:**

Material in powder form, capable of creating a dust explosion. When heated to decomposition it emits toxic fumes.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

**Precautions:**

Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

**Storage:**

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

TWA: 0.01 (ppm) Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Lustrous solid.)

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 112.4 g/mole

**Color:** Silvery.

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 765°C (1409°F)

**Melting Point:** 320.9°C (609.6°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 8.64 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Reactive with oxidizing agents.

**Corrosivity:** Not considered to be corrosive for metals and glass.

**Special Remarks on Reactivity:** Reacts violently with potassium.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

### Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 890 mg/kg [Mouse]. Acute toxicity of the dust (LC50): 229.9 mg/m<sup>3</sup> 4 hour(s) [Rat].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A2 (Suspected for human.) by ACGIH, 2 (Reasonably anticipated.) by NTP. The substance is toxic to kidneys, lungs, liver.

**Other Toxic Effects on Humans:**

Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** An allergen. 0047 Animal: embryotoxic, passes through the placental barrier.

**Special Remarks on other Toxic Effects on Humans:** May cause allergic reactions, exzema and/or dehydration of the skin.

### Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are as toxic as the original product.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

### Section 14: Transport Information

**DOT Classification:**

**Identification:**

**Special Provisions for Transport:**

## Section 15: Other Regulatory Information

### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Cadmium California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Cadmium Pennsylvania RTK: Cadmium Massachusetts RTK: Cadmium TSCA 8(b) inventory: Cadmium SARA 313 toxic chemical notification and release reporting: Cadmium CERCLA: Hazardous substances.: Cadmium

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

### Other Classifications:

#### WHMIS (Canada):

CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

#### DSCL (EEC):

R26- Very toxic by inhalation. R45- May cause cancer.

#### HMIS (U.S.A.):

**Health Hazard:** 3

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** E

#### National Fire Protection Association (U.S.A.):

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

#### Protective Equipment:

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

## Section 16: Other Information

### References:

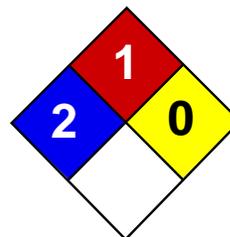
-Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987. -Liste des produits purs tératogènes, mutagènes, cancérogènes. Répertoire toxicologique de la Commission de la Santé et de la Sécurité du Travail du Québec. -Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec. -SAX, N.I. Dangerous Properties of Industrial Materials. Toronto, Van Nostrand Reinold, 6e ed. 1984. -The Sigma-Aldrich Library of Chemical Safety Data, Edition II. -Guide de la loi et du règlement sur le transport des marchandises dangereuses au Canada. Centre de conformité international Ltée. 1986.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 04:29 PM

**Last Updated:** 06/09/2012 12:00 PM

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Health	2
Fire	1
Reactivity	0
Personal Protection	E

# Material Safety Data Sheet

## Chromium MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Chromium

**Catalog Codes:** SLC4711, SLC3709

**CAS#:** 7440-47-3

**RTECS:** GB4200000

**TSCA:** TSCA 8(b) inventory: Chromium

**CI#:** Not applicable.

**Synonym:** Chromium metal; Chrome; Chromium Metal Chips 2" and finer

**Chemical Name:** Chromium

**Chemical Formula:** Cr

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Chromium	7440-47-3	100

**Toxicological Data on Ingredients:** Chromium LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC.

MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, lungs, liver, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** 580°C (1076°F)

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Some metallic oxides.

**Fire Hazards in Presence of Various Substances:**

Slightly flammable to flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:**

Moderate fire hazard when it is in the form of a dust (powder) and burns rapidly when heated in flame. Chromium is attacked vigorously by fused potassium chlorate producing vivid incandescence. Pyrophoric chromium unites with nitric oxide with incandescence. Incandescent reaction with nitrogen oxide or sulfur dioxide.

**Special Remarks on Explosion Hazards:**

Powdered Chromium metal +fused ammonium nitrate may react violently or explosively. Powdered Chromium will explode spontaneously in air.

## Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

### Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

### Personal Protection:

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

TWA: 0.5 (mg/m<sup>3</sup>) from ACGIH (TLV) [United States] TWA: 1 (mg/m<sup>3</sup>) from OSHA (PEL) [United States] TWA: 0.5 (mg/m<sup>3</sup>) from NIOSH [United States] TWA: 0.5 (mg/m<sup>3</sup>) [United Kingdom (UK)] TWA: 0.5 (mg/m<sup>3</sup>) [Canada] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Metal solid.)

**Odor:** Odorless.

**Taste:** Not available.

**Molecular Weight:** 52 g/mole

**Color:** Silver-white to Grey.

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 2642°C (4787.6°F)

**Melting Point:** 1900°C (3452°F) +/- !0 deg. C

**Critical Temperature:** Not available.

**Specific Gravity:** 7.14 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:**

Insoluble in cold water, hot water. Soluble in acids (except Nitric), and strong alkalies.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Excess heat, incompatible materials

**Incompatibility with various substances:** Reactive with oxidizing agents, acids, alkalis.

**Corrosivity:** Not available.

**Special Remarks on Reactivity:**

Incompatible with molten Lithium at 180 deg. C, hydrogen peroxide, hydrochloric acid, sulfuric acid, most caustic alkalies and alkali carbonates, potassium chlorate, sulfur dioxide, nitrogen oxide, bromine pentafluoride. It may react violently or ignite with bromine pentafluoride. Chromium is rapidly attacked by fused sodium hydroxide + potassium nitrate. Potentially hazardous incompatibility with strong oxidizers.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

### Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available. LC50: Not available.

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal.) by ACGIH, 3 (Not classifiable for human.) by IARC. May cause damage to the following organs: kidneys, lungs, liver, upper respiratory tract.

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of inhalation. Slightly hazardous in case of ingestion.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**

May cause cancer based on animal data. There is no evidence that exposure to trivalent chromium causes cancer in man.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: May cause skin irritation. Eyes: May cause mechanical eye irritation. Inhalation: May cause irritation of the respiratory tract and mucous membranes of the respiratory tract. Ingestion: May cause gastrointestinal tract irritation with nausea, vomiting, diarrhea. Chronic Potential Health Effects: Inhalation: The effects of chronic exposure include irritation, sneezing, redness of the throat, bronchospasm, asthma, cough, polyps, chronic inflammation, emphysema, chronic bronchitis, pharyngitis, bronchopneumonia, pneumoconiosis. Effects on the nose from chronic chromium exposure include irritation, ulceration, and perforation of the nasal septum. Inflammation and ulceration of the larynx may also occur. Ingestion or Inhalation: Chronic exposure may cause liver and kidney damage.

### Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

**Section 13: Disposal Considerations****Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14: Transport Information**

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

**Section 15: Other Regulatory Information****Federal and State Regulations:**

Connecticut hazardous material survey.: Chromium Illinois toxic substances disclosure to employee act: Chromium Illinois chemical safety act: Chromium New York release reporting list: Chromium Rhode Island RTK hazardous substances: Chromium Pennsylvania RTK: Chromium Minnesota: Chromium Michigan critical material: Chromium Massachusetts RTK: Chromium Massachusetts spill list: Chromium New Jersey: Chromium New Jersey spill list: Chromium Louisiana spill reporting: Chromium California Director's List of Hazardous Substances: Chromium TSCA 8(b) inventory: Chromium SARA 313 toxic chemical notification and release reporting: Chromium CERCLA: Hazardous substances.: Chromium: 5000 lbs. (2268 kg)

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

R40- Limited evidence of carcinogenic effect S36/37/39- Wear suitable protective clothing, gloves and eye/face protection. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Splash goggles.

**Section 16: Other Information**

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:16 PM

**Last Updated:** 06/09/2012 12:00 PM

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# SAFETY DATA SHEET

Based on Directive 2001/58/EC of the Commission of the European Communities

## CHRYSENE

### 1. Identification of the substance/preparation and of the company/undertaking

#### 1.1 Identification of the substance or preparation:

**Synonyms:** none  
**CAS No.:** 218-01-9      **BCR number:** BCR-269  
**EC index No.:** 601-048-00-0      **NFPA code:** N.D.  
**EINECS No.:** 205-923-4      **Molecular weight:** 228.30  
**RTECS No.:** GC0700000      **Formula:** C18H12

#### 1.2 Use of the substance or the preparation:

Certified reference material for laboratory use only

#### 1.3 Company/undertaking identification:

Institute for Reference Materials and Measurements  
Retieseweg  
B-2440 Geel  
Tel. : +32 14 57 12 11  
Fax : +32 14 58 42 73

#### 1.4 Telephone number for emergency:

+32 70 245 245  
Antigifcentrum  
p/a Militair Hospitaal Koningin Astrid, Bruynstraat, B-1120 Brussel

### 2. Composition/information on ingredients

Hazardous ingredients	CAS No. EINECS No.	Conc. in %	Hazard symbol	Risks (R-phrases)
chrysene	218-01-9 205-923-4	100	T;N	45-50/53 (1)

(1) For R-phrases in full: see heading 16

### 3. Hazards identification

- May cause cancer
- Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### 4. First aid measures

#### 4.1 Eye contact:

- Consult a doctor/medical service if irritation persists
- Rinse immediately with water

#### 4.2 Skin contact:

- Consult a doctor/medical service if irritation persists
- Wash with water and soap
- Wipe off dry product from skin
- Remove clothing before washing

#### 4.3 After inhalation:

- Consult a doctor/medical service if breathing problems develop
- Remove the victim into fresh air
- Unconscious: maintain adequate airway and respiration

#### 4.4 After ingestion:

- Consult a doctor/medical service if you feel unwell
- Immediately give lots of water to drink
- Never give water to an unconscious person

Printing date : 07-2002  
Compiled by : Brandweerinformatiecentrum voor Gevaarlijke Stoffen vzw (BIG)  
Technische Schoolstraat 43 A, B-2440 Geel  
☎ +32 14 58 45 47      <http://www.big.be>      E-mail: info@big.be

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MSDS established :  
Reference number : BIG\18207GB  
Reason for revision : Directive 2001/58/EC  
Revision date : 22-03-2002  
Revision number : 001

# CHRYSENE

- Do not induce vomiting

# CHRYSENE

## 5. Fire-fighting measures

### 5.1 Suitable extinguishing media:

- Water spray
- Alcohol foam
- Polymer foam
- ABC powder
- Carbon dioxide

### 5.2 Unsuitable extinguishing media:

- Solid water jet ineffective as extinguishing medium

### 5.3 Special exposure hazards:

- Not easily combustible
- Upon combustion CO and CO2 are formed

### 5.4 Instructions:

- Take account of toxic firefighting water
- Use firefighting water moderately and contain it

### 5.5 Special protective equipment for firefighters:

- Heat/fire exposure: compressed air/oxygen apparatus
- Dust cloud production: compressed air/oxygen apparatus

## 6. Accidental release measures

### 6.1 Personal protection/precautions: see heading 8.1/8.3/10.3

### 6.2 Environmental precautions:

- Prevent soil and water pollution
- Substance must not be discharged into the sewer
- Dam up the solid spill

### 6.3 Methods for cleaning up:

- Stop dust cloud by covering with sand/earth
- Carefully collect the spill/leftovers
- Scoop solid spill into closing containers
- Spill must not return in its original container
- Take collected spill to manufacturer/competent authority
- Clean contaminated surfaces with an excess of water
- Wash clothing and equipment after handling

## 7. Handling and storage

### 7.1 Handling:

- Observe strict hygiene
- Avoid prolonged and repeated contact with skin
- Avoid raising dust
- Do not discharge the waste into the drain
- Remove contaminated clothing immediately

### 7.2 Storage:

- Keep container tightly closed. Store only in a limited quantity. Store in a dry area. Store in a dark area.
- Keep away from: heat sources, ignition sources, oxidizing agents, acids

Storage temperature	: N.D.	°C
Quantity limits	: N.D.	kg
Storage life	: N.D.	
Materials for packaging	:	
- suitable	:no data available	
- to avoid	:no data available	

### 7.3 Specific uses:

- See information supplied by the manufacturer

# CHRYSENE

## 8. Exposure controls/Personal protection

### 8.1 Exposure limit values:

TLV-TWA	: not listed
TLV-STEL	: not listed
TLV-Ceiling	: not listed
OES-LTEL	: not listed
OES-STEL	: not listed
MEL-LTEL	: not listed
MEL-STEL	: not listed
MAK	: not listed
TRK	: not listed
MAC-TGG 8 h	: not listed
MAC-TGG 15 min.	: not listed
MAC-Ceiling	: not listed
VME-8 h	: not listed
VLE-15 min.	: not listed
GWBB-8 h	: not listed
GWK-15 min.	: not listed
Momentary value	: not listed
EC	: not listed
EC-STEL	: not listed

### Sampling methods:

- Chrysene (Polynuclear aromatic Hydrocarbons)	NIOSH 5515
- Chrysene	OSHA 58
- Chrysene (Polynuclear aromatic Hydrocarbons)	NIOSH 5506

### 8.2 Exposure controls:

#### 8.2.1 Occupational exposure controls:

- Measure the concentration in the air regularly
- Work under local exhaust/ventilation

#### 8.2.2 Environmental exposure controls: see heading 13

### 8.3 Personal protection:

#### 8.3.1 respiratory protection:

- Dust production: dust mask with filter type P3
- High dust production: compressed air/oxygen apparatus

#### 8.3.2 hand protection:

- Gloves  
Suitable materials: No data available
- Breakthrough time: N.D.

#### 8.3.3 eye protection:

- Safety glasses
- In case of dust production: protective goggles

#### 8.3.4 skin protection:

- Protective clothing
- In case of dust production: head/neck protection  
Suitable materials: No data available

# CHRYSENE

## 9. Physical and chemical properties

### 9.1 General information:

Appearance (at 20°C) : Crystalline solid / Flakes  
Odour : Odourless  
Colour : White

### 9.2 Important health, safety and environmental information:

pH value : N.D.  
Boiling point/boiling range : 448 °C  
Flashpoint : N.D. °C  
Explosion limits : N.D. vol% ( °C)  
Vapour pressure (at 20°C) : N.D. hPa  
Vapour pressure (at 50°C) : N.D. hPa  
Relative density (at 20°C) : 1.27  
Water solubility : < 0.001 g/100 ml  
Soluble in : N.D.  
Relative vapour density : N.D.  
Viscosity : N.D. Pa.s  
Partition coefficient n-octanol/water : 5.61/5.73  
Evaporation rate :  
    ratio to butyl acetate : N.D.  
    ratio to ether : N.D.

### 9.3 Other information:

Melting point/melting range : 256 °C  
Auto-ignition point : N.D. °C  
Saturation concentration : N.D. g/m<sup>3</sup>

## 10. Stability and reactivity

### 10.1 Conditions to avoid/reactivity:

- Stable under normal conditions

### 10.2 Materials to avoid:

- Keep away from: heat sources, ignition sources, oxidizing agents, acids

### 10.3 Hazardous decomposition products:

- Upon combustion CO and CO<sub>2</sub> are formed  
- Reacts violently with (strong) oxidizers  
- Decomposes on exposure to (strong) acids

## 11. Toxicological information

### 11.1 Acute toxicity:

LD50 oral rat : N.D. mg/kg  
LD50 dermal rat : N.D. mg/kg  
LD50 dermal rabbit : N.D. mg/kg  
LC50 inhalation rat : N.D. mg/l/4 h  
LC50 inhalation rat : N.D. ppm/4 h

# CHRYSENE

## 11.2 Chronic toxicity:

EC carc. cat. : 2  
EC muta. cat. : 3  
EC repr. cat. : not listed

Carcinogenicity (TLV) : A3  
Carcinogenicity (MAC) : K  
Carcinogenicity (VME) : not listed  
Carcinogenicity (GWBB) : not listed

Carcinogenicity (MAK) : 2  
Mutagenicity (MAK) : not listed  
Teratogenicity (MAK) : -

IARC classification : 3

11.3 Routes of exposure: ingestion, inhalation, eyes and skin  
Caution! Substance is absorbed through the skin

## 11.4 Acute effects/symptoms:

**AFTER SKIN CONTACT**  
- Slight irritation

## 11.5 Chronic effects:

- Probably human carcinogenic
  - No certainty about human mutagenic properties
- ON CONTINUOUS/REPEATED EXPOSURE/CONTACT:
- No specific information available
- SIMILAR PRODUCTS CAUSE FOLLOWING SYMPTOMS:
- Feeling of weakness
  - Photoallergy
  - Cracking of the skin
  - Skin rash/inflammation
  - Skin cancer
  - Lung tissue affection/degeneration
  - Enlargement/affection of the liver
  - Affection of the renal tissue

## 12. Ecological information

### 12.1 Ecotoxicity:

- LC50 (24 h) : 0.0007 mg/l (DAPHNIA MAGNA)
- LC50 (24 h) : >6.7 mg/l (RANA SP.)

### 12.2 Mobility:

- **Volatile organic compounds (VOC):** N.D.%
- Forming sediments in water
- Adsorbs into the soil
- Insoluble in water

For other physicochemical properties see heading 9.

### 12.3 Persistence and degradability:

- **biodegradation BOD<sub>5</sub>** : N.D. % ThOD
- **water** : - Not readily biodegradable in water
- **soil** : **T ½:** > 77 **days**

### 12.4 Bioaccumulative potential:

- **log P<sub>ow</sub>** : 5.61/5.73
- **BCF** : 4440 (LAMELLIBRANCHIATA)
- Highly bioaccumulative

## 12.5 Other adverse effects:

- **WGK** : 3 (Classification based on the R-phrases in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 17 May 1999)
- **Effect on the ozone layer** : Not dangerous for the ozone layer (Council Regulation (EC) 3093/94)
- **Greenhouse effect** : no data available
- **Effect on waste water purification** : no data available

## 13. Disposal considerations

### 13.1 Provisions relating to waste:

- Waste material code (91/689/EEC, Council Decision 2001/118/EC, O.J. L47 of 16/2/2001): 16 05 06 (laboratory chemicals, consisting of or containing dangerous substances, including mixtures of laboratory)
- Waste material code (Flanders): 001, 045, 691
- Waste code (Germany): 59302
- Hazardous waste (91/689/EEC)

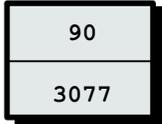
### 13.2 Disposal methods:

- Dissolve or mix with a combustible solvent
- Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber
- Do not discharge into surface water (2000/60/EEC, Council)

### 13.3 Packaging/Container:

- Waste material code packaging (91/689/EEC, Council Decision 2001/118/EC, O.J. L47 of 16/2/2001): 15 01 10 (packaging containing residues of or contaminated by dangerous substances)

## 14. Transport information



- 14.1 Classification of the substance in compliance with UN Recommendations
- |                      |  |
|----------------------|--|
| UN number            | : 3077   |
| CLASS                | : 9  |
| SUB RISKS            | : -  |
| PACKING              | : III  |
| PROPER SHIPPING NAME | : UN 3077, Environmentally hazardous substance, solid, n.o.s. (chrysene) |
- 14.2 ADR (transport by road)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.3 RID (transport by rail)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.4 ADNR (transport by inland waterways)
- |                       |       |
|-----------------------|-------|
| CLASS                 | : 9   |
| PACKING               | : III |
| DANGER LABEL TANKS    | : 9   |
| DANGER LABEL PACKAGES | : 9   |
- 14.5 IMDG (maritime transport)
- |                  |       |
|------------------|-------|
| CLASS            | : 9   |
| SUB RISKS        | : -   |
| PACKING          | : III |
| MFAG             | : -   |
| EMS              | : -   |
| MARINE POLLUTANT | : P   |
- 14.6 ICAO (air transport)
- |   |       |
|---|-------|
| CLASS                                   | : 9   |
| SUB RISKS                               | : -   |
| PACKING                                 | : III |
| PACKING INSTRUCTIONS PASSENGER AIRCRAFT | :     |
| PACKING INSTRUCTIONS CARGO AIRCRAFT     | :     |
- 14.7 Special precautions in connection with transport : none
- 14.8 Limited quantities (LQ) :

When substances and their packaging meet the conditions established by ADR/RID/ADNR in chapter 3.4, **only** the following prescriptions shall be complied with:

each package shall display a diamond-shaped figure with the following inscription:

- 'UN 3077'

or, in the case of different goods with different identification numbers within a single package:

- the letters 'LQ'

# CHRYSENE

## 15. Regulatory information

Enumerated in substance list Annex I of directive 67/548/EEC et sequens



Toxic



Dangerous for the environment

- R45 : May cause cancer  
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
- S53 : Avoid exposure - obtain special instructions before use  
S45 : In case of accident or if you feel unwell, seek medical advice (show the label where possible)  
S60 : This material and/or its container must be disposed of as hazardous waste  
S61 : Avoid release to the environment. Refer to special instructions/safety data sheets.

## 16. Other information

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

N.A. = NOT APPLICABLE  
N.D. = NOT DETERMINED  
\* = INTERNAL CLASSIFICATION

### Full text of any R-phrases referred to under heading 2:

- R45 : May cause cancer  
R50/53 : Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment

### Exposure limits:

TLV : Threshold Limit Value - ACGIH USA 2000  
OES : Occupational Exposure Standards - United Kingdom 1999  
MEL : Maximum Exposure Limits - United Kingdom 1999  
MAK : Maximale Arbeitsplatzkonzentrationen - Germany 2001  
TRK : Technische Richtkonzentrationen - Germany 2001  
MAC : Maximale aanvaarde concentratie - The Netherlands 2002  
VME : Valeurs limites de Moyenne d'Exposition - France 1999  
VLE : Valeurs limites d'Exposition à court terme - France 1999  
GWBB : Grenswaarde beroepsmatige blootstelling - Belgium 1998  
GWK : Grenswaarde kortstondige blootstelling - Belgium 1998  
EC : Indicative occupational exposure limit values - directive 2000/39/EC

### Chronic toxicity:

K : List of the carcinogenic substances and processes - The Netherlands 2002



**MATERIAL SAFETY DATA SHEET**

**PRODUCT NAME: AIR, COMPRESSED**

**1. Chemical Product and Company Identification**

**BOC Gases,  
Division of  
The BOC Group, Inc.  
575 Mountain Avenue  
Murray Hill, NJ 07974**

**BOC Gases  
Division of  
BOC Canada Limited  
5975 Falbourn Street, Unit 2  
Mississauga, Ontario L5R 3W6**

**TELEPHONE NUMBER: (908) 464-8100**

**TELEPHONE NUMBER: (905) 501-1700**

**24-HOUR EMERGENCY TELEPHONE NUMBER:  
CHEMTREC (800) 424-9300**

**24-HOUR EMERGENCY TELEPHONE NUMBER:  
(905) 501-0802**

**EMERGENCY RESPONSE PLAN NO: 20101**

**PRODUCT NAME: AIR, COMPRESSED or COMPRESSED OXYGEN AND NITROGEN MIXTURE**

**CHEMICAL NAME: Oxygen and Nitrogen Mixture**

**COMMON NAMES/SYNONYMS: Compressed Oxygen and Nitrogen Mixture**

**TDG (Canada) CLASSIFICATION: 2.2 (5.1)**

**WHMIS CLASSIFICATION: A, C**

**PREPARED BY: Loss Control (908)464-8100/(905)501-1700**

**PREPARATION DATE: 6/1/95**

**REVIEW DATES: 6/7/96**

**2. Composition, Information on Ingredients**

INGREDIENT	% VOLUME	PEL-OSHA <sup>1</sup>	TLV-ACGIH <sup>2</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Nitrogen FORMULA: N <sub>2</sub> CAS: 7727-37-9 RTECS #: QW9700000	2.0 to 98.0	Simple Asphyxiant	Simple Asphyxiant	Not Available
Oxygen FORMULA: O <sub>2</sub> CAS: 7782-44-7 RTECS #: RS2060000	2.0 to 98.0	Not Available	Not Available	Not Available

<sup>1</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>2</sup> As stated in the ACGIH 1994-95 Threshold Limit Values for Chemical Substances and Physical Agents

**3. Hazards Identification**

**EMERGENCY OVERVIEW**  
Mixtures with less than 19.5% oxygen act as an asphyxiant. Effects may include headaches, dizziness and loss of consciousness. High oxygen concentrations may promote combustion of flammable materials.

**ROUTE OF ENTRY:**

Skin Contact No	Skin Absorption No	Eye Contact No	Inhalation Yes	Ingestion No
--------------------	-----------------------	-------------------	-------------------	-----------------

PRODUCT NAME: AIR, COMPRESSED

**HEALTH EFFECTS:**

Exposure Limits No	Irritant No	Sensitization No
Teratogen No	Reproductive Hazard No	Mutagen Yes
Synergistic Effects None Reported		

Carcinogenicity: -- NTP: No IARC: No OSHA: No

**EYE EFFECTS:**

None known.

**SKIN EFFECTS:**

None known.

**INGESTION EFFECTS:**

None known.

**INHALATION EFFECTS:**

Air is nontoxic and necessary to support life. Mixtures with less than 19.5% oxygen act as an asphyxiant. Effects may include headaches, dizziness and loss of consciousness.

Not to be used as breathing air!

**NFPA HAZARD CODES**

Health: 0  
Flammability: 0  
Reactivity: 0

**HMIS HAZARD CODES**

Health: 0  
Flammability: 0  
Reactivity: 0

**RATINGS SYSTEM**

0 = No Hazard  
1 = Slight Hazard  
2 = Moderate Hazard  
3 = Serious Hazard  
4 = Severe Hazard

**4. First Aid Measures**

**EYES:**

None required.

**SKIN:**

None required.

**INGESTION:**

None required.

PRODUCT NAME: AIR, COMPRESSED

**INHALATION:**

Not to be used as breathing air!

PROMPT MEDICAL ATTENTION IS MANDATORY IN ALL CASES OF OVEREXPOSURE. RESCUE PERSONNEL SHOULD BE EQUIPPED WITH SELF-CONTAINED BREATHING APPARATUS.

Victims should be assisted to an uncontaminated area and inhale fresh air. Quick removal from the contaminated is most important. Unconscious persons should be moved to an uncontaminated area. If they are not breathing, administer artificial resuscitation. Further treatment should be symptomatic and supportive.

**5. Fire Fighting Measures**

Conditions of Flammability: Oxidizer		
Flash point: None	Method: Not Applicable	Autoignition Temperature: None
LEL(%): None	UEL(%): None	
Hazardous combustion products: None		
Sensitivity to mechanical shock: None		
Sensitivity to static discharge: None		

**FIRE AND EXPLOSION HAZARDS:**

High oxygen concentrations vigorously accelerate combustion.

**EXTINGUISHING MEDIA:**

Water spray to keep cylinders cool.

**FIRE FIGHTING INSTRUCTIONS:**

If possible, stop the flow of gas which is supporting the fire.

**6. Accidental Release Measures**

Evacuate all personnel from affected area. Use appropriate protective equipment. If leak is in user's equipment, be certain to purge piping with inert gas prior to attempting repairs. If leak is in container or container valve, contact the appropriate emergency telephone number listed in Section 1 or call your closest BOC location.

**7. Handling and Storage**

**Electrical classification:**

Nonhazardous.

Dry air is noncorrosive and may be used with all materials of construction. Moisture causes metal oxides which are formed with air to be hydrated so that they include volume and lose their protective role (rust formation). Concentrations of SO<sub>2</sub>, Cl<sub>2</sub>, salt, etc. in the moisture enhances the rusting of metals in air.

Oxygen should not be used as a substitute for compressed air in pneumatic equipment since this type of tool generally contains flammable lubricants.

Valve protection caps must remain in place unless container is secured with valve outlet piped to use point. Do not drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Use a pressure reducing regulator when connecting cylinder to lower pressure (<3000 psig) piping or systems. Do not heat cylinder by

MSDS: G-113

Revised: 6/7/96

**PRODUCT NAME: AIR, COMPRESSED**

any means to increase the discharge rate of product from the cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the system.

Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 130°F (54°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time. Post "NO SMOKING OR OPEN FLAMES" signs in the storage area or use area. There should be no sources of ignition in the storage or use area.

For additional storage recommendations, consult Compressed Gas Association Pamphlets P-1, G-7, and G-7.1.

Never carry a compressed gas cylinder or a container of a gas in cryogenic liquid form in an enclosed space such as a car trunk, van or station wagon. A leak can result in a fire, explosion, asphyxiation or a toxic exposure.

## 8. Exposure Controls, Personal Protection

### EXPOSURE LIMITS<sup>1</sup>:

INGREDIENT	% VOLUME	PEL-OSHA <sup>2</sup>	TLV-ACGIH <sup>3</sup>	LD <sub>50</sub> or LC <sub>50</sub> Route/Species
Nitrogen FORMULA: N <sub>2</sub> CAS: 7727-37-9 RTECS #: QW9700000	2.0 to 98.0	Simple Asphyxiant	Simple Asphyxiant	Not Available
Oxygen FORMULA: O <sub>2</sub> CAS: 7782-44-7 RTECS #: RS2060000	2.0 to 98.0	Not Available	Not Available	Not Available ]

<sup>1</sup> Refer to individual state or provincial regulations, as applicable, for limits which may be more stringent than those listed here.

<sup>2</sup> As stated in 29 CFR 1910, Subpart Z (revised July 1, 1993)

<sup>3</sup> As stated in the ACGIH 1994-1995 Threshold Limit Values for Chemical Substances and Physical Agents.

### EYE/FACE PROTECTION:

Safety goggles or glasses.

### SKIN PROTECTION:

Protective gloves made of any suitable material.

### OTHER/GENERAL PROTECTION:

Safety shoes, safety shower.

## 9. Physical and Chemical Properties

PARAMETER	VALUE	UNITS
Physical state (gas, liquid, solid)	: Gas	
Vapor pressure	: Above critical temp.	psia
Vapor density at STP (Air = 1)	: 1.0	
Evaporation point	: Not Available	
Boiling point	: -317.8	°F
	: -194	°C
Freezing point	: Not Available	
	: Not Available	
pH	: Not Available	
Specific gravity	: Not Available	
Oil/water partition coefficient	: Not Available	
Solubility (H2O)	: Slightly soluble	
Odor threshold	: Not Applicable	
Odor and appearance	: Odorless; Colorless Gas	

## 10. Stability and Reactivity

### STABILITY:

Stable

### INCOMPATIBLE MATERIALS:

All flammable materials.

### HAZARDOUS DECOMPOSITION PRODUCTS:

None

### HAZARDOUS POLYMERIZATION:

Will not occur.

## 11. Toxicological Information

### REPRODUCTIVE:

Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

### MUTAGENIC:

Oxygen concentrations between 20 to 95% have produced genetic changes in mammalian cell assay test systems.

### OTHER:

High pressure effects (greater than two atmospheres of oxygen) are on the central nervous system. Improper decompression results in the accumulation of nitrogen in the blood.

NOTE: Compressed air is not intended for breathing use, since its oxygen contents may be below that which supports life.

## 12. Ecological Information

PRODUCT NAME: AIR, COMPRESSED

No data given.

### 13. Disposal Considerations

Do not attempt to dispose of residual waste or unused quantities. Return in the shipping container PROPERLY LABELED, WITH ANY VALVE OUTLET PLUGS OR CAPS SECURED AND VALVE PROTECTION CAP IN PLACE to BOC Gases or authorized distributor for proper disposal.

### 14. Transport Information \*

Parameter	United States DOT	Canada TDG
PROPER SHIPPING NAME:	Air, Compressed Compressed gases, n.o.s. (Oxygen, Nitrogen)/ Compressed gases, oxidizing, n.o.s. (Oxygen, Nitrogen)	Air, Compressed Compressed gases, n.o.s. (Oxygen, Nitrogen)/ Compressed gases, oxidizing, n.o.s. (Oxygen, Nitrogen)
HAZARD CLASS:	2.2	2.2 (5.1)
DOT ID NUMBER:	UN 1002 UN 1956 UN 3156	UN 1002 UN 1956 UN 3156
SHIPPING LABEL:	NONFLAMMABLE GAS NONFLAMMABLE GAS NONFLAMMABLE GAS, OXIDIZER	NONFLAMMABLE GAS NONFLAMMABLE GAS NONFLAMMABLE GAS, OXIDIZER

\* Transport information is dependent on oxygen concentration. At concentrations greater than 22.5% oxygen, this product is classified as Compressed gases, oxidizing, n.o.s. At oxygen concentrations less than or equal to 22.5%, this product is classified as compressed gases, n.o.s.

### 15. Regulatory Information

#### SARA TITLE III NOTIFICATIONS AND INFORMATION

#### SARA TITLE III - HAZARD CLASSES:

Sudden Release of Pressure Hazard

### 16. Other Information

Compressed gas cylinders shall not be refilled without the express written permission of the owner. Shipment of a compressed gas cylinder which has not been filled by the owner or with his/her (written) consent is a violation of transportation regulations.

#### DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES:

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).



ERROR: undefined  
OFFENDING COMMAND: get

STACK:

/quit  
-dictionary-  
-mark-

# Safety data for dibenz(a,h)anthracene



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[Glossary](#) of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

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## General

Synonyms: 1,2:5,6-benzanthracene, 1,2:5,6-dibenzanthracene, dibenzo(a,h)anthracene, DBA, 1,2,5,6-DBA

Use: a common pollutant in smoke and used oils

Molecular formula:  $C_{22}H_{14}$

CAS No: 53-70-3

EINECS No: 200-181-8

Annex I Index. No: 601-041-00-2

## Physical data

Appearance: white to light yellow crystalline solid

Melting point: 266 - 267 C

Boiling point: 524 C

Vapour density:

Vapour pressure:

Density ( $g\ cm^{-3}$ ): 1.28

Flash point:

Explosion limits:

Autoignition temperature:

Water solubility:

## Stability

Stable. Combustible. Incompatible with strong oxidizing agents.

## Toxicology

Harmful if swallowed or inhaled. Experimental carcinogen, tumorigen and neoplastigen. IARC probable human carcinogen.

### Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given [here.](#))

IVN-MUS LDLO 10 mg kg<sup>-1</sup>

### Risk phrases

(The meaning of any risk phrases which appear in this section is given [here.](#))

R45 R50 R53.

## Environmental information

Harmful in the environment - may cause long-term damage.

## Transport information

(The meaning of any UN hazard codes which appear in this section is given [here.](#))

Non-hazardous for air, sea and road freight.

## Personal protection

Safety glasses, gloves, good ventilation. Handle as a possible carcinogen.

### Safety phrases

(The meaning of any safety phrases which appear in this section is given [here.](#))

S45 S53 S60 S61.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page.](#)]

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## MSDS SUMMARY SHEET

**Manufacturer:**

**Name:** PHILLIPS PETROLEUM COMPANY

**Address 1:**

**Address 2:**

**Address 3:**

**CSZ:** BARTLESVILLE **State:** OK **Zipcode:** 74004

**Emergency phone:** (800) 424-9300

**Business phone:** 800-762-0942

**Product:**

**Ferndale MSDS#:** 1354 **Version # :** 6

**Manufacturer MSDS#:** 0041

**Current? :** 2002

**Name:**

**NO. 2 DIESEL FUEL**

**Synonyms:**

CARB **Diesel** TF3

CARB **Diesel**

CARB **Diesel** 10%

**Diesel** Fuel Oil

EPA Low Sulfur **Diesel** Fuel

EPA Low Sulfur **Diesel** Fuel – Dyed

EPA Off Road High Sulfur **Diesel** – Dyed

Fuel Oil No. 2 – CAS # 68476-30-2

No. 2 **Diesel** Fuel Oil

No. 2 Fuel Oil – Non Hiway – Dyed

No. 2 High Sulfur **Diesel** – Dyed

No. 2 Low Sulfur **Diesel** - Dyed

No. 2 Low Sulfur **Diesel** - Undyed

Crude column 3<sup>rd</sup> IR

Crude column 3<sup>rd</sup> side cut

Atmospheric tower 3<sup>rd</sup> side cut

Ultra Low Sulfur **Diesel** No. 2

Finished **Diesel**

DHT Reactor Feed

Straight Run **Diesel**

**Diesel**

Middle Distillate

**Product/Catalog Numbers:**

**MSDS Date:** 01/01/2002 (**received:** 01/14/2002)

**NFPA codes:**

**Health:** 0 **Flammability:** 2 **Reactivity:** 0

**MATERIAL SAFETY DATA SHEET  
No. 2 Diesel Fuel**

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Name:** No. 2 Diesel Fuel  
**Product Code:** Multiple  
**SAP Code:**  
**Synonyms:** 1354  
CARB Diesel TF3  
CARB Diesel  
CARB Diesel 10%  
Diesel Fuel Oil  
EPA Low Sulfur Diesel Fuel  
EPA Low Sulfur Diesel Fuel – Dyed  
EPA Off Road High Sulfur Diesel – Dyed  
Fuel Oil No. 2 – CAS # 68476-30-2  
No. 2 Diesel Fuel Oil  
No. 2 Fuel Oil – Non Hiway – Dyed  
No. 2 High Sulfur Diesel – Dyed  
No. 2 Low Sulfur Diesel - Dyed  
No. 2 Low Sulfur Diesel – Undyed  
No. 2 Ultra Low Sulfur Diesel – Dyed  
No. 2 Ultra Low Sulfur Diesel - Undyed  
**Intended Use:**  
**Chemical Family:**  
**Responsible Party:** Phillip’s Petroleum Company  
Bartlesville, Oklahoma 74004

**For Additional MSDSs:** 800-762-0942

**Technical Information:**

The intended use of this product is indicated above. If any additional use is known, please contact us at the Technical Information number listed.

**EMERGENCY OVERVIEW**

**24 Hour Emergency Telephone Numbers:**

Spill, Leak, Fire or Accident California Poison Control System: 800-356-3120  
Call CHEMTREC  
North America: (800) 424-9300  
Others: (703) 527-3887 (collect)

**Health Hazards/Precautionary Measures:** Causes severe skin irritation. Aspiration hazard if swallowed. Can enter lungs and cause damage. Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Do not taste or swallow. Wash thoroughly after handling.

**Physical Hazards/Precautionary Measures:** Flammable liquid and vapor. Keep away from heat, sparks, flames, static electricity or other sources of ignition.

**Appearance:** Straw-colored to dyed red  
**Physical Form:** Liquid  
**Odor:** Characteristic petroleum

**HFPA Hazard Class:**

Health: 0 (Least)  
 Flammability: 2 (Moderate)  
 Reactivity: 0 (Least)

**HMIS Hazard Class**

Not Evaluated

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

<u>HAZARDOUS COMPONENTS</u>	<u>% VOLUME</u>	<u>Limits</u>	<u>EXPOSURE GUIDELINE</u>	
			<u>Agency</u>	<u>Type</u>
Diesel Fuel No. 2 CAS# 68476-34-6	100	100* mg/m3	ACGIH	TWA-SKIN
Naphthalene CAS# 91-20-3	<1	10ppm	ACGIH	TWA
		15ppm	ACGIH	STEL
		10ppm	OSHA	TWA
		250ppm	NIOSH	IDLH

All components are listed on the TSCA inventory

Tosco Low Sulfur No. 2 Diesel meets the specifications of 40 CFR 60.41 for low sulfur diesel fuel.

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

\*Proposed ACGIH (1999)

**3. HAZARDS IDENTIFICATION**

**Potential Health Effects:**

**Eye:** Contact may cause mild eye irritation including stinging, watering, and redness.

**Skin:** Severe skin irritant. Contact may cause redness, itching, burning, and severe skin damage. Prolonged or repeated contact can worsen irritation by causing drying and cracking of the skin, leading to dermatitis (inflammation). Not actually toxic by skin absorption, but prolonged or repeated skin contact may be harmful (see Section 11).

**Inhalation (Breathing):** No information available. Studies by other exposure routes suggest a low degree of toxicity by inhalation.

**Ingestion (Swallowing):** Low degree of toxicity by ingestion. ASPIRATION HAZARD – This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

**Signs and Symptoms:** Effects of overexposure may include irritation of the nose and throat, irritation of the digestive tract, nausea, diarrhea and transient excitation followed by signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).

**Cancer:** Possible skin cancer hazard (see Sections 11 and 14).

**Target Organs:** There is limited evidence from animal studies that overexposure may cause injury to the kidney (see Section 11).

**Developmental:** Inadequate data available for this material.

**Pre-Existing Medical Conditions:** Conditions aggravated by exposure may include skin disorders and kidney disorders.

**4. FIRST AID MEASURES**

**Eye:** If irritation or redness develops, move victim away from exposure and into fresh air. Flush eyes with clean water. If symptoms persist, seek medical attention.

**Skin:** Immediately remove contaminated shoes, clothing, and constrictive jewelry and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek immediate medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops, seek immediate medical attention.

**Inhalation (Breathing):** If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

**Ingestion (Swallowing):** Aspiration hazard; Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

**5. FIRE FIGHTING MEASURES**

**Flammable Properties:**

Flash Point: >125°F/>52°  
OSHA Flammability Class: Combustible liquid  
LEL %: 0.3 / UEL %; 10.0  
Autoignition Temperature: 500°F/260°C

**Unusual Fire & Explosion Hazards:** This material is flammable and can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, or mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. Vapors are heavier than air and can accumulate in low areas. If container is not properly cooled, it can rupture in the heat of a fire.

**Extinguishing Media:** Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.

**Fire Fighting Instructions:** For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area, keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk.

Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

## 6. ACCIDENTAL RELEASE MEASURES

Flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof equipment is recommended.

Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Wear appropriate protective equipment including respiratory protection as conditions warrant (see Section 8).

Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Dike far ahead of spill for later recovery or disposal. Use foam on spills to minimize vapors (see Section 5). Spilled material may be absorbed into an appropriate material.

Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. If spill of any amount is made into or upon navigable waters, the contiguous zone, or adjoining shorelines, notify the National Response Center (phone number 800-424-8802).

## 7. HANDLING AND STORAGE

**Handling:** Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharged. The use of explosion-proof equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements.

Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8).

Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames. Use good personal hygiene practices.

High pressure injection of hydrocarbon fuels, hydraulic oils or greases under the skin may have serious consequences even though no symptoms or injury may be apparent. This can happen accidentally when using high pressure equipment such as high pressure grease guns, fuel injection apparatus or from pinhole leaks in tubing or high pressure hydraulic oil equipment.

“Empty” containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. “Empty” drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.

Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSIZ49.1 and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

**Storage:** Keep container(s) tightly closed. Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area “No Smoking or Open Flame.” Store only in approved containers. Keep away from incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering controls:** If current ventilation practices are not adequate to maintain airborne concentration below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used (see appropriate electrical codes).

**Personal Protective Equipment (PPE):**

**Respiratory:** A NIOSH certified air purifying respirator with an organic vapor cartridge may be used under conditions where airborne concentrations are expected to exceed exposure limits (see Section 2).

Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is a potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection.

A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrants a respirator's use.

**Skin:** The use of gloves impervious to the specific material handled is advised to prevent skin contact, possible irritation and skin damage (see glove manufacturer literature for information on permeability). Depending on conditions of use, apron and/or arm covers may be necessary.

**Eyes/Face:** Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended. Depending on conditions of use, a face shield may be necessary.

**Other Protective Equipment:** Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse. It is recommended that impervious clothing be worn when skin contact is possible.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1atm).

Appearance: Straw-colored to dyed red

Physical State: Liquid

Odor: Characteristic petroleum

pH: unavailable

Vapor Pressure (mm Hg): 0.40

Vapor Density (air=1): >3

Boiling Point/Range: 320-700°F /160-371°C

Freezing/Melting Point: No Data

Solubility in Water: Negligible

Specific Gravity: 0.81-0.88 @ 60°F

Percent Volatile: Negligible

Evaporation Rate (nBuAc=1): <1

Viscosity: 32.6-40.0 SUS @ 100°F

Bulk Density: 7.08 lbs/gal

Flash Point: >125°F / >52°C

Flammable/Explosive Limits (%): LEL: 0.3 / UEL: 10.0

**10. STABILITY AND REACTIVITY**

**Stability:** Stable under normal ambient and anticipated storage and handling conditions of temperature and pressure. Flammable liquid and vapor. Vapor can cause flash fire.

**Conditions To Avoid:** Avoid all possible sources of ignition (see Sections 5 and 7).

**Materials to Avoid (Incompatible Materials):** Avoid contact with strong oxidants such as liquid chlorine, concentrated oxygen, sodium hypochlorite, calcium hypochlorite, etc.

**Hazardous Decomposition Products:** The use of hydrocarbon fuels in an area without adequate ventilation may result in hazardous levels of combustion products (e.g., oxides of carbon, sulfur and nitrogen, benzene and other hydrocarbons) and/or dangerously low oxygen levels. ACGIH has included a TLV of 0.05 mg/m<sup>3</sup> TWA for diesel exhaust particulate on its 1999 Notice of Intended Changes. See Section 11 for additional information on hazards of engine exhaust.

**Hazardous Polymerization:** Will not occur.

## **11. TOXICOLOGICAL INFORMATION**

### **Diesel Fuel No. 2 (CAS# 68476-34-6)**

**Carcinogenicity:** Chronic dermal application of certain middle distillate streams contained in diesel fuel No. 2 resulted in an increased incidence of skin tumors in mice. This material has not been identified as carcinogen by NTP, IARC, or OSHA. Diesel exhaust is a probable cancer hazard based on tests with laboratory animals.

**Target Organ(s):** Limited evidence of renal impairment has been noted from a few case reports involving excessive exposure to diesel fuel No. 2.

### **Naphthalene (CAS# 91-20-3)**

**Carcinogenicity:** Naphthalene has been evaluated in two year inhalation studies in both rats and mice. The National Toxicology Program (NTP) concluded that there is clear evidence of carcinogenicity in male and female rats based on increased incidences of respiratory epithelial adenomas and olfactory epithelial neuroblastomas of the nose. NTP found some evidence of carcinogenicity in female mice (alveolar adenomas) and no evidence of carcinogenicity in male mice. Naphthalene has not been identified as a carcinogen by IARC or OSHA.

## **12. ECOLOGICAL INFORMATION**

Not evaluated at this time

## **13. DISPOSAL CONSIDERATIONS**

This material, if discarded as produced, would be a RCRA “characteristic” hazardous waste due to the characteristic(s) of ignitability (D001) and benzene (D018). If the material is spilled to soil or water, characteristic testing of the contaminated materials is recommended. Further, this material, once it becomes a waste, is subject to the land disposal restrictions in 40 CFR 268.40 and may require treatment prior to disposal to meet specific standards. Consult state and local regulations to determine whether they are more stringent than the federal requirements.

Container contents should be completely used and containers should be emptied prior to discard. Container ?insate? could be considered a RCRA hazardous waste and must be disposed of with care and in compliance with federal, state and local regulations. Large empty containers, such as drums, should be returned to the distributor or to a drum reconditioner. To assure proper disposal of smaller containers, consult with state and local regulations and disposal authorities.

## **14. TRANSPORT INFORMATION**

**DOT Shipping Description:** Diesel Fuel, NA1983  
**Non-Bulk Package Marking:** Diesel Fuel, 3, NA 1993, III

**15. REGULATORY INFORMATION**

**EPA SARA 311/312 (Title III Hazard Categories):**

Acute Health: Yes  
 Chronic Health: Yes  
 Fire Hazard: Yes  
 Pressure Hazard: No  
 Reactive Hazard: No

**SARA 313 and 40 CFR 372:**

This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

<b>Component</b>	<b>CAS Number</b>	<b>Weight %</b>
-- None known --		

**California Proposition 65:**

**Warning:** This material contains the following chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm, and are subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

<b>Component</b>	<b>Effect</b>
Benzene	Cancer, Developmental and Reproductive Toxicant
Toluene	Developmental Toxicant

Diesel engine exhaust, while not a component of this material, is on the Proposition 65 list of chemicals known to the State of California to cause cancer.

**Carcinogen Identification:**

This material has not been identified as a carcinogen by NTP, IARC, or OSHA. See Section 11 for carcinogenicity information of individual components, if any. Diesel exhaust is a probable cancer hazard based on tests in laboratory animals. It has been identified as carcinogen by IARC.

**EPA (CERCLA Reportable Quantity): None**

**16. OTHER INFORMATION**

**Issue Date:** 01/01/02  
**Previous Issue Date:** 05/15/01  
**Product Code:** Multiple  
**Revised Sections:** None  
**Previous Product Code:** Multiple  
**MSDS Number:** 0041

**Disclaimer of Expressed and Implied Warranties:**

The information presented in this Material Data Safety Sheet is based on data believed to be accurate as of the date this Material Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THE PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

**Tosco Refining Company**

**Ferndale Refinery**

**UltraLow Sulfur Diesel Product Specification**

Ferndale Product Code:34380xx (5) Product Code: ULSD2

**(COMETS)**

<b>Specification</b>	<b>Unit</b>	<b>Limit</b>	<b>Test Procedure</b>	<b>Typical</b>
Appearance Water & Sediment Color Haze Rating	Vol % Number Rating	0.05 Max 3.0 Max 2 Max	D 2709 D 1500 D 4176	
Composition Carbon Residue (Ramsbottom)	Wt %	0.35 Max	D 524, D 189	
Volatility 90% Recovered  Flash Point Gravity	Deg; F Deg; F Deg; F API	540 Min 640 Min 125 Min (1) 30 Min	D 86 D 86 D 93 D 287, D4052	130 F
Fluidity Pour Point Cloud Point Viscosity @ 104F  Lubricity, SLBOCLE  Lubricity, HFRR	Deg; F Deg; F cSt cSt  grams  mm	See Season Table (6) See Season Table (6) 1.9 Min 4.1 Max  3100 Min  .45	D 97 D 2500 D 445 D 445  D 6078  D 6079	10 F    3300gm
Combustion Cetane Index or Cetane Number (3,4)	Number	40.0 Min	D 976, D613	47.0
Corrosion Copper Strip, 3hr @ 50 deg C	Number	3 Max (2)	D 130	
Aromatics (4)	Vol %	35 Max	D 1319	25 %
Contaminants Total Sulfur Water & Sediment Ash	PPM Vol % Wt %	30 Max 0.05 Max 0.01 Max	D 2622, D4294 D 1796 D 482	15-20ppm
Additives Cetane Improver Dye	Lb/MBbl	675 Max Undyed		

1. Minimum release specification is 125 deg. F. The refinery should target 135 deg. F.
2. Test result reported as a number and letter (e.g. 1a). Any letter is allowable as long as the number meets the spec shown.
3. Either specification must be met.
4. Either cetane index minimum or aromatics maximum must be met.
5. Winter cloud and pour specifications may be relaxed to the summer specifications by agreement with the customer.
6. Season Table

<b>Month</b>	<b>Product Code</b>	<b>Pour Point</b>	<b>Cloud Point</b>
Jan, Feb, Nov, Dec	WI	0 max (5)	14 max (5)
Mar - Oct	SU	15 max	24 max

# Safety data for indeno[1,2,3-cd]pyrene

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[Glossary](#) of terms on this data sheet.

The information on this web page is provided to help you to work safely, but it is intended to be an overview of hazards, not a replacement for a full Material Safety Data Sheet (MSDS). MSDS forms can be downloaded from the web sites of many chemical suppliers.

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## General

Synonyms: 1,10-(1,2-phenylene)pyrene, 1,10-(o-phenylene)pyrene, o-phenylenepyrene, 2,3-phenylenepyrene, 2,3,o-phenylenepyrene, IP

Use:

Molecular formula: C<sub>22</sub>H<sub>12</sub>

CAS No: 193-39-5

EINECS No: 205-893-2

## Physical data

Appearance: solid

Melting point: 161 - 163 C

Boiling point: 536 C

Vapour density:

Vapour pressure:

Density (g cm<sup>-3</sup>):

Flash point:

Explosion limits:

Autoignition temperature:

Water solubility:

## Stability

Stable. Incompatible with strong oxidizing agents.

## Toxicology

Limited evidence that this material may be carcinogenic.

### Toxicity data

(The meaning of any toxicological abbreviations which appear in this section is given [here](#).)

### **Risk phrases**

(The meaning of any risk phrases which appear in this section is given [here.](#))  
R40.

## **Transport information**

(The meaning of any UN hazard codes which appear in this section is given [here.](#))

Non-hazardous for air, sea and road freight.

## **Personal protection**

Treat as potentially hazardous - many multi-ring aromatic compounds are suspected carcinogens.

### **Safety phrases**

(The meaning of any safety phrases which appear in this section is given [here.](#))

S36 S37 S45.

[Return to [Physical & Theoretical Chemistry Lab. Safety home page.](#)]

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This information was last updated on May 10, 2005. We have tried to make it as accurate and useful as possible, but can take no responsibility for its use, misuse, or accuracy. We have not verified this information, and cannot guarantee that it is up-to-date.

Note also that the information on the PTCL Safety web site, where this page was hosted, has been copied onto many other sites, often without permission. If you have any doubts about the veracity of the information that you are viewing, or have any queries, please check the URL that your web browser displays for this page. If the URL **begins** "http://msds.chem.ox.ac.uk/" the page is maintained by the Safety Officer in Physical Chemistry at Oxford University. If not, this page is a copy made by some other person and we have no responsibility for it.

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For the following RAE Part Numbers:

600-0001-000, 600-0002-000

600-0002-001, 600-0026-000

600-0027-000, 600-0069-000



# MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

## 1. PRODUCT IDENTIFICATION

**CHEMICAL NAME; CLASS:** NONFLAMMABLE GAS MIXTURE  
 Containing One or More of the Following Components in a Nitrogen Balance Gas:  
 Oxygen 0-23.5%; Isobutylene, 0.0005-0.9%

**SYNONYMS:** Not Applicable  
**CHEMICAL FAMILY NAME:** Not Applicable  
**FORMULA:** Not Applicable  
**Document Number:** 50054

**Note:** The Material Safety Data Sheet is for this gas mixture supplied in cylinders with 33 cubic feet (935 liters) or less gas capacity (DOT - 39 cylinders). This MSDS has been developed for various gas mixtures with the composition of components within the ranges listed in Section 2 (Composition and Information on Ingredients). Refer to the product label for information on the actual composition of the product.

<b>PRODUCT USE:</b>	Calibration of Monitoring and Research Equipment
<b>SUPPLIER/MANUFACTURER'S NAME:</b>	CALGAZ
<b>ADDRESS:</b>	821 Chesapeake Drive Cambridge, MD 21613
<b>EMERGENCY PHONE:</b>	CHEMTREC: 1-800-424-9300
<b>BUSINESS PHONE:</b>	1-410-228-6400
	General MSDS Information: 1-713/868-0440
	Fax on Demand: 1-800/231-1366

## 2. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	mole %	EXPOSURE LIMITS IN AIR					
			ACGIH-TLV		OSHA-PEL		NIOSH IDLH ppm	OTHER ppm
			TWA ppm	STEL ppm	TWA ppm	STEL ppm		
Isobutylene	115-11-7	0.0005-0.9%	There are no specific exposure limits for Isobutylene.					
Oxygen	7782-44-7	0-23.5%	There are no specific exposure limits for Oxygen.					
Nitrogen	7727-37-9	Balance	There are no specific exposure limits for Nitrogen. Nitrogen is a simple asphyxiant (SA). Oxygen levels should be maintained above 19.5%.					

NE = Not Established. See Section 16 for Definitions of Terms Used.  
 NOTE (1): ALL WHMIS required information is included in appropriate sections based on the ANSI Z400.1-1998 format. This gas mixture has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

## 3. HAZARD IDENTIFICATION

**EMERGENCY OVERVIEW:** This is a colorless, odorless gas mixture. Releases of this gas mixture may produce oxygen-deficient atmospheres (especially in confined spaces or other poorly-ventilated environments); individuals in such atmospheres may be asphyxiated. Isobutylene, a component of this gas mixture, may cause drowsiness and other central nervous system effects in high concentrations; however, due to its low concentration in this gas mixture, this is unlikely to occur.

**SYMPTOMS OF OVER-EXPOSURE BY ROUTE OF EXPOSURE:** The most significant route of over-exposure for this gas mixture is by inhalation.

**INHALATION:** Due to the small size of an individual cylinder of this gas mixture, no unusual health effects from over-exposure to the product are anticipated under routine circumstances of use. The chief health hazard associated with this gas mixture is when this gas mixture contains less than 19.5% Oxygen and is released in a small, poorly-ventilated area (i.e. an enclosed or confined space). Under this circumstance, an oxygen-deficient environment may occur. Individuals breathing such an atmosphere may experience symptoms which include headaches, ringing in ears, dizziness, drowsiness, unconsciousness, nausea, vomiting, and depression of all the senses. Under some circumstances of over-exposure, death may occur. The effects associated with various levels of oxygen are as follows:

<b>CONCENTRATION OF OXYGEN</b>	<b>OBSERVED EFFECT</b>
12-16% Oxygen:	Breathing and pulse rate increase, muscular coordination slightly disturbed.
10-14% Oxygen:	Emotional upset, abnormal fatigue, disturbed respiration.
6-10% Oxygen:	Nausea, vomiting, collapse, or loss of consciousness.
Below 6%:	Convulsive movements, possible respiratory collapse, and death.

**HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.** Over-exposure to this gas mixture may cause the following health effects:

**ACUTE:** Due to the small size of the individual cylinder of this gas mixture, no unusual health effects from exposure to the product are anticipated under routine circumstances of use. The most significant hazard associated with this gas mixture when it contains less than 19.5% oxygen is the potential for exposure to oxygen-deficient atmospheres. Symptoms of oxygen deficiency include respiratory difficulty, ringing in ears, headaches, shortness of breath, wheezing, headache, dizziness, indigestion, nausea, unconsciousness, and death. The skin of a victim of over-exposure may have a blue color. Additionally, Isobutylene, a component of this gas mixture, may cause drowsiness or central nervous system effects in high concentrations; however, due to its low concentration in this gas mixture, this is unlikely to occur.

**CHRONIC:** Chronic exposure to oxygen-deficient atmospheres (below 18% oxygen in air) may affect the heart and nervous system.

**TARGET ORGANS:** ACUTE: Respiratory system, eyes. CHRONIC: Heart, cardiovascular system, central nervous system.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM		
<b>HEALTH HAZARD</b>	(BLUE)	1
<b>FLAMMABILITY HAZARD</b>	(RED)	0
<b>PHYSICAL HAZARD</b>	(YELLOW)	0
PROTECTIVE EQUIPMENT		
EYES	RESPIRATORY	HANDS BODY
See Section 8		
For Routine Industrial Use and Handling Applications		

## 4. FIRST-AID MEASURES

**RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS GAS MIXTURE WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus must be worn.**

No unusual health effects are anticipated after exposure to this gas mixture, due to the small cylinder size. If any adverse symptom develops after over-exposure to this gas mixture, remove victim(s) to fresh air as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation if necessary. Victim(s) who experience any adverse effect after over-exposure to this gas mixture must be taken for medical attention. Rescuers should be taken for medical attention if necessary. Take a copy of the label and the MSDS to physician or other health professional with victim(s).

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Acute or chronic respiratory conditions may be aggravated by over-exposure to this gas mixture.

**RECOMMENDATIONS TO PHYSICIANS:** Administer oxygen, if necessary; treat symptoms and eliminate exposure.

## 5. FIRE-FIGHTING MEASURES

**FLASH POINT:** Not applicable.

**AUTOIGNITION TEMPERATURE:** Not applicable.

**FLAMMABLE LIMITS (in air by volume, %):**

Lower (LEL): Not applicable.

Upper (UEL): Not applicable.

**FIRE EXTINGUISHING MATERIALS:** Non-flammable gas mixture. Use extinguishing media appropriate for surrounding fire.

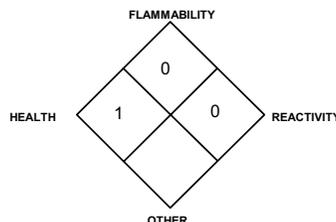
**UNUSUAL FIRE AND EXPLOSION HAZARDS:** This gas mixture is not flammable; however, containers, when involved in fire, may rupture or burst in the heat of the fire.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

**SPECIAL FIRE-FIGHTING PROCEDURES:** Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment.

### NFPA RATING



## 6. ACCIDENTAL RELEASE MEASURES

**LEAK RESPONSE:** Due to the small size and content of the cylinder, an accidental release of this gas mixture presents significantly less risk of an oxygen deficient environment and other safety hazards than a similar release from a larger cylinder. However, as with any chemical release, extreme caution must be used during emergency response procedures. In the event of a release in which the atmosphere is unknown, and in which other chemicals are potentially involved, evacuate immediate area. Such releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. In case of a leak, clear the affected area, protect people, and respond with trained personnel.

Allow the gas mixture to dissipate. If necessary, monitor the surrounding area (and the original area of the release) for oxygen. Oxygen levels must be above 19.5% before non-emergency personnel are allowed to re-enter area.

If leaking incidentally from the cylinder, contact your supplier.

## 7. HANDLING and USE

**WORK PRACTICES AND HYGIENE PRACTICES:** Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms, due to oxygen deficiency. Do not attempt to repair, adjust, or in any other way modify the cylinders containing this gas mixture. If there is a malfunction or another type of operational problem, contact nearest distributor immediately.

**STORAGE AND HANDLING PRACTICES:** Cylinders should be firmly secured to prevent falling or being knocked-over. Cylinders must be protected from the environment, and preferably kept at room temperature (approximately 21°C [70°F]). Cylinders should be stored in dry, well-ventilated areas, away from sources of heat, ignition, and direct sunlight. Protect cylinders against physical damage. Full and empty cylinders should be segregated. Use a first-in, first-out inventory system to prevent full containers from being stored for long periods of time. These cylinders are not refillable. **WARNING! Do not refill DOT 39 cylinders. To do so may cause personal injury or property damage.**

**SPECIAL PRECAUTIONS FOR HANDLING GAS CYLINDERS: WARNING!** Compressed gases can present significant safety hazards. During cylinder use, use equipment designed for these specific cylinders. Ensure all lines and equipment are rated for proper service pressure.

**PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT:** Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely. Always use product in areas where adequate ventilation is provided.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

**VENTILATION AND ENGINEERING CONTROLS:** No special ventilation systems or engineering controls are needed under normal circumstances of use. As with all chemicals, use this gas mixture in well-ventilated areas. If this gas mixture is used in a poorly-ventilated area, install automatic monitoring equipment to detect the levels of Nitrous Oxide and Oxygen.

**RESPIRATORY PROTECTION:** No special respiratory protection is required under normal circumstances of use. Maintain oxygen levels above 19.5% in the workplace. Use supplied air respiratory protection when oxygen levels are below 19.5%, or during emergency response to a release of this gas mixture. During an emergency situation, before entering the area, check the concentration of Methane and Oxygen. If respiratory protection is needed, use only protection authorized in the U.S. Federal OSHA Standard (29 CFR 1910.134), applicable U.S. State regulations, or the Canadian CSA Standard Z94.4-93 and applicable standards of Canadian Provinces. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

**EYE PROTECTION:** Safety glasses. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or appropriate Canadian Standards.

**HAND PROTECTION:** Wear leather gloves when handling cylinders. Chemically resistant gloves should be worn when using this gas mixture. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

**BODY PROTECTION:** No special protection is needed under normal circumstances of use. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136.

## 9. PHYSICAL and CHEMICAL PROPERTIES

The following information is for Nitrogen, a main component of this gas mixture.

**GAS DENSITY @ 32°F (0°C) and 1 atm:** 0.072 lbs/ft<sup>3</sup> (1.153 kg/m<sup>3</sup>)

**BOILING POINT:** -195.8°C (-320.4°F)

**SPECIFIC GRAVITY (air = 1) @ 70°F (21.1°C):** 0.906

**SOLUBILITY IN WATER vol/vol @ 32°F (0°C) and 1 atm:** 0.023

**EVAPORATION RATE (nBuAc = 1):** Not applicable.

**ODOR THRESHOLD:** Not applicable.

**VAPOR PRESSURE @ 70°F (21.1°C) psig:** Not applicable.

**FREEZING/MELTING POINT @ 10 psig:** -210°C (-345.8°F)

**pH:** Not applicable.

**MOLECULAR WEIGHT:** 28.01

**EXPANSION RATIO:** Not applicable.

**SPECIFIC VOLUME (ft<sup>3</sup>/lb):** 13.8

**COEFFICIENT WATER/OIL DISTRIBUTION:** Not applicable.

The following information is for Oxygen, a main component of this gas mixture.

**GAS DENSITY @ 32°F (0°C) and 1 atm:** 0.083 lb/cu ft (1.326 kg/m<sup>3</sup>)

**FREEZING/MELTING POINT @ 10 psig:** -218.8°C (-361.8°F)

**SPECIFIC GRAVITY (air = 1) @ 70°F (21.1°C):** 1.105

**SOLUBILITY IN WATER vol/vol at 32°F (0°C) and 1 atm:** 0.0491

**EVAPORATION RATE (nBuAc = 1):** Not applicable.

**ODOR THRESHOLD:** Not applicable.

**VAPOR PRESSURE @ 70°F (21.1°C) psig:** Not applicable.

**BOILING POINT:** -183.0°C (-297.4°F)

**pH:** Not applicable.

**MOLECULAR WEIGHT:** 32.00

**EXPANSION RATIO:** Not applicable.

**VOLUME (ft<sup>3</sup>/lb):** 12.1

**COEFFICIENT WATER/OIL DISTRIBUTION:** Not applicable.

The following information is for the gas mixture.

**APPEARANCE AND COLOR:** This is a colorless, odorless gas mixture.

**HOW TO DETECT THIS SUBSTANCE (warning properties):** There are no unusual warning properties associated with a release of this gas mixture. In terms of leak detection, fittings and joints can be painted with a soap solution to detect leaks, which will be indicated by a bubble formation.

## 10. STABILITY and REACTIVITY

**STABILITY:** Normally stable in gaseous state.

**DECOMPOSITION PRODUCTS:** The thermal decomposition products of Isobutylene include carbon oxides. The other components of this gas mixture do not decompose, per se, but can react with other compounds in the heat of a fire.

**MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE:** Titanium will burn in the Nitrogen component of this gas mixture. Lithium reacts slowly with Nitrogen at ambient temperatures. The Isobutylene component of this gas mixture is also incompatible with strong oxidizers (i.e. chlorine, bromine pentafluoride, oxygen difluoride, and nitrogen trifluoride).

**HAZARDOUS POLYMERIZATION:** Will not occur.

**CONDITIONS TO AVOID:** Contact with incompatible materials. Cylinders exposed to high temperatures or direct flame can rupture or burst.

## 11. TOXICOLOGICAL INFORMATION

**TOXICITY DATA:** The following toxicology data are available for the components of this gas mixture:

**ISOBUTYLENE:**

LC<sub>50</sub> (inhalation, rat) = 620,000 mg/kg/4 hours

LC<sub>50</sub> (inhalation, mouse) = 415,000 mg/kg

**NITROGEN:**

There are no specific toxicology data for Nitrogen. Nitrogen is a simple asphyxiant, which acts to displace oxygen in the environment.

**SUSPECTED CANCER AGENT:** The components of this gas mixture are not found on the following lists: FEDERAL OSHA Z LIST, NTP, CAL/OSHA, and IARC; therefore, they are not considered to be, nor suspected to be, cancer-causing agents by these agencies.

**IRRITANCY OF PRODUCT:** Contact with rapidly expanding gases can be irritating to exposed skin and eyes.

**SENSITIZATION TO THE PRODUCT:** The components of this gas mixture are not known to cause human skin or respiratory sensitization.

**REPRODUCTIVE TOXICITY INFORMATION:** Listed below is information concerning the effects of this gas mixture and its components on the human reproductive system.

**Mutagenicity:** No mutagenicity effects have been described for the components in this gas mixture.

**Embryotoxicity:** No embryotoxic effects have been described for the components in this gas mixture.

**Teratogenicity:** No teratogenicity effects have been described for the components in this gas mixture.

**Reproductive Toxicity:** No reproductive toxicity effects have been described for the components in gas mixture.

*A mutagen is a chemical which causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. An embryotoxin is a chemical which causes damage to a developing embryo (i.e. within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. A teratogen is a chemical which causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance which interferes in any way with the reproductive process.*

**BIOLOGICAL EXPOSURE INDICES (BEIs):** Currently, Biological Exposure Indices (BEIs) are not applicable for the components of this gas mixture.

## 12. ECOLOGICAL INFORMATION

**ENVIRONMENTAL STABILITY:** The components of this gas mixture occur naturally in the atmosphere. The gas will be dissipated rapidly in well-ventilated areas. The following environmental data are applicable to the components of this gas mixture.

**OXYGEN:** Water Solubility = 1 volume Oxygen/32 volumes water at 20°C. Log K<sub>ow</sub> = -0.65

**NITROGEN:** Water Solubility = 2.4 volumes Nitrogen/100 volumes water at 0°C. 1.6 volumes Nitrogen/100 volumes water at 20°C.

**EFFECT OF MATERIAL ON PLANTS or ANIMALS:** No evidence is currently available on the effects of this gas mixture on plant and animal life.

**EFFECT OF CHEMICAL ON AQUATIC LIFE:** No evidence is currently available on the effects of this gas mixture on aquatic life.

## 13. DISPOSAL CONSIDERATIONS

**PREPARING WASTES FOR DISPOSAL PREPARING WASTES FOR DISPOSAL:** Waste disposal must be in accordance with appropriate Federal, State, and local regulations. Cylinders with undesired residual product may be safely vented outdoors with the proper regulator. For further information, refer to Section 16 (Other Information).

## 14. TRANSPORTATION INFORMATION

**THIS GAS MIXTURE IS HAZARDOUS AS DEFINED BY 49 CFR 172.101 BY THE U.S. DEPARTMENT OF TRANSPORTATION.**

**PROPER SHIPPING NAME:** Compressed gases, n.o.s. ("Oxygen, Nitrogen") or the gas component with the next highest concentration next to Nitrogen.

**HAZARD CLASS NUMBER and DESCRIPTION:** 2.2 (Non-Flammable Gas)

**UN IDENTIFICATION NUMBER:** UN 1956

**PACKING GROUP:** Not applicable.

**DOT LABEL(S) REQUIRED:** Class 2.2 (Non-Flammable Gas)

**NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000):** 126

**MARINE POLLUTANT:** The components of this gas mixture are not classified by the DOT as Marine Pollutants (as defined by 49 CFR 172.101, Appendix B).

**SPECIAL SHIPPING INFORMATION:** Cylinders should be transported in a secure position, in a well-ventilated vehicle. The transportation of compressed gas cylinders in automobiles or in closed-body vehicles can present serious safety hazards. If transporting these cylinders in vehicles, ensure these cylinders are not exposed to extremely high temperatures (as may occur in an enclosed vehicle on a hot day). Additionally, the vehicle should be well-ventilated during transportation.

**Note:** DOT 39 Cylinders ship in a strong outer carton (overpack). Pertinent shipping information goes on the outside of the overpack. DOT 39 Cylinders do not have transportation information on the cylinder itself.

**TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS:** This gas is considered as Dangerous Goods, per regulations of Transport Canada.

**PROPER SHIPPING NAME:** Compressed gases, n.o.s. ("Oxygen, Nitrogen") or the gas component with the next highest concentration next to Nitrogen.

**HAZARD CLASS NUMBER and DESCRIPTION:** 2.2 (Non-Flammable Gas)

**UN IDENTIFICATION NUMBER:** UN 1956

**PACKING GROUP:** Not Applicable

**HAZARD LABEL:** Class 2.2 (Non-Flammable Gas)

**SPECIAL PROVISIONS:** None

**EXPLOSIVE LIMIT AND LIMITED QUANTITY INDEX:** 0.12

**ERAP INDEX:** None

**PASSENGER CARRYING SHIP INDEX:** None

**PASSENGER CARRYING ROAD VEHICLE OR PASSENGER CARRYING RAILWAY VEHICLE INDEX:** 75

**NORTH AMERICAN EMERGENCY RESPONSE GUIDEBOOK NUMBER (2000):** 126

**NOTE:** Shipment of compressed gas cylinders via Public Passenger Road Vehicle is a violation of Canadian law (Transport Canada Transportation of Dangerous Goods Act, 1992).

## 15. REGULATORY INFORMATION

**ADDITIONAL U.S. REGULATIONS:**

**U.S. SARA REPORTING REQUIREMENTS:** The components of this gas mixture are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

**U.S. SARA THRESHOLD PLANNING QUANTITY:** There are no specific Threshold Planning Quantities for this gas mixture. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

**U.S. TSCA INVENTORY STATUS:** The components of this gas mixture are listed on the TSCA Inventory.

**U.S. CERCLA REPORTABLE QUANTITY (RQ):** Not applicable.

**OTHER U.S. FEDERAL REGULATIONS:**

- No component of this gas mixture is subject to the requirements of CFR 29 1910.1000 (under the 1989 PELs).
- Isobutylene is subject to the reporting requirements of Section 112(r) of the Clean Air Act. The Threshold Quantity for this gas is 10,000 pounds.
- The regulations of the Process Safety Management of Highly Hazardous Chemicals are not applicable (29 CFR 1910.119).
- This gas mixture does not contain any Class I or Class II ozone depleting chemicals (40 CFR Part 82).

## 15. REGULATORY INFORMATION (continued)

- Nitrogen and Oxygen are not listed as Regulated Substances, per 40 CFR, Part 68, of the Risk Management for Chemical Releases. Isobutylene is listed under this regulation in Table 3 as Regulated Substances (Flammable Substances), in quantities of 10,000 lbs (4,554 kg) or greater.

**U.S. STATE REGULATORY INFORMATION:** The components of this gas mixture are covered under the following specific State regulations:

**Alaska - Designated Toxic and Hazardous Substances:** No.  
**California - Permissible Exposure Limits for Chemical Contaminants:** Nitrogen.  
**Florida - Substance List:** Oxygen, Isobutylene.  
**Illinois - Toxic Substance List:** No.  
**Kansas - Section 302/313 List:** No.  
**Massachusetts - Substance List:** Oxygen, Isobutylene.  
**Michigan - Critical Materials Register:** No.  
**Minnesota - List of Hazardous Substances:** No.  
**Missouri - Employer Information/Toxic Substance List:** No.  
**New Jersey - Right to Know Hazardous Substance List:** Oxygen, Nitrogen, Isobutylene.  
**North Dakota - List of Hazardous Chemicals, Reportable Quantities:** No.  
**Pennsylvania - Hazardous Substance List:** Oxygen, Nitrogen, Isobutylene.  
**Rhode Island - Hazardous Substance List:** Oxygen, Nitrogen.  
**Texas - Hazardous Substance List:** No.  
**West Virginia - Hazardous Substance List:** No.  
**Wisconsin - Toxic and Hazardous Substances:** : No.

**CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65):** No component of this gas mixture is on the California Proposition 65 lists.

**ADDITIONAL CANADIAN REGULATIONS:**

**CANADIAN DSL/NDL INVENTORY STATUS:** The components of this gas mixture are listed on the DSL Inventory.

**CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS:** The components of this gas mixture are not on the CEPA Priorities Substances Lists.

**CANADIAN WHMIS REGULATIONS:** This gas mixture is categorized as a Controlled Product, Hazard Class A, as per the Controlled Product Regulations.

## 16. OTHER INFORMATION

### INFORMATION ABOUT DOT-39 NRC (Non-Refillable Cylinder) PRODUCTS

DOT 39 cylinders ship as hazardous materials when full. Once the cylinders are relieved of pressure (empty) they are not considered hazardous material or waste. Residual gas in this type of cylinder is not an issue because toxic gas mixtures are prohibited. Calibration gas mixtures typically packaged in these cylinders are Nonflammable n.o.s., UN 1956. A small percentage of calibration gases packaged in DOT 39 cylinders are flammable or oxidizing gas mixtures.

For disposal of used DOT-39 cylinders, it is acceptable to place them in a landfill if local laws permit. Their disposal is no different than that employed with other DOT containers such as spray paint cans, household aerosols, or disposable cylinders of propane (for camping, torch etc.). When feasible, we recommended recycling for scrap metal content. CALGAZ will do this for any customer that wishes to return cylinders to us prepaid. All that is required is a phone call to make arrangements so we may anticipate arrival. Scrapping cylinders involves some preparation before the metal dealer may accept them. We perform this operation as a service to valued customers who want to participate.

**MIXTURES:** When two or more gases or liquefied gases are mixed, their hazardous properties may combine to create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an Industrial Hygienist or other trained person when you make your safety evaluation of the end product. Remember, gases and liquids have properties which can cause serious injury or death.

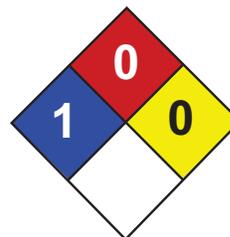
Further information about the handling of compressed gases can be found in the following pamphlets published by: Compressed Gas Association Inc. (CGA), 1725 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102. Telephone: (703) 412-0900.

P-1	"Safe Handling of Compressed Gases in Containers"
AV-1	"Safe Handling and Storage of Compressed Gases"
	"Handbook of Compressed Gases"

**PREPARED BY:** CHEMICAL SAFETY ASSOCIATES, Inc.  
PO Box 3519, La Mesa, CA 91944-3519  
619/670-0609  
Fax on Demand: 1-800/231-1366



This Material Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this gas mixture. To the best of CALGAZ knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.



Health	1
Fire	0
Reactivity	0
Personal Protection	E

# Material Safety Data Sheet

## Lead MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Lead

**Catalog Codes:** SLL1291, SLL1669, SLL1081, SLL1459, SLL1834

**CAS#:** 7439-92-1

**RTECS:** OF7525000

**TSCA:** TSCA 8(b) inventory: Lead

**CI#:** Not available.

**Synonym:** Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot

**Chemical Name:** Lead

**Chemical Formula:** Pb

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Lead	7439-92-1	100

**Toxicological Data on Ingredients:** Lead LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:** Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:** Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

**Serious Skin Contact:** Not available.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

### Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Some metallic oxides.

**Fire Hazards in Presence of Various Substances:** Non-flammable in presence of open flames and sparks, of shocks, of heat.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** When heated to decomposition it emits highly toxic fumes of lead.

**Special Remarks on Explosion Hazards:** Not available.

### Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

### Section 7: Handling and Storage

**Precautions:**

Keep locked up.. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable

protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

TWA: 0.05 (mg/m<sup>3</sup>) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m<sup>3</sup>) from OSHA (PEL) [United States] TWA: 0.03 (mg/m<sup>3</sup>) from NIOSH [United States] TWA: 0.05 (mg/m<sup>3</sup>) [Canada] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Metal solid.)

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 207.21 g/mole

**Color:** Bluish-white. Silvery. Gray

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 1740°C (3164°F)

**Melting Point:** 327.43°C (621.4°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 11.3 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Insoluble in cold water.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, excess heat

**Incompatibility with various substances:** Reactive with oxidizing agents.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available. LC50: Not available.

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

**Other Toxic Effects on Humans:** Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungs by mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually absorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, delirium, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause "fume metal fever", which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead colic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

**Section 13: Disposal Considerations****Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14: Transport Information**

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

**Section 15: Other Regulatory Information****Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value) California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead Connecticut hazardous material survey.: Lead Illinois toxic substances disclosure to employee act: Lead Illinois chemical safety act: Lead New York release reporting list: Lead Rhode Island RTK hazardous substances: Lead Pennsylvania RTK: Lead

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**

R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:21 PM

**Last Updated:** 11/01/2010 12:00 PM

*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall ScienceLab.com be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if ScienceLab.com has been advised of the possibility of such damages.*



ERROR: undefined  
OFFENDING COMMAND: get

STACK:

/quit  
-dictionary-  
-mark-

# Material Safety Data Sheet



## SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

### Havoline® Motor Oil (Deposit Shield)

**Product Use:** Engine Oil

**Product Number(s):** CPS223391, CPS223392, CPS223393, CPS223394, CPS223395, CPS223396, CPS223397

**Synonyms:** Havoline® Motor Oil SAE 10W-30, Havoline® Motor Oil SAE 10W-40, Havoline® Motor Oil SAE 20W-50, Havoline® Motor Oil SAE 30, Havoline® Motor Oil SAE 40, Havoline® Motor Oil SAE 5W-20, Havoline® Motor Oil SAE 5W-30

**Company Identification**

Chevron Products Company  
Global Lubricants  
6001 Bollinger Canyon Road  
San Ramon, CA 94583  
United States of America

**Transportation Emergency Response**

CHEMTREC: (800) 424-9300 or (703) 527-3887

**Health Emergency**

Chevron Emergency Information Center: Located in the USA. International collect calls accepted. (800) 231-0623 or (510) 231-0623

**Product Information**

email : lubemsds@chevrontexaco.com  
Product Information: 800-LUBE-TEK  
MSDS Requests: 800-414-6737

## SECTION 2 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENTS	CAS NUMBER	AMOUNT
Highly refined mineral oil (C15 - C50)	Mixture	70 - 95 %weight

## SECTION 3 HAZARDS IDENTIFICATION

**IMMEDIATE HEALTH EFFECTS**

**Eye:** Not expected to cause prolonged or significant eye irritation.

**Skin:** Contact with the skin is not expected to cause prolonged or significant irritation. Contact with the skin is not expected to cause an allergic skin response. Not expected to be harmful to internal organs if absorbed through the skin.

**Ingestion:** Not expected to be harmful if swallowed.

**Inhalation:** Not expected to be harmful if inhaled. Contains a petroleum-based mineral oil. May cause respiratory irritation or other pulmonary effects following prolonged or repeated inhalation of oil mist at airborne levels above the recommended mineral oil mist exposure limit. Symptoms of respiratory irritation may include coughing and difficulty breathing.

## SECTION 4 FIRST AID MEASURES

**Eye:** No specific first aid measures are required. As a precaution, remove contact lenses, if worn, and flush eyes with water.

**Skin:** No specific first aid measures are required. As a precaution, remove clothing and shoes if contaminated. To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse.

**Ingestion:** No specific first aid measures are required. Do not induce vomiting. As a precaution, get medical advice.

**Inhalation:** No specific first aid measures are required. If exposed to excessive levels of material in the air, move the exposed person to fresh air. Get medical attention if coughing or respiratory discomfort occurs.

## SECTION 5 FIRE FIGHTING MEASURES

### FIRE CLASSIFICATION:

OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.

**NFPA RATINGS:** Health: 0 Flammability: 1 Reactivity: 0

### FLAMMABLE PROPERTIES:

**Flashpoint:** (Cleveland Open Cup) 200 °C (392 °F) (Min)

**Autoignition:** No Data Available

**Flammability (Explosive) Limits (% by volume in air):** Lower: Not Applicable Upper: Not Applicable

**EXTINGUISHING MEDIA:** Use water fog, foam, dry chemical or carbon dioxide (CO<sub>2</sub>) to extinguish flames.

### PROTECTION OF FIRE FIGHTERS:

**Fire Fighting Instructions:** This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.

**Combustion Products:** Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

## SECTION 6 ACCIDENTAL RELEASE MEASURES

**Protective Measures:** Eliminate all sources of ignition in vicinity of spilled material.

**Spill Management:** Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible absorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.

**Reporting:** Report spills to local authorities and/or the U.S. Coast Guard's National Response Center at (800) 424-8802 as appropriate or required.

## SECTION 7 HANDLING AND STORAGE

**Precautionary Measures:** Keep out of the reach of children.

**General Handling Information:** Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.

**Static Hazard:** Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids', National Fire Protection Association (NFPA 77, 'Recommended Practice on Static Electricity', and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents'.

**Container Warnings:** Container is not designed to contain pressure. Do not use pressure to empty container or it may rupture with explosive force. Empty containers retain product residue (solid, liquid, and/or vapor) and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. They may explode and cause injury or death. Empty containers should be completely drained, properly closed, and promptly returned to a drum reconditioner or disposed of properly.

## SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

### GENERAL CONSIDERATIONS:

Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

### ENGINEERING CONTROLS:

Use in a well-ventilated area.

### PERSONAL PROTECTIVE EQUIPMENT

**Eye/Face Protection:** No special eye protection is normally required. Where splashing is possible, wear safety glasses with side shields as a good safety practice.

**Skin Protection:** No special protective clothing is normally required. Where splashing is possible, select protective clothing depending on operations conducted, physical requirements and other substances in the workplace. Suggested materials for protective gloves include: 4H (PE/EVAL), Nitrile Rubber, Silver Shield, Viton.

**Respiratory Protection:** No respiratory protection is normally required.

If user operations generate an oil mist, determine if airborne concentrations are below the occupational exposure limit for mineral oil mist. If not, wear an approved respirator that provides adequate protection from the measured concentrations of this material. For air-purifying respirators use a particulate cartridge.

Use a positive pressure air-supplying respirator in circumstances where air-purifying respirators may not provide adequate protection.

### Occupational Exposure Limits:

Component	Agency	TWA	STEL	Ceiling	Notation
Highly refined mineral oil (C15 - C50)	ACGIH	5 mg/m <sup>3</sup>	10 mg/m <sup>3</sup>	--	--
Highly refined mineral oil (C15 - C50)	OSHA Z-1	5 mg/m <sup>3</sup>	--	--	--

## SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Attention: the data below are typical values and do not constitute a specification.

**Color:** Amber

**Physical State:** Liquid

**Odor:** Petroleum odor

**pH:** Not Applicable

**Vapor Pressure:** <0.01 mmHg @ 100 °C (212 °F)

**Vapor Density (Air = 1):** >1

**Boiling Point:** >315°C (599°F)

**Solubility:** Soluble in hydrocarbons; insoluble in water

**Freezing Point:** Not Applicable

**Specific Gravity:** 0.87 @ 15.6°C (60.1°F) / 15.6°C (60.1°F) (Typical)

**Density:** 0.866 kg/l @ 15°C (59°F) (Typical)

**Viscosity:** 7.6 mm<sup>2</sup>/s @ 100°C (212°F) (Min)

## SECTION 10 STABILITY AND REACTIVITY

**Chemical Stability:** This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**Incompatibility With Other Materials:** May react with strong acids or strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

**Hazardous Decomposition Products:** None known (None expected)

**Hazardous Polymerization:** Hazardous polymerization will not occur.

## SECTION 11 TOXICOLOGICAL INFORMATION

### IMMEDIATE HEALTH EFFECTS

**Eye Irritation:** The eye irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Irritation:** The skin irritation hazard is based on evaluation of data for similar materials or product components.

**Skin Sensitization:** The skin sensitization hazard is based on evaluation of data for similar materials or product components.

**Acute Dermal Toxicity:** The acute dermal toxicity hazard is based on evaluation of data for similar materials or product components.

**Acute Oral Toxicity:** The acute oral toxicity hazard is based on evaluation of data for similar materials or product components.

**Acute Inhalation Toxicity:** The acute inhalation toxicity hazard is based on evaluation of data for similar materials or product components.

### ADDITIONAL TOXICOLOGY INFORMATION:

This product contains petroleum base oils which may be refined by various processes including severe solvent extraction, severe hydrocracking, or severe hydrotreating. None of the oils requires a cancer warning under the OSHA Hazard Communication Standard (29 CFR 1910.1200). These oils have not been listed in the National Toxicology Program (NTP) Annual Report nor have they been classified by the International Agency for Research on Cancer (IARC) as; carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A), or possibly carcinogenic to humans (Group 2B). These oils have not been classified by the American Conference of Governmental Industrial Hygienists (ACGIH) as: confirmed human carcinogen (A1), suspected human carcinogen (A2), or confirmed animal carcinogen

with unknown relevance to humans (A3).

During use in engines, contamination of oil with low levels of cancer-causing combustion products occurs. Used motor oils have been shown to cause skin cancer in mice following repeated application and continuous exposure. Brief or intermittent skin contact with used motor oil is not expected to have serious effects in humans if the oil is thoroughly removed by washing with soap and water.

## SECTION 12 ECOLOGICAL INFORMATION

### ECOTOXICITY

This material is not expected to be harmful to aquatic organisms.

### ENVIRONMENTAL FATE

This material is not expected to be readily biodegradable.

## SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. Oil collection services are available for used oil recycling or disposal. Place contaminated materials in containers and dispose of in a manner consistent with applicable regulations. Contact your sales representative or local environmental or health authorities for approved disposal or recycling methods.

## SECTION 14 TRANSPORT INFORMATION

The description shown may not apply to all shipping situations. Consult 49CFR, or appropriate Dangerous Goods Regulations, for additional description requirements (e.g., technical name) and mode-specific or quantity-specific shipping requirements.

**DOT Shipping Description:** PETROLEUM LUBRICATING OIL, NOT REGULATED AS A HAZARDOUS MATERIAL FOR TRANSPORTATION UNDER 49 CFR

**Additional Information:** NOT HAZARDOUS BY U.S. DOT. ADR/RID HAZARD CLASS NOT APPLICABLE.

**IMO/IMDG Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER THE IMDG CODE

**ICAO/IATA Shipping Description:** PETROLEUM LUBRICATING OIL; NOT REGULATED AS DANGEROUS GOODS FOR TRANSPORT UNDER ICAO

## SECTION 15 REGULATORY INFORMATION

### EPCRA 311/312 CATEGORIES:

- |                                       |    |
|---------------------------------------|----|
| 1. Immediate (Acute) Health Effects:  | NO |
| 2. Delayed (Chronic) Health Effects:  | NO |
| 3. Fire Hazard:                       | NO |
| 4. Sudden Release of Pressure Hazard: | NO |
| 5. Reactivity Hazard:                 | NO |

### REGULATORY LISTS SEARCHED:

01-1=IARC Group 1	03=EPCRA 313
01-2A=IARC Group 2A	04=CA Proposition 65
01-2B=IARC Group 2B	05=MA RTK

02=NTP Carcinogen

06=NJ RTK

07=PA RTK

No components of this material were found on the regulatory lists above.

**CHEMICAL INVENTORIES:**

All components comply with the following chemical inventory requirements: EINECS (European Union), IECSC (China), KECI (Korea), PICCS (Philippines), TSCA (United States).

One or more components has been notified but may not be listed in the following chemical inventories: DSL (Canada). Secondary notification by the importer may be required.

One or more components does not comply with the following chemical inventory requirements: AICS (Australia), ENCS (Japan).

**NEW JERSEY RTK CLASSIFICATION:**

Under the New Jersey Right-to-Know Act L. 1983 Chapter 315 N.J.S.A. 34:5A-1 et. seq., the product is to be identified as follows: PETROLEUM OIL (Motor oil)

**WHMIS CLASSIFICATION:**

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

**SECTION 16 OTHER INFORMATION**

**NFPA RATINGS:** Health: 0 Flammability: 1 Reactivity: 0

**HMIS RATINGS:** Health: 1 Flammability: 1 Reactivity: 0  
(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, \*- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA) or the National Paint and Coating Association (for HMIS ratings).

**LABEL RECOMMENDATION:**

Label Category : ENGINE OIL 1 - ENG1

**REVISION STATEMENT:** This is a new Material Safety Data Sheet.

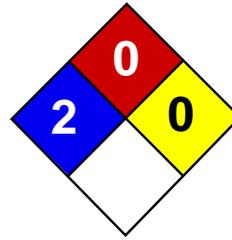
**Revision Date:** October 02, 2006

**ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:**

TLV - Threshold Limit Value	TWA - Time Weighted Average
STEL - Short-term Exposure Limit	PEL - Permissible Exposure Limit
	CAS - Chemical Abstract Service Number
ACGIH - American Conference of Government Industrial Hygienists	IMO/IMDG - International Maritime Dangerous Goods Code
API - American Petroleum Institute	MSDS - Material Safety Data Sheet
CVX - Chevron	NFPA - National Fire Protection Association (USA)
DOT - Department of Transportation (USA)	NTP - National Toxicology Program (USA)
IARC - International Agency for Research on Cancer	OSHA - Occupational Safety and Health Administration

Prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200) and the ANSI MSDS Standard (Z400.1) by the Chevron Energy Technology Company, 100 Chevron Way, Richmond, California 94802.

**The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.**



Health	2
Fire	0
Reactivity	0
Personal Protection	E

# Material Safety Data Sheet

## Nickel metal MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Nickel metal

**Catalog Codes:** SLN2296, SLN1342, SLN1954

**CAS#:** 7440-02-0

**RTECS:** QR5950000

**TSCA:** TSCA 8(b) inventory: Nickel metal

**CI#:** Not applicable.

**Synonym:** Nickel Metal shot; Nickel metal foil.

**Chemical Name:** Nickel

**Chemical Formula:** Ni

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Nickel metal	7440-02-0	100

**Toxicological Data on Ingredients:** Nickel metal LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer), of eye contact (irritant), of ingestion.

**Potential Chronic Health Effects:**

Slightly hazardous in case of skin contact (sensitizer), of ingestion, of inhalation (lung sensitizer). **CARCINOGENIC EFFECTS:** Classified 2B (Possible for human.) by IARC. Classified 2 (Some evidence.) by NTP. **MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance is toxic to skin. The substance may be toxic to kidneys, lungs, liver, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:** Not available.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

**Special Remarks on Fire Hazards:** Material in powder form, capable of creating a dust explosion. This material is flammable in powder form only.

**Special Remarks on Explosion Hazards:**

Material in powder form, capable of creating a dust explosion. Mixtures containing Potassium Perchlorate with Nickel & Titanium powders & infusorial earth can explode. Adding 2 or 3 drops of approximately 90% peroxyformic acid to powdered nickel will result in explosion. Powdered nickel reacts explosively upon contact with fused ammonium nitrate at temperatures below 200 deg. C.

## Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

### Precautions:

Keep locked up.. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If you feel unwell, seek medical attention and show the label when possible. Keep away from incompatibles such as oxidizing agents, combustible materials, metals, acids.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

TWA: 1 (mg/m3) from ACGIH (TLV) [United States] Inhalation Respirable. TWA: 0.5 (mg/m3) [United Kingdom (UK)] TWA: 1 (mg/m3) from OSHA (PEL) [United States] Inhalation Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Metal solid. Lustrous solid.)

**Odor:** Odorless.

**Taste:** Not available.

**Molecular Weight:** 58.71 g/mole

**Color:** Silvery.

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 2730°C (4946°F)

**Melting Point:** 1455°C (2651°F)

**Critical Temperature:** Not available.

**Specific Gravity:** Density: 8.908 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:**

Insoluble in cold water, hot water. Insoluble in Ammonia. Soluble in dilute Nitric Acid. Slightly soluble in Hydrochloric Acid, Sulfuric Acid.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials

**Incompatibility with various substances:** Reactive with oxidizing agents, combustible materials, metals, acids.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Incompatible with strong acids, selenium, sulfur, wood and other combustibles, nickel nitrate, aluminum, aluminum trichloride, ethylene, p-dioxan, hydrogen, methanol, non-metals, oxidants, sulfur compounds, aniline, hydrogen sulfide, flammable solvents, hydrazine, and metal powders (especially zinc, aluminum, and magnesium), ammonium nitrate, nitryl fluoride, bromine pentafluoride, potassium perchlorate + titanium powder + indusorial earth.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available. LC50: Not available.

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified 2B (Possible for human.) by IARC. Classified 2 (Some evidence.) by NTP. Causes damage to the following organs: skin. May cause damage to the following organs: kidneys, lungs, liver, upper respiratory tract.

**Other Toxic Effects on Humans:**

Hazardous in case of inhalation. Slightly hazardous in case of skin contact (irritant, sensitizer), of ingestion.

**Special Remarks on Toxicity to Animals:**

Lowest Published Lethal Dose/Conc: LDL [Rat] - Route: Oral; Dose: 5000 mg/kg LDL [Guinea Pig] - Route: Oral; Dose: 5000 mg/kg

**Special Remarks on Chronic Effects on Humans:** May cause cancer based on animal test data

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: Nickel dust and fume can irritate skin. Eyes: Nickel dust and fume can irritate eyes. Inhalation: Inhalation of dust or fume may cause respiratory tract irritation with non-productive cough, hoarseness, sore throat, headache, vertigo, weakness, chest pain, followed by delayed effects, including tachypnea, dyspnea, and ARDS. Death due to ARDS has been reported following inhalation of high concentrations of respirable metallic nickel dust. Later effects may include pulmonary edema and fibrosis. Ingestion: Metallic nickel is generally considered not to be acutely toxic if ingested. Ingestion may cause nausea, vomiting, abdominal , and diarrhea. Nickel may damage the kidneys(proteinuria), and may affect liver function. It may also affect behavior (somnolence), and cardiovascular system (increased coronary artery resistance, decreased myocardial contractility, myocardial damage, regional or general arteriolar or venus dilation). Chronic Potential Health Effects: Skin: May cause skin allergy. Nickel and nickel compounds are among the most common sensitizers inducing allergic contact dermatitis. Inhalation: Chronic inhalation nickel dust or fume can cause chronic hypertrophic rhinitis, sinusitis, nasal polyps, perforation of the nasal septum, chronic pulmonary irritation, fibrosis, pulmonary edema, pulmonary eosinophilia, Pneumoconiosis, allergies (asthma-like allergy), and cancer of the nasal sinus cavities, lungs, and possibly other organs. Future exposures can cause asthma attacks with shortness of breath, wheezing, cough, and/or chest tightness. Chronic inhalation of nickel dust or fume may also affect the liver (impaired liver function tests), and blood (changes in red blood cell count). Ingestion: Prolonged or repeated ingestion of nickel can be a source chronic urticaria and other signs of allergy.

Chronic ingestion of Nickel may also affect respiration and cause pneumoconiosis or fibrosis. Note: In the general population, sensitization occurs from exposure to nickel-containing coins, jewelry, watches,

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are as toxic as the original product.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14: Transport Information

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Nickel metal California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Nickel metal Connecticut hazardous material survey.: Nickel metal Illinois toxic substances disclosure to employee act: Nickel metal Illinois chemical safety act: Nickel metal New York release reporting list: Nickel metal Rhode Island RTK hazardous substances: Nickel metal Pennsylvania RTK: Nickel metal Michigan critical material: Nickel metal Massachusetts RTK: Nickel metal Massachusetts spill list: Nickel metal New Jersey: Nickel metal New Jersey spill list: Nickel metal Louisiana spill reporting: Nickel metal California Director's List of Hazardous Substances: Nickel metal TSCA 8(b) inventory: Nickel metal

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**

R40- Possible risks of irreversible effects. R43- May cause sensitization by skin contact. S22- Do not breathe dust. S36- Wear suitable protective clothing.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

### Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:42 PM

**Last Updated:** 11/01/2010 12:00 PM

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**This fact sheet answers the most frequently asked health questions (FAQs) about polycyclic aromatic hydrocarbons (PAHs). For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. This information is important because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.**

**SUMMARY: Exposure to polycyclic aromatic hydrocarbons usually occurs by breathing air contaminated by wild fires or coal tar, or by eating foods that have been grilled. PAHs have been found in at least 600 of the 1,430 National Priorities List sites identified by the Environmental Protection Agency (EPA).**

## What are polycyclic aromatic hydrocarbons?

(Pronounced pŏl'ī-sī'klīk ār'ə-măt'īk hī'drə-kar'bənz)

Polycyclic aromatic hydrocarbons (PAHs) are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, garbage, or other organic substances like tobacco or charbroiled meat. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

Some PAHs are manufactured. These pure PAHs usually exist as colorless, white, or pale yellow-green solids. PAHs are found in coal tar, crude oil, creosote, and roofing tar, but a few are used in medicines or to make dyes, plastics, and pesticides.

## What happens to PAHs when they enter the environment?

- PAHs enter the air mostly as releases from volcanoes, forest fires, burning coal, and automobile exhaust.
- PAHs can occur in air attached to dust particles.
- Some PAH particles can readily evaporate into the air from soil or surface waters.
- PAHs can break down by reacting with sunlight and other chemicals in the air, over a period of days to weeks.

- PAHs enter water through discharges from industrial and wastewater treatment plants.
- Most PAHs do not dissolve easily in water. They stick to solid particles and settle to the bottoms of lakes or rivers.
- Microorganisms can break down PAHs in soil or water after a period of weeks to months.
- In soils, PAHs are most likely to stick tightly to particles; certain PAHs move through soil to contaminate underground water.
- PAH contents of plants and animals may be much higher than PAH contents of soil or water in which they live.

## How might I be exposed to PAHs?

- Breathing air containing PAHs in the workplace of coking, coal-tar, and asphalt production plants; smoke-houses; and municipal trash incineration facilities.
- Breathing air containing PAHs from cigarette smoke, wood smoke, vehicle exhausts, asphalt roads, or agricultural burn smoke.
- Coming in contact with air, water, or soil near hazardous waste sites.
- Eating grilled or charred meats; contaminated cereals, flour, bread, vegetables, fruits, meats; and processed or pickled foods.
- Drinking contaminated water or cow's milk.

ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html>

- ❑ Nursing infants of mothers living near hazardous waste sites may be exposed to PAHs through their mother's milk.

### How can PAHs affect my health?

Mice that were fed high levels of one PAH during pregnancy had difficulty reproducing and so did their offspring. These offspring also had higher rates of birth defects and lower body weights. It is not known whether these effects occur in people.

Animal studies have also shown that PAHs can cause harmful effects on the skin, body fluids, and ability to fight disease after both short- and long-term exposure. But these effects have not been seen in people.

### How likely are PAHs to cause cancer?

The Department of Health and Human Services (DHHS) has determined that some PAHs may reasonably be expected to be carcinogens.

Some people who have breathed or touched mixtures of PAHs and other chemicals for long periods of time have developed cancer. Some PAHs have caused cancer in laboratory animals when they breathed air containing them (lung cancer), ingested them in food (stomach cancer), or had them applied to their skin (skin cancer).

### Is there a medical test to show whether I've been exposed to PAHs?

In the body, PAHs are changed into chemicals that can attach to substances within the body. There are special tests that can detect PAHs attached to these substances in body tissues or blood. However, these tests cannot tell whether any

health effects will occur or find out the extent or source of your exposure to the PAHs. The tests aren't usually available in your doctor's office because special equipment is needed to conduct them.

### Has the federal government made recommendations to protect human health?

The Occupational Safety and Health Administration (OSHA) has set a limit of 0.2 milligrams of PAHs per cubic meter of air (0.2 mg/m<sup>3</sup>). The OSHA Permissible Exposure Limit (PEL) for mineral oil mist that contains PAHs is 5 mg/m<sup>3</sup> averaged over an 8-hour exposure period.

The National Institute for Occupational Safety and Health (NIOSH) recommends that the average workplace air levels for coal tar products not exceed 0.1 mg/m<sup>3</sup> for a 10-hour workday, within a 40-hour workweek. There are other limits for workplace exposure for things that contain PAHs, such as coal, coal tar, and mineral oil.

### Glossary

Carcinogen: A substance that can cause cancer.

Ingest: Take food or drink into your body.

### References

Agency for Toxic Substances and Disease Registry (ATSDR). 1995. Toxicological profile for polycyclic aromatic hydrocarbons. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

**Where can I get more information?** For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone: 1-888-422-8737, FAX: 404-498-0093. ToxFAQs Internet address via WWW is <http://www.atsdr.cdc.gov/toxfaq.html> ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.





## MATERIAL SAFETY DATA SHEET

(POLYCHLORINATED BIPHENYLS)

### COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients Name: polychlorinated biphenyls (PCBs)

### HAZARD IDENTIFICATION

Reports of Carcinogenicity: YES

### HEALTH HAZARDS ACUTE AND CHRONIC

- **Eyes**: Moderately irritating to eye tissues.
- **Skin**: Can be absorbed through intact skin, may cause de-fatting, potential for chloracne.
- **Inhalation**: Possible liver injury.
- **Ingestion**: Slightly toxic; reasonably anticipated to be carcinogenic.

### EFFECTS OF OVER-EXPOSURE

Can cause dermatological symptoms; however, these are reversible upon removal of exposure source.

### FIRST AID MEASURES

- **Eyes**: Irrigate immediately with copious quantities of running water for at least 15 minutes if liquid or solid PCBs get into them.
- **Skin**: Contaminated clothing should be removed and the skin washed thoroughly with soap and water. Hot PCBs may cause thermal burns.
- **Inhalation**: Remove to fresh air; if skin rash or respiratory irritation persists, consult a physician (if electrical equipment arcs over, PCBs may decompose to produce hydrochloric acid).
- **Ingestion**: Consult a physician. Do not induce vomiting or give any oily laxatives. (If large amounts are ingested, gastric lavage is suggested).

**FIRE FIGHTING MEASURES**: Flash Point: >141 °C (285.8 °F)

**EXTINGUISHING MEDIA**: PCBs are fire-resistant compounds.

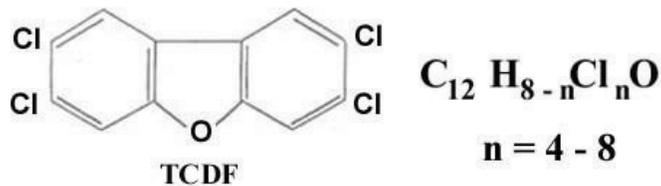
## FIRE-FIGHTING PROCEDURES

Standard fire-fighting wearing apparel and self-contained breathing apparatus should be worn when fighting fires that involve possible exposure to chemical combustion products. Fire fighting equipment should be thoroughly cleaned and decontaminated after use.

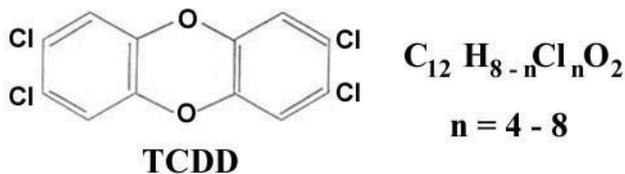
## UNUSUAL FIRE/EXPLOSION HAZARD

If a PCB transformer is involved in a fire-related incident, the owner of the transformer is required to report the incident. Consult and follow appropriate federal, provincial and local regulations.

*Note: When askarel liquid becomes involved in a fire, toxic by-products of combustion are typically produced including polychlorinated dibenzofurans and polychlorinated dibenzodioxins, both known carcinogens. The structures of these chemical species are as follows:*



**2,3,7,8-tetrachlorodibenzofuran**



**2,3,7,8-tetrachloro-dibenzo-p-dioxin**

*Note: 2,3,7,8-tetrachloro-dibenzo-p-dioxin is one of the most potent teratogenic, mutagenic and carcinogenic agents known to man.*

## SPILL RELEASE PROCEDURES

Cleanup & disposal of liquid PCBs are strictly regulated by the federal government. Ventilate area. Contain spill/leak. Remove spill by means of absorptive material. Spill clean-up personnel should use proper protective clothing. All wastes and residues containing PCBs should be collected, containerized, marked and disposed of in the manner prescribed by applicable federal, provincial and local laws.

## HANDLING AND STORAGE PRECAUTIONS

Care should be taken to prevent entry into the environment through spills, leakage, use, vaporization, or disposal of liquid. Avoid prolonged breathing of vapours or mists. Avoid contact with eyes or prolonged contact with skin. Comply with all federal, provincial and local regulations.

## **OTHER PRECAUTIONS**

Federal regulations require PCBs, PCB items, storage areas, transformer vaults, and transport vehicles to be appropriately labelled.

## **RESPIRATORY PROTECTION**

Use OSHA approved equipment when airborne exposure limits are exceeded. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical splash goggles. The respirator use limitations specified by the manufacturer must be observed.

## **VENTILATION**

Provide natural or mechanical ventilation to control exposure levels below airborne exposure levels.

**PROTECTIVE GLOVES:** Wear appropriate chemical resistant gloves to prevent skin contact.

**EYE PROTECTION:** Wear chemical splash goggles and have eye baths available.

## **OTHER PROTECTIVE EQUIPMENT**

Wear appropriate protective clothing. Provide a safety shower at any location where skin contact can occur.

## **WORK HYGIENIC PRACTICES**

Wash thoroughly after handling. Supplemental safety and health : none

## **PHYSICAL/CHEMICAL PROPERTIES**

- **Vapour pressure:** (mm Hg @100 °F) 0.005 - 0.00006
- **Viscosity:** (CENTISTOKES) 3.6 - 540
- **Stability indicator/materials to avoid:** Yes
- **Stability Condition to Avoid:** PCBs are very stable, fire-resistant compounds.

## **HAZARDOUS DECOMPOSITION PRODUCTS**

Carbon monoxide, carbon dioxide, hydrogen chloride, phenolics, aldehydes, furans, dioxins

## **WASTE DISPOSAL METHODS**

Consult the applicable PCB regulations prior to any disposal of PCBs or PCB-contaminated items.

MSDS Number: T0767 \* \* \* \* \* Effective Date: 05/19/08 \* \* \* \* \* Supersedes: 08/16/05

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
			National Response in Canada CANUTEC: 613-996-6666
From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		 	Outside U.S. and Canada Chemtrec: 703-527-3887
			<b>NOTE:</b> CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.			

## TETRACHLOROETHYLENE

### 1. Product Identification

**Synonyms:** ethylene tetrachloride; tetrachloroethene; perchloroethylene; carbon bichloride; carbon dichloride

**CAS No.:** 127-18-4

**Molecular Weight:** 165.83

**Chemical Formula:** Cl<sub>2</sub>C:CCl<sub>2</sub>

**Product Codes:**

J.T. Baker: 9218, 9360, 9453, 9465, 9469

Mallinckrodt: 1933, 8058

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Tetrachloroethylene	127-18-4	99 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate (Life)

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Blue (Health)

#### Potential Health Effects

##### Inhalation:

Irritating to the upper respiratory tract. Giddiness, headache, intoxication, nausea and vomiting may follow the inhalation of large amounts while massive amounts can cause breathing arrest, liver and kidney damage, and death. Concentrations of 600 ppm and more can affect the central nervous system after a few minutes.

##### Ingestion:

Not highly toxic by this route because of low water solubility. Used as an oral dosage for hookworm (1 to 4 ml). Causes abdominal pain, nausea, diarrhea, headache, and dizziness.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects.

##### Eye Contact:

Causes irritation, redness, and pain.

**Chronic Exposure:**

May cause liver, kidney or central nervous system damage after repeated or prolonged exposures. Suspected cancer risk from animal studies.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance. The use of alcoholic beverages enhances the toxic effects.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**

Aspiration hazard. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Wash skin with soap or mild detergent and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Note to Physician:**

Do not administer adrenaline or epinephrine to a victim of chlorinated solvent poisoning.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard but becomes hazardous in a fire situation because of vapor generation and possible degradation to phosgene (highly toxic) and hydrogen chloride (corrosive). Vapors are heavier than air and collect in low-lying areas.

**Explosion:**

Not considered to be an explosion hazard. Containers may explode when involved in a fire.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Store in a cool, dry, ventilated area away from sources of heat or ignition. Isolate from flammable materials. Protect from direct sunlight. Wear special protective equipment (Sec. 8) for maintenance break-in or where exposures may exceed established exposure levels. Wash hands, face, forearms and neck when exiting restricted areas. Shower, dispose of outer clothing, change to clean garments at the end of the day. Avoid cross-contamination of street clothes. Wash hands before eating and do not eat, drink, or smoke in workplace. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

100 ppm (TWA), 200 ppm (ceiling),

300 ppm/5min/3-hour (max)

-ACGIH Threshold Limit Value (TLV):

25 ppm (TWA), 100 ppm (STEL); listed as A3, animal carcinogen

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless liquid.

**Odor:**

Ethereal odor.

**Solubility:**

0.015 g in 100 g of water.

**Specific Gravity:**

1.62 @ 20C/4C

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

100

**Boiling Point:**

121C (250F)

**Melting Point:**

-19C (-2F)

**Vapor Density (Air=1):**

5.7

**Vapor Pressure (mm Hg):**

18 @ 25C (77F)

**Evaporation Rate (BuAc=1):**

0.33 (trichloroethylene = 1)

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Slowly decomposed by light. Deteriorates rapidly in warm, moist climates.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition. Hydrogen chloride gas and phosgene gas may be formed upon heating. Decomposes with moisture to yield trichloroacetic acid and hydrochloric acid.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong acids, strong oxidizers, strong alkalis, especially NaOH, KOH; finely divided metals, especially zinc, barium, lithium. Slowly corrodes aluminum, iron and zinc.

**Conditions to Avoid:**

Moisture, light, heat and incompatibles.

## 11. Toxicological Information

Oral rat LD50: 2629 mg/kg; inhalation rat LC50: 4100 ppm/6H; investigated as a tumorigen, mutagen, reproductive effector.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Tetrachloroethylene (127-18-4)	No	Yes	2A

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material may leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into water, this material is not expected to biodegrade. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals.

**Environmental Toxicity:**

The LC50/96-hour values for fish are between 1 and 10 mg/l. The LC50/96-hour values for fish are between 10 and 100 mg/l. This material is expected to be toxic to aquatic life.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

Proper Shipping Name: TETRACHLOROETHYLENE

Hazard Class: 6.1

UN/NA: UN1897

Packing Group: III

Information reported for product/size: 4L

### International (Water, I.M.O.)

Proper Shipping Name: TETRACHLOROETHYLENE

Hazard Class: 6.1

UN/NA: UN1897

Packing Group: III

Information reported for product/size: 4L

### International (Air, I.C.A.O.)

Proper Shipping Name: TETRACHLOROETHYLENE

Hazard Class: 6.1

UN/NA: UN1897

Packing Group: III

Information reported for product/size: 4L

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                               TSCA  EC   Japan  Australia
-----
Tetrachloroethylene (127-18-4)         Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                               --Canada--
Korea  DSL  NDSL  Phil.
-----
Tetrachloroethylene (127-18-4)         Yes  Yes  No    Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                               -SARA 302-  -SARA 313-
RQ    TPQ    List  Chemical Catg.
-----
Tetrachloroethylene (127-18-4)         No    No    Yes   No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                               -RCRA-      -TSCA-
CERCLA  261.33    8 (d)
-----
Tetrachloroethylene (127-18-4)         100      U210     No
```

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
 Reactivity: No (Pure / Liquid)

### WARNING:

THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

Australian Hazchem Code: 2[Z]

Poison Schedule: None allocated.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

NFPA Ratings: Health: 2 Flammability: 0 Reactivity: 0

### Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. SUSPECT CANCER HAZARD. MAY CAUSE CANCER. Risk of cancer depends on level and

duration of exposure.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

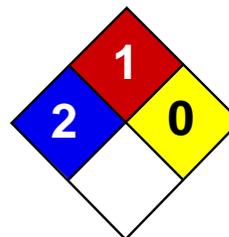
\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)



Health	2
Fire	1
Reactivity	0
Personal Protection	H

## Material Safety Data Sheet Trichloroethylene MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Trichloroethylene

**Catalog Codes:** SLT3310, SLT2590

**CAS#:** 79-01-6

**RTECS:** KX4560000

**TSCA:** TSCA 8(b) inventory: Trichloroethylene

**CI#:** Not available.

**Synonym:**

**Chemical Formula:** C<sub>2</sub>HCl<sub>3</sub>

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Trichloroethylene	79-01-6	100

**Toxicological Data on Ingredients:** Trichloroethylene: ORAL (LD50): Acute: 5650 mg/kg [Rat]. 2402 mg/kg [Mouse]. DERMAL (LD50): Acute: 20001 mg/kg [Rabbit].

### Section 3: Hazards Identification

**Potential Acute Health Effects:** Hazardous in case of skin contact (irritant, permeator), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH.

**MUTAGENIC EFFECTS:** Not available. **TERATOGENIC EFFECTS:** Not available. **DEVELOPMENTAL TOXICITY:** Not available. The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract. Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Do not use an eye ointment. Seek medical attention.

**Skin Contact:**

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

### Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** 420°C (788°F)

**Flash Points:** Not available.

**Flammable Limits:** LOWER: 8% UPPER: 10.5%

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>), halogenated compounds.

**Fire Hazards in Presence of Various Substances:** Not available.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

### Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:**

Absorb with an inert material and put the spilled material in an appropriate waste disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

### Section 7: Handling and Storage

**Precautions:**

Keep locked up Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapour/

spray. Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes

**Storage:**

Keep container dry. Keep in a cool place. Ground all equipment containing material. Carcinogenic, teratogenic or mutagenic materials should be stored in a separate locked safety storage cabinet or room.

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

TWA: 50 STEL: 200 (ppm) from ACGIH (TLV) TWA: 269 STEL: 1070 (mg/m<sup>3</sup>) from ACGIH Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 131.39 g/mole

**Color:** Clear Colorless.

**pH (1% soln/water):** Not available.

**Boiling Point:** 86.7°C (188.1°F)

**Melting Point:** -87.1°C (-124.8°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 1.4649 (Water = 1)

**Vapor Pressure:** 58 mm of Hg (@ 20°C)

**Vapor Density:** 4.53 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** 20 ppm

**Water/Oil Dist. Coeff.:** The product is equally soluble in oil and water; log(oil/water) = 0

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, methanol, diethyl ether, acetone.

**Solubility:**

Easily soluble in methanol, diethyl ether, acetone. Very slightly soluble in cold water.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Not available.

**Corrosivity:**

Extremely corrosive in presence of aluminum. Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

### Section 11: Toxicological Information

**Routes of Entry:** Dermal contact. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

Acute oral toxicity (LD50): 2402 mg/kg [Mouse]. Acute dermal toxicity (LD50): 20001 mg/kg [Rabbit].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified + (PROVEN) by OSHA. Classified A5 (Not suspected for human.) by ACGIH. The substance is toxic to kidneys, the nervous system, liver, heart, upper respiratory tract.

**Other Toxic Effects on Humans:** Hazardous in case of skin contact (irritant, permeator), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Passes through the placental barrier in human. Detected in maternal milk in human.

**Special Remarks on other Toxic Effects on Humans:** Not available.

### Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

### Section 14: Transport Information

**DOT Classification:** CLASS 6.1: Poisonous material.

**Identification:** : Trichloroethylene : UN1710 PG: III

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

### Federal and State Regulations:

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Trichloroethylene California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Trichloroethylene Pennsylvania RTK: Trichloroethylene Florida: Trichloroethylene Minnesota: Trichloroethylene Massachusetts RTK: Trichloroethylene New Jersey: Trichloroethylene TSCA 8(b) inventory: Trichloroethylene CERCLA: Hazardous substances.: Trichloroethylene

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

### Other Classifications:

#### WHMIS (Canada):

CLASS D-1B: Material causing immediate and serious toxic effects (TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC).

#### DSCL (EEC):

R36/38- Irritating to eyes and skin. R45- May cause cancer.

#### HMIS (U.S.A.):

**Health Hazard:** 2

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** h

#### National Fire Protection Association (U.S.A.):

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

#### Protective Equipment:

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:54 PM

**Last Updated:** 11/01/2010 12:00 PM

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## UNLEADED GASOLINE (ALL GRADES) MATERIAL SAFETY DATA SHEET

Petrocom Energy Group, LLC  
1330 Post Oak Blvd., Suite 2350  
Houston, Texas 77056  
Phone: 713-418-3000  
Fax: 713-418-3001

Revision Date: 03/05/2008

### Section 1: Product Identification

**Name:** Unleaded Gasoline  
**Synonyms:** Regular/Midgrade/Premium Gasoline, Motor Fuel, Reformulated Gasoline, RFG, Conventional Gasoline.  
**CAS No.:** 86290-81-5  
**MSDS No.:** PEG-UNL  
**Use:** Motor fuel

### Section 2: Product Composition

<u>Component</u>	<u>CAS Number</u>	<u>Amount (%)</u>
Gasoline	86290-81-5	0 – 100
Benzene	71-43-2	0 – 5
Toluene	108-88-3	0 – 30
Xylene (all isomers)	1330-20-7	0 – 25
Hexane (other isomers)	Mixture	5 – 25
n-Hexane	110-54-3	0 – 3
Cyclohexane	110-82-7	0 – 3
Octanes (all isomers)	Mixture	0 – 20
Heptane (all isomers)	142-82-5	0 – 15
Ethanol	64-17-5	0 – 10
Pentanes (all isomers)	Mixture	0 – 20
Trimethylbenzenes (all isomers)	95-63-6	0 – 5
Ethylbenzene	100-41-4	0 – 5
Cumene	98-82-8	0 – 5
Methyl Tertiary Butyl Ether (MTBE)	1634-04-4	0 – 16
Tertiary Amyl Methyl Ether (TAME)	994-05-8	0 – 6

## Section 3: Hazards Identification

<u>Emergency Overview</u>	<u>Hazard Rankings</u>
<p style="text-align: center;"><b>DANGER!</b></p> <p style="text-align: center;">Extremely Flammable liquid and vapor Harmful if swallowed Skin Irritant May cause eye and respiratory irritation Cancer Hazard – Contains material which can cause cancer</p>	<p style="text-align: center;"><b>NFPA</b></p> <div style="text-align: center;">  <p>The NFPA hazard diamond consists of four colored triangles meeting at a central point. The top triangle is red and contains the number 3. The left triangle is blue and contains the number 1. The right triangle is yellow and contains the number 0. The bottom triangle is white and is empty.</p> </div>

**Physical form:** Liquid  
**Appearance:** Clear to amber  
**Odor:** Strong, Gasoline

### Potential Health Effects

**Eyes:** Contact with eyes may cause irritation, redness, tearing, stinging, watering and blurred vision.

**Skin:** Contact with skin may cause irritation, itching, redness and skin damage. Prolonged or repeated contact may cause drying and cracking of the skin, and may also cause dermatitis and inflammation. (See also section 11).

**Inhalation:** Breathing high concentration can be harmful. Throat and lung irritation may occur. Central nervous system effects including nausea, euphoria, dizziness, headache, fatigue, drowsiness or unconsciousness may occur due to long term or high concentration exposure to vapors.

**Ingestion:** Toxic if swallowed. This product may cause nausea, vomiting, dizziness, drowsiness, diarrhea if swallowed. Central nervous system effects may be caused. Swallowing this product can result in severe lung damage and/or death.

**Signs / Symptoms:** When overexposed to this product effects such as nausea, vomiting, blurred vision, respiratory failure, central nervous system depression, unconsciousness, tremor, death may occur.

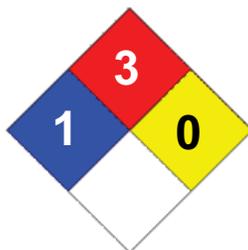
**See toxicological Information (section 11)**

## Section 4: First Aid Measures

- Eye contact:** Flush eyes immediately with fresh, cool water for at least 15 minutes. If irritation or redness or any symptoms persist, seek medical attention.
- Skin contact:** Remove contaminated clothes and shoes. Flush affected area with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, wash affected area thoroughly with soap and water. If irritation or redness develops, seek medical attention.
- Inhalation (Breathing):** If inhaled, immediately move person to fresh air. If there is difficulty breathing, give oxygen. If not breathing, immediately give artificial respiration. Seek medical attention.
- Ingestion (Swallowing):** This product may be harmful or fatal if swallowed. This product may cause nausea, vomiting, diarrhea and restlessness. Do not induce vomiting. Do not give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is unconscious or drowsy, place on the left side with the head down. Seek immediate medical attention.
- Notes to Physician:** This material sensitizes the heart to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Inhalation overexposure can produce toxic effects. Monitor respiratory distress. If difficulty in breathing evaluate upper respiratory tract inflammation, bronchitis and pneumonitis. Administer supplemental oxygen as required. If ingested, this material presents a significant aspiration and chemical pneumonitis hazard. Consider activated charcoal and/or gastric lavage. If patient is obtunded, protect the airway by cuffed endotracheal intubation or by placement of the body in a Trendelenburg and left lateral decubitus position.

## Section 5: Fire Fighting Measures

**NFPA Hazard Class:** Health = 1 ; Flammability = 3 ; Instability = 0  
(0 – Minimal ; 1 – Slight ; 2 – Moderate ; 3 – Serious ; 4 – Severe)



**Auto – ignition temperature :** >260 °C (500 °F)

**Flash point :** Closed cup: -43 °C (-45 °F)

**Flammable limits :** Lower: approximately 1.4%  
Upper: approximately 7.6%

**Products of combustion :** Carbon monoxide, carbon dioxide, nitrogen and sulfur oxides, smoke, fumes, unburned hydrocarbons and other products of incomplete combustion.

**Special properties :** Flammable liquid" This material can be ignited by heat, sparks, flames or other sources of ignition. Vapors may travel long distances to a source where they can ignite and flash back, or explode. A mixture of vapor and air can create an explosion hazard in confined spaces. If container is not properly cooled, it can rupture n the heat of a fire.

**Extinguishing media :** Use of dry chemical, carbon dioxide, or foam is recommended to extinguish fire. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may not extinguish the fire, unless it is used by experienced fire fighters and under favorable conditions.

**Protective Equipment for Fire Fighters :** Fire fighters should wear appropriate protective equipment and self contained breathing apparatus (SCBA) with a full face piece operated in positive pressure mode.

## Section 6: Accidental Release Measures

- Personal precautions:** This material is extremely flammable. Eliminate all ignition sources. Keep all hot metal surfaces away from spill/release. All equipment used when handling this material must be grounded.
- Spill precautions:** Stay upwind and away from spill. Notify persons down wind of the spill, isolate spill area and keep unauthorized personnel out. If it can be done with minimal risk, try to stop spill. Always wear protective equipment, including respiratory protection. Contact emergency personnel.
- Environmental precautions:** Prevent spilled material from entering sewers, drains, soil, and natural waterways. Use foam or spills to minimize vapors (section 5). Spilled material may be absorbed into an appropriate absorbent material.
- Methods for cleaning up:** Notify fire authorities and appropriate federal, state and local agencies. Immediate cleanup is recommended.

## Section 7: Handling and Storage

- Handling:** Flammable liquid and vapor. To be used only as a motor fuel. Avoid inhalation of vapors and contact with skin. Wash hands thoroughly after handling this material. Use in a well ventilated area away from all ignition sources. Use product with caution around heat, sparks, static electricity and open flames. Static electricity may ignite vapors and cause fire.
- Empty containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks or other ignition sources. They may explode and cause injury and/or death. Empty drums should be completely drained, properly bunged, and returned promptly to a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations.
- Storage:** Store in approved containers only. Keep in tightly closed containers in cool, dry, well ventilated areas. Keep isolated away from heat, sources of ignition and hot metal surfaces.

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**Section 8: Exposure Controls / Personal Protection**

**Engineering controls:** Provide ventilation or other engineering controls to keep the airborne concentrations of vapor or mists below their occupational exposure limits. Eyewash stations and safety showers should be located near the work-station.

**Personal Protection**

**Eye Protection:** Keep away from eyes. Safety glasses complying with approved standards should be worn. Chemical type goggles should be worn.

**Skin Protection:** Keep away from skin. Skin protection should be worn. Chemical resistant, impervious gloves should be worn. Always follow good personal hygiene practices after handling the material.

**Respiratory Protection:** Approved respiratory equipment must be used if a risk assessment indicates it is necessary. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn.

**General Protection:** Use this material in well ventilated areas. Ventilation equipment should be explosion proof also.

Component	Applicable Workplace Exposure Limits
Gasoline	ACGIH – TWA: 300 ppm (8 hours) STEL: 500 ppm (15 minutes)
Benzene	ACGIH – TWA: 0.5 ppm (8 hours) STEL: 2.5 ppm (15 minutes)  OSHA – TWA: 1 ppm (8 hours) STEL: 5 ppm (15 minutes)
Toluene	ACGIH – TWA: 20 ppm (8 hours)  OSHA – TWA: 200 ppm (8 hours) CEIL: 300 ppm PEAK: 500 ppm (10 minutes)
Xylene (all isomers)	ACGIH – TWA: 100 ppm (8 hours) STEL: 150 ppm (15 minutes)  OSHA – TWA: 100 ppm (8 hours)
Hexane (other isomers)	ACGIH – TWA: 500 ppm (8 hours) STEL: 1000 ppm (15 minutes)
n-Hexane	ACGIH – TWA: 50 ppm (8 hours)  OSHA – TWA: 500 ppm (8 hours)
Cyclohexane	ACGIH – TWA: 100 ppm (8 hours)  OSHA – TWA: 300 ppm (8 hours)
Octanes (all isomers)	ACGIH – TWA: 300 ppm (8 hours)  OSHA – TWA: 500 ppm (8 hours)
Heptane (all isomers)	ACGIH – TWA: 400 ppm (8 hours) STEL: 5000 ppm (15 minutes)  OSHA – TWA: 500 ppm (8 hours)
Ethanol	ACGIH – TWA: 1000 ppm (8 hours)  OSHA – TWA: 1000 ppm (8 hours)
Pentanes (all isomers)	ACGIH – TWA: 600 ppm (8 hours)  OSHA – TWA: 1000 ppm (8 hours)
Trimethylbenzenes (all isomers)	ACGIH – TWA: 25 ppm (8 hours)
Ethylbenzene	ACGIH – TWA: 100 ppm (8 hours) STEL: 125 ppm (15 minutes)  OSHA – TWA: 100 ppm (8 hours)
Cumene	ACGIH – TWA: 50 ppm (8 hours)  OSHA – TWA: 50 ppm (8 hours)
Methyl Tertiary Butyl Ether (MTBE)	ACGIH – TWA: 50 ppm (8 hours)
Tertiary Amyl Methyl Ether (TAME)	ACGIH – TWA: 20 ppm (8 hours)

**Section 9: Physical and Chemical Properties**

<b>Physical State:</b>	Liquid.
<b>Color:</b>	Transparent, clear to amber liquid.
<b>Odor:</b>	Strong. Characteristic gasoline odor.
<b>pH:</b>	Not applicable
<b>Boiling Point:</b>	>26 °C (>78 °F)
<b>Melting Point:</b>	Not applicable.
<b>Specific gravity:</b>	0.66 to 0.75 (Water = 1)
<b>Vapor density:</b>	3 to 4 (Air = 1)
<b>Vapor pressure:</b>	220-450 mm Hg at 20°C (68°F) / 6-15 Reid-psia at 37.8°C (100°F)
<b>Volatility:</b>	720 – 770 g/l VOC (w/v)
<b>Viscosity (at 40 °C):</b>	< 1
<b>Flash Point:</b>	< -45 °F / < 43°C
<b>Bulk Density:</b>	6.0 – 6.4 lbs/gal
<b>Solubility in water:</b>	Negligible

**Section 10: Stability and Reactivity**

<b>Stability:</b>	Stable. Extremely flammable liquid and vapor. Vapor can cause fire.
<b>Conditions to avoid:</b>	Keep away from heat, flame and all other possible sources of ignition.
<b>Materials to avoid:</b>	Keep away from strong oxidizing agents such as acids, chlorine, hydrogen peroxide and oxygen.
<b>Hazardous decomposition products:</b>	Please refer to the combustion products identified in Section 5 of this MSDS.
<b>Hazardous Polymerization:</b>	Not expected to occur.

## Section 11: Toxicological Information

### Toxicology Information

**Oral toxicity:** Almost non-toxic. LD 50: > 2000 mg/kg (species: rats)  
**Dermal toxicity:** Almost non-toxic. LD 50: > 2000 mg/kg (species: rabbits)  
**Inhalation toxicity:** Almost non-toxic. LD 50: > 5 mg/l (species: rats)  
**Eye irritation:** Almost non-irritating. Draize score: > 6 and < 15 (species: rabbits)  
**Skin irritation:** Irritant. Primary irritation index: > 3 and < 5 (species: rabbits)

**Other data:** Inhalation of high concentrations of vapors or mists may cause respiratory system irritation and damage. It may also result in the damage and depression of the central nervous system and may cause death. Prolonged contact with the material may cause severe skin irritation.

**Subchronic toxicity:** Dermal studies resulted in significant irritation but not systematic toxicity (species: rabbits). Inhalation exposures (90 day, approximately 1500 ppm vapor) produced light hydrocarbon nephropathy but no significant systemic toxicity (species: rats).

**Neurotoxicity:** Repeated and prolonged exposures to high concentrations of vapor has been reported to result in central nervous system damage and eventually, death. In a study in which ten human volunteers were exposed for 30 minutes to approximately 200, 500 or 1000 ppm concentrations of gasoline vapor, irritation of the eyes was the only significant effect observed, based on both subjective and objective assessments. However, no persistent neurotoxic effects were observed in subchronic inhalation studies of gasoline.

**Reproductive toxicity:** An inhalation study with rats exposed to 0, 400 and 1600 ppm of wholly vaporized unleaded gasoline, 6 hours per day on day 6 through 16 of gestation, showed no teratogenic effects nor indication of toxicity to either the mother or the fetus. Another inhalation study in rats exposed to 3000, 6000, or 9000 ppm of gasoline vapor, 6 hours per day on day 6 through 20 of gestation, also showed no teratogenic effects nor indications of toxicity to either the mother or the fetus.

**Chronic toxicity:** A lifetime mouse skin painting study of unleaded gasoline applied at 50 microliters, three time weekly, resulted in some severe skin irritation and changes, but no statistically significant increase in skin cancer or cancer to any other organ. Lifetime inhalation of wholly vaporized unleaded gasoline over 2000 ppm has caused increased liver tumors in female mice and increased kidney tumors in male rats. The EPA has concluded that mechanism by which wholly vaporized unleaded gasoline causes kidney damage is unique to the male rat. The effects in that species (kidney damage and cancer) should not be used in human risk assessment.

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<b>Other toxic effects on humans</b>	Extremely hazardous in case of ingestion. Very hazardous in case of eye contact. Hazardous in case of skin contact. Slightly hazardous in case of inhalation.
<b>Carcinogenic effects:</b>	Contains material that may cause cancer depending on the level and duration of exposure.
<b>Target organs:</b>	Contains material that may cause damage to humans organs such as (but not limited to) blood, kidneys, lungs, liver, eye, skin, nervous system and upper respiratory tract.

## Section 12: Ecological Information

<b>Ecotoxicity:</b>	This material may be toxic to aquatic organisms such as algae and daphnia. It has also shown to be toxic to fish.
<b>Environmental fate:</b>	The material is expected to be readily biodegradable. When released into the environment, some of the constituents of gasoline will volatilize and be photo degraded in the atmosphere. Following spillage, the more volatile components of gasoline will be rapidly lost, with concurrent dissolution of these and other constituents into the water. Factors such as local environmental conditions, photo-oxidation, biodegradation and adsorption onto suspended sediments, can contribute to the weathering of spilled gasoline.

## Section 13: Disposal Considerations

<b>Waste disposal:</b>	Avoid disposal of spilled material and runoff and contact with soil, waterways, drains and sewers. Disposal of this product and any of its by products should always comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements. This material would likely be identified as a federally regulated RCRA hazardous waste. See sections 7 and 8 for further information on handling, storage and personal protection. See section 9 for the material's physical and chemical properties.
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**Section 14: Transportation Information**

This material is U.S Department of Transportation (DOT) regulated material.

**Shipping name:** Gasoline, 3, UN 1203, PG II  
Gasohol, 3, NA 1203, PG II (for gasoline blended with less than 20% ethanol).

**Hazard class:** 3 DOT Class: Flammable liquid

**Packing Group:** II

**UN / NA Number:** UN1203 / NA1203

**Emergency Response Code:** 128

**Label:**

**Section 15: Regulatory Information**

**TSCA Inventory:** This product and/or its components are listed on the Toxic Substances Control Act (TSCA)

**SARA 302 / 304:  
Emergency planning and notification** The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires facilities subject to Subparts 302 and 304 to submit emergency planning and notification information based on Threshold Planning Quantities (TPQs) and Reportable Quantities (RQs) for “Extremely Hazardous Substances” listed in 40 CFR 302.4 and CFR 355. No components were identified.

**SARA 311 / 312:  
Hazard identification** SARA Title III requires facilities subject to this subpart to submit aggregate information on chemicals by “Hazard Category” as defined in 40 CFR 370.2. This material would be classified under: Fire, Acute (immediate) Health Hazard, Chronic (Delayed) Health Hazard.

**CERCLA / SARA 313:  
Toxic and chemical  
notification and release  
reporting**

This material contains the following chemicals subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR 372

<b>Component</b>	<b>CAS Number</b>	<b>Amount (%)</b>
Benzene	71-43-2	0 – 5
Toluene	108-88-3	0 – 30
Xylene (o, m, p isomers)	1330-20-7	0 – 25
n-Hexane	110-54-3	0 – 3
Cyclohexane	110-82-7	0 – 3
1, 2, 4 Trimethylbenzenes	95-63-6	0 – 5
Ethylbenzene	100-41-4	0 – 5
Cumene	98-82-8	0 – 5
Methyl Tertiary Butyl Ether (MTBE)	1634-04-4	0 – 16

**California Proposition 65:** This material may contain detectable quantities of the following chemicals known to the State of California to cause cancer, birth defects or other reproductive harm, and which may be subject to the requirements of California Proposition 65 (CA Health & Safety Code Section 25249.5):

Benzene (CAS NO. 71-43-3)  
Toluene (CAS No. 108-88-3)  
Ethylbenzene (CAS No. 100-41-4)  
Naphthalene (CAS No. 91-20-3)

**Canadian Regulations:**

WHMIS Hazard Class: B2 – Flammable Liquids  
D2A – Very Toxic Material

**Section 16: Other Information**

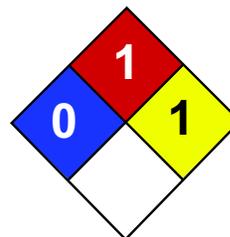
**Issue date:** March 5, 2008  
**Previous issue date:** No previous date  
**Version:** 1  
**MSDS Code:** PEG-UNL

**Legend:**

ACGIH = American Conference of Governmental Industrial Hygienists  
CAS = Chemical Abstracts Service Registry  
CEIL = Ceiling Limit  
CERCLA = The Comprehensive Environmental Response, Compensation and Liability Act  
EPA = Environmental Protection Agency  
NFPA = National Fire Protection Association  
OSHA = Occupational Safety and Health Administration  
SARA = Superfund Amendments and Reauthorization Act  
STEL = Short Term Exposure Limit (15 minutes)  
TWA = Time Weighted Average (8 hours)  
WHMIS = Worker Hazardous Materials Information System (Canada)

**Disclaimer:**

The information presented in this Material Safety Data Sheet (MSDS) is based on data believed to be accurate as of the issuance date of this MSDS. No warranty is expressed or implied for the accuracy or completeness of the above provided information. Petrocom Energy Group, LLC does not assume any liability for any damage or injury arising out of product use by others. The end user of the product has the responsibility for evaluating the accuracy of the data, and determining the safety, toxicity and suitability of the product under any conditions.



Health	1
Fire	1
Reactivity	1
Personal Protection	E

## Material Safety Data Sheet Zinc Metal MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Zinc Metal

**Catalog Codes:** SLZ1054, SLZ1159, SLZ1267, SLZ1099, SLZ1204

**CAS#:** 7440-66-6

**RTECS:** ZG8600000

**TSCA:** TSCA 8(b) inventory: Zinc Metal

**CI#:** Not applicable.

**Synonym:** Zinc Metal Sheets; Zinc Metal Shot; Zinc Metal Strips

**Chemical Name:** Zinc Metal

**Chemical Formula:** Zn

**Contact Information:**

**Sciencelab.com, Inc.**

14025 Smith Rd.

Houston, Texas 77396

US Sales: **1-800-901-7247**

International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**

1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Zinc Metal	7440-66-6	100

**Toxicological Data on Ingredients:** Zinc Metal LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:** Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated or prolonged exposure is not known to aggravate medical condition.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:** Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

**Serious Skin Contact:** Not available.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** 480°C (896°F)

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:**

Slightly flammable to flammable in presence of open flames and sparks, of heat, of oxidizing materials, of acids, of alkalis, of moisture. Non-flammable in presence of shocks.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

Flammable solid. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

**Special Remarks on Fire Hazards:**

Zinc + NaOH causes ignition. Oxidation of zinc by potassium proceeds with incandescence. Residues from zinc dust /acetic acid reduction operations may ignite after long delay if discarded into waste bins with paper. Incandescent reaction when Zinc and Arsenic or Tellurium, or Selenium are combined. When hydrazine mononitrate is heated in contact with zinc, a flaming decomposition occurs at temperatures a little above its melting point. Contact with acids and alkali hydroxides (sodium hydroxide, potassium hydroxide, calcium hydroxide, etc.) results in evolution of hydrogen with sufficient heat of reaction to ignite the hydrogen gas. Zinc foil ignites if traces of moisture are present. It is water reactive and produces flammable gases on contact with water. It may ignite on contact with water or moist air.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Flammable solid that, in contact with water, emits flammable gases. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Cover with dry earth, sand or other non-combustible material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

## Section 7: Handling and Storage

### Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents, acids, alkalis, moisture.

### Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area. Keep from any possible contact with water. Do not allow water to get into container because of violent reaction.

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** Not available.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Lustrous solid. Metal solid.)

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 65.39 g/mole

**Color:** Bluish-grey

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 907°C (1664.6°F)

**Melting Point:** 419°C (786.2°F)

**Critical Temperature:** Not available.

**Specific Gravity:** Not available.

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Insoluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Excess heat, incompatible materials, moisture

**Incompatibility with various substances:**

Reactive with oxidizing agents, acids, alkalis. Slightly reactive to reactive with moisture. The product may react violently with water to emit flammable but non toxic gases.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Incompatible with acids, halogenated hydrocarbons, NH<sub>4</sub>NO<sub>3</sub>, barium oxide, Ba(NO<sub>3</sub>)<sub>2</sub>, Cadmium, CS<sub>2</sub>, chlorates, Cl<sub>2</sub>, CrO<sub>3</sub>, F<sub>2</sub>, Hydroxylamine, Pb(N<sub>3</sub>)<sub>2</sub>, MnCl<sub>2</sub>, HNO<sub>3</sub>, performic acid, KClO<sub>3</sub>, KNO<sub>3</sub>, N<sub>2</sub>O<sub>2</sub>, Selenium, NaClO<sub>3</sub>, Na<sub>2</sub>O<sub>2</sub>, Sulfur, Te, water, (NH<sub>4</sub>)<sub>2</sub>S, As<sub>2</sub>O<sub>3</sub>, CS<sub>2</sub>, CaCl<sub>2</sub>, chlorinated rubber, catalytic metals, halocarbons, o-nitroanisole, nitrobenzene, nonmetals, oxidants, paint primer base, pentacarbonoyliron, transition metal halides, seleninyl bromide, HCl, H<sub>2</sub>SO<sub>4</sub>, (Mg +Ba(NO<sub>3</sub>)<sub>2</sub> +BaO<sub>2</sub>), (ethyl acetoacetate +tribromoneopentyl alcohol. Contact with Alkali Hydroxides(Sodium Hydroxide, Potassium Hydroxide, Calcium Hydroxide, etc) results in evolution of hydrogen. Ammonium nitrate + zinc + water causes a violent reaction with evolution of steam and zinc oxide. May react with water.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:**

LD<sub>50</sub>: Not available. LC<sub>50</sub>: Not available.

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:** Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: May cause skin irritation. Dermal exposure to zinc may produce leg pains, fatigue, anorexia and weight loss. Eyes: May cause eye irritation. Ingestion: May be harmful if swallowed. May cause digestive tract irritation with tightness in throat, nausea, vomiting, diarrhea, loss of appetite, malaise, abdominal pain. fever, and chills. May affect behavior/central nervous system and autonomic nervous system with ataxia, lethargy, staggering gait, mild derrangement in cerebellar function, lightheadness, dizziness, irritability, muscular stiffness, and pain. May also affect blood. Inhalation: Inhalation of zinc dust or fumes may cause respiratory tract and mucous membrane irritation with cough and chest pain. It can also cause "metal fume fever", a flu-like condition characterized appearance of chills, headached fever, maliase, fatigue, sweating, extreme thirst, aches in the legs and chest, and difficulty in breathing. A sweet taste may also be be present in metal fume fever, as well as a dry throat, aches, nausea, and vomiting, and pale grey cyanosis. The toxicological properties of this substance have not been fully investisgated.

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** Not available.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

### Section 14: Transport Information

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

### Section 15: Other Regulatory Information

**Federal and State Regulations:**

New York release reporting list: Zinc Metal Rhode Island RTK hazardous substances: Zinc Metal Pennsylvania RTK: Zinc Metal Florida: Zinc Metal Michigan critical material: Zinc Metal Massachusetts RTK: Zinc Metal New Jersey: Zinc Metal California Director's List of Hazardous Substances: Zinc Metal TSCA 8(b) inventory: Zinc Metal TSCA 12(b) one time export: Zinc Metal SARA 313 toxic chemical notification and release reporting: Zinc Metal CERCLA: Hazardous substances.: Zinc Metal: 1000 lbs. (453.6 kg)

**Other Regulations:** EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** Not Available

**DSCL (EEC):**

R15- Contact with water liberates extremely flammable gases. R17- Spontaneously flammable in air. S7/8- Keep container tightly closed and dry.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 1

**Reactivity:** 1

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 0

**Flammability:** 1

**Reactivity:** 1

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Safety glasses.

### Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 12:18 AM

**Last Updated:** 11/06/2008 12:00 PM

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## **Appendix D**

### **Standard Safe Work Practices**

- 1) Eating, drinking, chewing tobacco, smoking, and carrying matches or lighters is prohibited in a contaminated or potentially contaminated area or where the possibility for the transfer of contamination exists.
- 2) Avoid contact with potentially contaminated substances. Do not walk through puddles, pools, mud, etc. Avoid, whenever possible, kneeling on the ground, leaning, or sitting on equipment or ground. Do not place monitoring equipment on potentially contaminated surfaces (i.e., ground, etc.).
- 3) All field crew members should make use of their senses to alert them to potentially dangerous situations in which they should not become involved; i.e., presence of strong and irritating or nauseating odors.
- 4) Prevent, to the extent possible, spills. In the event that a spillage occurs, contain liquid if possible.
- 5) Field crew members shall be familiar with the physical characteristics of investigations, including:
  - Wind direction;
  - Accessibility to associates, equipment, vehicles;
  - Communication;
  - Hot zone (areas of known or suspected contamination);
  - Site access; and
  - Nearest water sources.
- 6) All wastes generated during activities on-site should be disposed of as directed by the project manager or his on-site representative.
- 7) Protective equipment as specified in the section on personnel protection will be utilized by workers during the initial Site reconnaissance, and other activities.
- 8) Employees shall follow procedures to avoid at-risk behaviors that could result in an incident.

## **APPENDIX 4**

# **SUSTAINABILITY STATEMENT**

## **SUSTAINABILITY STATEMENT**

This Sustainability Statement documents sustainable activities and green remediation efforts planned under this remedial action.

**Reuse of Clean, Recyclable Materials:** Reuse of clean, locally-derived recyclable materials reduces consumption of non-renewable virgin resources and can provide energy savings and greenhouse gas reduction.

An estimate of the quantity (in tons) of clean, non-virgin materials (reported by type of material) reused under this plan will be quantified and reported in the Remedial Action Report (RAR).

**Reduce Consumption of Virgin and Non-Renewable Resources:** Reduced consumption of virgin and non-renewable resources lowers the overall environmental impact of the project on the region by conserving these resources.

An estimate of the quantity (in tons) of virgin and non-renewable resources, the use of which will be avoided under this plan, will be quantified and reported in the RAR.

**Reduced Energy Consumption and Promotion of Greater Energy Efficiency:** Reduced energy consumption lowers greenhouse gas emissions, improves local air quality, lessens in-city power generation requirements, can lower traffic congestion, and provides substantial cost savings.

Best efforts will be made to quantify energy efficiencies achieved during the remediation and will be reported in the RAR. Where energy savings cannot be easily quantified, a gross indicator of the amount of energy saved or the means by which energy savings was achieved will be reported.

**Conversion to Clean Fuels:** Use of clean fuel improves NYC's air quality by reducing harmful emissions.

An estimate of the volume of clean fuels used during remedial activities will be quantified and reported in the RAR.

**Recontamination Control:** Recontamination after cleanup and redevelopment is completed undermines the value of work performed, may result in a property that is less protective of public health or the environment, and may necessitate additional cleanup work later or impede future redevelopment. Recontamination can arise from future releases that occur within the property or by influx of contamination from off-Site.

An estimate of the area of the Site that utilizes recontamination controls under this plan will be reported in the RAR in square feet.

**Storm-water Retention:** Storm-water retention improves water quality by lowering the rate of combined storm-water and sewer discharges to NYC's sewage treatment plants during periods of precipitation, and reduces the volume of untreated influent to local surface waters.

An estimate of the enhanced storm-water retention capability of the redevelopment project will be included in the RAR.

**Linkage with Green Building:** Green buildings provide a multitude of benefits to the city across a broad range of areas, such as reduction of energy consumption, conservation of resources, and reduction in toxic materials use.

The number of Green Buildings that are associated with this brownfield redevelopment property will be reported in the RAR. The total square footage of green building space created as a function of this brownfield redevelopment will be quantified for residential, commercial and industrial/manufacturing uses.

**Paperless Voluntary Cleanup Program:** CREF 546 West 44<sup>th</sup> Street, LLC is participating in OER's Paperless Voluntary Cleanup Program. Under this program,

submission of electronic documents will replace submission of hard copies for the review of project documents, communications and milestone reports.

**Low-Energy Project Management Program:** CREF 546 West 44<sup>th</sup> Street, LLC is participating in OER's low-energy project management program. Under this program, whenever possible, meetings are held using remote communication technologies, such as videoconferencing and teleconferencing to reduce energy consumption and traffic congestion associated with personal transportation.

**Trees and Plantings:** Trees and other plantings provide habitat and add to NYC's environmental quality in a wide variety of ways. Native plant species and native habitat provide optimal support to local fauna, promote local biodiversity, and require less maintenance.

An estimate of the land area that will be vegetated, including the number of trees planted or preserved, will be reported in square feet in the RAR.

## **APPENDIX 5**

### **SOIL/MATERIALS MANAGEMENT PLAN**

# **SOIL/MATERIAL MANAGEMENT PLAN**

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## **SOIL/MATERIALS MANAGEMENT PLAN**

### **1.1 Soil Screening Methods**

Visual, olfactory and photoionization detector (PID) soil screening and assessment will be performed under the supervision of a Qualified Environmental Professional and will be reported in the Remedial Action Report (RAR). Soil screening will be performed during invasive work performed during the remedy and development phases prior to issuance of the Notice of Completion.

### **1.2 Stockpile Methods**

Excavated soil from suspected areas of contamination (e.g., hot spots, underground storage tanks (USTs), drains, etc.) will be stockpiled separately and will be segregated from clean soil and construction materials. Stockpiles will be used only when necessary and will be removed as soon as practicable. While stockpiles are in place, they will be inspected daily, and before and after every storm event. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. Excavated soils will be stockpiled on, at minimum, double layers of 8-mil minimum sheeting, will be kept covered at all times with appropriately anchored plastic tarps, and will be routinely inspected. Broken or ripped tarps will be promptly replaced.

All stockpile activities will be compliant with applicable laws and regulations. Soil stockpile areas will be appropriately graded to control run-off in accordance with applicable laws and regulations. Stockpiles of excavated soils and other materials shall be located at least of 50 feet from the property boundaries, where possible. Hay bales or equivalent will surround soil stockpiles except for areas where access by equipment is required. Silt fencing and hay bales will be used as needed near catch basins, surface waters and other discharge points.

### **1.3 Characterization of Excavated Materials**

Soil/fill or other excavated media that is transported off-Site for disposal will be sampled in a manner required by the receiving facility, and in compliance with applicable laws and regulations. Soils proposed for reuse on-site will be managed as defined in this plan.

### **1.4 Materials Excavation, Load-Out and Departure**

The PE overseeing the remedial action will:

- oversee remedial work and the excavation and load-out of excavated material;
- ensure that there is a party responsible for the safe execution of invasive and other work performed under this work plan;
- ensure that Site development activities and development-related grading cuts will not interfere with, or otherwise impair or compromise the remedial activities proposed in this RAWP
- ensure that the presence of utilities and easements on the Site has been investigated and that any identified risks from work proposed under this plan are properly addressed by appropriate parties;
- ensure that all loaded outbound trucks are inspected and cleaned if necessary before leaving the Site;
- ensure that all egress points for truck and equipment transport from the Site will be kept clean of Site-derived materials during Site remediation.

Locations where vehicles exit the Site shall be inspected daily for evidence of soil tracking off premises. Cleaning of the adjacent streets will be performed as needed to maintain a clean condition with respect to Site-derived materials. Open and uncontrolled mechanical processing of historical fill and contaminated soil on-Site will not be performed without prior OER approval.

## **1.5 Off-Site Materials Transport**

Loaded vehicles leaving the Site will comply with all applicable materials transportation requirements (including appropriate covering, manifests, and placards) in accordance with applicable laws and regulations, including use of licensed haulers in accordance with 6 NYCRR Part 364. If loads contain wet material capable of causing leakage from trucks, truck liners will be used. Queuing of trucks will be performed on-Site, when possible in order to minimize off Site disturbance. Off-Site queuing will be minimized.

Outbound truck transport routes will be reported to OER prior to the start of the remedial action and is discussed in Section 5.8 of the RAWP. This routing will take into account the following factors: (a) limiting transport through residential areas and past sensitive sites; (b) use of mapped truck routes; (c) minimizing off-Site queuing of trucks entering the facility; (d) limiting total distance to major highways; (e) promoting safety in access to highways; and (f) overall safety in transport. To the extent possible, all trucks loaded with Site materials will travel from the Site using these truck routes. Trucks will not stop or idle in the neighborhood after leaving the project Site.

## **1.6 Materials Disposal Off-Site**

The following documentation will be established and reported by the PE for each disposal destination used in this project to document that the disposal of regulated material exported from the Site conforms with applicable laws and regulations: (1) a letter from the PE or Enrollee to each disposal facility describing the material to be disposed and requesting written acceptance of the material. This letter will state that material to be disposed is regulated material generated at an environmental remediation Site in New York under a governmental remediation program. The letter will provide the project identity and the name and phone number of the PE or Enrollee. The letter will include as an attachment a summary of all chemical data for the material being transported; and (2) a letter from each disposal facility stating it is in receipt of the correspondence (1, above) and is approved to accept the material. These documents will be included in the RAR.

The RAR will include an itemized account of the destination of all material removed from the Site during this remedial action. Documentation associated with disposal of all material will include records and approvals for receipt of the material. This information will be presented in the RAR.

Impacted soil/fill or other waste excavated and removed from the Site will be managed as regulated material and will be disposed in accordance with applicable laws and regulations. Historic fill and contaminated soils taken off-Site will be handled as solid waste and will not be disposed at a Part 360-16 Registration Facility (also known as a Soil Recycling Facility).

Waste characterization will be performed for off-site disposal in a manner required by the receiving facility and in conformance with its applicable permits. Waste characterization sampling and analytical methods, sampling frequency, analytical results and QA/QC will be reported in the RAR. A manifest system for off-Site transportation of exported materials will be employed. Manifest information will be reported in the RAR. Hazardous wastes derived from on-site will be stored, transported, and disposed of in compliance with applicable laws and regulations.

If disposal of soil/fill from the Site is proposed for unregulated disposal (i.e., clean soil removed for development purposes), including transport to a Part 360-16 Registration Facility, a formal request will be made for approval by OER with an associated plan compliant with 6NYCRR Part 360-16. This request and plan will include the location, volume and a description of the material to be recycled, including verification that the material is not impacted by site uses and that the material complies with receipt requirements for recycling under 6NYCRR Part 360. This material will be appropriately handled on-site to prevent mixing with impacted material.

## **1.7 Materials Reuse On-Site**

Soil and fill that is derived from the property that meets the 6 NYCRR Part 375 Soil Cleanup Objectives (SCOs) established in this plan may be reused on-site. The SCOs for on-site reuse are listed in the RAWP. "Reuse on-site" means material that is excavated during the remedy or

development, does not leave the property, and is relocated within the same property and on comparable soil/fill material, and addressed pursuant to the NYC VCP agreement subject to Engineering and Institutional Controls. The PE will ensure that reused materials are segregated from other materials to be exported from the Site and that procedures defined for material reuse in this RAWP are followed.

Organic matter (wood, roots, stumps, etc.) or other waste derived from clearing and grubbing of the Site will not be buried on-Site. Soil or fill excavated from the site for grading or other purposes will not be reused within a cover soil layer or within landscaping berms.

## **1.8 Demarcation**

After completion of hotspot removal and any other invasive remedial activities, and prior to backfilling, the top of the residual soil/fill will be defined by one of the following three methods:

1. Placement of a demarcation layer. The demarcation layer will consist of geosynthetic fencing or equivalent material to be placed on the surface of residual soil/fill to provide an observable reference layer. A description or map of the approximate depth of the demarcation layer will be provided in the RAR;
2. A land survey of the top elevation of residual soil/fill before the placement of cover soils, pavement and associated sub-soils, or other materials or structures; and
3. All materials beneath the approved cover will be considered impacted and subject to site management after the remedy is complete.

Demarcation may be established by one or any combination of these three methods. As appropriate, a map showing the method of demarcation for the Site and all associated documentation will be presented in the RAR. This demarcation will constitute the top of the site management horizon.

## **1.9 Import of Backfill Soil from Off-Site Sources**

This Section presents the requirements for imported fill materials to be used below the cover layer and within the clean soil cover layer. All imported soils will meet OER-approved

backfill and cover soil quality objectives for this Site. The backfill and cover soil quality objectives are listed in the RAWP.

A process will be established to evaluate sources of backfill and cover soil to be imported to the Site, and will include an examination of source location, current and historical use(s), and any applicable documentation. Material from industrial sites, spill sites, environmental remediation sites or other potentially contaminated sites will not be imported to the Site.

The following potential sources may be used pending attainment of backfill and cover soil quality objectives:

- Clean soil from construction projects at non-industrial sites in compliance with applicable laws and regulations;
- Clean soil from roadway or other transportation-related projects in compliance with applicable laws and regulations;
- Clean recycled concrete aggregate (RCA) from facilities permitted or registered by the regulations of New York State Department of Environmental Conservation (NYSDEC).

All materials received for import to the Site will be approved by a PE/QEP and will be in compliance with provisions in this RAWP. The RAR will report the source of the fill, evidence that an inspection was performed on the source, chemical sampling results, frequency of testing, and a Site map indicating the locations where backfill or soil cover was placed.

### **Source Screening and Testing**

Inspection of imported fill material will include visual, olfactory and PID screening for evidence of contamination. Materials imported to the Site will be subject to inspection, as follows:

- Trucks with imported fill material will be in compliance with applicable laws and regulations and will enter the Site at designated locations;
- The PE is responsible to ensure that every truck load of imported material is inspected for evidence of contamination; and

- Fill material will be free of solid waste including pavement materials, debris, stumps, roots, and other organic matter, as well as ashes, oil, perishables or foreign matter.

Composite samples of imported material will be taken at a minimum frequency in accordance with NYSDEC CP-51 Table 4. Once it is determined that the fill material meets imported backfill or cover soil chemical requirements and is non-hazardous, and lacks petroleum contamination, the material will be loaded onto trucks for delivery to the Site.

Recycled concrete aggregate (RCA) will be imported from facilities permitted or registered by NYSDEC. Facilities will be identified in the RAR. A PE/QEP is responsible to ensure that the facility is compliant with 6NYCRR Part 360 registration and permitting requirements for the period of acquisition of RCA. RCA imported from compliant facilities will not require additional testing, unless required by NYSDEC under its terms for operation of the facility. RCA imported to the Site must be derived from recognizable and uncontaminated concrete. RCA material is not acceptable for, and will not be used as cover material.

### **1.10 Fluids Management**

All liquids to be removed from the Site, including dewatering fluids, will be handled, transported and disposed in accordance with applicable laws and regulations. Liquids discharged into the New York City sewer system will receive prior approval by New York City Department of Environmental Protection (NYCDEP). NYCDEP regulates discharges to the New York City sewers under Title 15, Rules of the City of New York Chapter 19. Discharge to the New York City sewer system will require an authorization and sampling data demonstrating that the groundwater meets the City's discharge criteria. The dewatering fluid will be pretreated as necessary to meet the NYCDEP discharge criteria. If discharge to the City sewer system is not appropriate, the dewatering fluids will be managed by transportation and disposal at an off-Site treatment facility.

Discharge of water generated during remedial construction to surface waters (i.e. a stream or river) is prohibited without a SPDES permit issued by NYSDEC.

### **1.11 Storm-water Pollution Prevention**

Applicable laws and regulations pertaining to storm-water pollution prevention will be addressed during the remedial program. Erosion and sediment control measures identified in this RAWP (silt fences and barriers, and hay bale checks) will be installed around the entire perimeter of the remedial construction area and inspected once a week and after every storm event to ensure that they are operating appropriately. Discharge locations will be inspected to determine whether erosion control measures are effective in preventing significant impacts to receptors. Results of inspections will be recorded in a logbook and maintained at the Site and available for inspection by OER. All necessary repairs shall be made immediately. Accumulated sediments will be removed as required to keep the barrier and hay bale check functional. Undercutting or erosion of the silt fence toe anchor will be repaired immediately with appropriate backfill materials. Manufacturer's recommendations will be followed for replacing silt fencing damaged due to weathering.

### **1.12 Contingency Plan**

This contingency plan is developed for the remedial construction to address the discovery of unknown structures or contaminated media during excavation. Identification of unknown contamination source areas during invasive Site work will be promptly communicated to OER's Project Manager. Petroleum spills will be reported to the NYSDEC Spill Hotline. These findings will be included in the daily report. If previously unidentified contaminant sources are found during on-Site remedial excavation or development-related excavation, sampling will be performed on contaminated source material and surrounding soils and reported to OER. Chemical analytical testing will be performed for Full List volatiles and semi-volatiles, pesticides/PCBs, and TAL metals, as appropriate. Additional remedial measures, if required, will be determined by the PE in coordination with the OER.

## **1.13 Odor, Dust and Nuisance Control**

### **Odor Control**

All necessary means will be employed to prevent on- and off-site odor nuisances. At a minimum, procedures will include: (a) limiting the area of open excavations; (b) shrouding open excavations with tarps and other covers; and (c) use of foams to cover exposed odorous soils. If odors develop and cannot otherwise be controlled, additional means to eliminate odor nuisances will include: (d) direct load-out of soils to trucks for off-Site disposal; and (e) use of chemical odorants in spray or misting systems.

This odor control plan is capable of controlling emissions of nuisance odors. If nuisance odors are identified, work will be halted and the source of odors will be identified and corrected. Work will not resume until all nuisance odors have been abated. OER will be notified of all odor complaint events. Implementation of all odor controls, including halt of work, will be the responsibility of the PE/ QEP certifying the RAR.

### **Dust Control**

Dust management during invasive on-site work will include, at a minimum:

- Use of a dedicated water spray methodology for roads, excavation areas and stockpiles.
- Use of properly anchored tarps to cover stockpiles.
- Exercise extra care during dry and high-wind periods.
- Use of gravel or recycled concrete aggregate on egress and other roadways to provide a clean and dust-free road surface.

This dust control plan is capable of controlling emissions of dust. . If nuisance dust emissions are identified, work will be halted and the source of dusts will be identified and corrected. Work will not resume until all nuisance dust emissions have been abated. OER will

be notified of all dust complaint events. Implementation of all dust controls, including halt of work, will be the responsibility of the PE/ QEP certifying the RAR.

## **Other Nuisances**

Noise control will be exercised during the remedial program. All remedial work will conform, at a minimum, to NYC noise control standards.

Rodent control will be provided during Site clearing and grubbing, and during the remedial program, as necessary, to prevent nuisances.

### **1.14 Import of Clean Cover**

Approximately 550 cubic yards of soil is anticipated to be imported to the Site for use as clean cover. All imported soil will be uncontaminated, clean soil that meets the lesser of the appropriate NYSDEC 6 NYCRR Part 375-6.8(a) Restricted Residential Use SCOs and the NYSDEC 6 NYCRR Part 375-6.8 groundwater protection SCOs.

The imported uncontaminated, clean soil cover will be from an approved source/facility and will be evaluated by the PE to ensure:

1. That the material is properly maintained at the source and will not be comingled with any other material prior to importing and grading the clean soil material at the Site;
2. That the material does not include any solid waste, including construction and demolition material, as it's prohibited;
3. That screening for evidence of contamination by visual, olfactory and PID soil screening practices prior to testing at the source as well as upon importing to the Site for grading is completed; and
4. That a maximum five-part composite sample will be collected from the segregated stockpile at the source at a minimum frequency of one sample per 250 cubic yards and analyzed for the following 6 NYCRR Part 375 parameters:
  - VOCs by EPA Method 8260C (rev. 2006)
  - SVOCs by EPA Method 8270D (rev. 2007)

- Pesticides by EPA Method 8081B (rev. 2000)
- PCBs by EPA Method 8082A (rev. 2000)
- TAL Metals by EPA Method 6010C (rev. 2007)

Upon receipt of the segregated stockpile analytical results collected at the source, a Clean Soil Sampling Report will be submitted to OER for review/approval prior to importing. The report will include the following:

1. Summary of number of samples collected and analyzed, tabulated data and comparison to the selected Site Use SCOs;
2. Analytical data sheets and chain of custody documentation;
3. Summary of the quantity;
4. Photographs from the segregated stockpile at the source with sample point locations identified;
5. An affidavit from the source/facility on company letterhead stating that the segregated stockpile has been properly maintained at the source and complies with the requirements listed above; and
6. A copy of source/facility NYSDEC permit;

A highly visible demarcation barrier (i.e. orange geo-synthetic material or equivalent) will be installed beneath the clean soil/fill surface cover. Upon importing and grading the OER approved clean soil cover on top of a highly visible demarcation barrier, the following documentation will be presented in the RAR:

1. Copies of purchase invoices;
2. Truck transportation slips from the source to the Site;
3. Confirmation of OER approved clean soil cover material imported and graded at the site on top of highly visible demarcation barrier;
4. Site plan depicting all areas where the OER approved clean soil cover has been placed; and

5. Photographs documenting the importing and grading of the OER approved clean soil cover across the site with the underlying highly visible demarcation barrier (i.e. orange geo-synthetic material or equivalent).

## **APPENDIX 6**

### **EXAMPLE OF NON-HAZARDOUS WASTE MANIFEST**

APPROVAL NUMBER: \_\_\_\_\_

MANIFEST NUMBER: \_\_\_\_\_

(TYPE OR PRINT CLEARLY)

### Non-Hazardous Material Manifest

GENERATOR'S NAME & MAILING ADDRESS:

GENERATOR'S SITE ADDRESS:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

GENERATOR'S PHONE: (\_\_\_\_\_) \_\_\_\_\_

DESCRIPTION OF MATERIAL:

Non DOT Regulated - RCRA Non Hazardous

Quantity \_\_\_\_\_ Gallons \_\_\_\_\_ Tons

**I hereby certify that the above described material is not a hazardous waste as defined by 40 CFR Part 261 nor is it contaminated by PCB as described by 40 CFR Part 761. It is properly classified and packaged for transportation in accordance with applicable regulations.**

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

#### TRANSPORTER

Company: \_\_\_\_\_

Loading Time IN: \_\_\_\_\_ OUT: \_\_\_\_\_

Address: \_\_\_\_\_

Lic. #: \_\_\_\_\_ Decal #: \_\_\_\_\_

DE SW Haulers Permit # SW \_\_\_\_\_

I hereby certify that the above named material was picked up at the site listed above

Driver Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

#### DESTINATION

Time IN: \_\_\_\_\_ OUT: \_\_\_\_\_

I hereby certify that the above named material was delivered without incident to: \_\_\_\_\_

Address: \_\_\_\_\_

Driver Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

I hereby certify that the above named material has been accepted at: \_\_\_\_\_

Authorized Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Date: \_\_\_\_\_

Gross Weight: \_\_\_\_\_

Comments: \_\_\_\_\_

Tare Weight: \_\_\_\_\_

Net Weight in Tons: \_\_\_\_\_

## **APPENDIX 7**

# **WATERPROOFING/VAPOR BARRIER SPECIFICATIONS AND DESIGN DIAGRAMS**

# GRACE

## Construction Products

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**W. R. Grace & Co.-Conn.**  
62 Whittemore Avenue  
Cambridge, MA 02140

July 10<sup>th</sup>, 2013

Elodie Bourbon  
Langan  
21 Penn Plaza  
New York, NY 10001

Project: 546 West 44<sup>th</sup> Street New York, NY

Mr. Bourbon,

I have reviewed the following documents prepared by Langan for the project referenced above:

- Table 3 - Soil Sample Detection Summary with a sample date of 4/29/2013
- Table 4 - Groundwater Detection Summary with a sample date of 5/8/2013
- Table 5 - SV Detection Summary with a sample date of 5/1/2013
- Figure 5 - Sample Location Plan dated 5/16/2013
- Figure 6 - Soil Sample Results Map dated 5/16/2013
- Figure 7 - Groundwater Sample Results Map dated 5/29/2013
- Figure 8 - Soil Vapor Sample Results Map dated 5/18/2013

The identified contaminants at the levels reported will not have an adverse effect on the waterproofing or vapor barrier properties of Preprufe 300R<sup>®</sup>, Preprufe 160R<sup>®</sup>, Florprufe 120<sup>®</sup>, Bituthene<sup>®</sup> 3000/4000 all system accessories, provided standard design and application procedures are followed.

Standard installation instructions and details can be found on our website at [www.graceconstruction.com](http://www.graceconstruction.com).

If you have any questions, please feel free to call me at the number above.

Sincerely,



Mark Franciosi - Technical Services Engineer

cc: J. Ridgeway

## PREPRUFE® 300R & 160R

Pre-applied waterproofing membranes that bond integrally to poured concrete for use below slabs or behind basement walls on confined sites

### Description

Preprufe® 300R & 160R membranes are unique composite sheets comprising a thick HDPE film, an aggressive pressure sensitive adhesive and a weather resistant protective coating.

Unlike conventional non-adhering membranes, which are vulnerable to water ingress tracking between the unbonded membrane and structure, the unique Preprufe bond to concrete prevents ingress or migration of water around the structure.

The Preprufe R System includes:

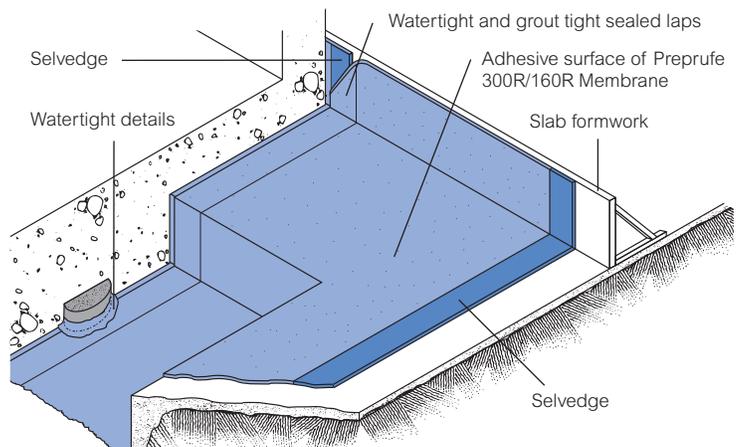
- **Preprufe 300R**—heavy-duty grade for use below slabs and on rafts (i.e. mud slabs). Designed to accept the placing of heavy reinforcement using conventional concrete spacers.
- **Preprufe 160R**—thinner grade for blindside, zero property line applications against soil retention systems.
- **Preprufe Tape LT**—for covering cut edges, roll ends, penetrations and detailing (temperatures between 25°F (-4°C) and 86°F (+30°C)).
- **Preprufe Tape HC**—as above for use in Hot Climates (minimum 50°F (10°C)).
- **Bituthene® Liquid Membrane**—for sealing around penetrations, etc.
- **Adcor™ ES**—waterstop for joints in concrete walls and floors
- **Preprufe Tieback Covers**—preformed cover for soil retention wall tieback heads
- **Preprufe Preformed Corners**—preformed inside and outside corners

Preprufe 300R & 160R membranes are applied either horizontally to smooth prepared concrete, carton forms or well rolled and compacted earth or crushed stone substrate; or vertically to permanent formwork or adjoining structures. Concrete is then cast directly against the adhesive side of the membranes. The specially developed Preprufe adhesive layers work together to form a continuous and integral seal to the structure.

Preprufe can be returned up the inside face of slab formwork but is not recommended for conventional twin-sided formwork on walls, etc. Use Bituthene self-adhesive membrane or Procor® fluid applied membrane to walls after removal of formwork for a fully bonded system to all structural surfaces.

### Advantages

- **Forms a unique continuous adhesive bond to concrete poured against it**—prevents water migration and makes it unaffected by ground settlement beneath slabs
- **Fully-adhered watertight laps** and detailing
- **Provides a barrier to water, moisture and gas**—physically isolates the structure from the surrounding ground
- **BBA Certified** for basement Grades 2, 3, & 4 to BS 8102:1990
- **Zero permeance** to moisture
- **Solar reflective**—reduced temperature gain
- **Simple and quick to install**—requiring no priming or fillets
- **Can be applied to permanent formwork**—allows maximum use of confined sites
- **Self protecting**—can be trafficked immediately after application and ready for immediate placing of reinforcement
- **Unaffected by wet conditions**—cannot activate prematurely
- **Inherently waterproof, non-reactive system:**
  - not reliant on confining pressures or hydration
  - unaffected by freeze/thaw, wet/dry cycling
- **Chemical resistant**—effective in most types of soils and waters, protects structure from salt or sulphate attack



Drawings are for illustration purposes only. Please refer to [graceconstruction.com](http://graceconstruction.com) for specific application details.

## Installation

The most current application instructions, detail drawings and technical letters can be viewed at [graceconstruction.com](http://graceconstruction.com). For other technical information contact your local Grace representative.

Preprufe 300R & 160R membranes are supplied in rolls 4 ft (1.2 m) wide, with a selvedge on one side to provide self-adhered laps for continuity between rolls. The rolls of Preprufe Membrane and Preprufe Tape are interwound with a disposable plastic release liner which must be removed before placing reinforcement and concrete.

### Substrate Preparation

**All surfaces**—It is essential to create a sound and solid substrate to eliminate movement during the concrete pour. Substrates must be regular and smooth with no gaps or voids greater than 0.5 in. (12 mm). Grout around all penetrations such as utility conduits, etc. for stability (see Figure 1).

**Horizontal**—The substrate must be free of loose aggregate and sharp protrusions. Avoid curved or rounded substrates. When installing over earth or crushed stone, ensure substrate is well compacted to avoid displacement of substrate due to traffic or concrete pour. The surface does not need to be dry, but standing water must be removed.

**Vertical**—Use concrete, plywood, insulation or other approved facing to sheet piling to provide support to the membrane. Board systems such as timber lagging must be close butted to provide support and not more than 0.5 in. (12 mm) out of alignment.

### Membrane Installation

Preprufe can be applied at temperatures of 25°F (-4°C) or above. When installing Preprufe in cold or marginal weather conditions 55°F (<13°C) the use of Preprufe Tape LT is recommended at all laps and detailing. Preprufe Tape LT should be applied to clean, dry surfaces and the release liner must be removed immediately after application. Alternatively, Preprufe Low Temperature (LT) is available for low temperature condition applications. Refer to Preprufe LT data sheet for more information.

**Horizontal substrates**—Place the membrane HDPE film side to the substrate with the clear plastic release liner facing towards the concrete pour. End laps should be staggered to avoid a build up of layers. Leave plastic release liner in position until overlap procedure is completed (see Figure 2).

Accurately position succeeding sheets to overlap the previous sheet 3 in. (75 mm) along the marked selvedge. Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to overlap. Peel back the plastic release liner from between the overlaps as the two layers are bonded together. Ensure a continuous bond is achieved without creases and roll firmly with a heavy roller. Completely remove the plastic liner to expose the protective coating. Any initial tack will quickly disappear.

Refer to Grace Tech Letter 15 for information on suitable rebar chairs for Preprufe.

**Vertical substrates**—Mechanically fasten the membrane vertically using fasteners appropriate to the substrate with the clear plastic release liner facing towards the concrete pour. The membrane may be installed in any convenient length. Fastening can be made through the selvedge using a small and low profile head fastener so that the membrane lays flat and allows firmly rolled overlaps. Immediately remove the plastic release liner.

Ensure the underside of the succeeding sheet is clean, dry and free from contamination before attempting to

overlap. Roll firmly to ensure a watertight seal.

**Roll ends and cut edges**—Overlap all roll ends and cut edges by a minimum 3 in. (75 mm) and ensure the area is clean and free from contamination, wiping with a damp cloth if necessary. Allow to dry and apply Preprufe Tape LT (or HC in hot climates) centered over the lap edges and roll firmly (see Figure 3). Immediately remove printed plastic release liner from the tape.

### Details

Refer to Preprufe Field Application Manual, Section V Application Instructions or visit [graceconstruction.com](http://graceconstruction.com). This manual gives comprehensive guidance and standard details.

### Membrane Repair

Inspect the membrane before installation of reinforcement steel, formwork and final placement of concrete. The membrane can be easily cleaned by power washing if required. Repair damage by wiping the area with a damp cloth to ensure the area is clean and free from dust, and allow to dry. Repair small punctures (0.5 in. (12 mm) or less) and slices by applying Preprufe Tape centered over the damaged area and roll firmly. Remove the release liner from the tape. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6 in. (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape, remove the release liner from the tape and roll firmly. Any areas of damaged adhesive should be covered with Preprufe Tape. Remove printed plastic release liner from tape. Where exposed selvedge has lost adhesion or laps have not been sealed, ensure the area is clean and dry and cover with fresh Preprufe Tape, rolling firmly. Alternatively, use a hot air gun or similar to activate adhesive and firmly roll lap to achieve continuity.

### Pouring of Concrete

Ensure the plastic release liner is removed from all areas of Preprufe membrane and tape.

It is recommended that concrete be poured within 56 days (42 days in hot climates) of application of the membrane. Following proper ACI guidelines, concrete must be placed carefully and consolidated properly to avoid damage to the membrane. Never use a sharp object to consolidate the concrete.

### Removal of Formwork

Preprufe membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength of 1500 psi (10 N/mm<sup>2</sup>) is recommended prior to stripping formwork supporting Preprufe membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

Refer to Grace Tech Letter 17 for information on removal of formwork for Preprufe.

Figure 1



Figure 2

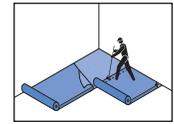
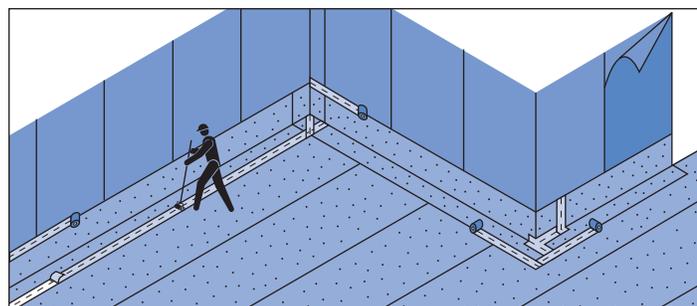
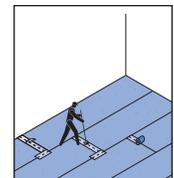


Figure 3

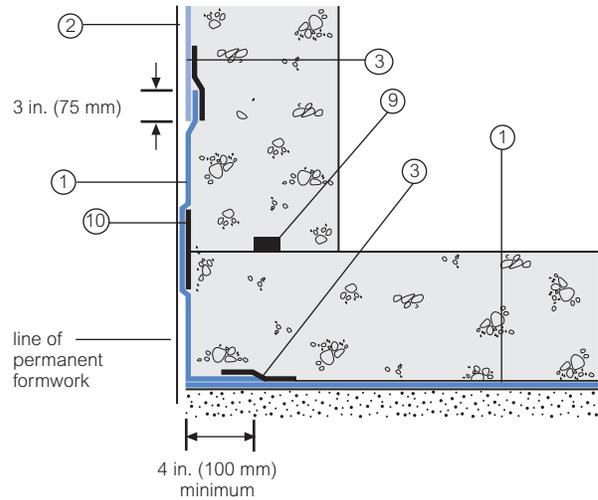


## Detail Drawings

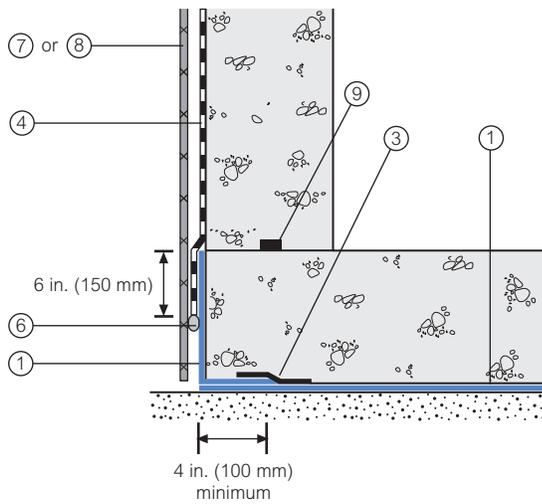
Details shown are typical illustrations and not working details. For a list of the most current details, visit us at [graceconstruction.com](http://graceconstruction.com).

For technical assistance with detailing and problem solving please call toll free at 866-333-3SBM (3726).

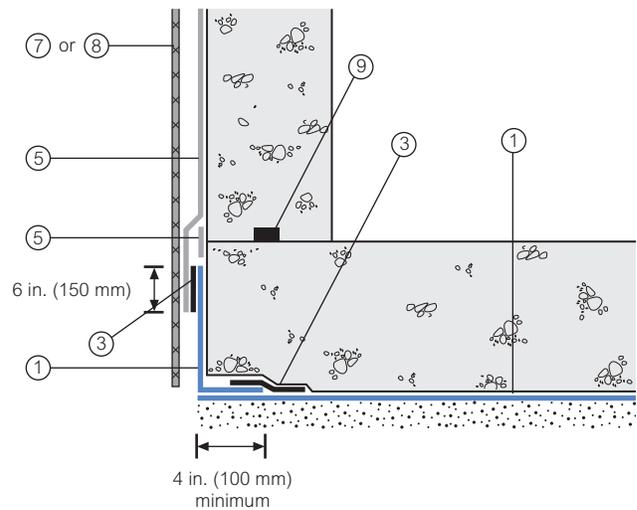
### Wall base detail against permanent shutter



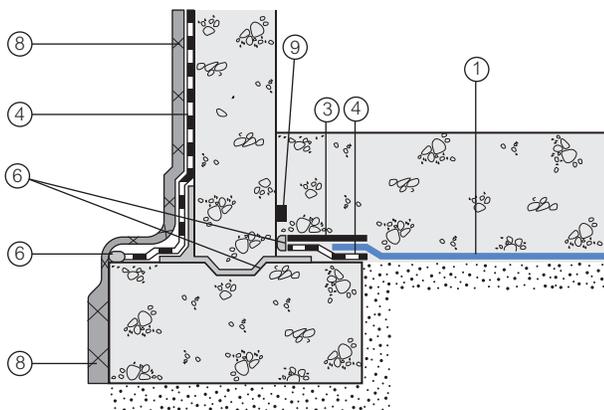
### Bituthene wall base detail (Option 1)



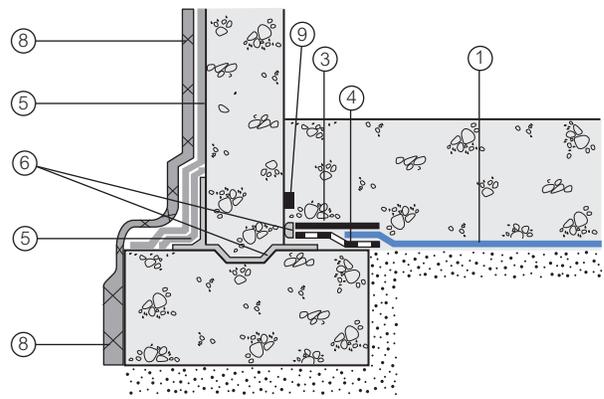
### Procor wall base detail (Option 1)



### Bituthene wall base detail (Option 2)



### Procor wall base detail (Option 2)



- 1 Preprufe 300R
- 2 Preprufe 160R
- 3 Preprufe Tape
- 4 Bituthene

- 5 Procor
- 6 Bituthene Liquid Membrane
- 7 Protection

- 8 Hydroduct®
- 9 Adcor ES
- 10 Preprufe CJ Tape

## Supply

Dimensions (Nominal)	Preprufe 300R Membrane	Preprufe 160R Membrane	Preprufe Tape (LT or HC*)
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	
Roll size	4 ft x 98 ft (1.2 m x 30 m)	4 ft x 115 ft (1.2 m x 35 m)	4 in. x 49 ft (100 mm x 15 m)
Roll area	392 ft <sup>2</sup> (36 m <sup>2</sup> )	460 ft <sup>2</sup> (42 m <sup>2</sup> )	
Roll weight	108 lbs (50 kg)	92 lbs (42 kg)	4.3 lbs (2 kg)
Minimum side/end laps	3 in. (75 mm)	3 in. (75 mm)	3 in. (75 mm)
* LT denotes Low Temperature (between 25°F (-4°C) and 86°F (+30°C)) HC denotes Hot Climate (50°F (>+10°C))			
<b>Ancillary Products</b>			
Bituthene Liquid Membrane—1.5 US gal (5.7 liter) or 4 US gal (15.1 liter)			

## Physical Properties

Property	Typical Value 300R	Typical Value 160R	Test Method
Color	white	white	
Thickness	0.046 in. (1.2 mm)	0.032 in. (0.8 mm)	ASTM D3767
Lateral Water Migration Resistance	Pass at 231 ft (71 m) of hydrostatic head pressure	Pass at 231 ft (71 m) of hydrostatic head pressure	ASTM D5385, modified <sup>1</sup>
Low temperature flexibility	Unaffected at -20°F (-29°C)	Unaffected at -20°F (-29°C)	ASTM D1970
Resistance to hydrostatic head	231 ft (71 m)	231 ft (71 m)	ASTM D5385, modified <sup>2</sup>
Elongation	660%	580%	ASTM D412, modified <sup>3</sup>
Tensile strength	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)	ASTM D412
Crack cycling at -9.4°F (-23°C), 100 cycles	Unaffected, Pass	Unaffected, Pass	ASTM C836
Puncture resistance	221 lbs (990 N)	100 lbs (445 N)	ASTM E154
Peel adhesion to concrete	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D903, modified <sup>4</sup>
Lap peel adhesion	5 lbs/in. (880 N/m)	5 lbs/in. (880 N/m)	ASTM D1876, modified <sup>5</sup>
Permeance to water vapor transmission	0.01 perms (0.6 ng/(Pa × s × m <sup>2</sup> ))	0.01 perms (0.6 ng/(Pa × s × m <sup>2</sup> ))	ASTM E96, method B
Water absorption	0.5%	0.5%	ASTM D570

### Footnotes:

- Lateral water migration resistance is tested by casting concrete against membrane with a hole and subjecting the membrane to hydrostatic head pressure with water. The test measures the resistance of lateral water migration between the concrete and the membrane.
- Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125 in. (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.
- Elongation of membrane is run at a rate of 2 in. (50 mm) per minute.
- Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2 in. (50 mm) per minute at room temperature.
- The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2 in. (50 mm) per minute.

### Specification Clauses

Preprufe 300R or 160R shall be applied with its adhesive face presented to receive fresh concrete to which it will integrally bond. Only Grace Construction Products approved membranes shall be bonded to Preprufe 300R/160R. All Preprufe 300R/160R system materials shall be supplied by Grace Construction Products, and applied strictly in accordance with their instructions. Specimen performance and formatted clauses are also available.

NOTE: Use Preprufe Tape to tie-in Procor with Preprufe.

### Health and Safety

Refer to relevant Material Safety data sheet. Complete rolls should be handled by a minimum of two persons.

[www.graceconstruction.com](http://www.graceconstruction.com)

For technical assistance call toll free at 866-333-3SBM (3726)

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We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.—Conn., 62 Whittemore Avenue, Cambridge, MA 02140. In Canada, Grace Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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**GRACE**

# GRACE

## Construction Products

### 1. Product Name

Preprufe® 300R and 160R Waterproofing Systems

### 2. Manufacturer

Grace Construction Products  
62 Whittemore Avenue  
Cambridge, MA 02140  
(866) 333-3SBM (3726)  
Fax: (617) 498-4311  
www.graceconstruction.com

### 3. Product Description

#### BASIC USE

Preprufe® 300R and Preprufe 160R membranes are used in blind side waterproofing applications where positive side waterproofing is desired but the positive side of the structure is not accessible once the concrete is poured.

Preprufe 300R Membrane is used primarily in under slab and below-grade split slab applications. Preprufe 300R Membrane is applied over properly prepared earth, stone or concrete. Concrete is cast against the adhesive side of the membrane. Preprufe 300R Membrane incorporates an exceptionally tough HDPE film and is designed to allow foot traffic directly on the membrane during construction.

Preprufe 160R Membrane is used in vertical applications. It is applied to properly prepared soil retention systems and concrete is cast against the membrane.

#### COMPOSITION & MATERIALS

Preprufe 300R and Preprufe 160R membranes are multilayered composite sheets consisting of an exceptionally tough HDPE film, a specially formulated synthetic pressure sensitive adhesive and a protective coating.

#### ACCESSORY COMPONENTS

- Preprufe Tape
- Preprufe Tieback Cover
- Bituthene® Liquid Membrane
- Preprufe CJ Tape

### 4. Technical Data

#### APPLICABLE STANDARDS

ASTM International

- ASTM C836 Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course
- ASTM D412 Standard Test Methods for Vulcanized Rubber and Thermoplastic Rubbers and Thermoplastic Elastomers-Tension
- ASTM D570 Standard Test Method for Water Absorption of Plastics
- ASTM D882 Standard Test Method for Tensile Properties of Thin Plastic Sheet
- ASTM D903 Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
- ASTM D1876 Standard Test Method for Peel Resistance of Adhesives (T-Peel Test)
- ASTM D1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
- ASTM D3767 Standard Practice for Rubber-Measurement of Dimensions
- ASTM D5385 Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes
- ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials
- ASTM E154 Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

#### PHYSICAL PROPERTIES

For detailed information on the physical properties of Preprufe 300R and Preprufe 160R Membranes, see Table 1.

### 5. Installation

Apply membranes when ambient temperatures are 25 degrees F (-4 degrees C) or above. Substrates must be smooth and sound with no gaps or voids in excess of 1/2" (13 mm).

#### FORMING SYSTEMS

It is very important to specify a forming system that is compatible with the Preprufe system. One-sided wall forming systems are clearly the best choice since there are no form ties used in this system. Therefore, there are no penetrations to the waterproofing layer. Other compatible systems include gang forms with load gathering form ties. These systems minimize the number of penetrations.

Hand set forming systems or, more specifically, use of form ties with ultimate load capabilities of less than 10,000 lb (44,500 N) per tie are not recommended. These systems have many form ties that penetrate the waterproofing.

#### Formwork

On vertical applications, use one-sided wall forming systems to minimize punctures in the membrane after the membrane is installed. Review Technical Letter "Forming Systems for use with Preprufe 160R Membrane."

#### APPLICATION

##### Vertical Applications

Apply the membrane with the thick white HDPE film side facing the prepared substrate and the protective coating side facing the concrete to be poured. The membrane may be installed in any convenient length vertically. For lengths of membrane greater than 8' (2.4 m), mechanically fasten the membrane at 2' (0.6 m) intervals centered in the self-adhesive selvedge prior to making the side lap, using small head nails or staples.

Using the lap line as a guide, apply subsequent sheets overlapping the in-place sheet 3" (75 mm) along the self-adhesive selvedge of the membrane. Avoid overlapping membrane beyond the guideline to prevent fishmouths. Should they occur, apply Preprufe Tape centered over the fishmouth, roll firmly to form a tight seal and remove release liner.

It is important that all nail heads be covered with the overlapping sheets of membrane. Side laps must be immediately rolled firmly to ensure a tight seal. A metal seam roller is recommended. To maximize adhesion in colder temperatures or in damp conditions, apply gentle heat to the lap area using a hot air gun (see Technical Letters). Overlap the ends of the membrane a minimum of 3" (75 mm). Remove and discard the release liner from both sheets. Apply Preprufe Tape centered over the end lap and edges of membrane not sealed by selvedge. Roll firmly to form a tight seal. Remove release liner from tape and discard.

For additional protection, Hydroduct® Tape may be applied between the sheets in the end lap area prior to application of the Preprufe Tape. Secure the top termination of the membrane with a termination bar and fasteners.

If the top termination is to be covered by the concrete pour, a strip of Preprufe CJ Tape must be placed over the termination bar and fasteners. Place the termination bar 2" (50 mm)

below the top edge of the membrane. If the membrane will tie into subsequent sheets of Preprufe, Bituthene Membrane or other waterproofing, leave an additional 12" (300 mm) length of Preprufe 160R membrane. Protect this length from damage and do not remove the release liner. This length of clean membrane will be used to complete the appropriate waterproofing details after the concrete or lift is poured.

**Horizontal Applications**

Roll out the membrane with the thick white HDPE film side facing the prepared substrate and the protective coating side facing the concrete to be poured. Remove the clear release liner at the time of installation. Using the lap line as a guide, align and roll out subsequent sheets overlapping the in-place sheet 3" (75 mm) along the self-adhesive selvage of the membrane. Side laps must be immediately rolled firmly to ensure a tight seal. A heavy metal seam roller is recommended.

Avoid overlapping membrane beyond the guideline to prevent fishmouths. Should this occur, apply Preprufe Tape centered over the fishmouth, roll firmly to form a tight seal and remove release liner. To maximize adhesion in

cooler temperatures or in damp conditions, apply gentle heat to the lap area using a hot air gun (see Technical Letters section of website). The membrane may be installed in any convenient length. Overlap the ends of the membrane 3" (75 mm) and remove and discard the release liner from both sheets. Apply Preprufe Tape centered over the end lap and edges of membrane not sealed by selvage. Roll firmly to form a tight seal. Remove release liner from tape and discard.

For additional protection, Hydroduct Tape may be applied between the sheets in the end lap area prior to application of the Preprufe Tape.

**Internal & External Corners**

Install the Preprufe Membrane according to standard application instructions detailed for vertical and horizontal applications above. Internal and external corners should be formed as shown in the Detail Drawings returning the membrane a minimum of 4" (100 mm).

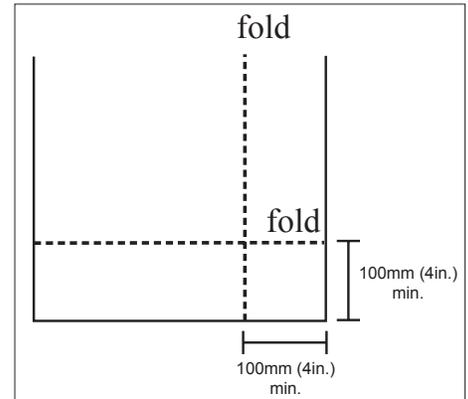


Figure 1

**Internal Corners**

Fold the membrane as indicated in Figure 1. Crease the fold with nominal hand pressure to ensure a close fit to the substrate profile and avoid hollows. With the white coating facing toward the concrete, ensure that the apex of the corner is covered and sealed with Preprufe Tape. Remove release liner and roll firmly.

**External Corners**

Fold the membrane as indicated in Figure 1. Crease the fold with nominal hand pressure to

TABLE 1 PHYSICAL PROPERTIES OF PREPRUFE 160R AND PREPRUFE 300R MEMBRANES

Property & test method	Typical values	
	Preprufe 160R Membrane	Preprufe 300R Membrane
Color	White	White
Thickness, ASTM D3767, Method A	0.032" (0.8 mm) nominal	0.046" (1.2 mm) nominal
Low temperature flexibility, ASTM D1970	Unaffected at -10°F (-23°C)	Unaffected at -10°F (-23°C)
Resistance to hydrostatic head, minimum, ASTM D5385, Modified <sup>1</sup>	23T (70 m)	23T (70 m)
Elongation, minimum, ASTM D412, Modified <sup>2</sup>	300%	300%
Tensile strength, film, minimum, ASTM D882	4000 psi (27.6 MPa)	4000 psi (27.6 MPa)
Crack cycling, at -10°F (-23°C), 100 cycles, ASTM C836	Unaffected	Unaffected
Puncture resistance, minimum, ASTM E154	100 lb (445 N)	221 lb (990 N)
Peel adhesion to concrete, minimum, ASTM D903, Modified <sup>3</sup>	5.0 lb/in width (880 N/m)	5.0 lb/in width (880 N/m)
Lap peel adhesion, ASTM D1876, Modified <sup>4</sup>	2.5 lb/in width (440 N/m)	2.5 lb/in width (440 N/m)
Permeance to water vapor transmission, maximum, ASTM D96, Method B	0.01 perms (0.6 ng/(Pa × s × m <sup>2</sup> ))	0.01 perms (0.6 ng/(Pa × s × m <sup>2</sup> ))
Water absorption, maximum, ASTM D570	0.5%	0.5%

<sup>1</sup> Hydrostatic head tests of Preprufe Membranes are performed by casting concrete against the membrane with a lap. Before the concrete cures, a 0.125" (3 mm) spacer is inserted perpendicular to the membrane to create a gap. The cured block is placed in a chamber where water is introduced to the membrane surface up to the head indicated.

<sup>2</sup> Elongation of membrane is run at a rate of 2" (51 mm) per minute.

<sup>3</sup> Concrete is cast against the protective coating surface of the membrane and allowed to properly dry (7 days minimum). Peel adhesion of membrane to concrete is measured at a rate of 2" (51 mm) per minute at room temperature.

<sup>4</sup> The test is conducted 15 minutes after the lap is formed (per Grace published recommendations) and run at a rate of 2" (51 mm) per minute at 25°F (-4°C).

ensure a close fit to the substrate profile and avoid hollows. Cut the Preprufe membrane in order to wrap around corner. With the white coating facing toward the concrete, ensure that the apex of the corner is covered and sealed with Preprufe Tape. Remove release liner and roll firmly.

**Round Penetrations**

For Service Pipes, Lighting Conduit, Piles, etc. - Follow these steps to seal around penetrations:

1. All penetrations must be firmly secured and stable. Grout around all penetrations that are not stable. Clean loose dust or dirt from the penetration surface using a clean, dry cloth or brush. Remove rust, if applicable, with a wire brush and wipe clean.
2. Cut the field membrane tight to the penetration and remove release liner. If membrane is not within 1/2" (12 mm) of penetration and not more than 2" (50 mm) from penetration, apply Preprufe Tape to cover the gap. Roll firmly into place and remove release liner. If the membrane is greater than 2" (51 mm) from penetration, install more Preprufe Membrane to cover the gap, repeating these instructions until Preprufe

Membrane/Tape is within 1/2" (12 mm).

3. Mix and apply Bituthene Liquid Membrane around the penetration. Liquid Membrane should be placed to form a minimum 1" (25.4 mm) continuous fillet between the Preprufe Membrane/Tape and the base of the penetration.
4. Cut a patch of Preprufe Membrane that is a minimum of 12" (300 mm) larger than the diameter or width of the penetration so that the patch extends 6" (150 mm) beyond the penetration in all directions. Remove the release liner and center the patch over penetration and trace/draw the penetration profile onto the patch. Using sheers or a utility knife, make relief cuts through the membrane. Triangles formed by making a

relief cut are not to exceed 2" (50 mm) in height when placed over penetration. In other words, penetration diameters greater than 4" (100 mm) need to be trimmed. Remove and discard release liner.

5. Slide the patch over penetration and press into the partially cured Liquid Membrane. Ensure that the patch is pressed firmly into the Liquid Membrane and is positioned directly onto the Preprufe Field Membrane/Tape below. Using a trowel, smooth out any Liquid Membrane that has flowed out of the relief cut.
6. Apply Preprufe Tape centered over the edges of the patch and roll firmly to form a tight seal. Remove release liner from tape and discard.
7. Wrap the penetration with Preprufe Tape, positioning the tape at the base of the patch. Remove enough release liner to overlap Tape onto itself and roll/press firmly into place. Remove remaining release liner and discard.

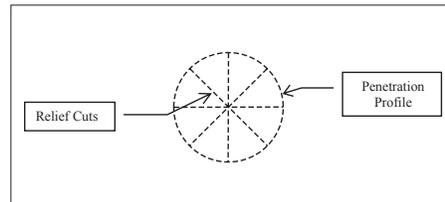


Figure 2

**Straight Edge Penetrations**

For square piles, steel columns, walers, rakers, etc. - Follow these steps to seal around

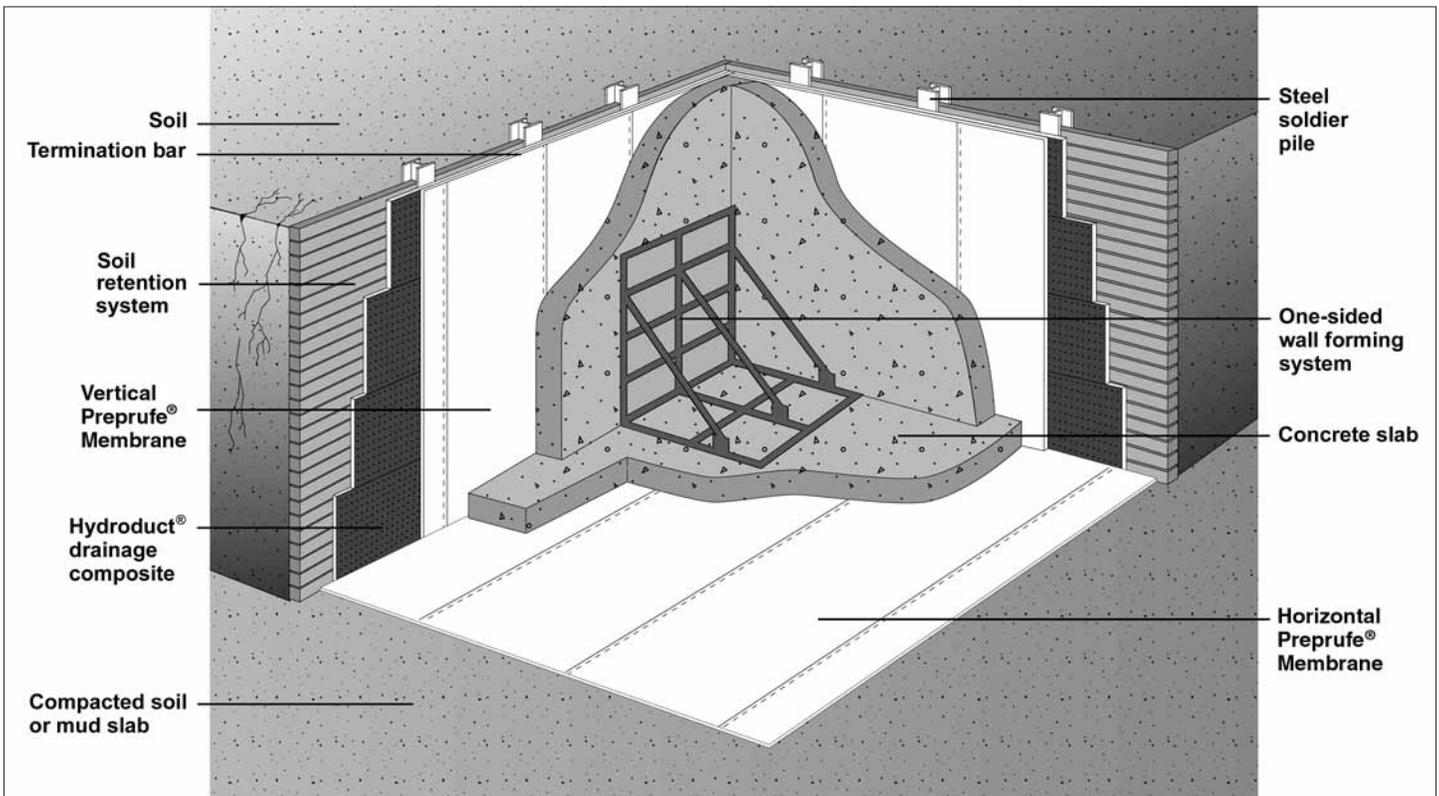


Figure 3 Preprufe® Waterproofing Systems

penetrations:

1. All penetrations must be firmly secured and stable. Grout around all penetrations that are not stable. Clean loose dust or dirt from the penetration surface using a clean, dry cloth or brush. Remove rust, if applicable, with a wire brush and wipe clean.
2. Cut the field membrane tight to the penetration and remove release liner. If membrane is not within 1/2" (12 mm) of penetration and not more than 2" (51 mm) from penetration, apply Preprufe Tape to cover the gap. Roll firmly into place and remove release liner. If the membrane is greater than 2" (51 mm) from penetration, install more Preprufe Membrane to cover the gap repeating these instructions until Preprufe Membrane/Tape is within 1/2" (12 mm).
3. Mix and apply Bituthene Liquid Membrane around the penetration. Liquid Membrane should be placed to form a minimum 1" (25.4 mm) continuous fillet between the Preprufe Membrane/Tape and the base of the penetration. Apply a 90 mil (2.2 mm) continuous coating overlapping a minimum of 3" (75 mm) onto the surface of the Preprufe Membrane and the penetration.
4. Install a minimum 12" (300 mm) strip of Bituthene Membrane centered over the Preprufe Membrane and the penetration intersection.
5. Install Preprufe Tape to cover the strip of Bituthene Membrane by overlapping a minimum of 1" (25.4 mm) until a minimum of 2" (51 mm) overlap onto the Preprufe Membrane is achieved.
6. Terminate the top edge of the strip of Bituthene Membrane and Preprufe Tape along the penetration with a bead of Bituthene Liquid Membrane.

#### Wall Penetrations

For Rebar, All-Thread, Metal Dowels, etc. - Follow these steps to seal around penetrations:

1. Clean loose dust or dirt from the penetration and the surrounding substrate surface using a clean, dry cloth or brush. Remove rust, if applicable, with a wire brush and wipe clean.
2. Mix and apply Bituthene Liquid Membrane around the penetration. Liquid Membrane should be placed to form a minimum 1" (25.4 mm) continuous fillet between the substrate and the base of the penetration.
3. Cut the field membrane tight to the penetration and remove release liner. If membrane is not within 1/2" (12 mm) of penetration and not more than 2" (51 mm) from

penetration, apply Preprufe Tape to cover the gap. Roll firmly into place and remove release. If the membrane is greater than 2" (51 mm) from penetration, install more Preprufe Membrane to cover the gap repeating these instructions until Preprufe Membrane/Tape is within 1/2" (12 mm).

4. Position the field membrane snug to the penetration so that it is a maximum of 1/2" (12 mm) from the base of the penetration and press firmly into the partially cured Liquid Membrane.
5. Apply Liquid Membrane to form a minimum 1" (25.4 mm) continuous fillet between the Preprufe Membrane and the base of the penetration. Extend a 90 mil (2.2 mm) continuous coating of Liquid Membrane overlapping a minimum of 3" (75 mm) onto the surface of the Preprufe Membrane and 6" (150 mm) onto the penetration.
6. Wrap the penetration with Preprufe Tape, positioning the tape at the base of the penetration. Remove enough release liner to overlap tape onto itself and roll/press firmly into place. Remove remaining release liner and discard.

#### Tiebacks

The Preprufe Tieback Cover is a specially designed, two-part cover used to maintain waterproofing integrity at soil retention tieback heads. The Preprufe Tieback Cover consists of a rigid ABS plastic base and prefabricated Preprufe membrane cover.

1. Install Preprufe Membrane within 2" of tieback as per standard installation instructions.
2. Center the base over tieback head and secure base to soil retention system using appropriate fasteners. Fasteners should have a low profile head.
3. Apply Preprufe Tape centered over the edge of the base flange and roll firmly to form a tight seal. Remove release liner and discard.
4. Position the membrane cover over the base taking care to ensure the cover flange sits flat onto the Preprufe Membrane.
5. Apply Preprufe Tape centered over the edge of the cover flange and roll firmly to form a tight seal. Remove release liner and discard.

Note: All Preprufe Tape should overlap onto surfaces of tape, membrane, base, cover, etc., a minimum of 50 mm (2").

#### Columns

There are 2 common methods to create a waterproof seal under columns.

- Column Option 1 - Preprufe Membrane is placed over the column footing and directly under the column. Tie-in penetrations such as rebar and threaded rod that penetrate the membrane should be sealed with Bituthene Liquid Membrane. Cut the membrane tight to the penetration. If membrane is not within 1/2" (12 mm) of penetration, apply Preprufe Tape to cover the gap. Mix and apply Bituthene Liquid Membrane around the penetration. Bituthene Liquid Membrane should be placed to form a minimum 1" (25.4 mm) continuous fillet around the penetration at the point of penetration. Bituthene Liquid Membrane should be applied as a 90 mil (2.2 mm) continuous coating overlapping a minimum of 3" (75 mm) onto the surface of the Preprufe membrane.
- Column Option 2 - Preprufe Membrane is placed below the column footing before it is poured. The membrane is installed following the vertical and horizontal application instructions described earlier in this section. When placing the membrane, it is important to leave sufficient length of Preprufe 300R beyond the footing to allow for tie-in to the Preprufe Membrane that will be laid to waterproof the general slab area. The release liner must not be removed from this extra length, and it should be protected from damage until the tie-in details are completed.

#### Grade Beam Pile Caps

The preferred methods to waterproof pile caps are to either "tank" or "cover" the pile cap.

- Pile Cap Option 1 (Tanking Option) - Install Preprufe Membrane over the prepared substrate as instructed in horizontal applications above. Preprufe Membrane is placed in the area formed for the pile cap before the concrete is poured. When placing the membrane, it is important to leave sufficient length of Preprufe beyond the pile cap area to allow for tie-in to the Preprufe Membrane that will be laid to waterproof the general slab area. Cut membrane tight to each pile and complete detail around each pile as instructed earlier in this section for a Penetration Detail.
- Pile Cap Option 2 (Covering Option) - For mud slabs, clean loose dust or dirt from the

pile cap and mud slab surface using a clean, dry cloth or brush. Apply a continuous 90 mil (2.2 mm) coating of Bituthene Liquid Membrane or Procor over the top of the pile cap. Place a 1" (25.4 mm) bead of Liquid Membrane or Procor around all penetrations at the point of penetration through the pile cap. Prime along the edge of the mud slab a minimum of 6" (150 mm) from the edge of pile cap with a Bituthene Primer and allow to dry. Align a 9" (225 mm) strip of Bituthene Membrane centered over the edge of the pile cap. Remove release liner and roll firmly onto the Liquid Membrane and primed mud slab. Install Preprufe Membrane over the prepared substrate and terminate it 2" (51 mm) onto the pile cap. Apply Preprufe Tape centered over the Preprufe Membrane termination. Remove the release liner and roll firmly. Seal Bituthene Membrane and Preprufe Tape edge with a termination bead of Liquid Membrane.

**Pile Cap Option 2 for Compacted Earth**

Apply a continuous 90 mil (2.2 mm) coating of Bituthene Liquid Membrane or Procor over the top of the pile cap. Place a 1" (25.4 mm) bead of Liquid Membrane or Procor around all penetrations at the point of penetration through the pile cap. Remove compacted earth away from the sides of pile cap. Clean loose dust or dirt from the pile cap surface using a clean, dry cloth or brush.

Prime the sides of the pile cap a minimum of 6" (150 mm) from the top of pile cap with a Bituthene Primer and allow to dry. Align a 9" (225 mm) strip of Bituthene Membrane centered over the outside edge (outside corner) of the pile cap. Remove release liner and roll firmly onto the Liquid Membrane and primed sides of pile cap. Align a 12" (300 mm) strip of Bituthene Membrane centered over the outside edge (outside corner) of the pile cap. Remove half of release liner by scoring release liner along the center of the strip.

Roll firmly onto the sides of pile cap with the 9" (225 mm) strip of Bituthene Membrane and the remaining primed pile cap. Leave the other half of the 12" (300 mm) strip with the release liner still intact in order to receive the Preprufe Membrane. Replace earth/fill and compact per standard back-filling instructions being careful not to damage the Bituthene strip including the non-bonded portion. Invert the Bituthene strip, and remove the remaining release liner to expose the adhesive portion

of the Bituthene.

Install Preprufe Membrane over the prepared substrate and terminate it 2" (51 mm) onto the pile cap. Roll firmly onto the inverted Bituthene strip. Apply Preprufe Tape centered over the Preprufe Membrane termination. Remove the release liner and roll firmly. Seal Bituthene Membrane and Preprufe Tape edge with a termination bead of Liquid Membrane.

**Pile Cap Option 2 for Non-Continuous Covering**  
If the Structural Engineer or the design does not allow for the waterproofing to "cover" the pile cap, there must be a minimum 6" (150 mm) continuous shoulder along the perimeter of the pile cap to allow for a proper termination. Apply a continuous 90 mil (2.2 mm) coating of Bituthene Liquid Membrane or Procor onto the top of the pile cap along the outside edge.

Apply a 6" (150 mm) strip of Bituthene Membrane onto the Bituthene Liquid Membrane or Procor along the edge of the pile cap. Install Preprufe Membrane over the prepared substrate and terminate it 2" (51 mm) onto the pile cap. Apply Preprufe Tape centered over the Preprufe Membrane termination. Remove the release liner and roll firmly. Seal Bituthene Membrane and Preprufe Tape edge with a termination bead of Liquid Membrane.

**Construction Joints**

Install the Preprufe membrane according to standard horizontal and vertical application instructions detailed above. Preprufe CJ Tape should be applied to the surface of the Preprufe membrane and centered along the line of all concrete joints. Remove release liner and roll firmly.

**Tie-Ins**

**Preprufe 160R to Preprufe 300R Sub Slab Waterproofing** - Install Preprufe 300R Membrane over the prepared substrate as detailed in horizontal and vertical applications above. Continue onto the vertical surface of the prepared soil retention system a minimum of 18" (450 mm) above the finished elevation of the structural floor slab.

Secure the top of the membrane to temporarily hold it in place on the vertical substrate. Care should be taken to prevent damage to this exposed membrane from concrete back-splash as well as slag from rebar welding in wall forms. The exposed membrane on the vertical surface can be protected with

protection board, plywood or other materials.

Following the vertical application instructions detailed above, install Preprufe 160R Membrane over the prepared vertical soil retention system. Unfasten the vertical length of the Preprufe 300R Membrane and tuck the Preprufe 160R behind the 18" (450 mm) length of Preprufe 300R, ensuring a minimum 3" (75 mm) lap. Complete the detail by installing Preprufe Tape centered over the lap being careful to seal any holes from fasteners. Roll firmly and remove the release liner.

**Preprufe 300R to Post-Applied Wall Waterproofing** - There are 2 options available to tie Preprufe 300R Membrane into wall waterproofing. In Option 1, the Preprufe 300R Membrane is installed under the concrete slab and the footing. Option 2 is intended for applications where the Preprufe 300R Membrane and wall waterproofing are connected through the wall and footing junction.

- Option 1 - Install Preprufe 300R Membrane over the prepared horizontal substrate and extend it up the vertical surface of the slab formwork. Terminate the membrane 6" (150 mm) above the top elevation of the structural floor slab or wall footing. Once the slab or footing is poured and cured for 7 days, remove the forms and trim the excess membrane above the slab (see Technical Letters). Install the wall membrane according to standard application procedures of the post-applied waterproofing manufacturer. Ensure that the wall membrane overlaps onto the surface of the Preprufe 300R by a minimum of 6" (150 mm).
- Option 2 - Prior to the pouring of the wall, apply a 90 mil (2.2 mm) coating of Bituthene Liquid Membrane on top of the footing area using standard application procedures. Extend the Bituthene Liquid Membrane 3" (75 mm) beyond the proposed wall width in each direction. Install the wall membrane according to standard application procedures of the post-applied waterproofing manufacturer. Ensure that the wall membrane overlaps onto the surface of the Preprufe 300R by a minimum of 6" (150 mm). On the inside of the wall, install a minimum 9" (225 mm) strip of Bituthene sheet membrane over the Bituthene Liquid Membrane that extends beyond the footing area. Install Bituthene Membrane by removing the release liner and firmly rolling the product in place. Install Preprufe 300R Membrane over the prepared substrate and terminate it at the center of the Bituthene sheet membrane strip. Apply Preprufe CJ Tape centered over the Preprufe

300R Membrane termination. Remove the release liner and roll firmly.

**Preprufe 160R to Plaza Deck Waterproofing** - Install Preprufe 160R over the prepared vertical surface following the standard vertical application instructions above. Terminate the Preprufe 160R Membrane 6" (150 mm) above the proposed height of the finished wall. Once the wall is poured and properly cured, remove temporary forming and trim the excess Preprufe 160R remaining above the wall. Install the plaza deck waterproofing according to the manufacturer's standard installation procedures. Ensure that the plaza deck waterproofing overlaps the 160R membrane a minimum of 9" (225 mm) and terminate it onto the Preprufe 160R using a bead of Bituthene Liquid Membrane.

**Preprufe 160R to Post-Applied Wall Waterproofing** - Install Preprufe 160R over the prepared vertical surface following the standard vertical application instructions above. Extend the Preprufe 160R Membrane 12" (300 mm) beyond the end of the blind-side wall. As the foundation wall formwork is installed, fold the 12" (300 mm) piece of Preprufe 160R Membrane to form a sharp corner. Secure it to the inside face of the exterior form panel. Once the wall is poured and cured for seven days, remove the formwork and install the post-applied waterproofing according to the manufacturer's standard installation procedures.

**Preprufe 300R Membrane Wall Termination**

- **Option 1 (Liquid Membrane Detail)** - Install Preprufe 300R Membrane over a mud slab as detailed in horizontal applications above. For compacted earth, contact a local Grace representative. Install Preprufe 300R Membrane tight to all vertical and horizontal intersections. At the termination of the membrane, place a 1" (25.4 mm) fillet of Bituthene liquid membrane and trowel a 90 mil (2.2 mm) coating a minimum of 3" (75 mm) onto vertical and horizontal surfaces. Remove the release liner and install a minimum 12" (300 mm) strip of Bituthene Membrane centered over the horizontal termination. Install Preprufe Tape to cover the strip of Bituthene Membrane by overlapping a minimum of 1" (25.4 mm) until a minimum of 2" (51 mm) overlap onto the Preprufe Membrane is achieved. Terminate the top edge of the strip of Bituthene Membrane and Preprufe Tape along the wall with a

bead of Bituthene Liquid Membrane.

- **Option 2 (Sheet Membrane Detail)** - Install Preprufe 300R Membrane over the prepared substrate as detailed in horizontal applications above. Install Preprufe 300R Membrane tight to all vertical and horizontal intersections. Install a minimum 6" (150 mm) strip of Bituthene Membrane on the vertical surface along the joint. Mix and apply Bituthene Liquid Membrane to form a minimum 1" (25.4 mm) continuous fillet between the Preprufe Membrane and the wall. Install Preprufe CJ Tape 6" (150 mm) from the edge of the wall onto the Preprufe Membrane and terminate 2" (51 mm) onto the strip of Bituthene Membrane. Install Preprufe CJ Tape onto the strip of Bituthene Membrane and overlap onto the previous Preprufe CJ Tape a minimum of 2" (51 mm). Terminate the top edge of the strip of Bituthene Membrane and Preprufe Tape along the wall with a bead of Bituthene Liquid Membrane.

**Membrane Repair**

Inspect the membrane for damage before placement of reinforcing steel, formwork and concrete. Repair small punctures 1/2" (12 mm), or less, and slices by applying Preprufe Tape centered over the damaged area and roll firmly. Remove the release liner from the tape. Repair holes and large punctures by applying a patch of Preprufe membrane, which extends 6" (150 mm) beyond the damaged area. Seal all edges of the patch with Preprufe Tape, remove the release liner from the tape and roll firmly.

**CONCRETE PLACEMENT**

Lightly soiled membrane should be cleaned with air blower and heavily soiled membrane should be cleaned with a power-washer. Cast concrete within 56 days (42 days in hot climates) of application of the membrane. Concrete must be placed carefully to avoid damage to the membrane. Never use a sharp object to consolidate concrete.

**REMOVAL OF FORMWORK**

Preprufe Membranes can be applied to removable formwork, such as slab perimeters, elevator and lift pits, etc. Once the concrete is poured, the formwork must remain in place until the concrete has gained sufficient compressive strength to develop the surface bond. Preprufe Membranes are not recommended for conventional twin-sided wall forming systems.

A minimum concrete compressive strength

of 1500 psi (10 N/mm<sup>2</sup>) is recommended prior to stripping formwork supporting Preprufe Membranes. Premature stripping may result in displacement of the membrane and/or spalling of the concrete.

As a guide, to reach the minimum compressive strength stated above, a structural concrete mix with an ultimate strength of 6000 psi (40 N/mm<sup>2</sup>) will typically require a cure time of approximately 6 days at an average ambient temperature of 25 degrees F (-4 degrees C) or 2 days at 70 degrees F (21 degrees C).

## 6. Availability & Cost

**AVAILABILITY**

A network of distributors carries Preprufe and Bituthene products for prompt delivery to project sites.

**COST**

For specific information, contact a local distributor or a Grace Construction Products representative.

## 7. Warranty

A 5 year material warranty for Preprufe and Bituthene membrane products is available from the manufacturer upon request.

## 8. Maintenance

Preprufe 300R and Preprufe 160R membranes will not require maintenance when installed in accordance with Grace's recommendations.

## 9. Technical Services

Support is provided by full-time, technically trained Grace field sales representatives and technical service personnel, backed by a central research and development staff.

## 10. Filing Systems

- Reed First Source
- Additional product information is available from the manufacturer.

W. R. Grace & Co. -Conn. hopes the information here will be helpful. It is based upon data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations and suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co. -Conn., 62 Whittemore Avenue, Cambridge, MA 02140. In Canada, W. R. Grace & Co. Canada, Ltd., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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This product may be covered by patents or patents pending.

PF-118C Printed in U.S.A. 11/06 AFS/LJ/3M



## Florprufe™ 120

### Integrally bonded vapor protection for slabs on grade

#### Description

Florprufe™ 120 is a high performance vapor barrier with Grace's Advanced Bond Technology™ that forms a unique seal to the underside of concrete floor slabs.

Comprising a highly durable polyolefin sheet and a specially developed, non-tacky adhesive coating, Florprufe 120 seals to liquid concrete to provide integrally bonded vapor protection.

Florprufe exceeds ASTM E1745 Class A rating.

#### Advantages

- Forms a powerful integral seal to the underside of concrete slabs
- Protects valuable floor finishes such as wood, tiles, carpet and resilient flooring from damage by vapor transmission
- Direct contact with the slab complies with the latest industry recommendations
- Remains sealed to the slab even in cases of ground settlement
- Ultra low vapor permeability
- Durable, chemical resistant polyolefin sheet
- Lightweight, easy to apply, kick out rolls
- Simple lap forming with mechanical fixings or tape

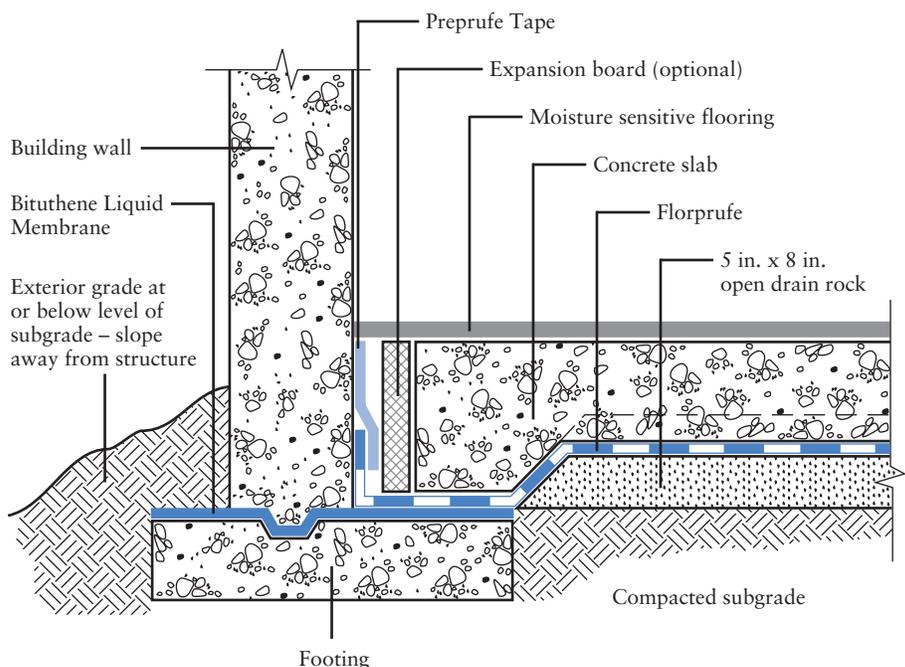
#### Use

Florprufe 120 is engineered for use below slabs on grade with moisture-impermeable or moisture-sensitive floor finishes that require the highest level of vapor protection.

Florprufe complies with the latest recommendations of ACI Committees 302 and 360, i.e. for slabs with vapor sensitive coverings, the location of the vapor barrier should always be in direct contact with the slab<sup>1</sup>.

The membrane is loose laid onto the prepared sub-base, forming overlaps that can be either mechanically secured or taped. The unique bond of Florprufe to concrete provides continuity of vapor protection at laps. Alternatively, if a taped system is preferred, self-adhered Preprufe® Tape can be used to overband the laps.

Slab reinforcement and concrete can be placed immediately. Once the concrete is poured, an integral bond develops between the concrete and membrane.



Typical Assembly

<sup>1</sup> ACI 302.1R-96 Addendum

## Supply

### Florprufe 120

Supplied in rolls	1.2 m x 35 m (4 ft x 115 ft)
Roll area	42 m <sup>2</sup> (460 ft <sup>2</sup> )
Roll weight	37 kg (81 lbs) approx.

### Ancillary Products

Preprufe Tape is packaged in cartons containing 4 rolls that are 100 mm x 15 m (4 in. x 49 ft). Bituthene Liquid Membrane is supplied in 5.7 L (1.5 gal) pails.

### Physical Properties: Exceeds ASTM E1745 Class A rating

Property	Typical Value	Test Method
Color	White	
Thickness (nominal)	0.5 mm (0.021 in.)	ASTM D3767 – Method A
Water Vapor Permeance	0.03 perms	ASTM E96 – Method B <sup>1</sup>
Tensile Strength	68 lbs/in.	ASTM E154 <sup>1</sup>
Elongation	300%	ASTM D412
Puncture Resistance	3300 gms	ASTM D1709 <sup>1</sup>
Peel Adhesion to Concrete	>4 lbs/in.	ASTM D903

1. Test methods that comprise ASTM E1745 standard for vapor retarders

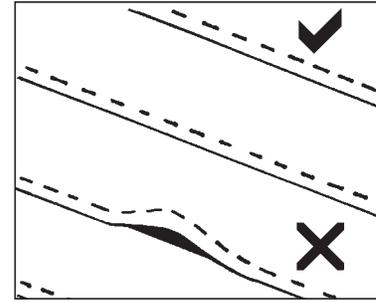


Figure 1

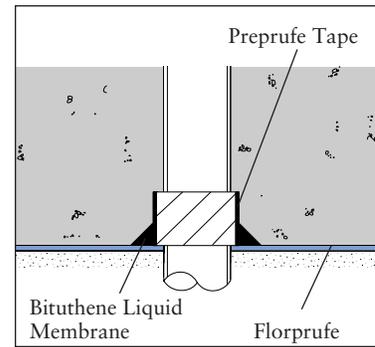


Figure 2

## Installation

### Health & Safety

Refer to relevant Material Safety Data Sheet. Complete rolls should be handled by 2 persons.

Florprufe 120 can be applied at temperatures of -4°C (25°F) or above. Membrane installation is unaffected by wet weather. Installation and detailing of Florprufe 120 are generally in accordance with ASTM E1643-98.

Prepare substrate in accordance with ACI 302.1R Section 4.1. Install Florprufe 120 over the leveled and compacted base. Place the membrane with the smooth side down and the plastic liner side up facing towards the concrete slab. Remove and discard plastic liner. End laps should be staggered to avoid a build up of layers.

Succeeding sheets should be accurately positioned to overlap the previous sheet 50 mm (2 in.) along the marked lap line.

### Laps

#### 1. Mechanical fastening method –

To prevent the membrane from moving and gaps opening, the laps should be fastened together at 1.0 m (39 in.) maximum centers. Fix through the center of the lap area using 12 mm (0.5 in.) long washer-head, self-tapping, galvanized screws (or similar) and allowing the head of the screw to bed into the adhesive compound to self-seal. It is not necessary to fix the membrane to the substrate, only to itself. **Ensure the membrane lays flat and no openings occur.** (See Figure 1.) Additional fastening may be required at corners, details, etc. Continuity is achieved once the slab is poured and the bond to concrete develops.

OR

#### 2. Taped lap method –

For additional security use Grace Preprufe Tape to secure and seal the overlaps. Overband the lap with the 100 mm (4 in.) wide Preprufe Tape, using the lap line for alignment. Remove plastic release liner to ensure bond to concrete.

### Penetrations

Mix and apply Bituthene Liquid Membrane detailing compound to seal around penetrations such as drainage pipes, etc. (See Figure 2 and refer to the Bituthene Liquid Membrane data sheet, BIT-230.)

### Concrete Placement

Place concrete within 30 days. Inspect membrane and repair any damage with patches of Preprufe Tape. Ensure all liner is removed from membrane and tape before concreting.

For Technical Assistance call toll free at 866-333-3SBM (3726).

**web** Visit our web site at [www.graceconstruction.com](http://www.graceconstruction.com)

W. R. Grace & Co.-Conn.

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**GRACE**  
Construction Products

## BITUTHENE® 3000 AND BITUTHENE LOW TEMPERATURE

Self-adhesive, rubberized asphalt/polyethylene waterproofing membranes for basements and sub-structures

### Description

Bituthene® 3000 and Bituthene Low Temperature are self-adhesive, rubberized asphalt/polyethylene waterproofing membranes used in basements and sub-structures.

### Advantages

- **Waterproof**—high hydrostatic head resistance
- **Cross laminated film**—provides dimensional stability, high tear strength, puncture and impact resistance
- **Cold applied**—no flame hazard; self-adhesive overlaps ensure continuity
- **Chemically resistant**—provides effective external protection against aggressive soils and ground water
- **Flexible**—accommodates minor settlement and shrinkage movement
- **Controlled thickness**—factory made sheet ensures constant, non-variable site application
- **Wide application window**—
  - **Bituthene Low Temperature** surface and ambient temperatures between 25°F (-4°C) and 60°F (16°C)
  - **Bituthene 3000** surface and ambient temperatures at 40°F (5°C) or above

- **Ripcord® split release on demand**—faster application in the straight-aways, ease of membrane positioning in detailed areas

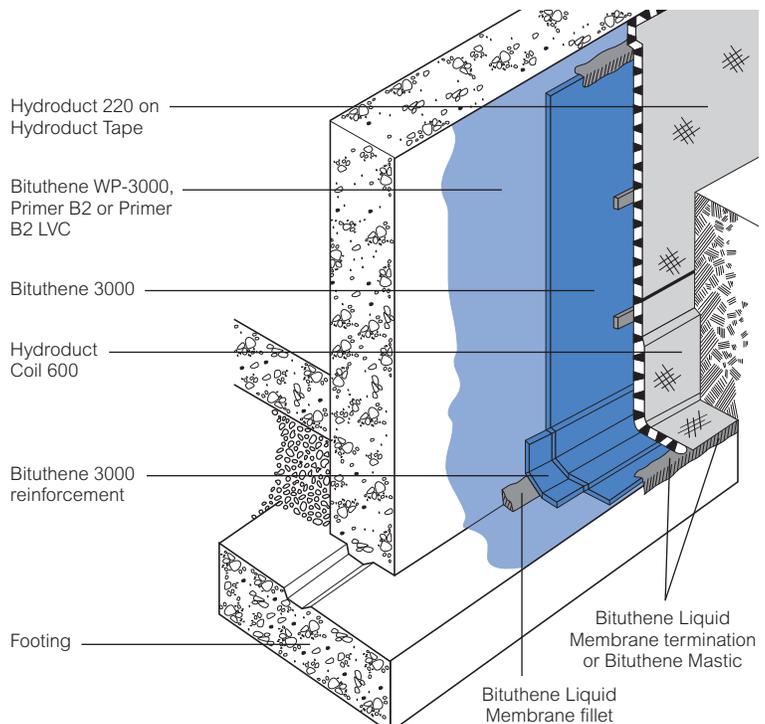
### Use

Bituthene is ideal for waterproofing concrete, masonry and wood surfaces where in-service temperatures will not exceed 130°F (54°C). It can be applied to foundation walls, tunnels, earth sheltered structures and split slab construction, both above and below grade. (For above grade applications, see *Above Grade Waterproofing Bituthene 3000 and Bituthene Low Temperature.*)

Bituthene is 1/16 in. (1.5 mm) thick, 3 ft (0.9 m) wide and 66.7 ft (20 m) long and is supplied in rolls. It is unrolled sticky side down onto concrete slabs or applied onto vertical concrete faces primed with Bituthene Primer WP-3000, Primer B2 or Primer B2 LVC. Continuity is achieved by overlapping a minimum 2 in. (50 mm) and firmly rolling the joint.

### Product Advantages

- Waterproof
- Cross laminated film
- Cold applied
- Chemically resistant
- Flexible
- Controlled thickness
- Wide application window
- Ripcord split release on demand



Drawings are for illustration purposes only. Please refer to [graceconstruction.com](http://graceconstruction.com) for specific application details.

Bituthene is extremely flexible. It is capable of bridging shrinkage cracks in the concrete and will accommodate minor differential movement throughout the service life of the structure.

## Application Procedures

### Safety, Storage and Handling Information

Bituthene products must be handled properly. Vapors from solvent-based primers and mastic are harmful and flammable. For these products, the best available information on safe handling, storage, personal protection, health and environmental considerations has been gathered. Material Safety Data Sheets (MSDS) are available at [graceconstruction.com](http://graceconstruction.com) and users should acquaint themselves with this information. Carefully read detailed precaution statements on product labels and the MSDS before use.

### Surface Preparation

Surfaces should be structurally sound and free of voids, spalled areas, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil and wax from exposed surfaces. Remove dust, dirt, loose stone and debris. Concrete must be properly dried (minimum 7 days for normal structural concrete and 14 days for lightweight structural concrete).

**If time is critical, Bituthene Primer B2 or Bituthene Primer B2 LVC may be used to allow priming and installation of membrane on damp surfaces or green concrete. Priming may begin in this case as soon as the concrete will maintain structural integrity.** Use form release agents which will not transfer to the concrete. Remove forms as soon as possible from below horizontal slabs to prevent entrapment of excess moisture. Excess moisture may lead to blistering of the membrane. Cure concrete with clear, resin-based curing compounds which do not contain oil, wax or pigment. Except with Primer B2 or Primer B2 LVC, allow concrete to thoroughly dry following rain. Do not apply any products to frozen concrete.

Repair defects such as spalled or poorly consolidated areas. Remove sharp protrusions and form match lines. On masonry surfaces, apply a parge coat to rough concrete block and brick walls or trowel cut mortar joints flush to the face of the concrete blocks.

### Temperature

- Apply Bituthene 3000 Membrane only in dry weather and at air and surface temperatures of 40°F (5°C) and above.
- Apply Bituthene Low Temperature Membrane only in dry weather and when air and surface temperatures are between 25°F (-4°C) and 60°F (16°C).
- Apply Bituthene Primer WP-3000 in dry weather above 40°F (5°C).

- Apply Bituthene Primer B2 in dry weather above 25°F (-4°C). (See separate product information sheet.)

### Priming

- Apply Bituthene Primer WP-3000 by spray or roller at a coverage rate of 500–600 ft<sup>2</sup>/gal (12–15 m<sup>2</sup>/L). Allow to dry one hour or until concrete returns to original color.
- Apply Bituthene Primer B2 by a lamb's wool roller at a coverage rate of 250–350 ft<sup>2</sup>/gal (6–8 m<sup>2</sup>/L). Allow primer to dry one hour or until tack-free.
- Apply Bituthene Primer B2 LVC by a lamb's wool roller at a coverage rate of 325–425 ft<sup>2</sup>/gal (7.5–10 m<sup>2</sup>/L). Allow primer to dry one hour or until tack free.
- Dry time may be longer in cold temperatures. Reprime areas if contaminated by dust. If the work area is dusty, apply membrane as soon as the primer is dry.
- **Do not apply any primer to Bituthene membrane.**

### Corner Details

The treatment of corners varies depending on the location of the corner. For detailed information on Bituthene Liquid Membrane, see separate product information sheet.

- At wall to footing inside corners—
  - Option 1:** Apply membrane to within 1 in. (25 mm) of base of wall. Treat the inside corner by installing a ¾ in. (20 mm) fillet of Bituthene Liquid Membrane. Extend Bituthene Liquid Membrane at least 2½ in. (65 mm) onto footing, and 2½ in. (65 mm) onto wall membrane.
  - Option 2:** Treat the inside corner by installing a ¾ in. (20 mm) fillet of Bituthene Liquid Membrane. Apply 12 in. (300 mm) wide strip of sheet membrane centered over fillet. Apply wall membrane over inside corner and extend 6 in. (150 mm) onto footing. Apply 1 in. (25 mm) wide troweling of Bituthene Liquid Membrane over all terminations and seams within 12 in. (300 mm) of corner.
- At footings where the elevation of the floor slab is 6 in. (150 mm) or more above the footing, treat the inside corner either by the above two methods or terminate the membrane at the base of the wall. Seal the termination with Bituthene Liquid Membrane.

### Joints

Properly seal all joints with waterstop, joint filler and sealant as required. Bituthene membranes are not intended to function as the primary joint seal. Allow sealants to fully cure. Pre-strip all slab and wall cracks over ¼ in. (1.5 mm) wide and all construction and control joints with 9 in. (230 mm) wide sheet membrane strip.

## Application on Horizontal Surfaces

(Note: Preprufe® pre-applied membranes are strongly recommended for below slab or for any application where the membrane is applied before concreting. See Preprufe product information sheets.)

Apply membrane from the low point to the high point so that laps shed water. Overlap all seams at least 2 in. (50 mm). Stagger all end laps. Roll the entire membrane firmly and completely as soon as possible. Use a linoleum roller or standard water-filled garden roller less than 30 in. (760 mm) wide, weighing a minimum of 75 lbs (34 kg) when filled. Cover the face of the roller with a resilient material such as a ½ in. (13 mm) plastic foam or two wraps of indoor-outdoor carpet to allow the membrane to fully contact the primed substrate. Seal all T-joints and membrane terminations with Bituthene Liquid Membrane at the end of the day.

## Protrusions and Drains

Apply membrane to within 1 in. (25 mm) of the base of the protrusion. Apply Bituthene Liquid Membrane 0.1 in. (2.5 mm) thick around protrusion. Bituthene Liquid Membrane should extend over the membrane a minimum of 2½ in. (65 mm) and up the penetration to just below the finished height of the wearing course.

## Vertical Surfaces

Apply membrane in lengths up to 8 ft (2.5 m). Overlap all seams at least 2 in. (50 mm). On higher walls apply membrane in two or more sections with the upper overlapping the lower by at least 2 in. (50 mm). Roll all membrane with a hand roller.

Terminate the membrane at grade level. Press the membrane firmly to the wall with the butt end of a hardwood tool such as a hammer handle or secure into a reglet. Failure to use heavy pressure at terminations can result in a poor seal. A termination bar may be used to ensure a tight seal.

Terminate the membrane at the base of the wall if the bottom of the interior floor slab is at least 6 in. (150 mm) above the footing. Otherwise, use appropriate inside corner detail where the wall and footing meet.

## Membrane Repairs

Patch tears and inadequately lapped seams with membrane. Clean membrane with a damp cloth and dry. Slit fishmouths and repair with a patch extending 6 in. (150 mm) in all directions from the slit and seal edges of the patch with Bituthene Liquid Membrane. Inspect the membrane thoroughly before covering and make any repairs.

## Drainage

Hydroduct® drainage composites are recommended for both active drainage and protection of the membrane. See Hydroduct product information sheets.

## Protection of Membrane

Protect Bituthene membranes to avoid damage from other trades, construction materials or backfill. Place protection immediately in temperatures above 77°F (25°C) to avoid potential for blisters.

- On vertical applications, use Hydroduct 220 Drainage Composite. Adhere Hydroduct 220 Drainage Composite to membrane with Hydroduct Tape. Alternative methods of protection are to use ¼ in. (6 mm) asphalt impregnated board or 1 in. (25 mm) extruded polystyrene. Such alternatives do not provide positive drainage to the system. Adhere protection board with an adhesive or Hydroduct Tape.
- In mud slab waterproofing, or other applications where positive drainage is not desired and where reinforced concrete slabs are placed over the membrane, the use of ¼ in. (6 mm) hardboard or 2 layers of ⅛ in. (3 mm) hardboard is recommended.

## Insulation

Always apply Bituthene membrane directly to primed or conditioned structural substrates. Insulation, if used, must be applied over the membrane. Do not apply Bituthene membranes over lightweight insulating concrete.

## Backfill

Place backfill as soon as possible. Use care during backfill operation to avoid damage to the waterproofing system. Follow generally accepted practices for backfilling and compaction. Backfill should be added and compacted in 6 in. (150 mm) to 12 in. (300 mm) lifts.

For areas which cannot be fully compacted, a termination bar is recommended across the top termination of the membrane.

## Placing Steel

When placing steel over properly protected membrane, use concrete bar supports (dobies) or chairs with plastic tips or rolled feet to prevent damage from sharp edges. Use special care when using wire mesh, especially if the mesh is curled.

## Approvals

- City of Los Angeles Research Report RR 24386
- U.S. Department of Housing and Urban Development (HUD) HUD Materials Release 628E

## Warranty

Five year material warranties covering Bituthene and Hydroduct products are available upon request. Contact your Grace sales representative for details.

## Technical Services

Support is provided by full time, technically trained Grace representatives and technical service personnel, backed by a central research and development staff.

## Supply

<b>Bituthene 3000 or Bituthene Low Temperature</b> Roll weight Palletization Storage	3 ft x 66.7 ft roll (200 ft <sup>2</sup> ) [0.9 m x 20 m (18.6 m <sup>2</sup> )] 83 lbs (38 kg) gross 25 rolls per pallet Store upright in dry conditions below 95°F (+35°C).
<b>Ancillary Products</b>	
Bituthene WP-3000	5 gal (18.9 L) pail/24 pails per pallet
Bituthene Primer B2	5 gal (18.9 L) pail/48 pails per pallet
Bituthene Primer B2 LVC	5 gal (18.9 L) pail/48 pails per pallet
Bituthene Liquid Membrane	1.5 gal (5.7 L) pail/100 pails per pallet or 4 gal (15.1 L) pail/24 pails per pallet
Hydroduct Tape	1 in. x 200 ft (2.5 cm x 61.0 m) roll/6 rolls per carton
Bituthene Mastic	Twelve 30 oz (0.9 L) tubes/carton or 5 gal (18.9 L) pail/36 pails per pallet

**Equipment by others:** Soft broom, utility knife, brush or roller for priming

## Physical Properties for Bituthene Membrane

Property	Typical Value	Test Method
Color	Dark gray-black	
Thickness	1/16 in. (1.5 mm) nominal	ASTM D3767—method A
Flexibility, 180° bend over 1 in. (25 mm) mandrel at -25°F (-32°C)	Unaffected	ASTM D1970
Tensile strength, membrane, die C	325 lbs/in. <sup>2</sup> (2240 kPa) minimum	ASTM D412 modified <sup>1</sup>
Tensile strength, film	5,000 lbs/in. <sup>2</sup> (34.5 MPa) minimum	ASTM D882 modified <sup>1</sup>
Elongation, ultimate failure of rubberized asphalt	300% minimum	ASTM D412 modified <sup>1</sup>
Crack cycling at -25°F (-32°C), 100 cycles	Unaffected	ASTM C836
Lap adhesion at minimum application temperature	3000: 4 lbs/in. (700 N/m) Low Temp: 5 lbs/in. (880 N/m)	ASTM D1876 modified <sup>2</sup>
Peel strength	9 lbs/in. (1576 N/m)	ASTM D903 modified <sup>3</sup>
Puncture resistance, membrane	50 lbs (222 N) minimum	ASTM E154
Resistance to hydrostatic head	200 ft (60 m) of water	ASTM D5385
Permeance	0.05 perms (2.9 ng/m <sup>2</sup> sPa) maximum	ASTM E96, section 12—water method
Water absorption	0.1% maximum	ASTM D570

### Footnotes:

1. The test is run at a rate of 2 in. (50 mm) per minute.
2. The test is conducted 15 minutes after the lap is formed and run at a rate of 2 in. (50 mm) per minute at 40°F (5°C).
3. The 180° peel strength is run at a rate of 12 in. (300 mm) per minute.

[www.graceconstruction.com](http://www.graceconstruction.com)

**For technical assistance call toll free at 866-333-3SBM (3726)**

Bituthene, Preprufe, Ripcord and Hydroduct are registered trademarks of W. R. Grace & Co.—Conn.

We hope the information here will be helpful. It is based on data and knowledge considered to be true and accurate and is offered for the users' consideration, investigation and verification, but we do not warrant the results to be obtained. Please read all statements, recommendations or suggestions in conjunction with our conditions of sale, which apply to all goods supplied by us. No statement, recommendation or suggestion is intended for any use which would infringe any patent or copyright. W. R. Grace & Co.—Conn., 62 Whittemore Avenue, Cambridge, MA 02140. In Canada, Grace Canada, Inc., 294 Clements Road, West, Ajax, Ontario, Canada L1S 3C6.

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**GRACE**

# Bituthene<sup>®</sup> 4000

Self-adhesive HDPE waterproofing membrane with enhanced bonding characteristics for use with B2 moisture tolerant primer.

## Advantages

- Cold applied - simple application to substrates especially at low temperatures.
- Suitable for application to "green" concrete - reduces programme schedules
- Moisture tolerant primer system - allows application in damp or marginal weather conditions.
- Wide application temperature range - excellent bond to self and substrate from -10°C to +35°C.
- Overlap security - enhanced-bond provides additional security.
- Cross laminated high density polyethylene carrier film - provides high tear strength, puncture and impact resistance.
- Flexible - accommodates concrete shrinkage cracks.
- Gas resistant - methane, carbon dioxide and radon gas protection in excess of the standard membrane requirements in BRE Reports 211 (radon) and 212 (methane and carbon dioxide).

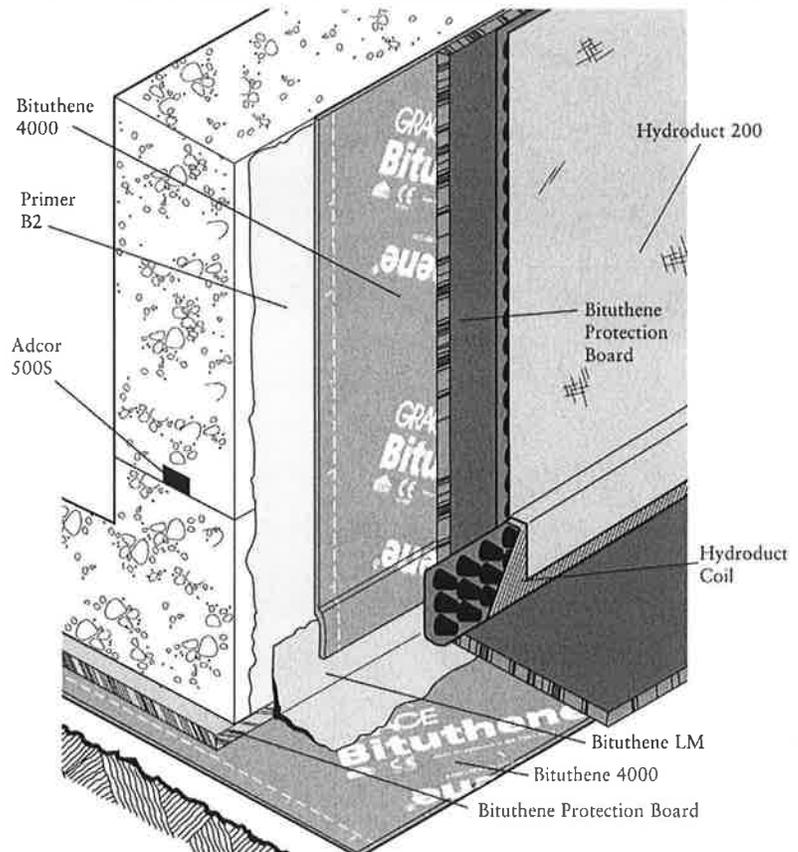
## Description

Bituthene<sup>®</sup> 4000 is a flexible preformed waterproof membrane combining a high performance cross laminated, HDPE carrier film with a unique super sticky self-adhesive rubber bitumen compound.

## Ancillary Products

### Primer B2

Primer B2 is used to prepare vertical and sloping surfaces and suspended slabs. It is moisture tolerant and can be used on "green" concrete or damp to touch substrates.



### Bituthene<sup>®</sup> LM

Waterproof continuity at angles and at penetrations is provided by Bituthene LM two component chemically curing liquid applied waterproof membrane.

### Bituthene<sup>®</sup> Protection Boards

Damage from following trades and backfill is prevented by Bituthene<sup>®</sup> Protection Boards. Located with Bitustik<sup>™</sup> 4000 double sided tape.

*Details shown are typical illustrations only and not working drawings. For assistance with working drawings and additional technical advice please contact Grace Technical Services*



## Supply

<b>Bituthene® 4000</b>	1 m x 20 m roll (20 sq m) Weight 32 kg
<b>Palletisation</b>	15 rolls per pallet
<b>Storage</b>	Store upright in dry conditions below +30°C
<b>Primer B2</b>	5, 25 litre drums
<b>Coverage</b>	10 - 12 sq m per litre depending upon method of application, surface porosity and ambient temperature
<b>Ancillary Products</b>	
<b>Bituthene® LM</b>	5.7 litre packs
<b>Bituthene®</b>	3 mm x 1 m x 2 m
<b>Protection Boards</b>	
<b>Adcor® 500S</b>	6 x 5 m rolls
<b>Hydroduct®</b>	In lieu of drainage stone
<b>Waterstops</b>	See separate data sheet for details
<b>Bitustik™ 4000</b>	150 mm x 12 m roll
<b>Lap Roller</b>	Unit

## Installation

At air temperatures below +4°C measures should be taken to ensure that all surfaces are free from ice or frost. All surfaces except those below ground bearing slabs and Preprufe® R membranes should be primed with one coat of Primer B2 applied at a rate of approx. 10m<sup>2</sup> per litre.

Bituthene 4000 shall be laid by peeling back the protective release paper and applying the adhesive face onto the prepared surface, free from ice, frost, condensation or any contaminants which could adversely effect adhesion.

Bituthene LM to be applied at all internal and external corners, penetrations etc. prior to applying the overall membrane.

Bituthene 4000 should be brushed onto the surface to ensure good initial bond and exclude air. Adjacent rolls are aligned and overlapped 50mm minimum at side and ends and well rolled with a firm pressure, using a lap roller to ensure complete adhesion and continuity between the layers. On high walls it may be necessary to batten fix the membrane to prevent slippage.

### Repairs

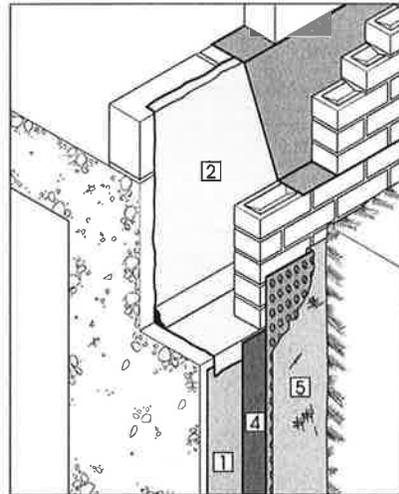
Damaged areas to be repaired by patching with an oversize patch applied to a clean dry surface and firmly rolled.

## Performance

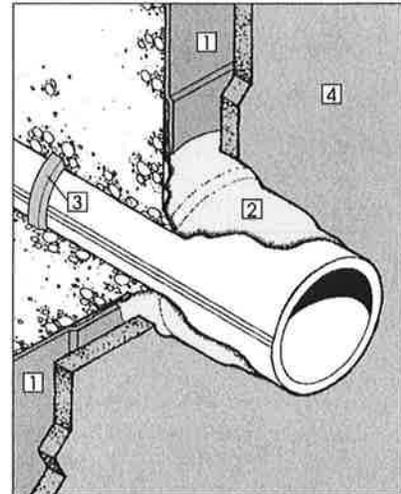
Bituthene 4000 complies with the relevant section of the following national standards:  
BS 8102:1990, Building Regulations (England and

## Physical Properties

Property	Typical Results	Test Method
Elongation at max load	Long 244% Trans 185%	BS 2782 320 A
Tear Resistance	Long 77N Trans 92N	MOAT 27:5.4.1
Peel Strength	76.5 N/mm <sup>2</sup>	MOAT 27:5.1.3
Tensile Strength of joints	117N	MOAT 27:5.2.2
Moisture Vapour Permeability	0.31 g/m <sup>2</sup> /24 hours	BS 3177: 1959 (75% RH/25°C)
Puncture Resistance	220 N 65mm	ASTM E154
Water Resistance (6m head)	No penetration	MOAT 27:5.1.4
Environmental Resistance	Conforms	ASTM D543



Typical ground level termination detail



Pipe through wall detail

### Key to diagrams:

- 1 Bituthene 4000 on Primer B2
- 2 Bituthene LM
- 3 Adcor 500S
- 4 Bituthene Protection Board
- 5 Hydroduct 220

Wales) 1991 (amended 1994) clause C4. Building Regulations (Northern Ireland) 1994 (amended 1995) clause B2. Building Standard (Scotland) Regulations 1990, Regulation B2.1, G2.6.

## Health and Safety

There is no legal requirement for a Material Safety Data Sheet for Bituthene 4000, Bituthene Protection Boards, Bitustik, Lap Roller, Hydroduct or waterstops. For health and safety questions on these products please contact Grace Construction Products Limited. For Primer B2, and Bituthene LM read the product label and Material Safety Data Sheet (MSDS) before use. Users must comply with all risk and safety phrases. MSDS's can be obtained from Grace Construction Products or from our web site at [www.graceconstruction.com](http://www.graceconstruction.com).

## NBS Specification Clause

Refer to Clause 180 and 190.

**Web** Visit our web site at [www.graceconstruction.com](http://www.graceconstruction.com)

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Construction Products

**APPENDIX 8**

**CITIZEN PARTICIPATION PLAN**

## **CITIZEN PARTICIPATION PLAN**

The NYC Office of Environmental Remediation (OER) and CREF 546 West 44th Street, LLC (the "Volunteer") have established this Citizen Participation Plan (CPP) because the opportunity for citizen participation is an important component of the NYC Voluntary Cleanup Program. This Citizen Participation Plan describes how information about the project will be disseminated to the Community during the remedial process. As part of its obligations under the NYCVCP, the Volunteer will maintain a repository for project documents and provide public notice at specified times throughout the remedial program. This CPP also takes into account potential environmental justice concerns in the community that surrounds the project Site. Under this CPP, project documents and work plans are made available to the public in a timely manner. Public comment on work plans is strongly encouraged during public comment periods. Work plans are not approved by the NYC OER until public comment periods have expired and all comments are formally reviewed. An explanation of cleanup plans in the form of a public meeting or informational session is available upon request to OER's project manager assigned to this Site, Hannah Moore, who can be contacted about these issues or any others questions, comments or concerns that arise during the remedial process at (212) 442-6372.

**Project Contact List:** OER has established a Site Contact List for this project to provide public notices in the form of fact sheets to interested members of the Community. Communications will include updates on important information relating to the progress of the cleanup program at the Site as well as to request public comments on the cleanup plan. The Project Contact List includes owners and occupants of adjacent buildings and homes, principal administrators of nearby schools, hospitals and day care centers, the public water supplier that serves the area, established document repositories, the representative Community Board, City Council members, other elected representatives and any local Brownfield Opportunity Area (BOA) grantee organizations. Any member of the public or organization will be added to the Site

Contact List on request. A copy of the Site Contact List is maintained by OER's project manager. If you would like to be added to the Project Contact List, contact NYC OER at (212) 788-8841 or by email at [brownfields@cityhall.nyc.gov](mailto:brownfields@cityhall.nyc.gov).

**Repositories:** A document repository is maintained in the nearest public library that maintains evening and weekend hours. This document repository is intended to house, for community review, all principal documents generated during the cleanup program including Remedial Investigation plans and reports, Remedial Action work plans and reports, and all public notices and fact sheets produced during the lifetime of the remedial project. The Volunteer will inspect the repositories to ensure that they are fully populated with project information. The repository for this project is:

New York Public Library for the Performing Arts,

Dorothy and Lewis Cullman Center

40 Lincoln Center Plaza, New York, NY 10023

(917) 275-6975

Monday and Thursday: 12:00PM to 8:00PM,

Tuesday, Wednesday and Friday: 12:00PM to 6:00PM, and

Saturday: 12:00PM to 6:00PM

**Digital Documentation:** NYC OER strongly encourages the use of digital documents in repositories as a means of minimizing paper use while also increasing convenience in access and ease of use.

**Public Notice and Public Comment:** Public notice to all members of the Project Contact List is required at three major steps during the performance of the cleanup program (listed below) and at other points that may be required by OER. Notices will include Fact Sheets with descriptive project summaries, updates on recent and upcoming project activities, repository information, and important phone and email contact information. All notices will be prepared by the Volunteer, reviewed and

approved by OER prior to distribution and mailed by the Volunteer. Public comment is solicited in public notices for all work plans developed under the NYC Voluntary Cleanup Program. Final review of all work plans by OER will consider all public comments. Approval will not be granted until the public comment period has been completed.

**Citizen Participation Milestones:** Public notice and public comment activities occur at several steps during a typical NYC VCP project. See flow chart on the last page of this document, which identifies when during the NYC VCP public notices are issued: These steps include:

- **Public Notice of the availability of the Remedial Investigation Report and Remedial Action Plan and a 30-day public comment period on the Remedial Action Plan.**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the availability of the Remedial Investigation Report (RIR) and Remedial Action Plan (RAP) and the initiation of a 30-day public comment period on the RAP. The Fact Sheet summarizes the findings of the RIR and provides details of the RAP. The public comment period will be extended an additional 15 days upon public request. A public meeting or informational session will be conducted by OER upon request.

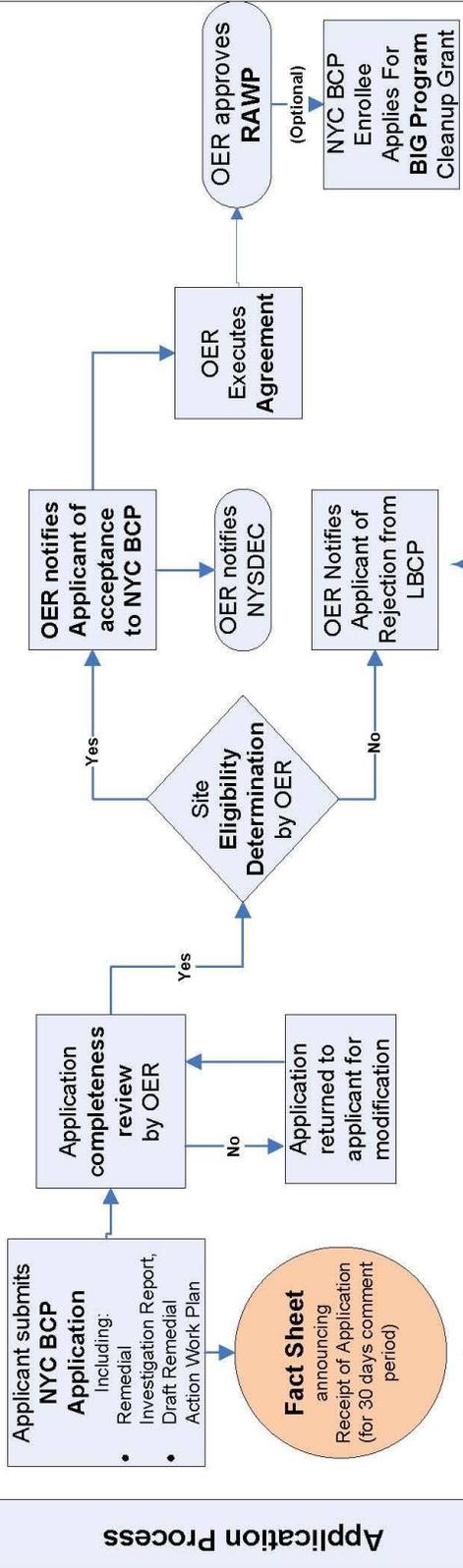
- **Public Notice announcing the approval of the RAWP and the start of remediation**

Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the approval of the RAP and the start of remediation.

- **Public Notice announcing the completion of remediation, designation of Institutional and Engineering Controls and issuance of the Notice of Completion**

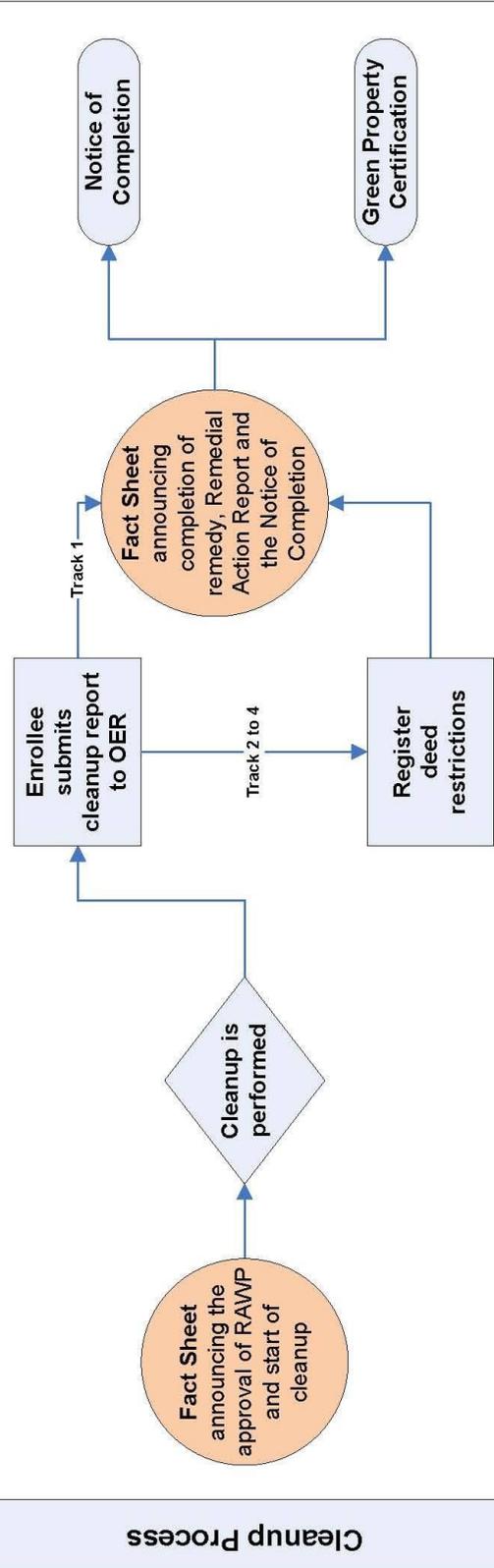
Public notice in the form of a Fact Sheet is sent to all parties listed on the Site Contact List announcing the completion of remediation, providing a list of all Institutional and Engineering Controls implemented for to the Site and announcing the issuance of the Notice of Completion.

## Flow Chart For NYC Brownfield Cleanup Program (NYC BCP)



Application Process

30 Day Comment Period



Cleanup Process