INTERIM REMEDIAL MEASURES WORK PLAN

for

23-01 42ND ROAD
Block 425, Lot 1
Long Island City, New York

Prepared For:

QPS 23-10 Development LLC
c/o Property Markets Group, Inc.
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1.0 INTRODUCTION

1.1 General

This Interim Remedial Measures (IRM) Work Plan was prepared on behalf of QPS 23-10 Developer, LLC (the Volunteer) for the property at 23-01 42nd Road, Long Island City, New York (the "Site"). The Site is identified as Block 425, Lot 1 on the New York City tax maps. Proposed development plans for the Site include demolition of the existing structure and construction of a 38-story residential apartment building with a ground-floor commercial space. A site location map is provided as Figure 1.

The scope of this IRM Work Plan includes decommissioning of an aboveground storage tank (AST) and three suspected underground storage tanks (UST), and excavation of petroleum-impacted soil, to the extent practical. Suspected locations of the USTs are shown on the site plan provided as Figure 2. This work may be undertaken before or after demolition of the existing building.

This IRM Work Plan has been prepared in accordance with requirements of the New York State Brownfield Cleanup Program (BCP) and New York State Department of Environmental Conservation's (NYSDEC) May 2010 DER-10 - Technical Guidance for Site Investigation and Remediation. The IRM will be completed in advance of completing a final remedy for the Site. This is in accordance with the definition of an IRM (May 2010 DER-10):

> ***"Interim remedial measure" or "IRM"*** *means activities to address both emergency and non-emergency site conditions, which can be undertaken without extensive investigation and evaluation, to prevent, mitigate or remedy environmental damage or the consequences of environmental damage attributable to a site, including, but not limited to, the following activities: construction of diversion ditches; collection systems; drum removal; leachate collection systems; construction of fences or other barriers; installation of water filters; provision of alternative water systems; the removal of source areas; or plume control.*

1.2 Site Description

The Site (Block 425, Lot 1) is located at 23-01 42nd Road in Long Island City, New York (Figure 1) and consists of a rectangular shaped lot that is approximately 14,920 square feet (±0.34 acres). The Site is currently improved with a vacant, two-story concrete building that was historically used for industrial manufacturing and occupies the entire lot. A boiler room is located in the southeastern area of the building. A site plan is provided as Figure 2.

1.3 Site Geology and Hydrogeology

Geologic Conditions

According to Site survey data, sidewalk elevation1 of the Site ranges from approximately el 17 at the northeastern portion to el 12.5 near the southwestern corner. The soil profile at the Site generally consists of miscellaneous uncontrolled fill underlain by silt and sand, and finally sound bedrock. The fill was observed to be about 4 to 9 feet thick. The top of sound bedrock was encountered at depths between about 12.5 and 30 feet below existing grade.

Hydrogeologic Conditions

Based on observations made during previous investigations, the estimated depth to groundwater is approximately 7 to 12 feet bgs. Based on local topography, groundwater is expected to flow to the west-northwest towards the East River, which is located approximately 0.5 miles from the Site.

1.4 Site History

The Site is located in an area of historical industrial usage and has been used for manufacturing purposes since as early as 1947. Inadvertent releases of solvents and petroleum products used during manufacturing operations have adversely impacted soil and groundwater.

Although the presence of USTs is not confirmed, Sanborn maps, dated 1936 through 2006, indicate two gasoline tanks in the southeast corner of the Site and one gasoline tank in the western area of the Site. In addition, geophysical anomalies indicative of USTs were identified in the northwest corner of the Site building during a Phase II investigation performed in November 2012. A fill port was identified along the 23rd Street sidewalk that is presumed to be associated with these USTs. There is no documentation of UST removal or abandonment. These tanks likely remain at the Site and releases from the tanks have impacted soil, groundwater, and soil vapor.

Evidence of soil and groundwater contaminated with petroleum and chlorinated solvents was discovered during preliminary planning and testing activities. Appropriate steps, including the reporting of the conditions to NYSDEC (Spill No. 1302811) and delineating the extent of the spill, have been initiated.

[1] Elevations are with respect to the Borough President of Queens Datum (BPQD), which is 2.725 ft. above the National Geodetic Vertical Datum (NGVD), mean sea level at Sandy Hook, New Jersey, 1929. [BPQD = NGVD – 2.725]

1.5 Proposed Development

The purpose of the project is to develop an underutilized, contaminated parcel into affordable and market rate residential use, while implementing remedial measures that are protective of human health and the environment. The proposed project will include the demolition of the existing structure and the construction of a 38-story residential apartment building with a ground-floor commercial space. Residential apartments will occupy a part of the lower seven floors and all the stories above. The excavation depth to facilitate foundation elements is seven feet below grade. Additionally, an elevator pit excavation will be made to 14 feet below grade. A proposed development plan is provided as Figure 3.

2.0 SUMMARY OF INTERIM REMEDIAL MEASURES

The proposed IRM consists of the following tasks:

- Removal of AST and potential USTs as part of the building demolition. The USTs will be decommissioned and removed, and grossly contaminated soil will be segregated, characterized and transported off-site for disposal. The AST will be handled in a likewise fashion;
- Petroleum-impacted soil associated with the suspect USTs will be removed, to the extent practical; and
- Collection of post-excavation documentation samples as necessary.
- Demolition of the existing building may be undertaken before or after the above referenced work.

The sequencing of these tasks will be determined by the New York City Department of Building demolition permitting process. Parts of the first-floor slab may remain upon completion of the demolition of the existing building, with parts to be removed to facilitate the removal of USTs and petroleum-impacted material.

The IRM described herein will be performed in accordance with applicable federal, state, and city regulations. A Health and Safety Plan (HASP) is provided as Appendix B.

2.1 Objectives and Rationale

The objective of the IRM is the removal of the AST and possible USTs, as well as any additional petroleum-impacted material (to the extent practical), to prevent additional environmental impacts to Site media (soil, groundwater, and soil vapor). In addition, the demolition of the on-site structure will allow for redevelopment of this Site.

2.1.1 Site Preparation

The Site will be prepared by the Contractor for implementation of the proposed IRM. Activities to be performed by the Contractor will include, but are not limited to, the establishment of work zones, addition of support facilities, construction of decontamination facilities, implementation of erosion control measures, and implementation of Site security measures (i.e. erection of security fencing around work zones and staging areas). The Contractor will ensure that soil erosion control and sediment control measures are in operation prior to the commencement of, and during all work operations contained in the proposed IRM.

Demolition of the existing building may commence prior to or upon completion of the removal of the existing AST, potential USTs, and petroleum-impacted material. Actual sequencing of tasks will be based on the permitting process. All demolition work will be performed in accordance with industry standard practices and in accordance with all applicable federal, state and local regulations. This includes the abatement of any asbestos containing material prior to any disturbance or demolition. The Contractor will ensure that all necessary permits are obtained prior to the commencement of any task included in the proposed IRM.

Prior to intrusive activities, Dig Safely New York (811) will be contacted by the Contractor a minimum of three business days in advance of the work. Dig Safely New York will be informed of the nature of the work and the intent to perform excavation activities at the Site.

2.1.2 Aboveground Storage Tank, Underground Storage Tank, and Petroleum-Impacted Removal

Removal of one 5,000-gallon AST is included in the proposed IRM. Based on previous environmental investigations and assessments conducted for the Site, the presence of an additional three USTs is suspected, and other USTs may be discovered during the IRM work. The suspected USTs, and any additional USTs discovered, will also be removed as part of the IRM. Removal of the AST and potential USTs will be performed in accordance with NYSDEC procedures and protocols. All tanks removed from the Site will be cleaned prior to off-site transport. Any grossly impacted materials will be segregated and disposed of at a permitted off-site facility in accordance with all applicable regulations. Any unregistered tanks that are discovered will be registered with NYSDEC Petroleum Bulk Storage (PBS) unit. NYSDEC will be notified at least 10 days in advance of UST removal activities.

Upon completion of AST and UST removal activities, the excavations will be inspected for the presence of contaminated soil and groundwater. Light, non-aqueous phase liquid (LNAPL, i.e. "free floating product") observed in the vicinity of the UST excavations will be removed from the Site using vacuum methods (or methods selected by the Contractor and approved by the Site owner) to a practical extent and disposed off-site in accordance with all applicable regulations at a permitted disposal facility. Soil observed to be grossly impacted will be excavated, to extent practical, and disposed off-site in a likewise manner.

Petroleum-impacted material will be excavated to the extent practical, as to not undermine any subgrade structures, foundation elements, off-site structures and/or off-site foundation elements.

2.1.3 Documentation Sampling

Post-excavation documentation samples will be collected from excavation sidewalls and bottom. A minimum of one sample per 30 linear feet of sidewall and one sample per 900 square feet of excavation bottom will be collected, in accordance with NYSDEC DER-10. Documentation samples will be analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC) and metals, as listed in 6 NYCRR Chapter IV Subpart 375-6, Table 375-6.8(a).

2.2 Remedial Activity Oversight

The Remediation Engineer, Langan Engineering, will oversee interim remedial action planning and implementation. The Remediation Engineer is responsible for documenting that the contractor performs the work as specified in the IRM Work Plan and provides the proper documentation required by NYSDEC. These contractor documents will be submitted to the NYSDEC in the Construction Completion Report (CCR); which is described in Section 3.0.

The Remediation Engineer will provide full-time oversight of the IRM activities. The activities that occur during the IRM will be properly documented in monthly BCP progress reports and in the CCR as described in Section 3.0.

2.3 Soil Screening Methods

Visual, olfactory and instrumental soil screening and assessment will be performed by a qualified environmental professional during remediation and development excavations into known or potentially impacted material. Instrumental screening will be performed with a photoionization detector (PID) equipped with a 10.6 electron Volt (eV) bulb and will be calibrated daily.

2.4 Waste Characterization

Waste characterization samples will be collected from the excavated material generated during implementation of the IRM per disposal facility requirements. This activity will be coordinated and overseen by the Remediation Engineer. Samples will be collected to be representative of the material requiring disposal at a frequency consistent with disposal facility requirements. Samples may be collected from stockpiled excavated materials.

Waste characterization samples will be submitted to a New York State Department of Health (NYSDOH) ELAP-approved laboratory for analysis in accordance with the Quality Assurance Project Plan (QAPP) provided in Appendix B. Analytical data will be compared to Part 375 Restricted Residential SCOs, as listed in 6 NYCRR Chapter IV Subpart 375-6, Table 375-6.8(a).

Any grossly contaminated material or material that exceeds the Restricted Use SCOs will be transported off-site and disposed at a permitted facility.

Waste characterization samples will be analyzed for parameters that are typically required by disposal facilities, including, target compound list (TCL) VOCs, TCL SVOCs, Resource Conservation and Recovery Act (RCRA) metals, PCBs, pesticides, herbicides, toxicity characteristic leaching procedure (TCLP) VOCs, TCLP SVOCs, TCLP metals, ignitability, corrosivity, reactivity, and paint filter. Additional sampling and analyses may be required, in accordance with the selected disposal facility requirements.

2.5 Material Load Out and Transport

Non-hazardous, petroleum-impacted material will be handled, transported and disposed by a licensed hauler in accordance with applicable Part 360 and 364 regulations and other applicable local, state, federal regulations. The waste removal contractor will provide the appropriate permits, certifications, and written commitments from disposal facilities to accept the material throughout the life of the contract. Petroleum-impacted material will be transported by a waste removal contactor who possesses a valid New York State Part 364 Waste Transporter Permit. Waste manifests will be used to track the material that is transported off-site. Haulers will be appropriately licensed and trucks will be properly placarded.

The Remediation Engineer will oversee the load-out of excavated material. Once the loading of a container, dump truck, or trailer has been completed, the material will be transported to the approved off-site disposal facility. Loaded vehicles leaving the Site will be appropriately lined, securely covered, and manifested in accordance with appropriate federal, state, local, and NYSDOT requirements (or other applicable transportation requirements). If loads contain wet material capable of producing free liquid, truck liners will be used.

2.6 Material Off-site Disposal

The Remediation Engineer will review submittals for proposed disposal facilities before any materials leave the Site to verify that the facility has the proper permits and to review their requirements. Waste characterization will be performed for off-site disposal in accordance with receiving facility requirements and in conformance with applicable permits. Sampling and analytical methods, sampling frequency, analytical results and quality assurance/quality control (QA/QC) methods will be reported in the CCR upon completion of the IRM and in the Final Engineering Report (FER) upon completion of the final remedy. All waste characterization data available for soil/material to be disposed at a given facility will be submitted to the disposal facility with suitable explanation prior to shipment and receipt.

2.7 Material Reuse On-site

Non-hazardous construction and demolition material, historic fill and underlying native soil that is free of petroleum impacts may be reused or re-graded on-site at the discretion of the Remediation Engineer. Material intended for reuse on-site will be stockpiled separately.

2.8 Waste Liquid Management

If excavation dewatering is required during implementation of this IRM Work Plan, dewatered liquids will be discharged into the New York City sewer system. Approval will be obtained by the New York City Department of Environmental Protection (NYCDEP) and a NYCDEP permit will be issued before any water is discharged to the sewer. If waste liquids cannot be discharged to the sewer, this material will be removed from the Site, and handled, transported and disposed in accordance with applicable local, State, and Federal regulations.

2.9 Import/Backfill of Clean Fill Material

Backfilling is not anticipated for the implementation of the IRM Work Plan. However, if required, Import fill will meet Part 375 Restricted Residential SCOs. Prior to its placement, imported material will be screened for evidence of contamination (visual, olfactory and instrument). Material from industrial sites, spill sites, other environmental remediation sites or other potentially impacted sites will also not be imported to the Site. The clean fill will not include solid waste including brick, concrete, glass, ash, wood, or other debris. All materials proposed for import onto the Site will be approved by the Remedial Engineer and will be in compliance with provisions in this IRM Work Plan prior to receipt at the Site.

2.10 Residual Subsurface Petroleum Impacts

Considering that this IRM does not represent the final remedial action for the Site, it is anticipated that residual petroleum-impacted material will remain. Upon the completion of the IRM, any exposed residual petroleum-impacted material will be covered temporarily with a minimum of one foot of fill material with no indications of petroleum impact until the final remedy is implemented. Should backfilling occur in the area where residual petroleum-impacted material is to remain, a demarcation layer (i.e. high visibility construction fencing) will be placed between the remaining impacted soil and the clean backfill.

2.11 Dust, Odor, Vapor and Nuisance Control Plan

This dust, odor, organic vapor and nuisance control plan was developed in accordance with the NYSDOH Generic Community Air Monitoring Plan (CAMP) and OSHA standards for construction (29 CFR 1926). Remediation and construction activities will be monitored for dust and odors by the Remediation Engineer's field inspector. Continuous monitoring on the

perimeter of the work zones for odor, VOCs, and dust will be required for all ground intrusive activities, such as soil excavation and handling activities. The work zone is defined as the general area in which machinery is operating in support of remediation activities. A portable PID will be used to monitor the work zone during excavation and UST removal and for periodic monitoring for VOCs during post-excavation soil sampling. The Site perimeter will be visually monitored for fugitive dust emissions. Action levels for site worker respiratory use are set forth in the HASP, included in Appendix A. Action levels for the protection of the community and visitors are discussed in Section 2.11.1.

2.11.1 Dust, Odor and Vapor Control

Work practices to minimize odors and vapors (VOCs) include limiting the time that the excavations remain open, wetting exposed fill or soil, minimizing stockpiling of impacted-source soil, and minimizing the handling of impacted material. Offending odor and organic vapor controls may include the application of foam suppressants or tarps over the odor or petroleum source areas. Foam suppressants may include biodegradable foams that are applied over the source material for short-term control of the odor.

VOCs will be monitored with a handheld PID with an action level of 25 parts per million (ppm) in the absence of benzene, in accordance with the HASP. The action level for benzene is 1 ppm. 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 implemented to control the hazard. Level C respiratory protection may be donned in accordance with the HASP if untrained personnel are not present and the action level is exceeded.

This plan will be implemented to control emissions of VOCs and nuisance odors. Specific VOC and odor control methods to be used on a routine basis will include limiting the time that the excavations remain open, minimizing stockpiling of impacted-source soil, and minimizing the handling of impacted material. If nuisance odors or vapors exceeding action levels set forth in the IRM Work Plan are identified off-site, work will be halted and the source of odors will be identified and corrected. Work will not resume until all VOCs or nuisance odors have been abated. NYSDEC and NYSDOH will be notified of all odor and vapor events and of all other complaints about the project. Implementation of all odor and vapor controls, including the halting of work, will be the responsibility of the Remediation Contractor under the oversight of the Remediation Engineer, who is responsible for certifying the CCR.

2.12 Health and Safety Plan

The Remediation Engineer prepared a Site-specific HASP for the IRM, which is included as Appendix A. The HASP provides a mechanism for establishing on-site safe working conditions, safety organization, procedures, and personal protective equipment requirements. The HASP meets the requirements of 29 CFR 1910 and 29 CFR 1926 (which includes 29 CFR 1910.120 and 29 CFR 1926.65). The HASP includes, but is not limited to, the following components listed below:

- Organization and Identification of key personnel;
- Training requirements;
- Medical surveillance requirements;
- List of Site hazards;
- Excavation safety;
- Work zone descriptions and monitoring procedures;
- Personal safety equipment and protective clothing requirements;
- Decontamination requirements;
- Standard operating procedures;
- Contingency Plan; and
- Material Safety Data Sheets.

2.13 Quality Assurance Project Plan

The Remediation Engineer prepared a QAPP, which includes proposed sampling procedures and analytical methods for waste characterization samples. The QAPP is provided as Appendix B.

2.14 Notification

The NYSDEC will be notified prior to commencement of work related to the IRM. A pre-construction meeting will be coordinated between the Remediation Engineer, the Remediation Contractor, and the NYSDEC. This meeting must take place prior to the implementation of this IRM Work Plan.

3.0 REPORTING

Upon completion of the IRM, a CCR will be prepared and submitted. The Remediation Engineer responsible for certifying all reports will be an individual licensed to practice engineering in the State of New York. Joel Landes, P.E. of Langan will have this responsibility. Should Mr. Landes become unable to fulfill this responsibility, another suitably qualified New York State professional engineer will take his place. All project reports will be submitted to the NYSDEC electronically as PDFs. Laboratory analytical data will be submitted in an electronic data deliverable (EDD) format that complies with the NYSDEC's electronic data warehouse standards.

3.1 Daily Reports

Daily reports will be prepared for the project file and for review by Project Managers. Daily reports will include:

- An update of progress made during the reporting day;
- Locations of work and quantities of material imported and exported from the Site;
- References to map for Site activities;
- A summary of any and all complaints with relevant details (names, phone numbers);
- A summary of CAMP finding, including excursions; and
- An explanation of notable Site conditions.

Daily reports are not intended to be the mode of communication for notification to the NYSDEC of emergencies (accident, spill), requests for changes to the IRM Work Plan or other sensitive or time critical information. However, such conditions will also be included in the daily reports. Emergency conditions and changes to the IRM Work Plan will be addressed directly to NYSDEC Project Manager via personal communication. If Site conditions warrant, the Remediation Engineer may request to change from daily to weekly reports that include the above information.

3.2 Construction Completion Report

A CCR will be submitted to the NYSDEC Project Managers within 90 days of completing the interim remedial action. The CCR will document the implementation of the remedial action undertaken as an IRM. The CCR will be incorporated into and referenced in the Final Engineering Report (FER) for the Site when issued. The CCR will provide:

1. Certification by the Remedial Engineer that the data generated was useable and met the remedial requirements;
2. Certification by the Remedial Engineer that the remedial work conformed to the IRM Work Plan;
3. Certification by the Remedial Engineer that dust, odor, and vapor control measures were implemented during invasive work and conformed with the IRM Work Plan;
4. Certification by the Remedial Engineer that all the remediation waste was transported and disposed in accordance with the IRM Work Plan;
5. Certification by the Remedial Engineer that the source approval and sampling of imported acceptable fill (not anticipated) was completed in a manner consistent with the methodology of the IRM Work Plan;
6. Description of any problems encountered and their resolutions;
7. Description of changes in the IRM from the elements provided in the IRM Work Plan and associated design documents and the reasons for them;
8. Description of the deviations from the approved IRM Work Plan;
9. Listing of waste streams, quantity of materials disposed, and where they were disposed;
10. List of the remediation standards applied to the remedial actions;
11. Description of source and quality of fill;
12. A summary of all residual impacted material left on the Site;
13. A tabular summary of all sampling results and all material characterization results and other sampling and chemical analysis performed as part of the IRM;
14. Written and photographic documentation of all remedial work performed under this remedy;
15. Copies of all the submitted progress reports;
16. Certifications, manifests, and bills of lading for excavated materials transported off-site;
17. An accounting of the destination of all material removed from the Site, including excavated impacted soil, historic fill, solid waste, hazardous waste, non-regulated material, and fluids; and
18. Documentation associated with disposal of all material must also include records and approvals for receipt of the material. It will provide an accounting of the origin and chemical quality of all material imported onto the Site.

4.0 CERTIFICATION

I Marc J. Gallagher, P.E. certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Interim Remedial Measure Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10).

Marc J. Gallagher, P.E.
NYS P.E. # 081664-1