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September 1, 2004

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Environmental Engineer  
New York State Department of Environmental Conservation  
Hazardous Waste Remediation - Region 2  
47-40 21st Street  
Long Island City, New York 11101

Re: Scoping Document for Operable Unit 6 (OU-6) Remedial Investigation  
Amtrak Sunnyside Yard Queens, New York

Dear Mr. Agrawal:

Roux Associates, Inc. (Roux Associates) has prepared this letter to serve as the scoping document for the remedial investigation (RI) activities planned for Operable Unit 6 (OU-6) at the National Railroad Passenger Corporation (Amtrak) Sunnyside Yard located in Queens, New York (Yard). Operable Unit OU-6 is defined as groundwater, including saturated soils, beneath the Yard. The RI activities proposed for OU-6 are designed to develop up-to-date groundwater quality data and confirm the findings of previous investigations conducted by Roux Associates. A summary of the findings of previous groundwater investigations conducted at the Yard, as well as the proposed scope of work for additional groundwater investigation is presented below.

#### **Summary of Previous Groundwater Investigations**

The summary of previous investigations for OU-6 as presented below include investigation activities conducted by Roux Associates, AKRF, Inc. (AKRF), Parsons, Brinckerhoff, Quade & Douglas, Inc./STV Incorporated (PB/STV), Environmental Management and Compliance Group, Inc. (EMCG) and the New York City Transit Authority (NYCTA). Investigations conducted by AKRF, PB/STV and EMCG were conducted as part of the Metropolitan Transportation Authority/Long Island Rail Road (MTA/LIRR) East Side Access Project. Investigations conducted by the NYCTA were conducted as part of the MTA 63<sup>rd</sup> Street Tunnel Project.

#### Roux Associates Investigations

Roux Associates, on behalf of Amtrak and New Jersey Transit, conducted groundwater investigation activities for OU-6 including the following: Phase I RI, Phase II RI and Addendum, High Speed Trainset related work (OU-1 and OU-2) and OU-6 baseline

sampling. Results of these groundwater investigation activities were provided in the report titled, "Operable Unit 6 Remedial Investigation Report," dated May 14, 1999 (OU-6 RI), and are summarized below. Groundwater sampling activities conducted by the NYCTA are also described in the OU-6 RI and are summarized below. Plate 1 is provided with this document to illustrate the findings of the OU-6 RI.

- OU-6 consists of the saturated soil and groundwater beneath the Yard, which comprise the Upper Glacial aquifer. The Upper Glacial aquifer is present beneath the entire Yard.
- Groundwater within the Upper Glacial aquifer flows predominantly west at an average rate of 5.7 to 6.6 ft/d, discharging to the buried flow path of Dutch Kills Creek in the western portion of the Yard and/or the East River, located approximately one mile from the Yard. Although Dutch Kills is now buried in the western portion of the Yard, it emerges south of the Yard before joining Newtown Creek.
- Upward vertical gradients (i.e., upward groundwater flow) exist beneath the west and northwest portions of the Yard, including OU-3, reducing or preventing the downward migration of petroleum-related contaminants from the OU-3 separate-phase petroleum accumulation into OU-6. This is supported by analytical data from monitoring wells screened either beneath or hydraulically downgradient of the separate-phase petroleum accumulation. In addition, the upward gradients assist in containment of the OU-3 separate-phase petroleum accumulation.
- Saline groundwater is present throughout the southwest half of the Yard, and along the north side of the Yard where it correlates with a buried channel (i.e., cobble zone) that trends east-west through the Yard, connecting the buried Dutch Kills and saline groundwater lens with the buried northeast wetland. There are no chemical-specific standards for saline groundwater (i.e., Class GSA). Thirteen Yard wells (38 percent) contained saline groundwater (i.e., chloride >250 mg/L and/or TDS >1,000 mg/L).
- At least three plumes of chlorinated VOCs in groundwater have migrated onto the Yard from off-site sources, and are not related to Yard activities. Two of these plumes exceed groundwater standards. One plume with chlorinated VOC exceedances originates south of the Yard (south of MW-34) and extends north through the Yard and MW-42: the source of this plume is unknown. The second plume with chlorinated VOC exceedances originates at Standard Motor Products (SMP) (i.e., the known source) and has migrated south to locations MW-64 and MW-65.
- Two plumes of benzene, toluene, ethylbenzene and xylenes (BTEX) in groundwater have migrated onto the Yard from off-site sources, and are not related to Yard activities. Benzene within one plume exceeds groundwater

standards (i.e., MW-35 on June 18, 1997). (This exceedance was confirmed by a Transit Authority split sample collected November 14, 1997.)

- Seven metals were detected above both background ranges and groundwater standards. All of these exceedances are attributable to an off-site, upgradient source (i.e., SMP), with salt-water intrusion of the aquifer contributing to the concentrations of magnesium, and anoxic conditions within the aquifer (e.g., the buried northeast wetland) contributing to the concentrations of iron and manganese.
- No SVOCs were detected in Yard groundwater above groundwater standards. In addition, the only SVOC detected above the practical quantitation limit occurred in Monitoring Well MW-35. MW-35 is located north of the sewer line that parallels the northern boundary of the Yard and is hydraulically downgradient of SMP.
- No PCBs were detected in Yard groundwater above groundwater standards. Low concentrations of Aroclor-1260 were only detected in two monitoring wells: MW-23D and MW-25A. Monitoring Well MW-23D is located beneath the OU-3 separate-phase petroleum accumulation, and residual contamination may exist. MW-25A was located near the north property boundary and no clear source has been identified for the low detection.
- Groundwater quality data confirm that petroleum-related VOCs, SVOCs, PCBs and metals are not contaminating groundwater beneath or downgradient of the separate-phase petroleum accumulation in OU-3. The source of the low BTEX concentrations (i.e., below groundwater standards and below the practical quantitation limit) detected within MW-38D is something other than the OU-3 separate-phase petroleum accumulation because:
  1. The top of the screen zone in MW-38D is more than 26 feet below the water table (and therefore, more than 26 feet below the separate-phase petroleum accumulation).
  2. No VOCs were detected in groundwater directly beneath the separate-phase petroleum accumulation (i.e., MW-23D).
  3. There is an upward hydraulic gradient at location MW-38D (-0.0254 ft/ft).
  4. All VOCs, including BTEX, were non-detect in the shallow well clustered with MW-38D (i.e., MW-49, where the screen zone straddles the water table and is at the same elevation as the separate-phase petroleum accumulation).
- Five wells contain total dissolved solids (TDS) concentrations above the Class GA standard but below the concentration that defines saline groundwater (i.e.,

Class GSA). The proximity of these wells to the buried wetlands and/or buried channel (i.e., cobble zone) suggests that the TDS levels are attributable to historical salt-water intrusion of the aquifer.

- Yard-related impacts to groundwater are limited to a hydrocarbon sheen in one well, MW-68, a benzene detection in MW-27 and unregulated detections in two wells: former well MW-59 (MIBK) and well MW-27 (MIBK).

Additional groundwater investigation activities conducted by Roux Associates and/or the NYCTA since submittal of the OU-6 RI are summarized below:

- The NYCTA collected groundwater samples from MW-19 and MW-35 for SVOC and PCB analysis on August 13, 1998 and February 25, June 3 and September 9, 1999. Analytical results for these samples did not indicate exceedances of groundwater standards.
- Roux Associates collected groundwater samples in October 2000 at three boring locations; TSB-9, TSB-10 and TSB-16 (Plate 2), as part of the OU-3 remedial investigation. The groundwater samples were collected utilizing a tube passed through the Geoprobe™ robs and a peristaltic pump (no filter-packed screens were installed). The samples collected were analyzed for TCL VOCs, TCL SVOCs, PCBs, TAL metals, chloride and TDS. Sampling results were provided in the Roux Associates report titled, "Operable Unit 3 Remedial Investigation Report," dated March 29, 2001. In summary, VOCs were detected above groundwater standards only at TSB-9 (ethylbenzene [5.4 µg/L] and xylenes [14.6 µg/L]). Metals (arsenic, iron, manganese and sodium) were also detected in groundwater above standards. SVOCs and PCBs were not detected above groundwater standards. Since the groundwater samples were not collected from permanent monitoring wells, standard procedures for well development, waiting period between development and sample collection and purging procedures were not applicable. As a result, the groundwater data developed for these locations was considered for screening purposes only.

#### AKRF Investigation (East Side Access Project)

AKRF installed and sampled four monitoring wells at the Yard during their 1999 site investigation performed as part of the East Side Access Project. These wells, designated as SSY-23, SSY-46, SSY-49 and SSY-51, are shown in Plate 2. These monitoring wells are constructed of 2-inch PVC well casing/screen installed using the hollow-stem auger drilling method and are screened at the water table. Groundwater samples collected from these four wells were analyzed for VOCs, SVOCs, metals and PCBs/Pesticides. Results of the monitoring well installation/groundwater sampling activities are provided in AKRF report titled, "Detailed Environmental Site Investigation – Sunnyside Yard, Sunnyside, New York," dated December 1999, and can be summarized as follows:

- Chlorinated VOCs 1,2-DCE, TCE and PCE were detected only at SSY-23 at concentrations of 34, 40 and 400 µg/L, respectively, coinciding with the chlorinated VOC plume previously identified by Roux Associates.
- Metals detected in groundwater and their concentrations were similar to those observed by Roux Associates.
- No SVOCs, PCBs or pesticides were detected in the groundwater samples.

Since the four AKRF wells are screened at the water table, similar to the wells installed by Roux Associates, the data for these wells will be incorporated into Roux Associates' master database for the Yard, and will be evaluated in conjunction with data developed during the RI described herein. The AKRF wells, if they can be located, will also be sampled as part of the RI scope of work described below.

#### PB/STV (East Side Access Project)

Monitoring well installation and sampling activities were performed by PB/STV as part of the East Side Access Project. A description of monitoring well installation/sampling activities are provided in PB/STV document titled, "Findings Report for the Environmental Site Investigation of the Sunnyside Yard and Harold Interlocking, Sunnyside, Queens County, New York – East Side Access Project Alignments and Replacement Yards Study," dated January 2001, and can be summarized as follows:

- Seventeen monitoring wells were installed by PB/STV in the Yard at the locations shown in Plate 2. According to the PB/STV report referenced above, the monitoring wells are screened significantly below the water table, with an average screened interval depth of 45 to 55 ft below land surface. Screened interval depths range from 25 ft to 35 ft below land surface (TE-IB/OB-1) to 89 ft to 99 ft below land surface (TE-MW-IB-2).
- One comprehensive set of groundwater samples were collected from the seventeen PB/STV wells and four existing Roux Associates wells: MW-28, MW-34, MW-42 and MW-45 (Plate 2). Groundwater samples were analyzed for VOCs, SVOCs and metals.
- Analytical results indicate detections of VOCs, primarily chlorinated VOCs, at concentrations similar to those documented by Roux Associates, and coinciding with the chlorinated VOC plumes identified migrating onto the Yard from off-site sources. Concentrations of metals and SVOCs detected at the Yard were also similar to those documented by Roux Associates.

Due to the depth of the screened intervals, the data for the wells installed by PB/STV will not be incorporated into the master database for the Yard, nor will the wells be sampled as part of the RI for the Yard. However, the data developed by PB/STV for the above-referenced Roux Associates wells will be incorporated into the master database for the

Yard, and will be evaluated in conjunction with data developed during the RI described herein.

Environmental Management and Compliance Group, Inc (EMCG)

Groundwater sampling activities were conducted by Environmental Management and Compliance Group, Inc. (EMCG) in response to the NYSDEC permit requirements for dewatering activities conducted at the Queens Open-Cut Excavation at the Existing Bellmouth. The groundwater monitoring events included the collection of groundwater samples from existing Roux Associates' monitoring wells MW-19 and MW-35 (Plate 2) for VOC, SVOC, PCB and metals analyses. Results of the sampling events are provided in "Monitoring Reports No. 1 through 5," prepared by EMCG and submitted to the NYSDEC between June and November 2003, and can be summarized as follows:

- Groundwater samples were collected at MW-19 on six dates and at MW-35 on three dates from April through August 2003.
- Low concentrations (maximum of 7.4 µg/L) of PCE and TCE were detected at MW-19. VOCs were not detected at MW-35.
- Low concentrations (maximum of 7.3 µg/L) of four SVOCs were detected at MW-19 and MW-35.
- No PCBs were detected in the groundwater samples collected at MW-19 and MW-35.
- Lead was detected at MW-19 and MW-35 at concentrations ranging from 3 to 190 µg/L. Relatively low concentrations of barium, chromium and selenium were also detected at MW-19.

Analytical results developed by EMCG for MW-19 and MW-35 will be incorporated into Roux Associates master database for the Yard, and will be evaluated in conjunction with data developed during the RI described herein.

Monitoring Well Inventory

To facilitate development of the proposed scope of work for OU-6 presented herein, Roux Associates conducted a monitoring well inventory to confirm the presence of remaining monitoring wells installed by Roux Associates. The monitoring well inventory was completed by Roux Associates on July 6, 2004 and the following additional monitoring wells were found to be either unusable or destroyed or could not be located at the Yard: MW-29, MW-30, MW-41, MW-46, MW-47, MW-61 and MW-69D. These wells were present at the time of Roux Associates OU-6 RI submittal; however, it is assumed that these wells were either destroyed or rendered unusable during operation and maintenance activities conducted at the Yard since submittal of the OU-6 RI.

### **Proposed Scope of Work for the OU-6 Investigation**

The proposed scope of work for the OU-6 RI includes the following tasks:

- Task 1: Preparation of OU-6 RI Work Plan
- Task 2: Monitoring Well Installation/Development/Survey
- Task 3: Re-Development of Existing Monitoring Wells
- Task 4: Monitoring Well Gauging/Groundwater Sampling
- Task 5: Preparation of OU-6 RI Report

A brief description of the scope of work for each of these tasks is provided below.

#### Task 1: Preparation of OU-6 RI Work Plan

A work plan will be prepared to provide the scope of work to complete the OU-6 RI. As discussed below, activities proposed for the OU-6 RI include monitoring well installation/development/survey and monitoring well gauging/sampling. A detailed scope of work for each of the OU-6 RI tasks will be presented in the work plan. The RI work plan will be completed in accordance with the applicable Federal and State regulatory requirements and will include the following:

- Field Sampling Plan (FSP);
- Quality Assurance Project Plan (QAPP);
- Health and Safety Plan (HASP); and
- Citizen Participation Plan (CPP).

#### Task 2: Monitoring Well Installation/Development/Survey

Based upon the results of the monitoring well inventory described above, the following monitoring wells could not be located at the Site: MW-29, MW-30, MW-41, MW-46, MW-47, MW-61 and MW-69D. To develop additional groundwater quality data at these seven locations, replacement monitoring wells will be installed using the Geoprobe method in close proximity to the location of former monitoring wells. An additional replacement monitoring well will also be installed near former MW-64 to evaluate groundwater quality downgradient of the Standard Motor Products property located on Northern Boulevard. Approximate locations of the proposed eight monitoring wells are shown in Plate 2. The exact location of each proposed well will be determined in the field based upon accessibility.

The monitoring wells will be installed using a Geoprobe™ and will consist of 1-inch inside diameter (ID) PVC casing and pre-packed screen. The screen zones of the

replacement wells will approximately coincide with the screen zones of the former monitoring wells.

Following installation, each monitoring well will be developed to ensure hydraulic connection with the formation. In addition, each well will be surveyed for horizontal and vertical control by a New York State licensed surveyor. Both land surface and top-of-casing (measuring point) elevations will be determined for each well. Horizontal coordinates and land surface elevations will be accurate to +/- 0.1 feet, and measuring point elevations will be accurate to +/- 0.01 feet.

#### Task 3: Re-Development of Existing Monitoring Wells

Prior to the performance of the monitoring well gauging and sampling task described below, each existing monitoring well (including the AKRF wells described above if they can be located) will be re-developed to ensure hydraulic connection with the formation and remove sediment from the well. Prior to re-development, each existing well will be gauged and checked with a clear bailer to determine if separate-phase petroleum hydrocarbons (SPH) or a petroleum sheen is present. Monitoring wells which contain SPH and/or a petroleum sheen will not be re-developed.

#### Task 4: Monitoring Well Gauging/Groundwater Sampling

Upon completion of Tasks 2 and 3, a comprehensive groundwater sampling round will be conducted to further characterize groundwater quality conditions beneath the Yard. Groundwater samples will be collected from all existing monitoring wells (including the AKRF wells described above if they can be located) and newly installed monitoring wells at the Yard. Wells containing SPH or a petroleum sheen will not be sampled. The groundwater samples will be analyzed for TCL VOCs, TCL SVOCs, PCBs, TAL metals, chloride and TDS.

A comprehensive monitoring well gauging event will be conducted in conjunction with the groundwater sampling round described above. Water-level measurements, and if applicable, separate-phase product thicknesses will be recorded for all new and existing monitoring wells to further define groundwater flow patterns beneath the Site. An electronic water level indicator or product/water interface probe will be used to collect the water levels and determine SPH thicknesses (if present). Water-level and product-thickness measurements will be accurate to +/- 0.01 ft.

#### Task 5: Preparation of OU-6 RI Report

Roux Associates will prepare an RI report to provide results of the groundwater investigation activities described above. The RI report will incorporate all previous groundwater data developed for the Yard (as discussed above), as well as all newly generated data to provide a comprehensive description of conditions at the Yard. The RI report will be completed in accordance with the applicable Federal and State regulatory requirements, and will include some or all of the following:

- geological and well construction logs;



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- tabular summary of water-level measurements and groundwater quality data (historic and new) developed for OU-6;
- maps illustrating groundwater flow and groundwater quality; and
- an evaluation of all RI data (historic and new) with respect to the remedial goals for the Yard.

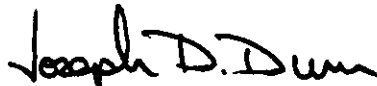
If you have any questions regarding this OU-6 remedial investigation scoping document, please do not hesitate to call.

Sincerely,

ROUX ASSOCIATES, INC.



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