FUSS & O'NEILL
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November 8, 2010

Mr. Mark Pellegrini
Town of Manchester
P.O. Box 191
494 Main Street
Manchester, CT 06040-0191

RE: Remedial Action Plan
295-303 Broad Street, Manchester, Connecticut

Dear Mr. Pellegrini:

Fuss & O'Neill is pleased to submit this Remedial Action Plan to address petroleum impacts to soil identified at the above-referenced site. Based on environmental investigations conducted at the Site, we recommended soil remediation at the following areas of concern (AOCs):

- 295 Broad Street, AOC 4 – Used Oil Above-ground Storage Tanks (ASTs)
- 295 Broad Street, AOC 8 – Stained Concrete
- 299 Broad Street, AOC 8 - Debris Area
- 303 Broad Street, AOC 12 – In-Ground Lifts/Historical Automotive Repair

In addition, the potential exists for remediation to be warranted at the following AOC, where we observed petroleum staining and recommended additional release determination sampling:

- 299 Broad Street, AOC 6 – Used Oil AST

Remediation in accordance with Connecticut's Remediation Standard Regulations (RSRs) will be required if the Site is subject to Connecticut's Property Transfer Law or enters into a Connecticut Department of Environmental Protection (CTDEP) voluntary cleanup program.

A historical landfill (AOC 1) underlies the majority of the 303 Broad Street parcel and appears to extend onto both the 295 and 299 Broad Street parcel, based on soil borings advanced during environmental investigations and historical aerial photographs. The landfill will need to be addressed in accordance with Connecticut's Solid Waste Regulations. The CTDEP has indicated that historical landfills such as this can typically be left in place and can be addressed with the use of an environmental land use restriction prohibiting excavation into the landfill materials unless a plan for such excavation is approved by CTDEP. Groundwater monitoring would also likely be required.

The AOCs for which remediation is recommended and indications that remediation is warranted are described below.

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295 Broad Street, AOC 4 – Used Oil ASTs

Three 275-gallon ASTs and several drums for used oil were observed in the automobile service area located in the western portion of the building in 2004. A significant amount of staining was observed on the concrete floor in the vicinity of the ASTs. Fuss & O'Neill collected soil samples from this area in 2004 and 2010 that identified the presence of petroleum hydrocarbons at concentrations exceeding RSR criteria. A trace concentration of the volatile organic compound (VOC) tetrachloroethylene was also detected. The release area has not been fully delineated; however, based on observations of this AOC and the data collected to date, we anticipate that an area of approximately 10 feet-by-10 feet in size and no more than 6 feet deep warrants remediation. Additional sampling would be needed if the extent of the release area is to be more accurately defined.

295 Broad Street, AOC 8 – Stained Concrete

An area of staining was observed on a concrete pad located immediately adjacent to the south of the former automobile service area and west of the storage space. The historical use of this pad is unknown, but staining appeared to be petroleum-related and may be associated with a former air compressor. In 2010, Fuss & O'Neill identified the presence of petroleum hydrocarbons in shallow soil at a concentration exceeding RSR criteria in a boring advanced within the stained area. The extent of impacted soil has not been defined; however, we assume that an area of no more than 10-by-10 feet in size and 4 feet deep warrants remediation. Additional sampling would be needed if the extent of the release area is to be more accurately defined.

299 Broad Street, AOC 6 - Used Oil AST Area

J&M Corvettes and previous occupants stored used oil in a 275-gallon AST situated on concrete near the northwest corner of the 299 Broad Street building. A significant amount of staining was observed beneath, on the top of, and down the sides of the AST in 2004 and 2010, as well as on the adjacent retaining wall, indicating that surface spills had occurred while filling the tank. Initial soil sampling within this AOC did not detect a release to soil; however, the presence of the tank and physical limitations prevented us from collecting samples from the locations most likely to have been impacted by a release. Remediation of this area is not indicated at this time; however, we have included the 299 Broad Street Used Oil AST Area as part of this Remedial Action Plan based on visual observations. We have assumed that an impacted area no more than 10-by-10 feet in size and 3 feet deep exists, and that soil directly behind the retaining wall will also be impacted by petroleum hydrocarbons. Additional sampling would be necessary to determine if remediation is warranted; however, stained soil can be assumed to contain concentrations of petroleum hydrocarbons exceeding cleanup criteria.

299 Broad Street, AOC 8 - Debris Area

An area of debris containing automotive body parts, metal shavings, and other materials was observed above a retaining wall at the eastern end of the 299 Broad Street building. Soil sampling conducted by Fuss & O'Neill in 2004 and 2010 indicated the presence of petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), and lead at concentrations exceeding RSR criteria. Based on the analytical data, soil removed from this area will likely require disposal as a hazardous waste due to the concentrations of lead that exist (mass lead up to 25,900 ppm and TCLP lead of 150 ppm). We assume that remediation of this area will be conducted after the debris has been removed.

The lateral and vertical extents of the area to be remediated have not been fully delineated; however, based on physical observation of the debris area and soil samples collected to date, we anticipate that this area will be no more than 20 feet long, 10 feet wide, with a depth of 4 feet.

303 Broad Street, AOC 12 – In-Ground Lifts

The 303 Broad Street building contains four in-ground hydraulic vehicle lifts that were pumped out and abandoned in place prior to 1994. The lifts were reportedly abandoned because the nature of the fill materials beneath the building caused the walls of their vaults to collapse. Soil sampling data collected by Fuss & O'Neill in 2004 and 2001 indicated the presence of petroleum hydrocarbons at concentrations above RSR criteria in two separate areas, inferred to be associated with a release of hydraulic oil. This AOC is located within the historical landfill (AOC 1); therefore, releases below the water table may be associated with the landfill materials.

The release areas have not been fully delineated; however, based on the collected data, we estimated that the areas proposed for remediation total approximately 400 square feet in size and up to 10 feet deep.

Remedial Approach

The objective of the proposed remedial action is to remove soil containing concentrations of constituents that exceed the GB Pollutant Mobility Criteria and the Residential Direct Exposure Criteria specified in the RSRs. Proposed remedial actions for each AOC are described below. Fuss & O'Neill considered various remedial options for the Site, however, based on the relatively small volume of impacted soil, soil excavation and off-site disposal appears to be the most effective remedy for achieving compliance with the RSRs. For the purpose of this Remedial Action Plan, we assume that excavation will be conducted after the buildings at the Site have been demolished as part of Site redevelopment. *Table 1* summarizes the specific remedial actions associated with each AOC. The general remedial tasks include the following:

- *Saw-cutting:* Concrete pads overlying AOCs will be saw-cut and removed to allow for access to the underlying soil at the following AOCs:

- 295 Broad Street, AOC 4 – Used Oil ASTs
- 295 Broad Street, AOC 8 – Stained Concrete
- 299 Broad Street, AOC 6 – Used Oil AST

We assume that the concrete pad overlying the in-ground lifts associated with 303 Broad Street, AOC 12, will be removed when the lifts are removed prior to remediation.

- *Retaining-wall removal:* Portions of cinder-block retaining walls adjacent to the following AOCs will be removed:

  - 299 Broad Street, AOC 6 – Used Oil AST
  - 299 Broad Street, AOC 8 – Debris Area

- *Excavation:* Excavate soil within the AOCs to be remediated to the depth indicated in *Table 1*. Excavated soil will be stockpiled on and covered by polyethylene sheeting pending waste characterization analytical results. Waste characterization samples will be collected and analyzed in accordance with the requirements of the selected disposal facility. After receiving the analytical results, the soil will be transported to an off-site disposal or recycling facility. Soil excavated from 299 Broad Street, AOC 8 (Debris Area) will be stockpiled separately, because the potential exists that the soil from this area may require disposal as hazardous waste based on the concentrations of lead detected during sampling. We estimate that up to 225 cubic yards (360 tons) of soil will be excavated, including 30 cubic yards (47 tons) that may require disposal as hazardous waste.

  If soil is to be direct-loaded for off-site disposal instead of stockpiled at the Site, then soil samples must be collected and analyzed for acceptance by a disposal facility prior to initiating remedial activities.

- Post-excavation soil samples will be collected from the bottom and sidewalls of each excavated area. Sidewall soil samples will be collected at a minimum rate of one sample per 20 linear feet per excavation (with at least one sample per sidewall), and bottom samples will be collected at a minimum rate of approximately one sample per every 200 square feet of area.

  Samples will be screened in the field for total petroleum hydrocarbons using the "PetroFlag" screening method to minimize the amount of soil to be excavated at the following AOCs:

  - 295 Broad Street, AOC 4 – Used Oil ASTs
  - 295 Broad Street, AOC 8 – Stained Concrete
  - 299 Broad Street, AOC 6 – Used Oil AST

- 303 Broad Street, AOC 12 – In-ground Lifts

Soil excavation will continue at these AOCs until the PetroFlag results are below baseline numeric criteria specified in the RSRs. At the remaining AOCs, the size of the area to be excavated will be based on analytical generated to date.

- Confirmatory soil samples will be submitted to a fixed-based laboratory for one or more of the following constituents:

  - Extractable total petroleum hydrocarbons (ETPH) by Connecticut's ETPH method (Modified USEPA Method 8100)
  - Volatile organic compounds (VOCs) by USEPA Method 8260
  - Polycyclic aromatic hydrocarbons (PAHs) by USEPA Method 8270
  - Mass and/or SPLP RCRA 8 metals (arsenic, barium, cadmium, chromium, mercury, lead, selenium, and silver)

  The constituents of concern analyzed are AOC-specific. Analytes associated with each AOC are listed in *Table 1*.

- Each excavated area will be backfilled with clean fill and properly compacted and regraded. Remediation does not include the reconstruction of the retaining walls.

Please contact us if you have any questions regarding this project.

Sincerely,

Lori A. Anderson, LEP
Senior Hydrogeologist

John B. Hankins, LEP, CPG
Senior Vice President

Attachments:

Table 1 – Remedial Action Plan Summary

Figure 1 – Proposed Areas of Excavation

FUSS & O'NEILL

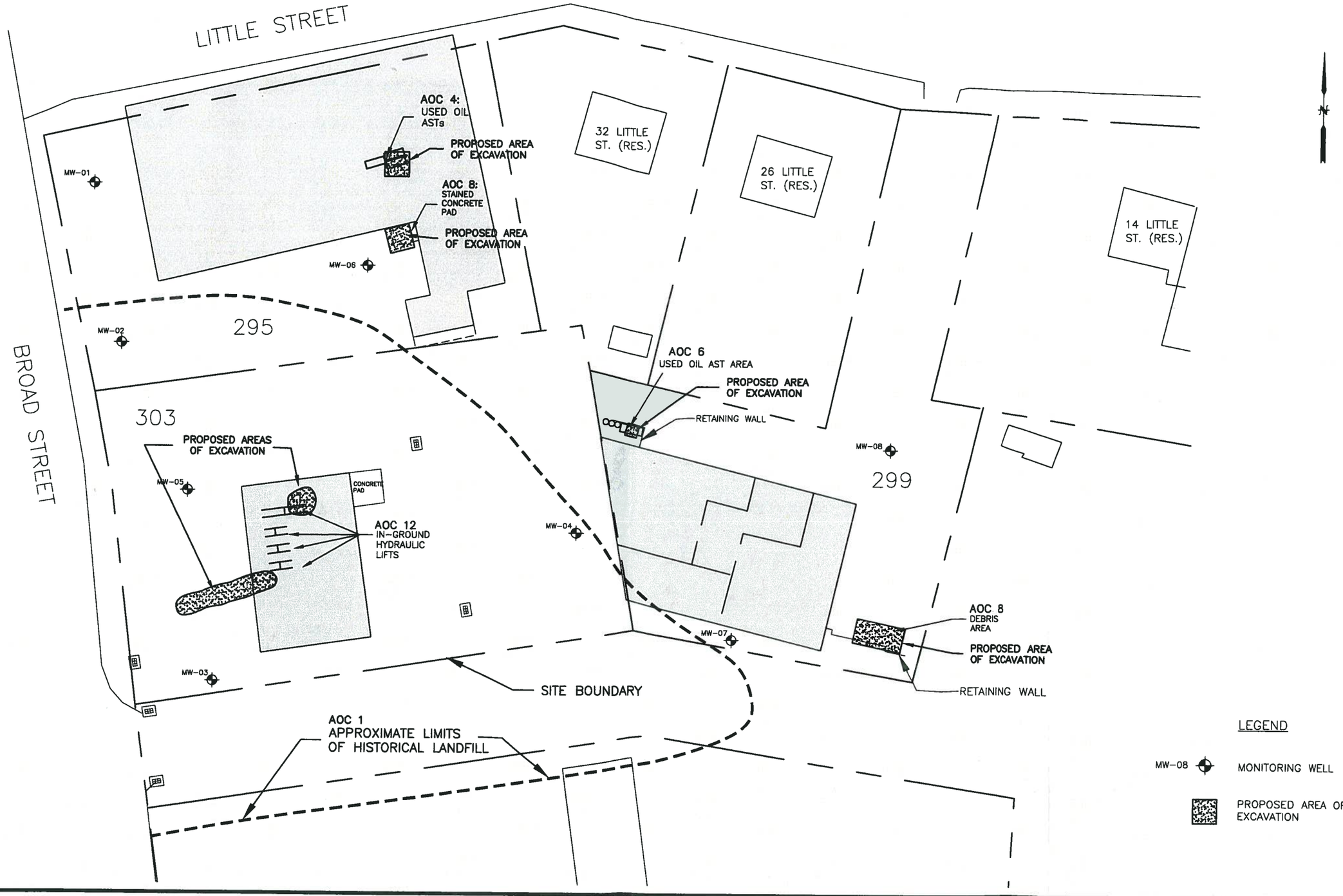
Table 1
Remedial Action Plan Summary
295-303 Broad Street
Manchester, Connecticut
November 2010

Street No.	AOC	Length (ft)	Width (ft)	Depth (ft)	Volume (cy)	Tonnage	Remedial Steps	Analytes	Comments/Assumptions
295	4 - Used Oil ASTs	10	10	6	22	36	Saw-cut concrete 10'x10' Excavate Use PetroFlag to assist in determining limits of excavation Backfill	ETPH VOCs	Excavate after building is gone Saw-cut not necessary if slab is removed during building demolition
295	8 – Stained Concrete	10	10	6	22	36	Saw-cut concrete 10'x10' Excavate Use PetroFlag to assist in determining limits of excavation Backfill	ETPH	Excavate after building is gone Saw-cut not necessary if slab is removed during building demolition
299	6 - Used Oil AST	5	5	3	3	4	Remove 4-foot wide section of petroleum-stained cinder block retaining wall (approx. 2 to 4 feet high) Saw-cut concrete 5'x5' Scrape any visibly stained soil from the vertical wall Excavate Use PetroFlag to assist in determining limits of excavation Backfill	ETPH (all samples) Highest ETPH also for: - VOCs - PAHs - RCRA 8 metals	Unknown at this time if remediation will be required - Assume petroleum hydrocarbons in soil at cinder block retaining wall and beneath concrete slab
299	8 - Debris Area	20	10	4	30	47	Excavate - Will likely result in the partial removal of a cinderblock retaining wall (approximately 4-5 feet high) Backfill/regrade	ETPH PAHs Mass RCRA 8 metals - highest metals also for SPLP	Area to be remediated is at the top of a retaining wall Excavate after debris has been removed Assume hazardous soil disposal based on lead concentrations (segregate from other excavated soil)
303	12 - In-ground Lifts	20	20	10	148	237	Excavate visibly stained soil at two locations to approximately 10 feet or to 2 feet below water table, whichever is shallower Use PetroFlag to assist in determining limits of excavation Backfill	ETPH - highest ETPH from each excavation also for PAHs	Excavate soil after lifts have been removed and building is gone
				TOTAL:	**225**	**360**			

NOTES:

Excavation areas and volumes are estimated based on visual observations of staining and analytical data to date. Areas requiring remediation may be smaller or larger than estimated.
Tonnage is based on 1.6 times the estimated volume and may vary depending on the density of the soil.

UNITS: ft = feet; cy = cubic yards
ETPH = extractable total petroleum hydrocarbons
VOCs = volatile organic compounds
PAHs = polycyclic aromatic hydrocarbons
RCRA 8 metals = arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver
SPLP = Synthetic Precipitation Leaching Procedure



No.	DATE	DESCRIPTION	BY
1.			

REVISIONS

PROJ. MANAGER:
CHIEF DESIGNER:
REVIEWED BY: DATE

NOTES:
MAP BASED ON TOWN OF MANCHESTER ASSESSOR'S MAPPING AND FUSS & O'NIELL FIELD OBSERVATIONS. SAMPLE LOCATIONS BASED ON FUSS & O'NEILL MARCH AND APRIL 2004 AND AUGUST 2010 FIELD MEASUREMENTS.

SCALE:
HORZ.: 1" = 40'
VERT.:
DATUM:
HORZ.:
VERT.:
0 20 40'
GRAPHIC SCALE

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PROPOSED AREAS OF EXCAVATION
REMEDIAL ACTION PLAN
295-303 BROAD STREET

MANCHESTER CONNECTICUT

PROJ. No.: 2004-0123.A10
DATE: NOVEMBER 2010

FIG. 1