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ALTERNATIVES ANALYSIS REPORT

For

4630 RIVER ROAD SITE

SITE # C915258
4630 RIVER ROAD
TONAWANDA, NEW YORK 14150

Prepared For:

Giuseppe Holdings, LLC
2947 Delaware Ave
Kenmore, NY 14217

Prepared By:

Panamerican Environmental, Inc.
2390 Clinton Street
Buffalo, New York 14227

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CERTIFICATIONS

I John B. Berry certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Report [Alternatives Analysis Report] 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) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

John B. Berry, PE

1.0 INTRODUCTION

Giuseppe Holdings, LLC owner of the 4630 River Road Site (Site # C915258) located at 4630 River Road, Tonawanda, New York **(**refer to Figure 1) has entered into a Brownfields Cleanup Program (BCP) Agreement with the NYSDEC under the Voluntary section of the "Brownfield Cleanup Program Act". Giuseppe Holdings, LLC has contracted Panamerican Environmental, Inc. (PEI) to conduct a Remedial Investigation (RI) and prepare an Alternatives Analysis Report (AAR) as required by the BCP Agreement and complete remedial measures as necessary. This document presents the alternative analysis report with a recommended remedial alternative. The remedial investigation (RI) activities were completed in January/February 2013 at the 4630 River Road Site and an RI report completed in October 2013 *(Remedial Investigation Report for 4360 River Road Site No. C915258; prepare for: Giuseppe Holdings, LLC; prepared by: PEI, October 2013).*

The RI/AAR program is being completed in accordance with BCP requirements as defined in section 375-3.8 of the NYSDEC 6NYCRR Part 375 Environmental Remediation Program Regulations. It is anticipated that the remedial measure selected will lead to a site remedy that will meet Unrestricted Use status as defined in Part 375-1.8(g)(1)(i); achieve Soil Cleanup Objectives as defined in Part 375-6.8(a); and mitigate any environmental impacted media issues at the site.

1.1 Site Location and Description

The subject site is located on River Road in Tonawanda, New York. Located on the south side of the Niagara River, the property is roughly across the River from East River Road, Winkler Drive and Staley Road on Grand Island, New York (refer to Figure 1). The subject property is a vacant approximately 3.5-acre parcel. A drainage swale divides the property and runs from River Road to the river through the east-central portion of the parcel. The South Grand Island Bridge is located about 0.4 miles west of the property. Historically, the property contained two separate stormwater retention ponds formerly used by Ashland Petroleum and United Refining Company (URC). The ponds were previously remediated under a NYSDEC Spill (Spill # 9614534) during which all the soils from the ponds bottoms were removed down to the water table. Indication is that the soils were bio-treated and re-used onsite. Previous soil sampling by others indicate that petroleum impacted soil and possibly groundwater exists on the property.

1.2 Proposed Redevelopment Plan

The contemplated future use of the site includes the construction of 64 apartments with an underground parking deck and marina facilities (refer to Sheet C100 – Master Site Plan).

1.3 Description of Surrounding Property

The site is bordered to the east by a public park; to the west by property owned by Ashland Oil & Refining Company/United Refinery and to the south by River Road. Further south is

property owned by Noco Energy Corp. /Tonawanda Terminals Corp. The surrounding area, in general, is commercial/industrial

1.4 Site History

Historically, the property contained two separate stormwater retention ponds formerly used by Ashland Petroleum and United Refining Company (URC). The ponds were previously remediated under a NYSDEC Spill (Spill # 9614534) during which all the soils from the ponds bottoms were removed down to the water table. Indication is that the soils were bio-treated and re-used onsite. Previous soil sampling by others indicate that petroleum impacted soil and possibly groundwater exists on the property.

1.4.1 Summary Previous Environmental Investigations by Others

Historical information indicates the following previous investigations/remedial activities have been completed on the property:

- 1997-2001 NYSDEC Spill Report - NYSDEC Spill Report Form for Spill # 9614534 which was a former Spill at the Site related to stormwater retention ponds formerly used by Ashland Petroleum and United Refining Company (URC). The spill report covers the years from 1997 until 2001. The spill report indicates that the ponds active use was discontinued in 1982 when the refinery closed. The last entry in June 2001 in the spill report indicates that analytical results from the downgradient wells were below detection limits and no further action was required. However, the report and letter from NYSDEC dated September 7, 2001 indicates that the spill was given an “inactive” status since low levels of petroleum impacted soils remained.

  According to the Spill Report Form, URC conducted a cleanup of the property consisting of excavating all soils from the pond bottoms down to the apparent water table. Prior to backfilling the excavation, numerous (total of 16) sidewall and bottom soil samples were collected and submitted for laboratory analysis for NYSDEC STARS List volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). A review of the laboratory analytical data (refer to Table 1) indicates that most VOC and all SVOC compounds were not detected above their respective laboratory method detection limits. The chain of custody for these samples indicates that the samples were analyzed by the TCLP method. As such, the results only tell us that some contaminates remained on site following retention pond closure. As a result, direct comparison to Part 375 Soil Cleanup Objectives (SCOs) cannot be made. Also, a note in the spill report suggests that the soil excavated from the ponds was “treated” or “bio-remediated” at the terminal/plant. However, the report does not indicate whether these soils were used as backfill in the former ponds, spread across the site or removed off-site.

  According to the NYSDEC Spill Report, four groundwater monitoring wells were installed on the property. Analytical data from these wells were included in the Spill Report. The spill report suggested that testing results (refer to Table 3) from these

wells indicated minimal to no impacts to groundwater and that the NYSDEC did not require any additional groundwater investigation based on these findings.

- 2006 Phase I Environmental Assessment - A Phase I Environmental Site Assessment was prepared by LCS, Inc. dated November 2006 (Phase I). PEI did not have access to the Phase I report and therefore has not included its findings.

- 2010 Phase II Subsurface Investigation (Phase II). A Phase II Environmental Site Assessment (ESA) was prepared by Empire Geo Services, Inc. (SJB) dated May 28, 2010. Twelve (12) soil probes (P-1 through P-12) were advanced using Geoprobe direct push technology (locations provided on Figure 2). Continuous soil samples were retrieved in each borehole. All the borings, with the exception of one (P-12) were completed west of the drainage ditch which crosses the property. The probes were completed to a depth of 8-12-feet below ground surface (bgs). All samples were monitored in the field using a total organic vapor compound (Total OVC) monitoring instrument using PID technology and were visually and olfactory described. Five of the borings (P-3, P-5, P-6, P-8, and P-12) were described as having creosote, petroleum or tar-like odors and elevated PID (Total VOC) readings. Two other locations (P-7 and P-11) were described as having a strong "paint thinner" odor and elevated PID readings of 2,200-3,200 ppm. Four of the borings (P-1, P-2, P-4 and P-9) were reported to have Total VOC readings of background. Only one sample was collected and analyzed in a laboratory for Target Compound List (TCL) volatile and semi-volatile compounds; from P-11 between 6.8 and 8.0 feet bgs where the paint thinner odor was identified. The SJB Phase II Sample P-11 detected compound concentrations are presented in Table 1 along with a comparison to NYSDEC Part 375 Soil Cleanup Objectives for Unrestricted Site Use.

- 2011 Surface Water and Sediment Sampling. A surface water and sediment sampling program was completed in the drainage swale prior to the point where it runs through the east-central portion of the property. One surface water and one sediment sample were collected from each of three locations along the swale (refer to Figure 2). Samples were analyzed for STARS list petroleum VOCs and SVOCs (refer to Table 2). These samples were collected along the swale at locations from north of River Road and south of the property line prior to its entrance onto the property. No samples were collected in the swale on the property. Sample results indicate a number of semi-volatile compounds were detected. These were all PAH compounds. The report also indicates sheen and "free-phased product were observed. Additionally, absorbent booms were located across the swale near the culverts.

A summary of the results of previous investigations indicate that soil and ground water contain petroleum-based compounds. The results of the one Phase II soil sample indicate that ethylbenzene, m,p-xylene and chrysene were detected above the NYSDEC Part 375 Unrestricted SCOs. The results of the water and sediment samples collected in the drainage swale prior to its entrance on-site indicated the presence of several SVOC PAH related compounds.

2.0 SUMMARY OF REMEDIAL INVESTIGATION FINDINGS

2.1 Hydrological Conditions

2.1.1 Topography

The property, in general, is relatively flat and gently slopes from River Road toward the Niagara River to the northwest. The former lagoon areas still have a slight berm along the western side which elevates them slightly from the western portion and the River. A drainage swale divides the property and runs from River Road to the Niagara River through the east-central portion of the parcel. A small drainage-low area is located along the southern border and runs from east (River Road) to the west (Niagara River).

2.1.2 Geology/Hydrogeology

In general, fill material consisting of black and light brown granular fill, including coarse to fine gravel, medium to fine sand and pieces of asphalt, concrete, brick and wood along with miscellaneous materials (i.e., electrical wiring, plastic, etc.). The depth of the fill material averaged approximately six (6) feet across the site with the greatest depth of eight (8) feet at the North end of the site. Beneath the fill, the native soils typically consisted of wet clay to clayey silt with wet sands and gravel.

Based on measured groundwater depths from the four monitoring wells, groundwater, as expected, flows towards the river from the southeast to the northwest.

2.1.3 Wetlands

There are no observed wetlands within the property boundaries.

2.2 Contamination by Media

2.2.1 On-Site Contamination

Historically, the property contained two separate storm water retention ponds formerly used by Ashland Petroleum and United Refining Company (URC). The ponds were previously remediated under a NYSDEC Spill (Spill # 9614534) during which all the soils from the ponds bottoms were removed down to the water table. Indication is that the soils were bio-treated and re-used onsite. Remaining residual contamination from pond remediation may have contributed to elevated VOCs detected in the soils during the RI and detected in historic sampling to the west of the remediated ponds.

There is historical reference to a xylene pipeline and storage tank just west of the site property line. The off-site pipeline and tank could be a contributing source to odors and elevated xylene compounds detected in test trench and historic boring soil samples along the west and southwest site perimeter.

An examination of the RI groundwater sample analytical results from the four existing wells, suggests that the property is not a source of impacted groundwater. No elevated VOCs or SVOCs were detected in the RI groundwater samples and only two elevated metal compound concentrations (manganese and sodium) above TOGs was detected in the filtered metals samples. It should be noted that historic groundwater samples from the same wells (1999-2000 sampling) indicated several elevated VOCs and SVOCs in two of the wells. These elevated compound concentrations may have dissipated over the 13 year time span between sampling rounds.

Figure 2 outlines the approximate limits where on-site petroleum impacted soils were detected during the RI and historic environmental investigations (three cross hatched areas). Compounds in soil samples that exceeded Part 375 Unrestricted Use criteria in these areas are also noted on Figure 2. Figure 2 also notes where non-petroleum related compounds were detected in the RI test pit soil samples that exceeded Part 375 Unrestricted Use criteria.

2.2.2 Identification of Standards, Criteria and Guidance

SCGs are promulgated requirements ("standards" and "criteria") and non-promulgated guidance ("guidance") that govern activities that may affect the environment and are used by the NYSDEC at various stages in the investigation and remediation of a site. The following are the primary SCGs for this project:

- NYSDEC 6NYCRR Part 375 – Environmental Remediation Programs December 2006;
- NYSDEC DER-10 – Technical Guidance for Site Investigations and Remediation May 2010;
- NYSDEC - Technical and Operational Guidance Series (1.1.1) Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations June 1998; and,
- NYSDEC Policy – CP-51- Soil Cleanup Guidance; Date Issued: October 21, 2010.

2.2.3 Soil/Fill Contamination

The following provides a summary of the RI soil sample/analytical program. The data is summarized in a series of tables. Also discussed in this section are the results from historic investigation programs as they relate to the RI results. Compounds detected during historic soil sampling programs are summarized in Table 1 – Historic Soil Sample Analytical Results Summary and Table 2 – Historic Sediment Sample Analytical results Summary

Table's 1 and 4 also provide a comparison of the analytical results with 6 NYCRR Part 375-6.8 Unrestricted Use Soil Cleanup Objectives and Table 2 - a comparison of the sediment sample analytical results with Part 375-6.8(b) Restricted Use SCOs-Protection of

Ecological Resources.

Elevated concentrations of compounds detected in soil samples from both the RI and historic programs at each sample location are also presented on Figure 2 – Remedial Investigation Location Plan.

RI Surface Soil Samples

A total of five (5) surface soil samples were collected from the following test trench locations: TP-01, TP-08, TP-10, TP-12 and TP-16 (refer to Figure 2). All surface soil samples were analyzed for TCL SVOCs (plus TICs), PCBs, pesticides and TAL metals.

Specific surface soil sample compound concentrations detected as noted in Tables 4 and on Figure 2 are discussed in detail below.

SVOCs

Numerous SVOCs consisting primarily of PAHs were detected in surface soil samples TP-01A, TP-10A and TP-16A. No SVOCs were detected in samples TP-08A or TP-12A. Only sample TP-16A had SVOC (PAHs) compound concentrations that exceeded Part 375 Unrestricted Use soil cleanup objectives (SCOs). These included the following:

Benzo(a)anthracene – 1.6 ppm versus 1ppm SCO
Benzo(a)pyrene – 1.4 ppm versus 1 ppm SCO
Benzo(b)fluoranthene – 1.4 ppm versus 1 ppm SCO
Indeno(1,2,3-cd)pyrene – 1.1 ppm versus 0.5 ppm SCO
Benzo(k)fluoranthene – 1.1 ppm versus 0.8 ppm SCO
Chrysene – 1.7 ppm versus 1 ppm SCO

PCBs

PCB compounds Aroclor 1254 and 1260 were detected in TP-01A (1254 and 1260), TP-08A (1260) and TP-10A (1254 and 1260) at concentrations below Part 375 Unrestricted Use soil cleanup objectives (SCOs). No PCB s were detected in samples TP-12A and TP-16A.

Pesticides

Several pesticide compounds were detected in samples TP-01A, TP-08A, TP-10A and TP-16A. No pesticides were detected in sample TP-12A. Several pesticide compounds exceeded Part 375 Unrestricted Use SCOs in the following surface samples:

TP-01A
4,4-DDT – 0.0084 ppm versus 0.0033 ppm SCO (Lab Analysis indicated tentative analyte identification)

TP-08A
4,4-DDD – 0.0088 versus 0.0033 ppm SCO (Lab Analysis indicated tentative analyte identification)
4,4-DDT – 0.01 versus 0.0033 ppm SCO

TP-10A
4,4-DDD – 0.0056 versus 0.0033 ppm SCO (Lab Analysis indicated tentative analyte identification)
4,4-DDT – 0.01 versus 0.0033 ppm SCO

Metals

Most metals are naturally present in soil and fill materials. Concentrations of metals in soil and fill exhibit considerable variability, both stratigraphically and spatially. This variability is related to the composition of the fill, natural soils' origin, weathering processes that chemically and physically modify soil and, groundwater interactions that modify the geochemistry.

Metal compounds were detected in all of the surface soil samples. Several metal compounds exceeded Part 375 Unrestricted Use SCOs in the following surface samples:

TP-01A
Chromium - 49 ppm versus 1 ppm SCO
Copper – 57 ppm versus 50 ppm SCO
Lead – 190 ppm versus 63 ppm SCO
Nickel – 33 ppm versus 30 ppm SCO
Zinc – 340 ppm versus 109 ppm SCO

TP-08A
Copper – 57 ppm versus 50 ppm SCO
Zinc – 120 ppm versus 109 ppm SCO

TP-10A
Barium – 400 ppm versus 350 ppm SCO
Lead – 98 ppm versus 63 ppm SCO
Zinc – 430 ppm versus 109 ppm SCO

RI Subsurface Soil Samples

A total of nine (9) subsurface soil samples were collected from the following test trench locations: TP-01, TP-04, TP-08, TP-10, TP-11, TP-12, TP-13, TP-16 and TP-20 (refer to Figure 2). Subsurface soil samples from test trenches TP-01, TP-08, TP-10, TP-12 and TP-16 were analyzed for TCL VOCs (plus TICs), SVOCs (plus TICs), PCBs, pesticides and TAL metals. Subsurface samples from TP-04, TP-11, TP-13 and TP-20 were analyzed for STARS VOCs only.

Specific subsurface soil sample compound concentrations detected as noted in Table 4 and on Figure 2 are discussed in detail below.

VOCs

A number of VOCs were detected in the subsurface sample locations with the exception of samples/locations TP-10B, TP-11, and TP-12B. However, of the VOCs detected, only sample TP-16B had VOC concentrations that exceeded Part 375 Unrestricted Use SCOs. These were as follows:

Ethylbenzene – 220 ppm versus 1 ppm SCO
Toluene – 9.5 ppm versus 0.7 ppm SCO
O-Xylene – 290 ppm versus 0.26 ppm SCO
m,p-Xylene – 800 ppm versus 0.26 ppm SCO

It should be noted that, acetone was detected in sample TP-01B slightly above its Unrestricted SCO. However, acetone is common laboratories contaminate and it was also detected in the method blank.

SVOCs

A number of SVOCs were detected in the subsurface sample locations with the exception of samples/locations TP-08B, TP-10B and TP-12B. However, of the SVOCs detected, only sample TP-01B had SVOC concentrations that exceeded Part 375 Unrestricted Use SCOs. These were as follows:

Benzo(a)anthracene – 2.8 ppm versus 1ppm SCO
Benzo(a)pyrene – 2.1 ppm versus 1 ppm SCO
Benzo(b)fluoranthene – 2.4 ppm versus 1 ppm SCO
Indeno(1,2,3-cd)pyrene – 1.6 ppm versus 0.5 ppm SCO
Benzo(k)fluoranthene – 1.5 ppm versus 0.8 ppm SCO
Chrysene – 3.8 ppm versus 1 ppm SCO

PCBs

No PCBs were detected in four of the five subsurface soil samples analyzed for PCBs. One PCB compound (Aroclor 1254) was detected in subsurface soil sample TP-01B at a concentration below Part 375 Unrestricted Use SCOs.

Pesticides

Several pesticide compounds were detected in only one of the subsurface samples (TP-01B). However, only one compound exceeded/equaled Part 375 Unrestricted Use SCOs as follows:

Alpha-BHC -.0.02 ppm versus 0.02 ppm SCO

Metals

Metal compounds were detected in all five subsurface soil samples analyzed for metals. Several metal compounds exceeded Part 375 Unrestricted Use SCOs in the following subsurface samples:

TP-01B
Copper – 55 ppm versus 50 ppm SCO
Lead – 130 ppm versus 63 ppm SCO
Zinc – 400 ppm versus 109 ppm SCO

TP-16B
Arsenic – 14 ppm versus 13 ppm SCO
Lead – 71 ppm versus 63 ppm SCO
Zinc – 150 ppm versus 109 ppm SCO

2.2.4 Groundwater Contamination

A total of four monitoring wells were installed in 1999 as part of the retention pond assessment and remediation (refer to Figures 2 and 3). The existing wells were determined by PEI to be functioning and were developed and groundwater samples collected during the RI for analysis of the same 375 parameters as the soil samples.

During RI well development extensive turbidity and sediment was found in the groundwater in each well. Since high turbidity usually results in elevate metal compounds in the samples the laboratory was requested to run both filtered and unfiltered samples for metals.

Analytical results (refer to Table 5) for groundwater samples collected from all four wells indicated that no VOCs, SVOCs, PCBs or pesticides were present in any of the samples. However, low levels of SVOC TICs were detected in three of the well samples and low levels of VOC TICs in one of the well samples. As anticipated, a number of metals were detected in both the filtered and unfiltered groundwater samples from each of the four wells. All analytical results were compared to NYSDEC Technical and Operational Guidance Series (TOGs) 1.1.1 GA Groundwater Regulations (refer to Table 5).

The filtered and unfiltered metals analytical results are provided for each sample on Table 5 and filtered samples indicate only two metal compound concentrations exceeded TOGs standards. Manganese exceeded the TOGs standard of 300 ppb in well sample MW-01 (390 ppb), MW-02 (490 ppb) and MW-03 (430 ppb). Sodium exceeded the TOGs standard of 20000 ppb in well samples MW-02 (75000 ppb) and MW-03 (140000 ppb).

2.3 Environmental and Public Health Assessment

2.3.1 Qualitative Human Health Exposure Assessment

The proposed site remediation will remove all impacted soils exceeding Part 375

Unrestricted Use SCOs from across the site and the new development will cover the majoriity of the site with new buildings or paved sections. Confirmation soil sampling will be conducted under the remedial measure and new site development to confirm that all impacted soils have been removed to meet Unrestricted Use Part 375 SCOs.

The primary population at risk would be construction workers performing remedial activities. However, PEI and contractor health and safety plans will be in effect (Remedial Action Work Plan stipulation) during all remediation activities to minimize any human exposure.

The RI program noted only two elevated metal compounds in groundwater that exceeded NYSDEC TOGs Guidance. Municipal water supply will be used for all site water requirements of the new development thereby eliminating any future human exposure.

2.3.2 Qualitative Ecological Exposure Assessment

Under the BCP the site is to be developed to meet Part 375 Unrestricted Use requirements. The site will be covered primarily with: new buildings; surface paved driveways, parking and sidewalk areas; and extensive underground parking (refer to Sheet C100 – Master Site Plan) There will be minimal green space (10 +/- percent) of landscaped areas. The site provides no wildlife habitat or pond/water features.

Surface water runoff from the site will be collected by the City storm water system and does not discharge to any surface water feature.

The DER-10 Appendix 3C Fish and Wildlife resources Impact Analysis (FWRIA) Decision Key was completed as part of the RI report. No FWRIA is needed based on the completed decision key process. This determination is based on the following:

- There is no widespread soil contamination since the site will be remediated to Unrestricted Use status. The site does not have a habitat of an endangered, threatened or special concern species present.

Therefore, no unacceptable ecological risks are anticipated under the current or any anticipated future site use scenario.

2.4 Remedial Action Objectives

The RAOs for the site are established for the protection of public health and environment protection. RAOs are also developed to meet the SCGs as described in Section 2.2.2. The final remedial measures for the 4630 River Road Site must satisfy Remedial Action Objectives (RAOs). The primary RAOs identified for the site are:

RAOs for Public/Site Worker Health Protection:

- Prevent ingestion/direct contact with contaminated soil

- Prevent inhalation of, or exposure from contaminants volatilizing from, contaminants in soil.

3.0 REMEDIAL ALTERNATIVES ANALYSIS

3.1 Alternatives Selection Factors

In addition to achieving RAOs, NYSDEC's Brownfield Cleanup Program calls for an evaluation of remedial alternatives in accordance with 6 NYCRR Part 375-3 and DER-10 Technical Guidance for Site Investigation and Remediation. This alternatives analysis section evaluates the remedial alternative developed for the site using the following selection factors:

- **Overall Protection of Public Health and the Environment**. This criterion is an evaluation of the remedy's ability to achieve each of the RAOs, and protect public health and the environment, assessing how each existing or potential pathway of exposure is eliminated, reduced, or controlled through removal, treatment, engineering controls, or institutional controls.
- **Compliance with Standards, Criteria, and Guidance (SCGs)**. Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance. The SCGs applicable to this site are listed in section 2.2.2.
- **Long-Term Effectiveness and Permanence**. This criterion is an evaluation of the long-term effectiveness and permanence of an alternative or remedy after implementation.
- **Reduction of Toxicity, Mobility or Volume with Treatment**. This criterion evaluates the remedy's ability to reduce the toxicity, mobility, or volume of Site contamination. Preference is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the contamination at the Site.
- **Short-Term Effectiveness**. Short-term effectiveness is an evaluation of the potential short-term adverse impacts and human exposures, and nuisance conditions during construction and/or implementation. This includes a discussion of how the identified adverse conditions will be controlled, and the effectiveness of the controls. This criterion also includes a discussion of engineering controls that will be used to mitigate short term impacts (i.e., dust control measures), and an estimate of the length of time needed to achieve the remedial objectives. Sustainability is also evaluated.
- **Implementability**. The implementability criterion evaluates the technical and administrative feasibility of implementing the remedy. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the

necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

- **Cost**. This criteria evaluates the overall cost effectiveness of an alternative or remedy.

- **Community Acceptance**. This criterion evaluates the public's comments, concerns, and overall perception of the remedy.

3.2 Land Use Evaluation

In developing and screening remedial alternatives, NYSDEC's Part 375 regulations require that the reasonableness of the anticipated future land use be factored into the evaluation. The future land use will meet Part 375 Unrestricted site use category.

The contemplated future use of the site includes the construction of 64 apartments with an underground parking deck and marina facilities (refer to Sheet C100 – Master Site Plan).
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3.3 Selection of Alternatives for Evaluation

The planned remediation for the site is to remove all impacted soils to achieve Part 375 Track 1- Unrestricted Use. Therefore, only one alternative, the Unrestricted Use Alternative, will be evaluated.

3.4 Unrestricted Use Alternative

An Unrestricted Use alternative will comply with Part 375-3.8(e)(1) for Track 1 – Unrestricted Use. The soil component of this alternative shall achieve the unrestricted soil cleanup objectives (SCOs) set forth in Part 375 Table 375-6.8(a).

The results of the RI program indicated that impacted soils, above unrestricted use SCOs, were present at several locations across the site. Three specific areas of impacted soils were delineated as shown on Figure 2. The maximum estimated depth of the impacted soils in these areas was eight (8) feet in depth below existing grade. The sample compounds that exceed unrestricted SCOs are also indicated on Figure 2.

3.4.1 Description

An Unrestricted Use alternative would necessitate remediation of all impacted soil/fill material where concentrations exceed the Unrestricted SCOs per 6NYCRR Part 375 Tables 8a through 8d. For unrestricted use scenarios, excavation and off-site disposal of impacted soil/fill is generally regarded as the most applicable remedial measure, because institutional controls cannot be used to supplement the remedy.

The new development plans for the property (refer to C100 Master Site Plan) call for approximately 90 percent of the property to be excavated to accommodate below grade

parking for the apartment units (8 to 10 feet below grade). This planned excavation (refer to Figure 4 Excavation Plan) will remove most of the impacted soil. Hot spots of impacted soils remaining below the level of the parking facilities construction and any areas outside the footprint of the new development will be removed to a depth to meet Unrestricted Use status and backfilled with clean fill that meets NYSDEC DER-10 requirements for imported clean fill. Approximately 17,000 to 18,000 cubic yards of soil will be required to be removed to accommodate the new development and removal of impacted soils exceeding Unrestricted Use SCOs. The present assumption is that, even if a portion of this material may meet Unrestricted SCOs, all material will be disposed of at a properly permitted commercial solid waste landfill.

The following is an evaluation of this alternative using the DER-10 guidance criteria.

3.4.2 Evaluation

Overall Protection of Public Health and the Environment – The Unrestricted Use alternative would achieve the corresponding Part 375 SCOs, which are designed to be protective of human health and the environment. .

Compliance with SCGs –Unrestricted Use alternative would comply with SCGs

Long-Term Effectiveness and Permanence – The Unrestricted Use alternative would achieve removal of all on-site soil exceeding the Unrestricted SCOs. As such, the Unrestricted Use alternative would provide long-term effectiveness and permanence. Post-remedial monitoring and certifications would not be required.

Reduction of Toxicity, Mobility, or Volume with Treatment – Through removal of any soil/fill that exceeds Unrestricted SCOs the Unrestricted Use alternative would permanently and/or significantly reduce the toxicity, mobility, and volume of Site contamination.

Short-Term Effectiveness – There will be short term impacts in implementing this alternative. During the remedial action, there will be some exposure to the community and workers during excavation and transporting of the soil materials. To mitigate these effects, a health and safety plan will be required along with a Community Air Monitoring Program and/or possibly a Community and Environmental Response Plan (CERP) during all remedial activities. Engineering controls such as dust control measures will also be implemented. The remediation schedule of an estimated one to two months in length will have a minimum to moderate impact on the environment during remediation. Strict stormwater controls will also be required to protect the adjacent waterway.

Implementability – No technical implementability issues are associated with implementation of this alternative. The implementation will require securing permits for trucking through city streets and community outreach for public concerns regarding dust, noise and traffic.

Community Acceptance – Community acceptance will be evaluated based on comments

to be received from the public in response to Fact Sheets, public comment periods on documents and other planned Citizen Participation activities.

Cost - Cost is not an issue since there is only one alternative being evaluated and the remediation will also be part of the overall site development project.

4.0 RECOMMENDED REMEDIAL ALTERNATIVE

The unrestricted use alternative remedial measure satisfies the remedial action objectives and is fully protective of human health and the environment. Therefore, this alternative is the recommended final remedy for the site.

According to Part 375, in order for the site to meet Unrestricted Use status, all impacted soils must be remediated to meet Unrestricted Use SCOs. The recommended remedy for the site includes the excavation/removal of all impacted soils from the site for off-site landfill disposal. This will be accomplished as part of the new development of the site. The construction of the new apartment building facilities will include removing a majority of the site soils across the site (8 to 10 feet in depth) to accommodate subsurface parking below the townhouses. Hot spots of impacted soils remaining below the level of the parking facilities construction and any areas outside the footprint of the new development will be removed to a depth to meet Unrestricted Use status and backfilled with clean fill.

A Remedial Action Work Plan (RAWP) will be developed to describe in detail how the above remediation will be accomplished. The RAWP will include procedures to determine in the field the adequate removal of all impacted soil. Procedures will include screening the excavated soils by visual, olfactory observation and with a Photoionization Detector (PID) for total organic vapors (VOCs) to determine when all impacted soils have been removed. Confirmatory soil samples will be collected at this stage from the excavation bottom and side-walls in accordance with NYSDEC DER-10 guidance.

TABLE 1 - 4630 RIVER ROAD - HISTORICAL SOIL SAMPLE ANALTICAL RESULTS SUMMARY

Sampling Program	SJB (1)	United Refinery Confirmation Samples (2)											NYSDEC
Sample Number	P-11	P-1	P-2	P-3	P-5	P-6	P-7	P-10	P-11	P-12	P-13	P-15	
Sample Date	5/12/2010	8/28/1997	8/28/1997	8/28/1997	8/28/1997	8/28/1997	8/28/1997	8/28/1997	8/28/1997	8/28/1997	8/28/1997	8/28/1997	PART 375
Sample depth (bgs)	6.8' - 8.0'	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Unrestricted
Compounds	ppm	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm (3)	ppm
Volatiles													
Benzene	ND	0.002	0.007	ND	0.001	0.001	0.002	0.005	0.001	ND	0.001	0.002	0.06
Ethylbenzene	**300**	ND	0.028	ND	ND	ND	ND	0.026	ND	ND	ND	ND	1
n-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12
Toluene	ND	ND	0.016	ND	ND	ND	ND	0.013	ND	ND	ND	ND	0.7
o-Xylene	ND	ND	0.034	ND	ND	ND	ND	0.031	ND	ND	ND	ND	0.26
Xylenes (Total)	ND	ND	0.18	0.007	0.008	0.015	ND	0.17	ND	0.007	ND	ND	0.26
m,p-Xylene	**1080**	ND	0.14	ND	ND	0.011	ND	0.14	ND	ND	ND	ND	0.26
SVOCs													
Benzo(a)anthracene	0.464	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Chrysene	**1.04**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Phenanthrene	2.66	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Pyrene	1.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100

ND - Non-Detect NA - Not Available

Shaded Value - Exceeds Part 375 Restricted Residential SCO

(1) - Data from Empire GEO Services subsidiary of SJB Services Phase II Sursurface Investigation of 4630 River Rd Report dated May 28,2010

(2) - Data from EnSol, Inc. Remedial Action Plan dated February 18, 2011. Samples P-4, P-8, P-9, P-14 and P-16 not shown all ND

(3) - Samples were analyzed by the TCLP method so the results cannot be directly compared to the NYSDEC Part 375 Soil Cleanup Objectives

TABLE 2 - 4630 RIVER ROAD - HISTORICAL SEDIMENT SAMPLE ANALTICAL RESULTS SUMMARY

Sampling Program	EnSol-Ditch Sediment Samples (1)			NYSDEC
Sample Number	**MWT-1-SED**	**MWT-2-SED**	**MWT-3-SED**	
Sample Date	**11/22/2011**	**11/22/2011**	**11/22/2011**	**PART 375**
Sample depth (bgs)	**0.0' - 0.17'**	**0.0' - 0.17'**	**0.0' - 0.17'**	**Ecological Resources (2)**
Compounds	**ppm**	**ppm**	**ppm**	**ppm**
Volatiles				
n-Butylbenzene	ND	0.17	ND	NS
SVOCs				
Acenaphthene	ND	0.74	0.74	20
Anthracene	0.92	2.79	2.79	NS
Benzo(a)anthracene	2.69	4.08	4.08	NS
Benzo(a)pyrene	2.12	2.3	2.3	2.6
Benzo(b)fluoranthene	2.01	2.73	2.73	NS
Benzo(g,h,I)perylene	**1.51**	**1.3**	**1.3**	NS
Benzo(k)fluoranthene	1.78	1.92	1.92	NS
Chrysene	2.82	5.08	0.44	NS
Dibenz(a,h)anthracene	ND	0.54	ND	NS
Fluoranthene	5.95	8.92	ND	NS
Flourene	ND	2.36	0.89	30
Indeno(1,2,3-cd)pyrene	1.13	1.13	ND	NS
Phenanthrene	3.32	9.62	0.57	NS
Pyrene	4.63	7.15	0.68	NS

ND - Non-Detect NS - Not Specified

(1) - Data from EnSol, Inc. Summary of Surface Water and Sediment Sampling dated November 9, 2011

(2) - Part 375 - 6.8(b) Restricted Use SCOs - Protection of Ecological Resources

TABLE 3 - 4630 RIVER ROAD - HISTORICAL GROUNDWATER AND SURFACE WATER SAMPLE ANALTICAL RESULTS SUMMARY													
Samplling Program	**United Refinery Groundwater Samples (1)**							**EnSol-Ditch Surface Water Samples (3)**			**NYSDEC Standard/Guidance**		
Well Number	**HP MW-1**	**HP MW-2**	**HP MW-3**			**HP MW-4**		**MWT-1**	**MWT-2**	**MWT-3**			
Sample Number	**TT-HPMW1**	**TT-HPMW2**	**TT-HPMW3**	**TT-HPMW3**	**(2)**	**TT-HPMW4**	**(2)**	**MWT-1-H2O**	**MWT-2-H2O**	**MWT-3-H2O**	**TOGS H(WS)**	**TOGs E**	**TOGs 1.1.1. GA**
Sample Date	**10/14/1999**	**10/14/1999**	**10/14/1999**	**11/2/2000**	**5/23/2001**	**10/14/1999**	**5/23/2001**	**11/22/2011**	**11/22/2011**	**11/22/2011**	**(a)**	**(b)**	**(c)**
Compounds	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**
Volatiles Organics													
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	1
Ethylbebenzene	ND	ND	**150 (c)**	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	5
Isopropylbenzene	ND	ND	**8.1 (c)**	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	5
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	5
o-Xylene	ND	ND	**410 (c)**	4	ND	ND	ND	ND	ND	ND	N/A	N/A	5
Xylenes (Total)	ND	ND	ND	**28 (c)**	ND	ND	ND	ND	ND	ND	N/A	N/A	5
m,p-Xylene	ND	ND	**890 (c)**	ND	ND	ND	ND	ND	ND	ND	N/A	N/A	5
Methyl tert-butyl Ether	ND	ND	ND	ND	ND	4.5	ND	ND	ND	ND	N/A	N/A	N/A
Semi-Volatile Organics													
Acenaphthene	ND	ND	ND	ND	ND	ND	ND	ND	**132 (a)**	ND	20	N/A	N/A
Chryzene	ND	ND	ND	ND	ND	ND	ND	ND	128	ND	N/A	200	N/A
Flourene	ND	ND	ND	ND	ND	ND	ND	ND	**363 (b)**	ND	N/A	50	N/A
Phenanthrene	ND	ND	ND	ND	ND	ND	ND	ND	**897 (b)**	ND	N/A	50	N/A
Pyrene	ND	ND	ND	ND	ND	ND	ND	ND	**210 (b)**	ND	N/A	50	N/A

ND - Non-Detect **N/A - No Standard or Not-Applicable**

Shaded Value - Exceeds Groundwater Standard

(1) - United Refinery analytical Results from NYSDEC Spill Reports

(2) - Analytical Results from NYSDEC Table 1 4630 River Road Site Analytical Results for Groundwater Samples Collected After Retention Pond Closure

(3) - Data from EnSol, Inc. Summary of Surface Water and Sediment Sampling dated November 9, 2011

TOGS H(WS) - Source of Drinking Water (surface water)

TOGS E - Aesthetic (fresh waters)

TOGS GA - Source of Drinking Water (groundwater)

TABLE 4 - 4630 RIVER ROAD - RI SOIL SAMPLE ANALTICAL RESULTS SUMMARY PAGE 1 of 2

Sampling Program	PEI - REMEDIAL INVESTIGATION (RI) TEST TRENCH SOIL SAMPLING PROGRAM																
Sample No. (RiRo)	TP-01A	TP-01B	TP-04	TP-08A	TP-08B	TP-10A	TP-10B	TP-11	TP-12A	TP-12B	TP-13	TP-16A	TP-16B	TP-20	NYSDEC	NYSDEC	NYSDEC
Sample Date	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	1/31/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	2/1/2013	PART 375	PART 375	PART 375
Sample depth (bgs)	2"	7'- 8.5'	7'	2"	4'	2"	7'- 8'	7'- 9'	2"	3'- 5'	6'-8'	2"	4'- 6'	4'-ditch	Residential	Restrict-Res	Unrestricted
Compounds	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Metals															(a)	(b)	(c)
Aluminum	14000	4500	NA	13000	15000	11000	12000	NA	15000	11000	NA	14000	18000	NA	N/A	N/A	N/A
Arsenic	8.7	4.9	NA	6.4	8.4	6	6.8	NA	5.7 J	5.3 J	NA	6.7 J	**14 DJ (c)**	NA	16	16	13
Barium	200	300	NA	92	99	**400 (a)(b)(c)**	110	NA	120	100	NA	140	140	NA	350	400	350
Beryllium	1.1	0.6 J	NA	0.86	1.1	1.2	0.64 J	NA	0.76 J	0.59 J	NA	0.86 J	2.1 DJ	NA	14	72	7.2
Cadmium	1.6	0.83	NA	0.56 J	0.5 J	1.1	0.4 J	NA	0.33 J	ND	NA	0.46 J	0.73 J	NA	2.5	4.3	2.5
Calcium	34000	14000	NA	63000	19000	37000	89000	NA	56000 J	71000 J	NA	41000 J	52000 DJ	NA	N/A	N/A	N/A
Chromium (Hex)	**49 (a)(c)**	**19 (c)**	NA	**22 (a)(c)**	**22 (a)(c)**	**22 (a)(c)**	**16 (c)**	NA	**21 (c)**	**16 (c)**	NA	**21 (c)**	**24 (a)(c)**	NA	22	110	1
Cobalt	6.6	ND	NA	6.7	11	4.4 J	7.7	NA	10	9.2	NA	8.2	8.9 J	NA	N/A	N/A	N/A
Copper	**57 (c)**	**55 (c)**	NA	**57 (c)**	26	41	28	NA	23	19	NA	27	35	NA	270	270	50
Cyanide Total	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	NA	27	27	27
Iron	28000	13000	NA	20000	25000	16000	24000	NA	24000	21000	NA	23000	22000	NA	N/A	N/A	N/A
Lead	**190 (c)**	**130 (c)**	NA	32	27	**98 (c)**	9.8	NA	12	13	NA	48	**71 (c)**	NA	400	400	63
Magnesium	9800	10000	NA	16000	7700	18000	13000	NA	17000	16000	NA	9200	12000 M	NA	N/A	N/A	N/A
Manganese	1500	270	NA	640	290	570	380	NA	570	560	NA	470	520 M	NA	2000	2000	1600
Mercury	0.04 J	0.01 J	NA	0.01	0.01	0.01 J	0.01 DJ	NA	0.01	0.01	NA	ND	ND	NA	0.81	0.81	0.18
Nickel	**33 (c)**	11	NA	23	26	20	21	NA	23	21	NA	21	25	NA	140	310	30
Selenium	ND	ND	NA	1.3	ND	ND	ND	NA	ND	ND	NA	0.65	ND	NA	36	180	3.9
Potassium	2200	480	NA	2300	2500	1700	2800	NA	4000	1800	NA	2600	2300	NA	N/A	N/A	N/A
Sodium	540	190 J	NA	410	310 J	290 J	310 J	NA	320 J	590 J	NA	240 J	640 DJ	NA	N/A	N/A	N/A
Vanadium	29	6.7	NA	24	33	19	26	NA	32	22	NA	27	26	NA	N/A	N/A	N/A
Zinc	**340 (c)**	**400 (c)**	NA	**120 (c)**	86	**430 (c)**	78	NA	75	63	NA	86	**150 M (c)**	NA	2200	10000	109
PCBS																	
Aroclor 1254	0.07	0.02 J	NA	ND	ND	0.03 J	ND	NA	ND	ND	NA	ND	ND	NA	1	1	0.1
Aroclor 1260	0.05	ND	NA	0.05	ND	0.03 J	ND	NA	ND	ND	NA	ND	ND	NA	1	1	0.1
Pesticides																	
4,4-DDE	0.0031 CJN	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	NA	1.8	8.9	0.0033
4,4-DDD	ND	ND	NA	**0.0088 CJN(c)**	ND	**0.0056CJN(c)**	ND	NA	ND	ND	NA	0.0024 CJN	ND	NA	2.6	13	0.0033
4,4-DDT	**0.0084 CJN(c)**	ND	NA	**0.01 (c)**	ND	**0.01 (c)**	ND	NA	ND	ND	NA	ND	ND	NA	1.7	7.9	0.0033
beta-BHC	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.01 CJ	ND	NA	0.072	0.36	0.036
delta-BHC	0.0025 CJ	ND	NA	ND	ND	0.0022 CJN	ND	NA	ND	ND	NA	ND	ND	NA	100	100	0.04
Dieldrin	0.0038 CJ	0.0043 CJN	NA	0.0031 CJN	ND	0.0027 CJN	ND	NA	ND	ND	NA	ND	ND	NA	0.039	0.2	0.005
Endrin Aldehyde	2.8 J	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.01 CJN	ND	NA	N/A	NA	NA
alpha-BHC	ND	**0.02 J (c)**	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	NA	0.097	0.48	0.02
Endrin	ND	0.0037 J	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.0024 J	ND	NA	2.2	11	0.014
Heptachlor Epoxide	ND	0.01 J	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	NA	N/A	NA	NA
Endosulfan II	ND	ND	NA	0.01 CJN	ND	ND	ND	NA	ND	ND	NA	ND	ND	NA	4.8	24	2.4
Endrin Ketone	ND	ND	NA	0.01 CJN	ND	ND	ND	NA	ND	ND	NA	0.01 CJ	ND	NA	NA	NA	NA
Methoxychlor	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.01 CJN	ND	NA	NA	NA	NA

TABLE 4 - 4630 RIVER ROAD - RI SOIL SAMPLE ANALTICAL RESULTS SUMMARY PAGE 2 of 2																	
Sampling Program	**PEI - REMEDIAL INVESTIGATION (RI) TEST TRENCH SOIL SAMPLING PROGRAM**																
Sample No. (RiRo)	**TP-01A**	**TP-01B**	**TP-04**	**TP-08A**	**TP-08B**	**TP-10A**	**TP-10B**	**TP-11**	**TP-12A**	**TP-12B**	**TP-13**	**TP-16A**	**TP-16B**	**TP-20**	**NYSDEC**	**NYSDEC**	**NYSDEC**
Sample Date	**1/31/2013**	**1/31/2013**	**1/31/2013**	**1/31/2013**	**1/31/2013**	**1/31/2013**	**1/31/2013**	**2/1/2013**	**2/1/2013**	**2/1/2013**	**2/1/2013**	**2/1/2013**	**2/1/2013**	**2/1/2013**	**PART 375**	**PART 375**	**PART 375**
Sample depth (bgs)	**2"**	**7'- 8.5'**	**7'**	**2"**	**4'**	**2"**	**7'- 8'**	**7'- 9'**	**2"**	**3'- 5'**	**6'-8'**	**2"**	**4'- 6'**	**4'-ditch**	**Residential**	**Restrict-Res**	**Unrestricted**
Compounds	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**	**ppm**
Volatiles															**(a)**	**(b)**	**(c)**
Acetone	NA	**0.19B (c)**	ND	NA	ND	NA	ND	ND	NA	ND	ND	NA	ND	ND	100	100	0.05
1,2,4-Trimethylbenzene	NA	ND	0.56 J	NA	ND	NA	ND	ND	NA	ND	0.28	NA	ND	ND	47	52	3.6
1,3,5-Trimethylbenzene	NA	ND	0.29 J	NA	ND	NA	ND	ND	NA	ND	0.06	NA	ND	ND	47	52	8.4
Carbon Disulfide	NA	0.02	ND	NA	ND	NA	ND	ND	NA	ND	ND	NA	ND	ND	NA	NA	NA
Cyclohexane	NA	0.12	ND	NA	ND	NA	ND	ND	NA	ND	ND	NA	ND	ND	NA	NA	NA
Ethylbenzene	NA	0.07	0.06 J	NA	0.09	NA	ND	ND	NA	ND	0.01 J	NA	**220M(a)(b)(c**	0.01	30	41	1
Isopropylbenzene	NA	0.02 J	0.05	NA	ND	NA	ND	ND	NA	ND	0.09	NA	8.1	ND	N/A	NA	NA
Naphthalene	NA	ND	1 J	NA	ND	NA	ND	ND	NA	ND	0.03	NA	ND	ND	100	100	12
Mythyl acetate	NA	0.05	ND	NA	ND	NA	ND	ND	NA	ND	ND	NA	ND	ND	N/A	NA	NA
Methylcyclohexane	NA	0.47	ND	NA	ND	NA	ND	ND	NA	ND	ND	NA	ND	ND	N/A	NA	NA
n-Propylbenzene	NA	ND	0.06 J	NA	ND	NA	ND	ND	NA	ND	0.09	NA	ND	ND	100	100	3.9
p-Isopropylbenzene	NA	ND	0.08	NA	ND	NA	ND	ND	NA	ND	0.02	NA	ND	ND	NA	NA	NA
sec-Butylbenzene	NA	ND	0.06 J	NA	ND	NA	ND	ND	NA	ND	0.02	NA	ND	ND	100	100	11
Toluene	NA	0.02	0.03	NA	0.01	NA	ND	ND	NA	ND	0.01	NA	**9.5 M (c)**	ND	100	100	0.7
o-Xylene	NA	0.3	0.17	NA	0.01	NA	ND	ND	NA	ND	0.02	NA	**290 (a)(b)(c)**	0.03	100	100	0.26
m,p-Xylene	NA	0.09	0.27	NA	0.03	NA	ND	0.01	NA	ND	0.19	NA	**800 (a)(b)(c)**	0.1	100	100	0.26
TICs	NA	22.4	NA	NA	ND	NA	ND	ND	NA	ND	ND	NA	12	ND	N/A	NA	NA
SVOCs																	
1.1 Biphenyl	ND	0.72	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	NA	NA	NA	NA
2,4-Dimethylphenol	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	2	NA	NA	NA	NA
2-Methylnapthalene	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	1.1	NA	NA	NA	NA
3&4-Methylphenol	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	0.52 J	NA	NA	NA	NA
Acenaphthene	ND	1.1	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.33 J	ND	NA	100	100	20
Anthracene	ND	2.2	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.48	ND	NA	100	100	100
Benzo(a)anthracene	0.36 J	**2.8 (a)(b)(c)**	NA	ND	ND	0.22 J	ND	NA	ND	ND	NA	**1.6 (a)(b)(c)**	ND	NA	1	1	1
Benzo(a)pyrene	0.37	**2.1 (a)(b)(c)**	NA	ND	ND	0.22 J	ND	NA	ND	ND	NA	**1.4 (a)(b)(c)**	ND	NA	1	1	1
Benzo(b)fluoranthene	0.39	**2.4 (a)(b)(c)**	NA	ND	ND	0.23 J	ND	NA	ND	ND	NA	**1.4 (a)(b)(c)**	ND	NA	1	1	1
Benzo(g,h,I)perylene	0.27 J	1.5	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.75	ND	NA	100	100	100
Benzo(k)fluoranthene	0.3 J	**1.5 (a)(c)**	NA	ND	ND	0.2 J	ND	NA	ND	ND	NA	**1.1 (a)(c)**	ND	NA	1	3.9	0.8
Chrysene	0.4	**3.8 (a)(c)**	NA	ND	ND	0.26 J	ND	NA	ND	ND	NA	**1.7 (a)(c)**	0.75 J	NA	1	3.9	1
Fluoranthene	0.72	5.4	NA	ND	ND	0.36	ND	NA	ND	ND	NA	3	0.49 J	NA	100	100	100
Flourene	ND	2.9	NA	ND	ND	ND	ND	NA	ND	ND	NA	0.19 J	ND	NA	100	100	30
Hexachlorobenzene	ND	ND	NA	ND	ND	0.17 J	ND	NA	ND	ND	NA	ND	ND	NA	0.33	1.2	0.33
Indeno(1,2,3-cd)pyrene	0.31 J	**1.6 (a)(b)(c)**	NA	ND	ND	0.21 J	ND	NA	ND	ND	NA	**1.1 (a)(b)(c)**	ND	NA	0.5	0.5	0.5
Phenanthrene	0.37	8.7	NA	ND	ND	0.17 J	ND	NA	ND	ND	NA	1.6	1.7	NA	100	100	100
Pyrene	0.62	6.7	NA	ND	ND	0.33	ND	NA	ND	ND	NA	2.6	0.91	NA	100	100	100
TICs	2.55	62.5	NA	0.34	0.89	0.39	0.15	NA	ND	ND	NA	30.1	75.4	NA	N/A	NA	NA

All Data has Been Validated

ND - Non-Detect NA - Not Available

Shaded Value - Exceeds Part 375 Restricted Residential SCO

TICs - Tentitively Identified Compounds

"B" = Method blank contained trace levels of analyte. Refer to included method blank report.

C - Calibration acceptability criteria exceeded for this analyte

"D" = Duplicate results outside QC limits. May indicate a non-homogenous matrix.

J - Estimated value-below calibration range N - Analysis indicates tentitive analyte identification

"M" = Matrix spike recoveries outside QC limits. Matrix bias indicated.

TABLE 5 - 4630 RIVER ROAD RI GROUNDWATER SAMPLE ANALYTICAL RESULTS SUMMARY									
Sample Number (R	**MW-01**	**MW-01**	**MW-02**	**MW-02**	**MW-03**	**MW-03**	**MW-04**	**MW-04**	**NYSDEC**
Sample Date	**2/7/2013**	**2/7/2013**	**2/7/2013**	**2/7/2013**	**2/7/2013**	**2/7/2013**	**2/7/2013**	**2/7/2013**	**TOGs 1.1.1. GA**
Compounds	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**
Metals	**Filtered (1)**	**Unfiltered**	**Filtered (1)**	**Unfiltered**	**Filtered (1)**	**Unfiltered**	**Filtered (1)**	**Unfiltered**	
Aluminum	ND	280000	ND	28000	ND	8500	ND	52000	N/A
Antmony	ND	ND	ND	ND	ND	ND	ND	ND	3
Arsenic	ND	**170**	ND	21	ND	ND	ND	11	25
Barium	86 J	1000	73 J	190	63 J	120	69 J	310	1000
Beryllium	ND	**13**	ND	ND	ND	ND	ND	ND	3
Cadmium	ND	**12**	ND	ND	ND	ND	ND	ND	5
Calcium	120000	730000	210000	300000	200000	220000	80000	100000	N/A
Chromium	19 J	**370**	ND	38	ND	28	ND	**86**	50
Cobalt	ND	250	ND	25 J	ND	ND	ND	ND	N/A
Copper	ND	**580**	ND	65	ND	20 J	ND	83	200
Iron	71 J	**690000**	ND	**49000**	ND	**9100**	ND	**59000**	300
Lead	ND	**340**	ND	**28**	ND	5.8 J	ND	**54**	25
Magnesium	35000	230000	33000	53000	32000	36000	27000	46000	N/A
Manganese	**390**	**8000**	**490**	**1700**	**430**	**560**	71	**600**	300
Mercury	ND	0.5	ND	ND	ND	ND	ND	0.15	0.7
Nickel	ND	**620**	ND	63	ND	ND	ND	65	100
Potassium	1700 J	56000	4100	12000	1600 J	3700	1900 J	16000	N/A
Selenium	ND	**16**	5.3 J	9 J	ND	7.9 J	ND	7.1 J	10
Sodium	13000	18000	**75000**	**78000**	**140000**	**140000**	6700	7100	20000
Thallium	ND	ND	ND	ND	ND	ND	ND	ND	0.5
Vanadium	ND	550	ND	53	ND	18 J	ND	87	N/A
Zinc	ND	2300	ND	150	ND	35 J	ND	300	N/A
SVOCs									
TICs	10	N/A	30.2	N/A	29	N/A	ND	N/A	N/A
VOCs									
TICs	6.7	N/A	ND	N/A	ND	N/A	ND	N/A	N/A
Pesticides									
Pesticides	ND	N/A	ND	N/A	ND	N/A	ND	N/A	
PCBs									
PCBs	ND	N/A	ND	N/A	ND	N/A	ND	N/A	
Field Parameters									
Turbidity (NTU)	>1000	>1000	>1000	>1000	>1000	>1000	>1000	>1000	N/A
pH	10.44	10.44	9.55	9.55	10.74	10.74	9.23	9.23	N/A
Dissolved Oxygen	13.87	13.87	4.12	4.12	5	5	8.26	8.26	N/A
Temp (degrees C)	3.6	3.6	4	4	5.69	5.69	3.12	3.12	N/A
Conductivity	0.01	0.01	1.8	1.8	1.83	1.83	0.01	0.01	N/A

All Data has been validated

(1) - Dissolved TAL Metals (ICP) - Results lab filtered due to high groundwater sediment in wells

N/A - Not Applicable ND - Non-detect

TOGs 1.1.1 GA - Technical and Operational Guidance Series (1.1.1) Source of Drinking Water (Groundwater)

Shading - Results above NYSDEC TOGs Groundwater Standards

J - Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). Concentrations within this range are estimated.

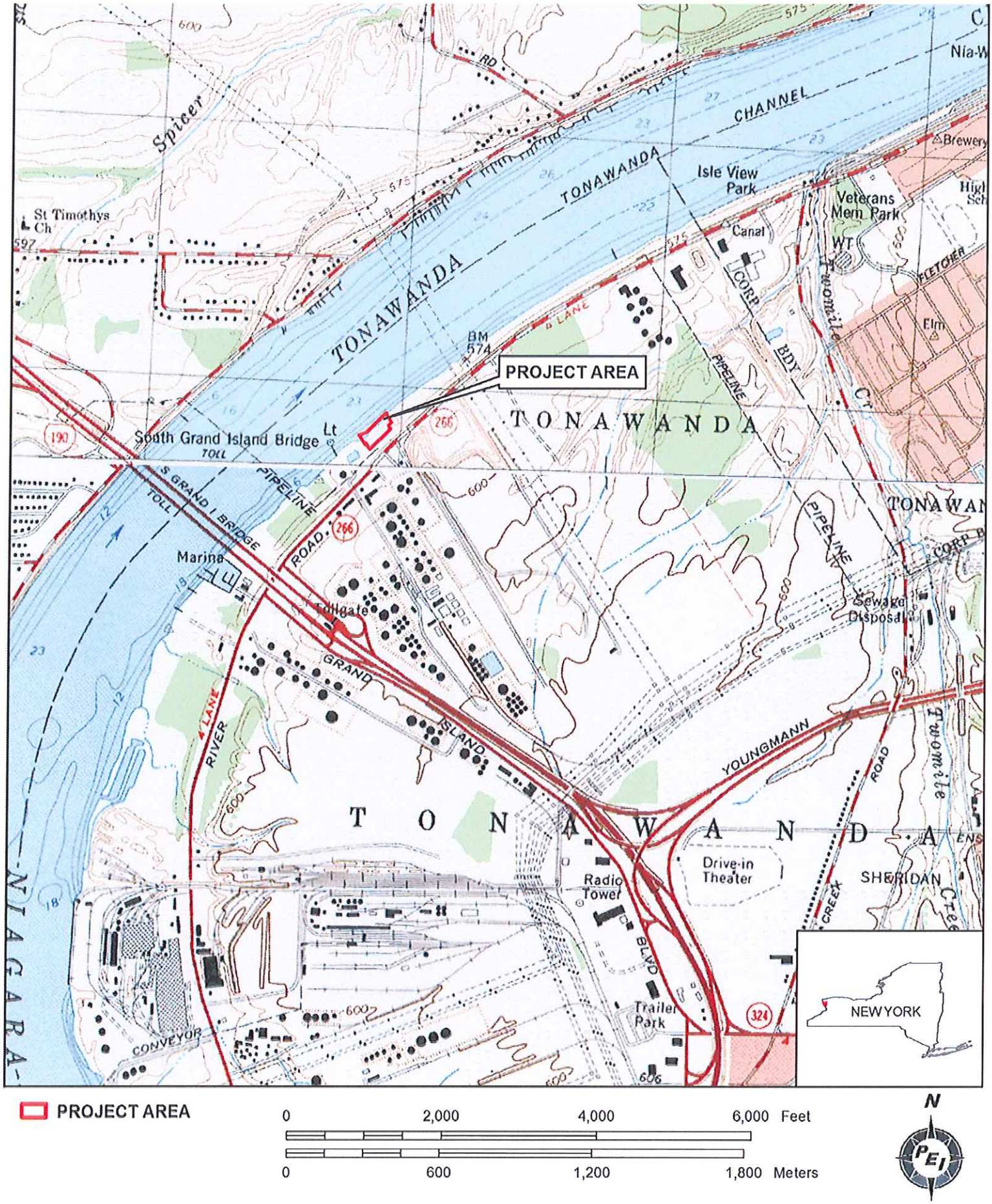


Fig 1: Project location area (USGSTonawanda West Quad. 1980)

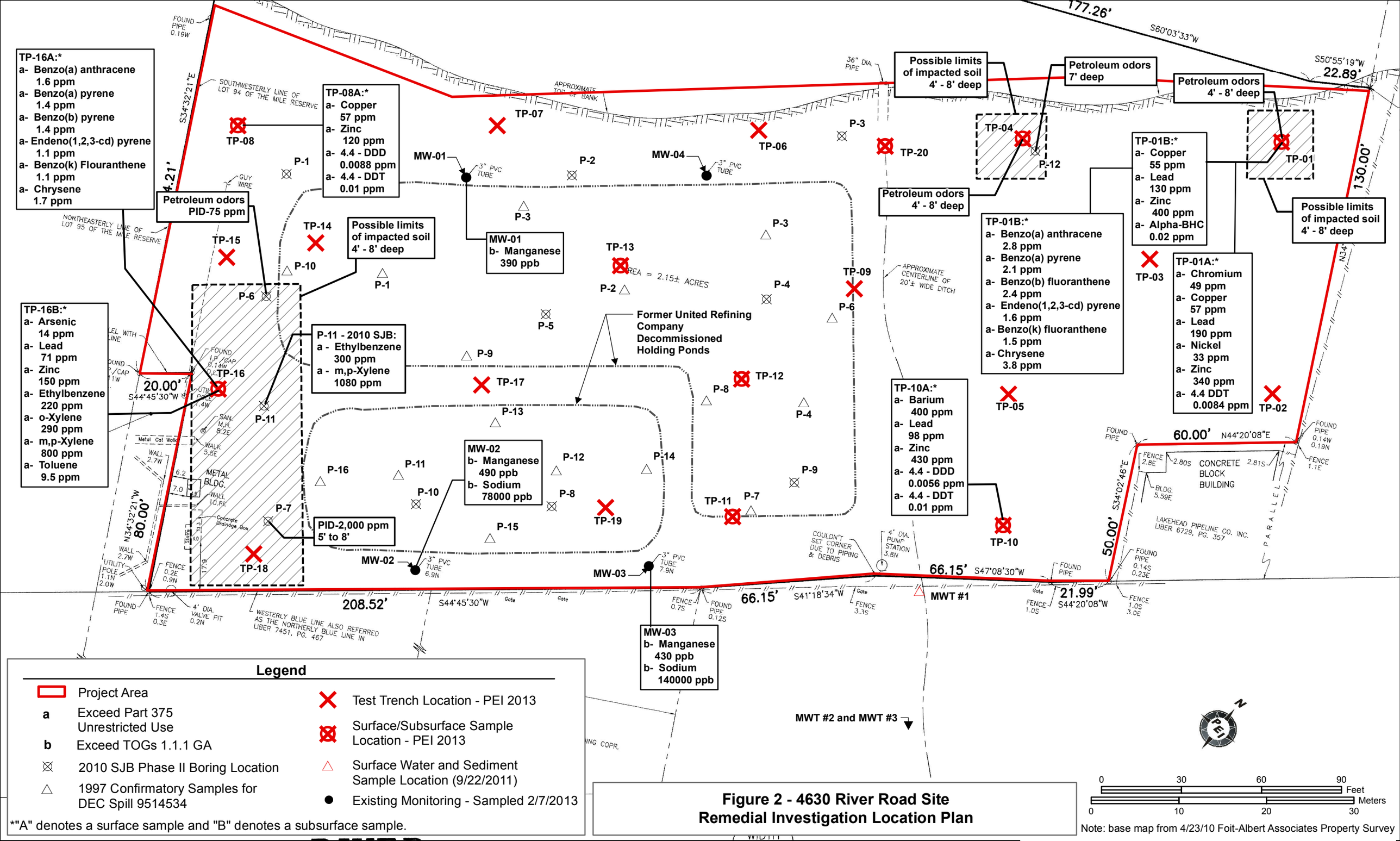


Figure 2 - 4630 River Road Site
Remedial Investigation Location Plan

Note: base map from 4/23/10 Foit-Albert Associates Property Survey

MW-01
569.6' Top Casing
562.7' GW EL

MW-04
569.3' Top Casing
562.45' GW EL

MW-02
571.5' Top Casing
566.35' GW EL

MW-03
571.4' Top Casing
566.5' GW EL

Former United Refining Company Decommissioned Holding Ponds

AOC = 2.15± ACRES

562'

564'

566'

174.21'
S34°32'21"E

80.00'
N34°32'21"W

177.26'
S60°03'33"W

S50°55'19"W
22.89'

130.00'
N34°02'46"W

20.00'
S44°45'30"W

208.52'
S44°45'30"W

66.15'
S47°08'30"W

66.15'
S41°18'34"W

21.99'
S44°20'08"W

60.00'
N44°20'08"E

50.00'
S34°02'46"E

TP-01 TP-02 TP-03 TP-04 TP-05 TP-06 TP-07 TP-08 TP-09 TP-10 TP-11 TP-12 TP-13 TP-14 TP-15 TP-16 TP-17 TP-18 TP-19 TP-20

P-1 P-2 P-3 P-4 P-5 P-6 P-7 P-8 P-9 P-10 P-11 P-12 P-13 P-14 P-15 P-16

MWT #1

MWT #2 and MWT #3

SOUTHWESTERLY LINE OF LOT 94 OF THE MILE RESERVE

NORTHEASTERLY LINE OF LOT 95 OF THE MILE RESERVE

PARALLEL WITH BLUE LINE

WESTERLY BLUE LINE ALSO REFERRED AS THE NORTHERLY BLUE LINE LIBER 7451, PG. 467

LANDS CONVEYED TO ASHLAND OIL & REFINING CO. LIBER 7451, PG. 467

LAKEHEAD PIPELINE CO. INC. LIBER 6729, PG. 357

APPROXIMATE TOP OF BANK

APPROXIMATE CENTERLINE OF 20'± WIDE DITCH

36" DIA. PIPE

CONCRETE BLOCK BUILDING

METAL BLDG.

GUY WIRE

UTILITY POLE

SAN. M.H.

WALK

FENCE

GATE

FOUND PIPE

FOUND I.P./CAP

3" PVC TUBE

4' DIA. VALVE PIT

4' DIA. MW STATION

COULDN'T SEE CORNER DUE TO PIPING & DEBRIS

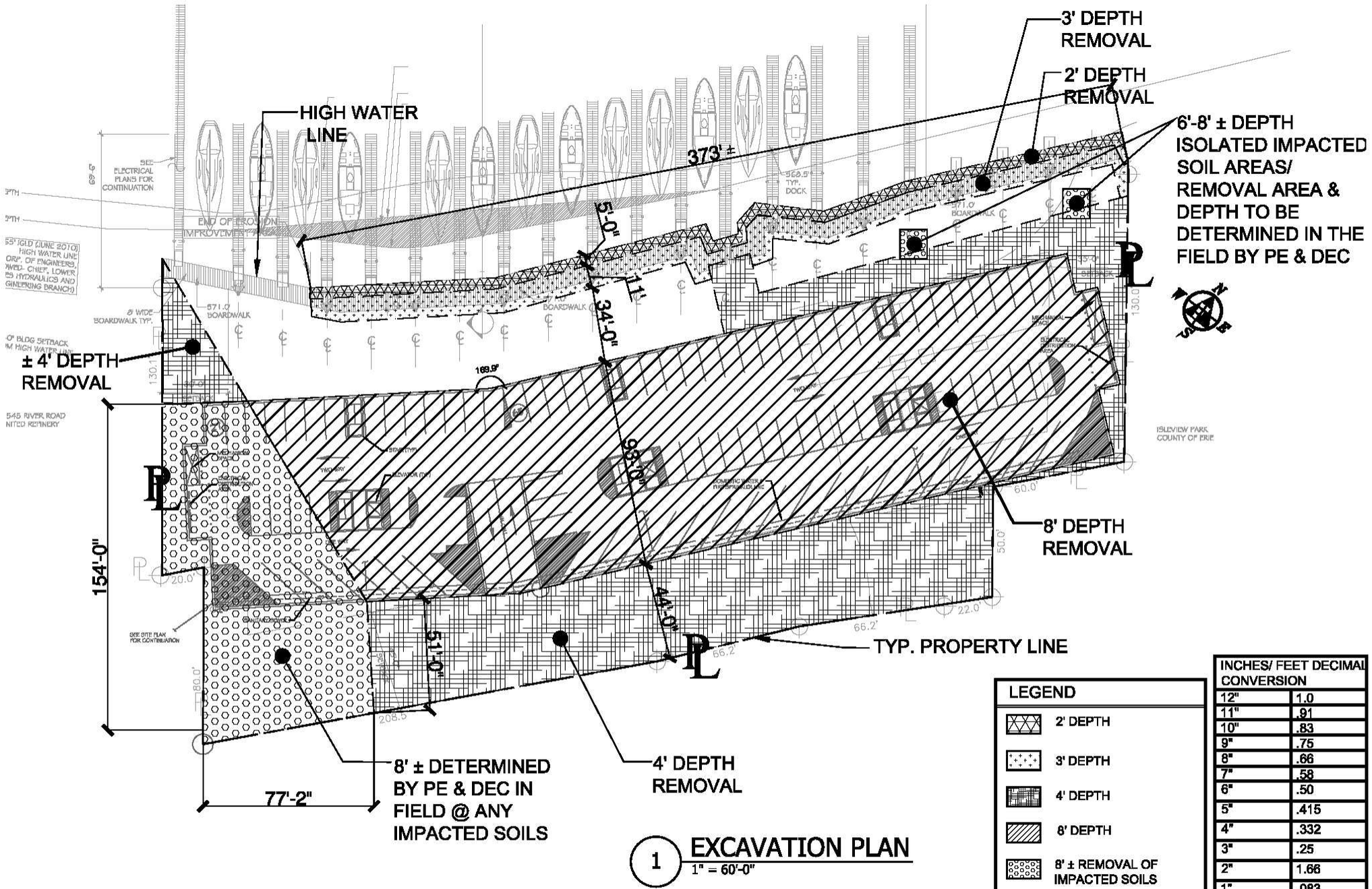
Legend

- Project Area
- 2010 SJB Phase II Boring Location
- 1997 Confirmatory Samples for DEC Spill 9514534
- Test Trench Location - PEI 2013
- Surface/Subsurface Sample Location - PEI 2013
- Surface Water and Sediment Sample Location (9/22/2011)
- Existing Monitoring Well - Sampled 2/7/2013
- 562 GW Contour GW EL. - 10-22-13

Figure 3 - 4630 River Road Site
Remedial Investigation GW Contour Plan

0 30 60 90 Feet
0 10 20 30 Meters

Note: base map from 4/23/10 Foit-Albert Associates Property Survey



1 EXCAVATION PLAN
1" = 60'-0"

INCHES/ FEET DECIMAL CONVERSION	
12"	1.0
11"	.91
10"	.83
9"	.75
8"	.66
7"	.58
6"	.50
5"	.415
4"	.332
3"	.25
2"	1.66
1"	.083

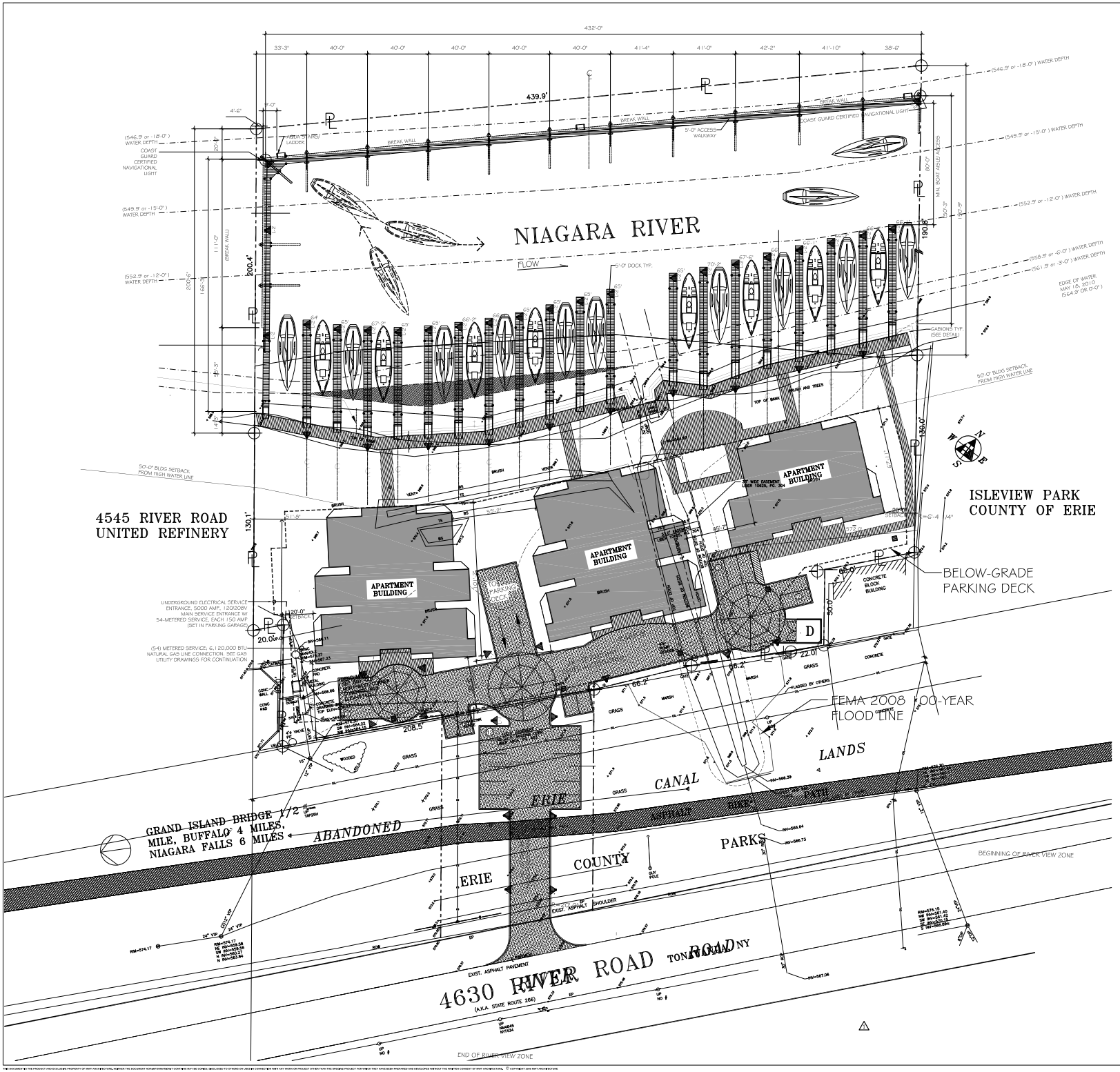
MWT

4630 RIVER ROAD TOWNHOUSES AND MARINA

TONAWANDA, NY

DATE: 04/29/14
DRAWN BY: MWT
SCALE: AS NOTED
REVISIONS: -

PROJECT NO: 10012
DRAWING NO:
FIGURE 4
EXCAVATION PLAN



1 MASTER SITE PLAN
1" = 20'-0"

REVISIONS:

AMENDED PLAN

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4630 RIVER ROAD
AMENDED
SITE PLAN
4630 RIVER ROAD
TONAWANDA, NY

PROJECT NO.:1001
DATE: 01/23/13
DRAWN BY: ATK
CHKD. BY: MWT

MASTER SITE PLAN

SHEET C100