ExxonMobil

Environmental Services

38 Varick Street
Brooklyn, New York 11222
Telephone: (718) 404-0652
Facsimile: (718) 404-0681
steve.p.trifiletti@exxonmobil.com

Steve Trifiletti
Project Manager

September 21, 2010

Mr. Brian Davidson
New York State Department of Environmental Conservation
Remedial Bureau B
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7016

Re: Interim Remedial Measure Work Plan
Former Pratt Oil Works
The Inland Project Area (Tract I)
Long Island City, New York
Consent Order Case No. D2-1002-12-07AM
Document Tracking No. S241115

Dear Mr. Davidson:

ExxonMobil Oil Corporation ("ExxonMobil") is submitting for your review and comment the enclosed *Interim Remedial Measure Work Plan* for the Inland Project Area of the Former Pratt Oil Works (Project Area). One hard copy and an electronic copy are provided as requested by New York State Department of Conservation (NYSDEC) in a letter dated June 2, 2010. This report has been prepared on behalf of ExxonMobil by Kleinfelder of Bohemia, New York.

Please do not hesitate to contact me at (718) 404-0652 if you have questions.

Very truly yours,

Steve Trifiletti
Project Manager

Enclosure

Via FEDEX Overnight

cc: S. Caruso (NYSDEC – electronic copy only)
L. Forte (A&L Cesspool Ser./Co. – hard copy only)
J. Kaplan (Waste Management of New York LLC – electronic and hard copy)
K. Lumpe (Steel Equities – hard copy only)

KLEINFELDER
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DELIVERED VIA ELECTRONIC MAIL

September 21, 2010

Mr. Steve P. Trifiletti
ExxonMobil Environmental Services Company
Global Remediation - Major Projects
38 Varick Street
Brooklyn, New York 11222

Re: Interim Remedial Measure Work Plan
Former Pratt Oil Works (Project Area)
The Inland Project Area (Tract I)
Long Island City, New York
NYSDEC Case No. 07-07418 (Parcel A)
NYSDEC Case No. 08-13060 (Parcel C)
NYSDEC Case No. 09-04539 (Parcel D)
NYSDEC Case No. 09-03356 (Parcel E)
NYSDEC Case No. 09-03488 (Parcel G)
NYSDEC Case No. 09-03616 (Parcel H)
NYSDEC Case No. 09-03287 (Parcel I)
Consent Order Case No. D2-1002-12-07AM
NYSDEC Remedial Tracking No. S241115

Dear Mr. Trifiletti:

Enclosed, please find an *Interim Remedial Measure Work Plan* (Work Plan) prepared by Kleinfelder East, Inc. (Kleinfelder) on behalf of ExxonMobil Environmental Services Company (ExxonMobil) for the Inland Parcels listed above, which compose Tract I (further referred to as the Inland Project Area) of the Former Pratt Oil Works (FPOW) (Project Area). The Work Plan proposes the installation of two light non-aqueous phase liquid (LNAPL) recovery systems at the Inland Project Area.

If you have questions or comments, please contact the undersigned at (631) 218-0612.

Very truly yours,
Kleinfelder East, Inc.

John E. Wolf
Senior Project Manager

FOR
Jason Chan, P.E.
Project Engineer

One Corporate Drive, Suite 201, Bohemia, NY 11716 **p** | 631.218.0612 **f** | 631.218.0787

Enclosure

Copy: File (19)

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INTERIM REMEDIAL MEASURE WORK PLAN

Former Pratt Oil Works (Project Area)
The Inland Project Area (Tract I)
Parcel A - 38-40 Railroad Avenue
Parcel C - 38-70 Review Avenue
Parcel D - 38-84 Railroad Avenue
Parcel E - 38-50 Review Avenue and 38-54 Railroad Avenue
Parcel F - 38-98 Review Avenue
Parcel G - 38-78 Review Avenue
Parcel H - 39-30 Review Avenue
Parcel I - 38-20 Review Avenue
Parcel J - 37-88 Review Avenue
Parcel K - 38-60 Review Avenue
Long Island City, New York

NYSDEC Case No. 07-07418 (Parcel A)
NYSDEC Case No. 08-13060 (Parcel C)
NYSDEC Case No. 09-04539 (Parcel D)
NYSDEC Case No. 09-03356 (Parcel E)
NYSDEC Case No. 09-03488 (Parcel G)
NYSDEC Case No. 09-03616 (Parcel H)
NYSDEC Case No. 09-03287 (Parcel I)

Consent Order Case No. D2-1002-12-07AM
NYSDEC Remedial Tracking No. S241115

September 21, 2010

Prepared by:

Kleinfelder East, Inc.
One Corporate Drive, Suite 201
Bohemia, New York 11716
(631) 218-0612

Prepared for:

ExxonMobil Environmental
Services Company
38 Varick Street
Brooklyn, New York 11222
(718) 404-0652

INTERIM REMEDIAL MEASURE WORK PLAN

Former Pratt Oil Works (Project Area)
The Inland Project Area (Tract I)
Long Island City, New York

ENGINEERING CERTIFICATION

This Work Plan has been reviewed by Kleinfelder Engineering, P.C. for accuracy, content and quality of presentation. The Education Law of the State of New York prohibits any person from altering anything in this Work Plan in anyway unless it is under the direction of the licensed professional engineer. Where such alterations are made, the professional engineer must sign, seal, date and describe the full extent of the alteration (NYS Education Law Section 7209-2).

Dennis G. Shin, P.E.
Vice President
Kleinfelder Engineering, P.C.

9/21/10
Date

INTERIM REMEDIAL MEASURE WORK PLAN

Former Pratt Oil Works (Project Area)
The Inland Project Area (Tract I)
Long Island City, New York

QUALITY ASSURANCE/QUALITY CONTROL

The following personnel have reviewed this Work Plan for accuracy, content, and quality of presentation:

John E. Wolf
Project Manager

9/21/10
Date

Jason Chan, P.E.
Project Engineer

FOR

9/21/10
Date

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LIST OF ACRONYMS AND ABBREVIATIONS

AST	-	aboveground storage tank
CAP	-	Corrective Action Plan
CET	-	Clean Earth Technologies
DSNY	-	New York City Department of Sanitation
DTB	-	depth to bottom
DTW	-	depth to water
EFR	-	enhanced fluid recovery
fbg	-	feet below grade
ft/ft	-	feet per foot
FDNY	-	Fire Department of New York
FPOW	-	Former Pratt Oil Works
gpm	-	gallons per minute
HASP -	-	Health and Safety Plan
HSO	-	Health and Safety Officer
IRM	-	interim remedial measure
LIRR	-	Long Island Railroad
LNAPL	-	light non-aqueous phase liquid
mg/L	-	milligrams per liter
msl	-	mean sea level
MTBE	-	Methyl tertiary-butyl ether
NYCDOB	-	New York City Department of Buildings
NYSDEC	-	New York State Department of Conservation
PAH	-	Polycyclic Aromatic Hydrocarbons
PPE	-	personal protective equipment
RSCOs	-	Recommended Soil Cleanup Objectives
SOCONY	-	Standard Oil Company of New York
SSUR	-	Site Status Update Report
su	-	standard unit
SVOCs	-	semi-volatile organic compounds
TOGS	-	*Technical and Operational Guidance Series*
USDOT	-	United States Department of Transportation

LIST OF ACRONYMS AND ABBREVIATIONS

USGS	-	United States Geologic Survey
VOCs	-	volatile organic compounds
WMNY	-	Waste Management of New York

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1.0 INTRODUCTION

ExxonMobil Environmental Services Company (ExxonMobil), on behalf of ExxonMobil Oil Corporation, contracted Kleinfelder East, Inc. (Kleinfelder) to prepare this *Interim Remedial Measure Work Plan* (Work Plan), for the Inland Project Area, which composes Tract I (hereafter referred to as the Inland Project Area) of the Former Pratt Oil Works (Project Area). The Waterfront Project Area (Tract II), together with the Inland Project Area (Tract I), are collectively referred to as the Project Area. This Work Plan was prepared based on the results and findings of the following reports:

- *Interim Site Characterization Report* for the Waterfront Parcels prepared by Kleinfelder, dated August 10, 2009;
- *Interim Site Characterization Report* for the Inland Parcels prepared by Kleinfelder, dated March 11, 2010;
- *Interim Remedial Measure Feasibility Study Report*, prepared by Kleinfelder, dated July 1, 2010.

This Work Plan is limited to the Inland Project Area and proposes interim remedial measures (IRMs) in an effort to recover light non-aqueous phase liquid (LNAPL). The IRMs include manual recovery and installation and operation of two stand-alone LNAPL recovery systems.

This Work Plan is proposed in accordance with Item No. 3 of a Corrective Action Plan (CAP) included in Consent Order Case No. D2-1002-12-07AM which was executed between ExxonMobil Oil Corporation and the New York State Department of Environmental Conservation (NYSDEC) on July 15, 2008. The location of the Project Area is illustrated on Figure 1.

The parcels that constitute the Project Area have changed ownership over the years. A detailed discussion of the ownership is provided in Section 2 of this Work Plan. The addresses which compose the Inland Project Area, as well as current property owners, are listed as follows:

Inland Parcels

Parcel	Address	Current owner
Parcel A	38-40 Railroad Avenue	Waste Management of New York
Parcel C	38-70 Review Avenue	Keane Realty LLC
Parcel D	38-84 Railroad Avenue	A&L Cesspool Services Company
Parcel E	38-50 Review Avenue and 38-54 Railroad Avenue	HP Sherman Co. Inc.
Parcel F	38-98 Review Avenue	DG Properties LLC
Parcel G	38-78 Review Avenue	Werwaiss Realty Company
Parcel H	39-30 Review Avenue	American Cleaning Solutions
Parcel I	38-20 Review Avenue	Review Associates
Parcel J	37-88 Review Avenue	Up from the Ashes, Inc.
Parcel K	38-60 Review Avenue	Renari Realty, LLC

1.1 Regulatory History

The following subsections summarize the regulatory history with the NYSDEC for the Project Area.

1.1.1 Consent Order

ExxonMobil Oil Corporation and the NYSDEC signed Consent Order Case No. D2-1002-12-07AM on July 15, 2008 by which ExxonMobil Oil Corporation voluntarily agreed to perform a site characterization of the current environmental conditions of the Project Area. ExxonMobil Oil Corporation voluntarily agreed to perform the site characterization, subject to an express reservation of rights and without admission of liability, despite several decades of industrial and petroleum-related operations unrelated to ExxonMobil Oil Corporation, that both pre- and post-dated ExxonMobil Oil Corporation predecessor's discrete presence in the Project Area (Parsons, 2008).

1.1.2 NYSDEC Case Numbers

As memorialized in the February 17, 2009 correspondence from the NYSDEC, each parcel would be assigned one NYSDEC case number, if warranted, in order to manage site characterization activities under one comprehensive case number per parcel. NYSDEC case numbers generated for the Project Area include the following:

Parcel A: NYSDEC generated case No. 07-07418 on October 5, 2007 for 38-50 Review Avenue, Maspeth.

Parcel B: NYSDEC generated case No. 08-13060 on March 5, 2009 for 39-14 Review Avenue, Long Island City in response to VOCs detected while field screening soil samples collected during the preclearance of monitoring well MW-9.

Parcel C: NYSDEC generated case No. 07-07417 on October 5, 2007 for 38-70 Review Avenue, Maspeth.

Parcel D: NYSDEC generated case No. 09-04539 on July 19, 2009 for 38-84 Railroad Avenue, Long Island City in response to VOCs detected while field screening soil samples collected during the drilling of soil boring SB-13/MW-24.

Parcel E: NYSDEC generated case No. 09-03356 on June 22, 2009 for 38-54 Railroad Avenue in response to VOCs detected while field screening soil samples collected during the preclearance of monitoring well MW-17.

Parcel G: NYSDEC generated case No. 09-03488 on June 24, 2009 for 38-78 Review Avenue, Long Island City in response to odors detected in a soil sample collected during the drilling of soil boring SB-15.

Parcel H: NYSDEC generated case No. 09-03616 on June 27, 2009 for 39-30 Review Avenue, Long Island City in response to odors detected in a soil sample collected during the drilling of monitoring well MW-21.

Parcel I: NYSDEC generated case No. 09-03287 on June 20, 2009 for 38-20 Review Avenue, Long Island City in response to odors detected in a soil sample collected during the drilling of monitoring well MW-20.

2.0 SITE DESCRIPTION AND HISTORY

The following subsections provide site descriptions and summarize historic and current property uses and previous environmental activities performed at the Inland Project Area.

2.1 Site Description

The Project Area encompasses approximately 18.5 acres located adjacent to Newtown Creek. The Project Area has been subdivided into 16-lots of Block 312 since 1949. The Project Area is divided north and south by the Long Island Rail Road (LIRR) train tracks. Properties north of the LIRR compose the Inland Project Area (Tract I) and properties south of the LIRR compose the Waterfront Project Area (Tract II). Each tract is further subdivided into parcels (Parcels A through K) based on property ownership. Therefore, each parcel may have more than one address based on property ownership. ExxonMobil currently has access agreements with Parcels A, B, C, D, E and G. A Site Plan illustrating pertinent site features including, but not limited to, block and lot, parcel identification, property boundaries, monitoring well locations, LIRR and current buildings and structure layouts is provided as Figures 2. A 2006 aerial photo, illustrating pertinent site features, is provided as Figure 3.

The Project Area is located approximately 1,000 feet southeast of the Greenpoint Avenue Bridge. Public utilities servicing the Project Area include underground water, electric and telecommunication lines. Sanitary waste is stored on each parcel in what appear to be septic tanks; however, the construction of these structures was not confirmed. The results of a survey of the property boundaries and pertinent site features of the Project Area are provided on Figure 2.

There are currently 25 monitoring wells on the Project Area (MW-1 through MW-3, MW-4S, MW-4D, and MW-5 through MW-24) including 14 monitoring wells (MW-1, MW-2, MW-3, MW-4S, MW-4D and MW-5 through MW-13) on the Waterfront Project Area and 11 monitoring wells (MW-14 through MW-24) on the Inland Project Area. In general, the

screened portion of the groundwater monitoring wells span the water table, with the exception of monitoring wells MW-4D, MW-5, and MW-6. Monitoring well MW-4D is screened beneath an approximate 2-foot organic peat layer beneath the potentiometric surface. Monitoring wells MW-5 and MW-6 are screened beneath a silty clay, semi-confining layer beneath the potentiometric surface.

2.2 Current Property Use

The Project Area is located in an industrial business zone. Below is a description of current property use per parcel of the Inland Project Area:

- Parcel A is owned by Waste Management of New York and is used for parking by A&L Recycling.
- Parcel C is owned by Keane Realty LLC and is used for vehicle storage associated with V.I.P. Towing Inc.
- Parcel D is owned by A&L Cesspool Services Corporation and currently operates as A&L Recycling which specializes in restaurant oil and grease recovery and recycling, as well as cesspool services (http://alrecycling.net).
- Parcel E is owned by HP Sherman Co. Inc. and operates as William E. Williams Valve Corporation which designs and manufactures valves for industrial and commercial applications (www.williamsvalve.com).
- Parcel F is owned by DG Properties LLC and operates as J&S Supply Corporation, a wholesale stocking distributor of residential and commercial building materials (www.jandssupply.com).
- Parcel G is owned by Werwaiss Realty Company and operates as United Refrigeration Inc., a commercial refrigeration supply distributor (www.uri.com).
- Parcel H operates as American Cleaning Solutions, a division of American Wax Co., who manufactures and sells cleaning and maintenance products (www.cleaning-solutions.com).
- Parcel I is owned by Review Associates and includes a warehouse building partially occupied by LeNoble Lumber on the east side. LeNoble Lumber is a

retail lumber and building supply distribution facility (www.lenoblelumber.com). On the west side of the warehouse is National Van Equipment Company Inc., a manufacturer of furniture pads and moving equipment (www.nationalvanequip.com).

- Parcel J is owned by Up from the Ashes, Inc. and occupied by Phoenix Beverage Inc., a wholesale beverage distributor.
- Parcel K is owned by Renari Realty, LLC.

2.3 Surrounding Property Use

The Project Area is bound to the northeast by Review Avenue. Further northeast is Calvary Cemetery. The Project Area is bordered to the northwest by a former Quanta Resources site (NYSDEC Superfund site #2-41-005, Quanta). Southwest of the Project Area is Newtown Creek. A former cement facility is located southeast of the Project Area.

2.4 Site History

The development of the property that became Project Area appears to have commenced in the early 1850's by the North American Kerosene Gas Lamp Company (Parsons, 2008). The Asphalt Mining and Kerosene Gas Company set up a factory along Newtown Creek, Long Island City in 1854. The company later changed names to North American Kerosene and Lighting Company (Dictionary of Canadian Biography).

On or about July 1876, Charles Pratt & Company acquired the property under the name of the Pratt Long Island Refinery (Pratt Oil Works). Historic information indicates a Queens County Oil Works was present at the property before the acquisition by Charles Pratt (Parsons, 2008). Standard Oil Company of New York (SOCONY) acquired the Project Area in approximately 1892. SOCONY ceased operations in 1949 (Parsons, 2008).

2.5 Geology and Hydrogeology

The following subsections discuss the regional topography, surface water, geology, and hydrogeology, in the vicinity of the Project Area.

2.5.1 Topography

The Project Area is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map, Brooklyn, New York, Quadrangle (USGS, 1979). The Project Area is approximately 30 feet above mean sea level (msl) along Review Avenue and slopes to approximately six feet along the southern portions of the Project Area along Newtown Creek. Topography in the vicinity of the Project Area slopes to the southwest towards Newtown Creek. The topography in the vicinity of the Project Area is illustrated on the Locus Plan provided on Figure 1.

2.5.2 Site Geology

The Inland Project Area geology observed in the samples collected is predominantly composed of sand of unknown thickness, observed to the maximum depth of investigation (25 to 37 feet below grade [fbg]). Sporadic lenses of silt, gravel and cobble were observed in borings. Fill material including coal ash, brick, concrete and wood debris were observed along the southern portion of the Inland Project Area (MW-15 and MW-18).

2.5.3 Hydrogeology

The regional hydrogeologic unit beneath the Project Area is the Upper Glacial aquifer. The Project Area is located between a groundwater recharge area to the east (USGS, 2009) and Newtown Creek to the southwest (a regional groundwater discharge area). Regional groundwater flow is west towards Newtown Creek.

Groundwater is present beneath the Inland Project Area in typical water table conditions. The water table is present beneath the Inland Project Area at depths ranging from approximately 10 fbg along the southern boundary (MW-15) to approximately 28.5 fbg in the northernmost portions (MW-22). LNAPL has been detected in 7 of 11 monitoring wells with thicknesses ranging from 0.01 feet (MW-16) to 8.90 feet (MW-24).

On April 21, 2010, a synoptic round of liquid level gauging was conducted on the monitoring well network. Groundwater flow direction at the water table was towards Newtown Creek with an average gradient of approximately 0.01 feet per foot (ft/ft).

2.6 Summary of Existing Environmental Data

The following subsections summarize the distribution of LNAPL detected and discuss the soil and groundwater quality beneath the Inland Project Area.

2.6.1 Light Non-Aqueous Phase Liquid

LNAPL, with specific gravity less than 1.0, has been detected in Inland Project Area monitoring wells MW-14, MW-16, MW-17, MW-19, MW-22, MW-23 and MW-24, with reported thickness ranging from 0.01 (MW-16) to 7.5 feet (MW-24) based on April 21, 2010 gauging data. The LNAPL was detected at the water table in the monitoring wells. The LNAPL has generally been detected throughout the Project Area, but no detections have been identified to the northernmost (MW-20), easternmost (MW-13, MW-10, and MW-21), and westernmost (MW-1) portions of the Project Area. LNAPL detections and thicknesses are summarized in Table 1. Ranges of specific gravity (density), kinematic viscosity, and dynamic viscosity are provided in Table 2.

2.6.2 Soil Quality

VOCs were not detected in soil samples collected from the Inland Project Area above NYSDEC Recommended Soil Cleanup Objectives (RSCOs), with the exception of MW-17 (12.5-17'). Chlorinated VOCs were detected in soil samples collected from MW-14, MW-17 and MW-21 below RSCOs.

Semi-volatile organic compounds (SVOCs), in the form of polycyclic aromatic hydrocarbons (PAHs), were detected above RSCOs in the soil samples collected from the Inland Project Area with the exception of samples collected from MW-16, MW-20, MW-22 and MW-24. In general, PAH concentrations were greater in samples collected from the Waterfront Project Area, compared to samples collected from the Inland Project Area.

Metals were detected above RSCOs in soil samples collected from the Inland Project Area. The majority of metals were detected in the fill material, at or above the water table, such fill which pre-dates FPOW operations. The concentrations of metals decreased in soil samples collected below the water table.

2.6.3 Groundwater Quality

Chlorinated VOCs were detected in groundwater samples collected from monitoring well MW-21. Methyl tertiary-butyl ether (MTBE) was detected in groundwater samples collected from MW-18.

SVOCs were minimally detected in groundwater throughout the Inland Project Area, which appears consistent with the fact that SVOCs include high molecular weight hydrocarbons that tend to sorb to soils and have a low solubility in groundwater.

Distribution of metal concentrations was lower in groundwater, relative to its distribution in soil.

3.0 INTERIM REMEDIAL MEASURE FEASIBILTY ASSESSMENT

IRM methodologies were tested using a series of feasibility studies initiated on April 19, 2010 in an effort to evaluate the optimal IRM LNAPL recovery methods. The feasibility studies included a portable electric-powered submersible pump; electric-powered submersible pump, pneumatic-powered submersible pump and enhanced fluid recovery (EFR). The findings of the feasibility testing were documented in an *Interim Remedial Measure Feasibility Study Report* dated July 1, 2010, prepared by Kleinfelder.

4.0 PROPOSED INTERIM REMEDIAL MEASURE STRATEGY

The following subsections describe the proposed IRM strategy to install and operate two stand-alone LNAPL-recovery systems using monitoring wells MW-14 and MW-24, and to manually recover LNAPL in other monitoring wells.

4.1 Permitting

Permits that may be required for the IRM systems installation and operation include the following:

- Fire Department of New York (FDNY) permits for the operation and installation of aboveground storage tanks (ASTs).
- New York City Department of Buildings (NYCDOB) permit to construct a fence and concrete pad.
- Observation by Buckeye Partners L.P. while installing fence posts.

Additional permits may be required by local municipalities. The required permits will be acquired prior to IRM-related work being conducted at the Inland Project Area. Applicable permits will be posted or kept on-site as required.

KLEINFELDER One Corporate Drive, Suite 201, Bohemia, NY 11716 p | 631.218.0612 f | 631.218.0787

4.2 Pump Selection and Design

The pumps that will be used to recover LNAPL from MW-14 and MW-24 were selected based on the findings and results of the IRM Feasibility Study. The results of the feasibility study appear to indicate that electric-powered submersible pumps were effective at recovering the LNAPL at approximately the same rate as the LNAPL recharge rate. This allows for sustaining a reduced LNAPL thickness within the wells. The systems will be configured in an effort to maintain a reduced LNAPL thickness within the wells during recovery that is similar to the LNAPL saturation thickness in the formation to minimize displacement of LNAPL with groundwater. The systems will be configured in an effort to maintain the relative permeability and saturation of the pore space in an effort to facilitate LNAPL recovery.

A LNAPL recovery rate that exceeds the recharge rate may reduce the LNAPL-wet pore spaces in the formation and result in premature development of residual LNAPL conditions (globules and ganglia). Additionally, an excessive LNAPL recovery rate may accelerate the creation of a three-phase system (water, air, LNAPL) in the formation pore space, which may inhibit LNAPL recoverability due to increased capillary forces and the interfacial tension between phases.

The pump system selected for the IRM systems is the Clean Earth Technologies (CET) Magnum Spill Buster™ (Spill Buster™). The Spill Buster™ is an automated LNAPL recovery pumping system consisting of a motorized auto seeker reel assembly, electric-powered LNAPL recovery pump, and controller. The LNAPL-recovery pump system is designed with an interface probe to automatically set the pump depth at the LNAPL interface and recover only LNAPL within the well. The motorized auto seeker reel assembly mounted above the well, is designed to adjust the pump intake depth as LNAPL is recovered from the well. The controller can be used to adjust the pump cycle duration to set the average pump flow rate to a recovery rate that is less than the observed recharge rate of LNAPL into the well.

The IRM Feasibility Study appears to indicate that the average LNAPL recharge rates at MW-14 and MW-24 were approximately 0.08 and 0.10 gallons per minute (gpm), respectively. The pump system will be configured to operate at similar average LNAPL recovery flow rates for the IRM systems proposed at MW-14 and MW-24.

An equipment summary for CET Magnum Spill Buster™ is included in Appendix A.

4.3 IRM Systems Description

Spill Buster™ pump systems will be used in an effort to recover LNAPL from monitoring wells MW-14 and MW-24. The LNAPL will be recovered from the subsurface using the electric-powered pumps and transferred to above-ground storage tanks (ASTs) with a capacity of approximately 200 gallons.

The systems will be designed with secondary containment and leak detection. The Spill Buster™ auto seeker reel assembly will be mounted above the well head within a subsurface vault (approximately 36-inch by 36-inch by 24-inch) for secondary containment due to the high-traffic where the wells are located. A bulkhead fitting will be installed at the bottom of the vault with a 1-foot length of 2 inch diameter schedule 40 polyvinyl chloride (PVC) well riser pipe that will extend through the bottom of the vault into the well. The product transfer tubing from the product discharge connection of the auto seeker reel assembly to the AST will consist of nylon tubing. A subsurface schedule 40 PVC secondary containment pipe will be installed approximately 2 feet below grade from the well vault to the connection at the AST with a minimum slope of 1/4 inch per foot towards the well vault. The AST will be double-wall steel with interstitial space leak detection.

The LNAPL-recovery systems will be equipped with redundant critical equipment devices. Level switches will be installed at the following locations within each system:

1) leak detection within the well vault;
2) high level within the AST;

3) redundant high-high level within the AST; and
4) leak detection within the interstitial space of the double-wall steel AST.

The ASTs, Spill Buster™ control panels, and electric disconnect switches will be located in low-traffic areas surrounded by 6-foot high chain-link fences with privacy slats. Each fenced IRM compound will be installed with lockable gates. Posted signage will include the following:

- No Smoking;
- Authorized Personnel Only;
- Emergency Contact Information; and
- Personal Protective Equipment (PPE) Required.

Control wiring from the control panels to the Spill Buster™ automatic reel systems will be installed subgrade within a conduit between the well vaults and the fenced area.

The proposed locations of the systems are illustrated on Figure 3. Detailed plans for the system enclosure layouts for MW-14 and MW-24 are illustrated on Figures 4 and 5, respectively. A conceptual cross section of the LNAPL-recovery systems is illustrated on Figure 6.

The IRM systems will be installed in accordance with applicable federal, state, and local requirements.

4.4 IRM Systems Operation, Maintenance, and Monitoring

The IRM systems will each be provided with a remote monitoring system. The Raco Alarm Agent or equivalent system will be used to automatically provide a notification via electronic mail or text message if a system is de-energized as a result of loss of power or activation of one of the system alarms. A product specification sheet for the Raco Alarm Agent is included in Appendix A.

Operation and maintenance visits to the Inland Project Area will be conducted on a weekly basis. During the weekly visits, the following activities will be conducted:

- Depth to LNAPL and depth-to-water (DTW) gauging of the monitoring wells that historically have contained LNAPL at the Inland Project Area (MW-12, MW-14, MW-16, MW-17, MW-19, MW-22, MW-23, and MW-24).
- Depth to LNAPL and depth-to-bottom (DTB) gauging of the ASTs and calculation of recovered LNAPL volumes.
- If required, disposal of recovered LNAPL via vacuum truck for disposal at an approved disposal facility. Based on the IRM Feasibility Study and the design recovery rate, it is anticipated that vacuum truck disposal will be required on a weekly basis; however, the frequency of vacuum truck mobilization may change depending on LNAPL recovery rate over time.

4.5 Manual LNAPL Recovery

For monitoring wells in the Inland Project Area without pumps (MW-12, MW-16, MW-17, MW-19, MW-22, and MW-23), LNAPL potentially will be recovered using either passive bailers, sorbent socks or a portable LNAPL recovery pump. On a weekly basis, the wells will be gauged for depth to LNAPL and DTW, and LNAPL will be manually recovered. If applicable, LNAPL will be temporarily recovered and contained in vented 5-gallon canisters before being transferred into an IRM system AST. The volume of LNAPL manually recovered from each well will be measured and recorded prior to transfer to an IRM system AST.

Spent absorbent material (socks and pads), used personal protective equipment, rags, and other waste generated from recovery events will be temporarily stored in USDOT-approved, 55-gallon capacity steel drums. The drums will be stored within the IRM system compounds on polyethylene containment pallets and covered with plastic tarps. The drums will periodically be transported by an approved transporter to an approved disposal facility.

5.0 WASTE MANAGEMENT

IRM-derived wastes generated during the IRM activities will be containerized for periodic removal from the Inland Project Area. The potential waste that will be generated and the associated storage methodology are as follows:

- Non-hazardous recovered LNAPL from IRM system operation or from manual recovery events will be temporarily contained in ASTs prior to transport off-site for recycling.
- Recovered LNAPL, characterized as hazardous, will be stored in separate USDOT-approved drums with closed tops, pending disposal.
- Plastic sheeting, spent absorbent socks, used adsorbent pads, and disposable used PPE will be consolidated in USDOT-approved drum(s) pending disposal.
- Fluids generated from decontamination activities will be stored in USDOT-approved drums with closed tops pending disposal.

The drums generated will be stored within the IRM system compounds prior to waste characterization and disposal. A drum inventory will be maintained documenting the number of drums, drum identification, drum contents, and transport date.

6.0 REPORT OF FINDINGS

A summary of IRM activities will be included as part of the quarterly Site Status Update Reports (SSURs). The summary of IRM activities will include, but not be limited to, the following:

- The liquid-level gauging data as measured during IRM activities;
- System uptimes, LNAPL recovery rates, and cumulative volumes of LNAPL recovered for both IRM systems at MW-14 and MW-24; and
- Summary of manual LNAPL recovery, including recovery method and LNAPL volume recovered.

SSURs will be submitted within 90-days of receipt of groundwater monitoring data.

7.0 PROJECT MANAGEMENT

The following subsections provide a summary of the project team and a proposed project schedule.

7.1 Organization and Staffing

The following is a summary of the key members of the project team and their responsibilities:

Key Position	Contact Name	Responsibilities
ExxonMobil		
Project Manager	Steve Trifiletti Telephone: (718) 404-0652 E-mail: Steve.p.trifiletti@exxonmobil.com	ExxonMobil's Project Manager is responsible for managing the project within ExxonMobil and for ensuring that the consultant completes the work in accordance with the Work Plan.

Key Position	Contact Name	Responsibilities
ExxonMobil's Consultant (Kleinfelder)		
Project Manager	John E. Wolf Telephone: (631) 218-0612 E-mail: jwolf@kleinfelder.com	The Kleinfelder Project Manager (KPM) is responsible for project execution and will be the primary contact with ExxonMobil on technical and scheduling issues.
Field Supervisor	Scott Strom Telephone: (631) 218-0612 E-mail: sstrom@kleinfelder.com	The Field Supervisor will be responsible for working with the KPM to coordinate, oversee, and ensure that requirements are followed with regard to field activities.
Technical Director	Jeffrey. R. Hale P.G. Telephone: (724) 772-7072 E-mail: JHale@kleinfelder.com	The Technical Director will provide technical support and overall quality assurance for the project.
Project Engineer	Jason Chan, P.E. Telephone: (631) 218-0612 E-mail: Jchan@kleinfelder.com	The Project Engineer will be responsible for designing and coordinating IRM system installation. In addition, the Project Engineer will monitor the IRM system performance.

Key Position	Contact Name	Responsibilities
ExxonMobil's Consultant (Kleinfelder)		
Health and Safety Officer (HSO)	Raymond Fitzpatrick Telephone: (631) 218-0612 E-mail: rfitzpatrick@kleinfelder.com	The HSO will prepare the Health and Safety Plan (HASP), ensure that the HASP is properly implemented, and ensure that personnel and subcontractor site personnel are trained in accordance with the site-specific project health and safety requirements, as well as those of ExxonMobil.

Key Position	Contact Name	Responsibilities
Subcontractors		
Construction Contractor	To be determined	Fence installation, concrete pad construction and AST installation.
Electrical Contractor	Wire To Water Farmingdale, New York	Electrical installation.
Permit Expeditor	Walter T. Gorman Engineering Rockaway Park, New York	Acquire required permits for IRM system installation and operation.

7.2 Project Schedule

ExxonMobil and Kleinfelder request NYSDEC's review and written approval of this Work Plan. The proposed scope of work is contingent upon, but not limited to, permits, access, electric availability and weather conditions. The proposed scope of work included in the Work Plan is planned to be implemented as follows:

- IRM systems permitting activities will be initiated within 30-days of NYSDEC approval;
- IRM systems equipment will be ordered within 30-days of NYSDEC approval;
- IRM systems installation activities including, but not limited to, fence installation, concrete slab, AST installation, equipment and piping will be initiated within 30 days of receipt of applicable permits;
- The IRM systems installation is anticipated to take approximately three weeks to complete;

- The IRM systems will be activated within 7-days of completion, following final system inspections and testing of critical equipment, contingent upon acceptable inspection and testing results;
- The IRM systems will be visited weekly for operations and maintenance;
- Manual LNAPL recovery events will occur on a weekly basis; and
- IRM activity summaries will be reported along with the quarterly SSURs.

The proposed scope of work included in this Work Plan will be implemented according to the schedule discussed above, assuming no unforeseen circumstances or additional activities required by the NYSDEC. If additional work is required by the NYSDEC for the Inland Project Area during the same time frame described above, the implementation of said additional work, as well as the activities listed above, will be completed on a revised schedule to be agreed upon by ExxonMobil and the NYSDEC.

8.0 REFERENCES

Kleinfelder, *Interim Site Characterization Report* (Waterfront Parcels), August 10, 2009.

Kleinfelder, *Interim Site Characterization Report* (Inland Parcels), March 11, 2010.

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New York State Department of Environmental Conservation, *Technical and Administrative Guidance Memorandum No. 4046 - Determination of Soil Cleanup Objectives and Cleanup Levels*, January 24, 1994.

New York State Department of Environmental Conservation, *Technical and Operational Guidance Series (TOGS) 1.1.1, Ambient Water Quality Standards and Guidance Values*, June 1998, and Addendum June 2000.

Parsons, *Site Characterization Work Plan for the Waterfront Parcels, Former Pratt Oil Works Site, Long Island City, New York*, May, 2008.

United States Geological Survey, 7.5-Minute Series Topographic Map of Brooklyn, New York Quadrangle, photo revised 1979.

United States Geological Survey, *Water-Table and Potentiometric-Surface Altitudes in the Upper Glacial, Magothy, and Lloyd Aquifers Beneath Long Island, New York, March-April 2006*, Scientific Investigation Map 3066, 2009.

TABLES

TABLE 1
GROUNDWATER GAUGING AND FIELD PARAMETERS SUMMARY

Former Pratt Oil Works
Long Island City, New York

April 2009 through April 2010

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MW-1 (6-18)	4/7/2009	13.49	ND	9.51	ND	NA	3.98	0.4	6.57	11.78	0.68	-302	NA*	530	NM	
	4/17/2009	13.49	ND	9.43	ND	NA	4.06	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	13.49	ND	8.56	ND	NA	4.93	0.6	7.02	17.97	0.57	-231	2.64	0.37	NM	
	10/26/2009	13.49	ND	8.08	ND	NA	5.41	NM	6.72	18.59	2.00	-324	0.00	7.20	0.08	
	1/22/2010	13.49	ND	8.36	ND	NA	5.13	0.2	6.76	11.50	0.58	-295	0.69	5.80	0.03	
	4/21/2010	13.49	ND	8.30	ND	NA	5.19	1.4	8.51	10.32	0.551	-283	0.00	0.10	0.00	
MW-2 (2-17)	4/7/2009	6.56	ND	5.45	ND	NA	1.11	80.9	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	6.56	7.72	7.81	0.09	0.89**	-1.17	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	6.56	7.78	8.88	1.10	0.89**	-1.34	0.5	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	6.56	6.72	8.09	1.37	0.89**	-0.31	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	6.56	8.19	9.93	1.74	0.89**	-1.82	NM	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	6.56	7.54	8.04	0.50	0.89**	-1.04	6.8	NM	NM	NM	NM	NM	NM	NM	
MW-3 (3-18)	4/7/2009	7.95	NM	NM	NM	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	7.95	NM	NM	NM	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	7.95	NM	NM	NM	0.9386	NM	NM	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	7.95	8.15	9.70	1.55	0.9386	-0.30	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	7.95	8.20	8.22	0.02	0.9386	-0.25	5.5	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	7.95	8.95	9.05	0.10	0.9386	-1.01	0.2	NM	NM	NM	NM	NM	NM	NM	
MW-4 (5-22)	4/7/2009	8.87	6.59	9.65	3.06	0.8908	1.95	135	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	8.87	6.52	11.55	5.03	0.8908	1.80	NS	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	8.87	6.00	10.95	4.95	0.8908	2.33	7.6	NM	NM	NM	NM	NM	NM	NM	Well abandoned
MW-4S (4-9)	10/26/2009	8.81	6.31	7.20	0.89	0.8908	2.40	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	8.81	6.50	7.27	0.77	0.8908	2.23	161.0	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	8.81	5.81	6.43	0.62	0.8908	2.93	15.6	NM	NM	NM	NM	NM	NM	NM	
MW-4D (13.5-18.5)	10/26/2009	8.57	ND	6.95	ND	NA	1.62	NM	6.68	18.10	1.05	-119	0.00	17.00	0.05	
	1/22/2010	8.57	ND	7.72	ND	NA	0.85	4.9	6.78	15.92	1.07	-136	0.66	59.50	0.08	
	4/21/2010	8.57	ND	6.71	ND	NA	1.86	1.4	6.49	15.39	1.18	-202	0.00	0.00	0.10	
MW-5 (13-21)	4/7/2009	9.62	7.14	18.82	11.68	0.8952	1.26	23.0	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	9.62	7.32	18.66	11.34	0.8952	1.11	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	9.62	6.99	20.00	13.01	0.8952	1.27	4.7	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	9.62	7.69	18.05	10.36	0.8952	0.84	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	9.62	NM	NM	NM	0.8952	NM	NM	NM	NM	NM	NM	NM	NM	NM	Passive Bailer
	4/21/2010	9.62	7.11	19.60	12.49	0.8952	1.20	9.8	NM	NM	NM	NM	NM	NM	NM	

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MW-6 (18-23)	4/7/2009	11.80	9.09	12.18	3.09	0.8944	2.38	68.7	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	11.80	9.35	12.55	3.20	0.8944	2.11	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	11.80	8.79	12.82	4.03	0.8944	2.58	2.9	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	11.80	9.08	15.55	6.47	0.8944	2.04	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	11.80	9.22	18.00	8.78	0.8944	1.65	42.7	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	11.80	8.62	9.25	0.63	0.8944	3.11	14.8	NM	NM	NM	NM	NM	NM	NM	
MW-7 (1-15)	4/7/2009	6.54	4.82	5.18	0.36	0.9129	1.69	211	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	6.54	7.74	8.42	0.68	0.9129	-1.26	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	6.54	7.80	9.30	1.50	0.9129	-1.39	0.0	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	6.54	7.07	7.70	0.63	0.9129	-0.58	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	6.54	6.04	7.62	1.58	0.9129	0.36	40.0	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	6.54	8.05	8.10	0.05	0.9129	-1.51	107	NM	NM	NM	NM	NM	NM	NM	
MW-8 (1-13)	4/7/2009	5.80	ND	4.09	ND	NA	1.71	0.0	7.59	8.07	37.40	-140	3.7	74.9	2.31	
	4/17/2009	5.80	ND	7.54	ND	NA	-1.74	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	5.80	ND	7.50	ND	NA	-1.70	0.0	7.68	28.95	27.40	-330	0.26	1.4	NM	
	10/26/2009	5.80	ND	6.83	ND	NA	-1.03	NM	7.10	16.32	32.40	-327	0.00	2.90	2.01	
	1/22/2010	5.80	ND	6.59	ND	NA	-0.79	0.0	7.04	7.15	35.20	-238	1.94	148	2.14	
	4/21/2010	5.80	ND	7.66	ND	NA	-1.86	0.2	6.96	11.49	40.2	-295	0.00	2.60	2.50	
MW-9 (3-18)	4/7/2009	9.76	8.40	17.70	9.30	0.9074	0.50	106	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	9.76	8.28	17.51	9.23	0.9074	0.63	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	9.76	8.35	17.90	9.55	0.9074	0.53	5.3	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	9.76	8.84	17.90	9.06	0.9074	0.08	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	9.76	9.85	18.20	8.35	0.9074	-0.86	9.8	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	9.76	8.86	14.99	6.13	0.9074	0.33	15.7	NM	NM	NM	NM	NM	NM	NM	
MW-10 (3-13)	4/7/2009	10.56	ND	8.74	ND	NA	1.82	1.8	6.90	12.32	0.478	-143	0.0	95.4	0.02	
	4/17/2009	10.56	ND	8.64	ND	NA	1.92	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	10.56	ND	8.10	ND	NA	2.46	0.0	6.94	18.44	0.54	-135	5.47	0.0	NM	
	10/26/2009	10.56	ND	8.20	ND	NA	2.36	NM	6.71	17.93	0.78	-180	0.00	5.50	0.04	
	1/22/2010	10.56	ND	8.63	ND	NA	1.93	0.0	6.51	14.69	1.54	-196	0.70	3.70	0.08	
	4/21/2010	10.56	ND	8.28	ND	NA	2.28	0.0	6.78	15.04	1.25	201	0.24	46.0	0.00	

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MW-11 (2-17)	4/7/2009	6.98	ND	5.73	ND	NA	1.25	0.0	4.62	10.54	29.6	-242	0.00	77.1	NM	
	4/17/2009	6.98	ND	8.72	ND	NA	-1.74	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	6.98	ND	7.98	ND	NA	-1.00	0.0	6.87	18.76	26.60	-221	5.49	6.9	NM	
	10/26/2009	6.98	ND	8.15	ND	NA	-1.17	NM	6.71	17.88	30.90	-291	0.00	0.00	1.94	
	1/22/2010	6.98	ND	8.18	ND	NA	-1.20	0.0	6.42	11.58	28.70	-254	1.34	3.20	1.75	
	4/21/2010	6.98	ND	NM	NM	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	Well destroyed
MW-12 (2-16)	4/7/2009	6.67	ND	8.26	ND	NA	-1.59	0.0	NM	NM	NM	NM	NM	NM	NM	
	4/17/2009	6.67	8.40	8.41	0.01	0.91**	-1.73	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	6.67	ND	NM	ND	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	6.67	7.81	7.95	0.14	0.91**	-1.15	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	6.67	7.80	7.81	0.01	0.91**	-1.13	0.0	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	6.67	ND	7.96	ND	NA	-1.29	2.0	NM	NM	NM	NM	NM	NM	NM	Shean observed
MW-13 (1-8)	4/7/2009	7.82	ND	NM	NM	NA	NM	0.0	8.43	9.68	1.14	-155	0.00	102	0.05	
	4/17/2009	7.82	ND	3.64	ND	NA	4.18	NM	NM	NM	NM	NM	NM	NM	NM	
	7/29/2009	7.82	ND	3.51	ND	NA	4.31	0.0	7.22	20.84	1.40	-131	4.18	0.0	NM	
	10/26/2009	7.82	ND	3.59	ND	NA	4.23	NM	6.87	15.90	1.34	-76	0.0	10.50	0.07	
	1/22/2010	7.82	ND	NM	NM	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	Inaccessible
	4/21/2010	7.82	ND	3.70	ND	NA	4.12	0.0	7.34	12.31	1.40	-166	0.00	2.70	0.10	
MW-14 (7.5-27.5)	7/29/2009	22.92	20.65	26.80	6.15	0.9086	1.71	10.9	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	22.92	21.31	26.50	5.19	0.9086	1.14	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	22.92	21.70	26.98	5.28	0.9086	0.74	NM	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	22.92	20.67	23.33	2.66	0.9086	2.01	4.7	NM	NM	NM	NM	NM	NM	NM	
MW-15 (5.5-20.5)	7/29/2009	13.05	ND	10.59	ND	NA	2.46	0.0	7.05	19.48	0.78	-104	0.32	786	NM	
	10/26/2009	13.05	ND	11.32	ND	NA	1.73	NM	6.41	13.60	216.00	-138	8.11	990	0.10	
	1/22/2010	13.05	ND	11.91	ND	NA	1.14	3.8	6.79	15.32	0.89	-121	1.27	122	0.04	
	4/21/2010	13.05	ND	10.79	ND	NA	2.26	0.2	7.08	15.02	1.12	-161	0.00	41.50	0.10	
MW-16 (10.5-30.5)	7/29/2009	24.12	20.91	21.00	0.09	0.91**	3.20	0.2	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	24.12	21.25	21.27	0.02	0.91**	2.87	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	24.12	21.52	21.95	0.43	0.91**	2.56	5.9	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	24.12	20.06	20.07	0.01	0.91**	4.06	1.2	NM	NM	NM	NM	NM	NM	NM	

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MW-17 (8.5-25.5)	7/29/2009	16.81	14.76	22.20	7.44	0.9122	1.40	3.5	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	16.81	15.44	23.0	7.56	0.9122	0.71	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	16.81	16.02	22.35	6.33	0.9122	0.23	1.4	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	16.81	15.53	17.22	1.69	0.9122	1.13	1.6	NM	NM	NM	NM	NM	NM	NM	
MW-18 (17.5-37.5)	9/24/2009	23.55	ND	20.92	ND	NA	2.63	NM	6.50	27.67	1.98	-144	0.40	33.50	NM	
	10/26/2009	23.55	ND	21.32	ND	NA	2.23	NM	6.59	14.84	1.63	-126	0.0	159	0.08	
	1/22/2010	23.55	ND	21.28	ND	NA	2.27	0.5	6.63	14.45	2.00	-133	1.29	47.50	0.10	
	4/21/2010	23.55	ND	19.97	ND	NA	3.58	1.9	7.63	15.92	1.73	-212	0.00	60.00	0.10	
MW-19 (11.5-31.5)	9/24/2009	24.85	21.95	22.55	0.60	0.9087	2.85	NM	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	24.85	22.00	23.05	1.05	0.9087	2.75	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	24.85	22.24	23.15	0.91	0.9087	2.53	7.9	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	24.85	20.86	21.55	0.69	0.9087	3.93	8.6	NM	NM	NM	NM	NM	NM	NM	
MW-20 (9.5-29.5)	7/29/2009	28.63	ND	21.03	ND	NA	7.60	0.1	6.93	19.35	1.43	-94	0.00	189	NM	
	10/26/2009	28.63	ND	21.61	ND	NA	7.02	NM	6.24	16.43	1.14	0.44	0.00	83.20	0.06	
	1/22/2010	28.63	ND	21.99	ND	NA	6.64	0.0	6.53	13.86	1.53	0.99	0.50	98.00	0.08	
	4/21/2010	28.63	ND	18.07	ND	NA	10.56	0.3	6.75	14.70	3.33	-13.0	0.00	34.30	0.20	
MW-21 (10.5-25.5)	7/29/2009	16.63	ND	14.37	ND	NA	2.26	0.0	6.96	18.45	1.22	190	4.93	17.8	NM	
	10/26/2009	16.63	ND	14.10	ND	NA	2.53	NM	6.61	5.76	1.07	144	1.07	12.70	0.05	
	1/22/2010	16.63	ND	14.61	ND	NA	2.02	0.0	6.60	13.92	1.25	92	4.04	10.5	0.06	
	4/21/2010	16.63	ND	13.79	ND	NA	2.84	1.4	6.63	13.81	1.16	68	5.20	1.60	0.10	
MW-22 (14.5-34.5)	7/29/2009	29.36	25.79	27.20	1.41	0.9092	3.44	0.0	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	29.36	26.15	28.40	2.25	0.9092	3.01	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	29.36	26.35	28.44	2.09	0.9092	2.82	5.8	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	29.36	NM	NM	NM	NA	NM	NM	NM	NM	NM	NM	NM	NM	NM	Inaccessible
MW-23 (10.5-24.5)	7/29/2009	19.05	17.09	23.85	6.76	0.9094	1.35	0.0	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	19.05	17.76	23.82	6.06	0.9094	0.74	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	19.05	18.39	23.65	5.26	0.9094	0.18	7.9	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	19.05	17.57	22.36	4.79	0.9094	1.05	15.9	NM	NM	NM	NM	NM	NM	NM	

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TABLE 1
GROUNDWATER GAUGING AND FIELD PARAMETERS SUMMARY

Former Pratt Oil Works
Long Island City, New York

April 2009 through April 2010

		Gauging Data						Field Parameters								
Well ID (screen Interval)	**Date**	**Top of Casing Elevation** (feet)	**Depth to LNAPL** (feet)	**Depth to Water** (feet)	**LNAPL Thickness** (feet)	**Specific Gravity** (g/cm3)	**Corrected GW Elevation** (feet)	**PID Reading** (ppmv)	**pH** (s.u.)	**Temp-erature** (ºC)	**Conductivity** (mS/cm)	**Oxidation-Reduction Potential** (mV)	**Dissolved Oxygen** (mg/L)	**Turbidity** (ntu)	**Salinity** (ppt)	**Comments**
MW-24 (5.5-25.5)	7/29/2009	17.56	15.20	24.10	8.90	0.9034	1.50	0.0	NM	NM	NM	NM	NM	NM	NM	
	10/26/2009	17.56	15.79	24.25	8.46	0.9034	0.95	NM	NM	NM	NM	NM	NM	NM	NM	
	1/22/2010	17.56	16.31	24.75	8.44	0.9034	0.43	NM	NM	NM	NM	NM	NM	NM	NM	
	4/21/2010	17.56	15.10	22.60	7.50	0.9034	1.74	3.1	NM	NM	NM	NM	NM	NM	NM	

Notes:

~ - no standard or guidance value exists

<1.0 - Not detected at or above the laboratory reporting limit shown

ºC - degrees Celsius

F - degrees Fahrenheit

Corrected GW Elevation - calculated using the following formula:
(top of casing elevation - depth to water) + (LNAPL thickness * LNAPL specific gravity)

Depth to Water - measured in feet below land surface from top of casing

GW - Groundwater

LNAPL - Light non-aqueous phase liquid

mg/L - milligrams per liter (parts per million)

mS/cm - milliSiemens per centimeter

mV - millivolts

N/A - Not applicable

NA - Not analyzed

ND - Not detected

NM - Not monitored

NS - Not sampled

NSVD - Not surveyed to vertical datum

ntu - nephelometric turbidity units

ppmv - parts per million by volume

ppt - parts per thousand

s.u. - standard units

* - equipment malfunction

** - estimated value based on surrounding wells

Field Parameters - Measured from monitoring wells without LNAPL detections during groundwater sampling.
Date on table may not reflect actual measurement date.

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Table 2
NAPL VISCOSITY AND SPECIFIC GRAVITY SUMMARY

Former Pratt Oil Works
Long Island City, New York

Sample ID	Sample Date	Temperature (F)	Kinematic Viscosity (cst)	Dynamic Viscosity mPas	Specific Gravity (Density) (g/mL)
SB-10	3/16/2009	100	16.78	14.88	0.8866
		77	28.96	25.92	0.8951
		50	64.67	58.53	0.9051
TP-8	4/1/2009	100	32.47	29.20	0.8992
		77	61.77	56.06	0.9076
		50	158.71	145.59	0.9174
MW-3(3-18)	8/7/2009	100	97.64	92.67	0.9491
		77	226.67	217.03	0.9575
		68**	490.51	471.55	0.9614
MW-4(5-22)	1/2/2009	100	7.27	6.35	0.8737
		77	10.97	9.68	0.8824
		50	20.05	17.90	0.8928
MW-5(13-21)	1/8/2009	100	15.97	14.12	0.8845
		77	27.49	24.55	0.893
		50	61.37	55.42	0.903
MW-6(18-23)	4/17/2009	100	16.47	14.60	0.8862
		77	28.60	25.58	0.8947
		50	64.57	58.42	0.9047
MW-7(1-15)	4/17/2009	100	27.17	24.57	0.9044
		77	49.97	45.62	0.913
		50	122.22	112.79	0.9229
MW-9(3-18)	3/24/2009	100	19.32	17.19	0.8899
		77	34.15	30.68	0.8984
		50	79.23	71.97	0.9083
MW-14(7.5-27.5)	7/13/2009	100	18.36	16.27	0.8863
		77	32.31	28.93	0.8956
		50	74.57	67.56	0.906
MW-17(8.5-25.5)	7/13/2009	77*	31.45	28.15	0.8949
		60	51.49	46.40	0.9012
		50	71.61	64.80	0.9048
MW-19(11.5-31.5)	9/28/2009	100	21.23	18.91	0.8903
		77	38.41	34.53	0.8988
		50	92.18	83.76	0.9087
MW-22(14.5-34.5)	7/13/2009	100	16.38	14.52	0.8861
		77	28.52	25.51	0.8946
		50	64.78	58.60	0.9046
MW-23(10.5-24.5)	7/13/2009	100	18.00	15.96	0.8866
		77	31.36	28.08	0.8951
		50	71.59	64.80	0.9051
MW-24(5.5-25.5)	7/30/2009	100	17.39	15.42	0.8866
		77	30.59	27.38	0.8951
		50	70.36	63.68	0.905

Notes:

F - degrees fahrenheit
cst - centistokes
NAPL - Non-aqueous phase liquid
mPas - Millipascal
g/mL - grams per milliliter
* Sample run with modified temperature profile due to volatility at 100F
** Sample run with modified temperature profile due to waxing at 50F and 60F

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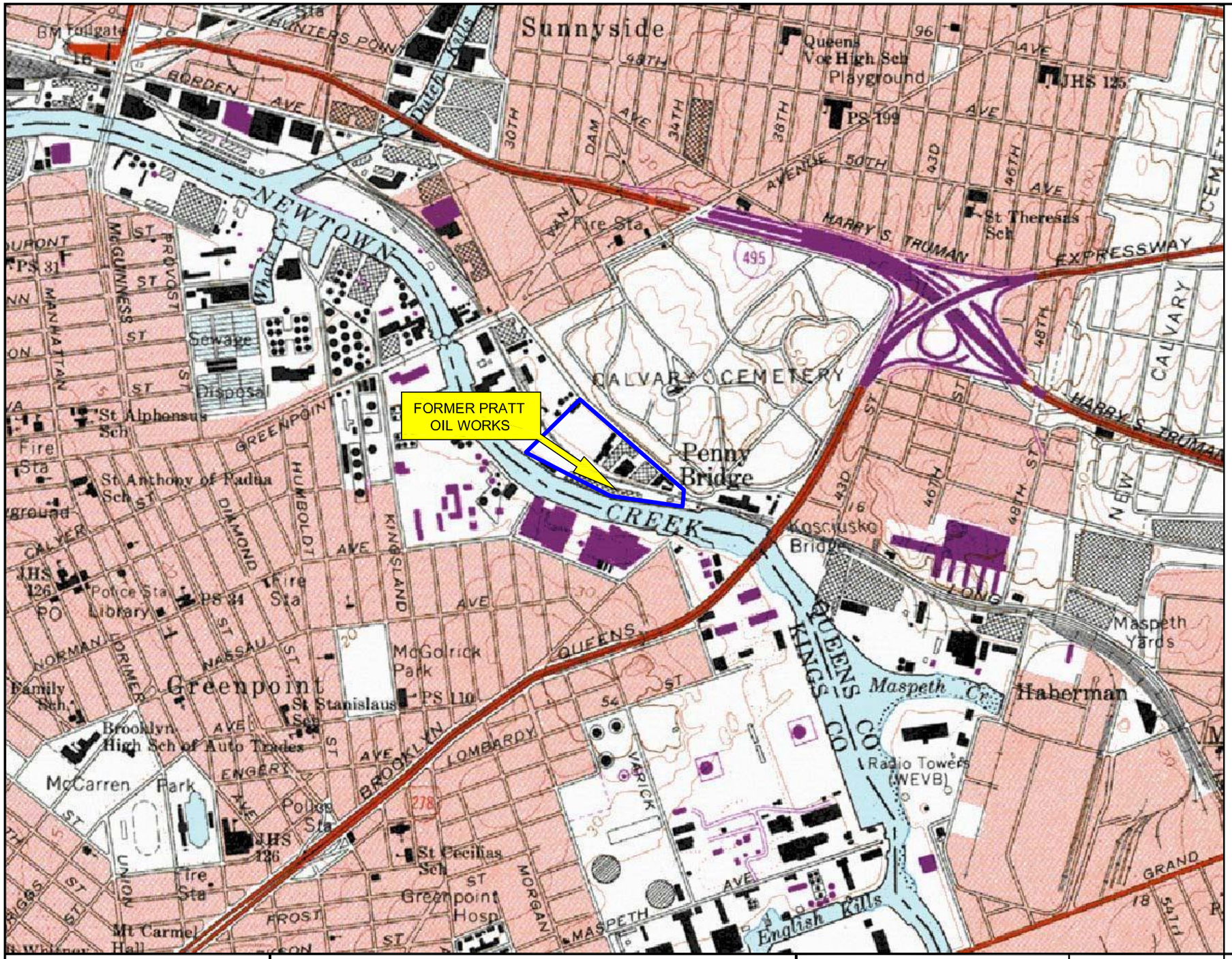
FIGURES



APPROXIMATE LOCATION
OF FORMER PRATT OIL WORKS

N

LATITUDE: 40° 43' 47.32" N

LONGITUDE: 73° 56' 08.26" W

SOURCE:
USGS 7.5' SERIES TOPOGRAPHIC MAP,
"BROOKLYN, NY QUADRANGLE
PHOTOREVISED 1979"

QUADRANGLE
LOCATION

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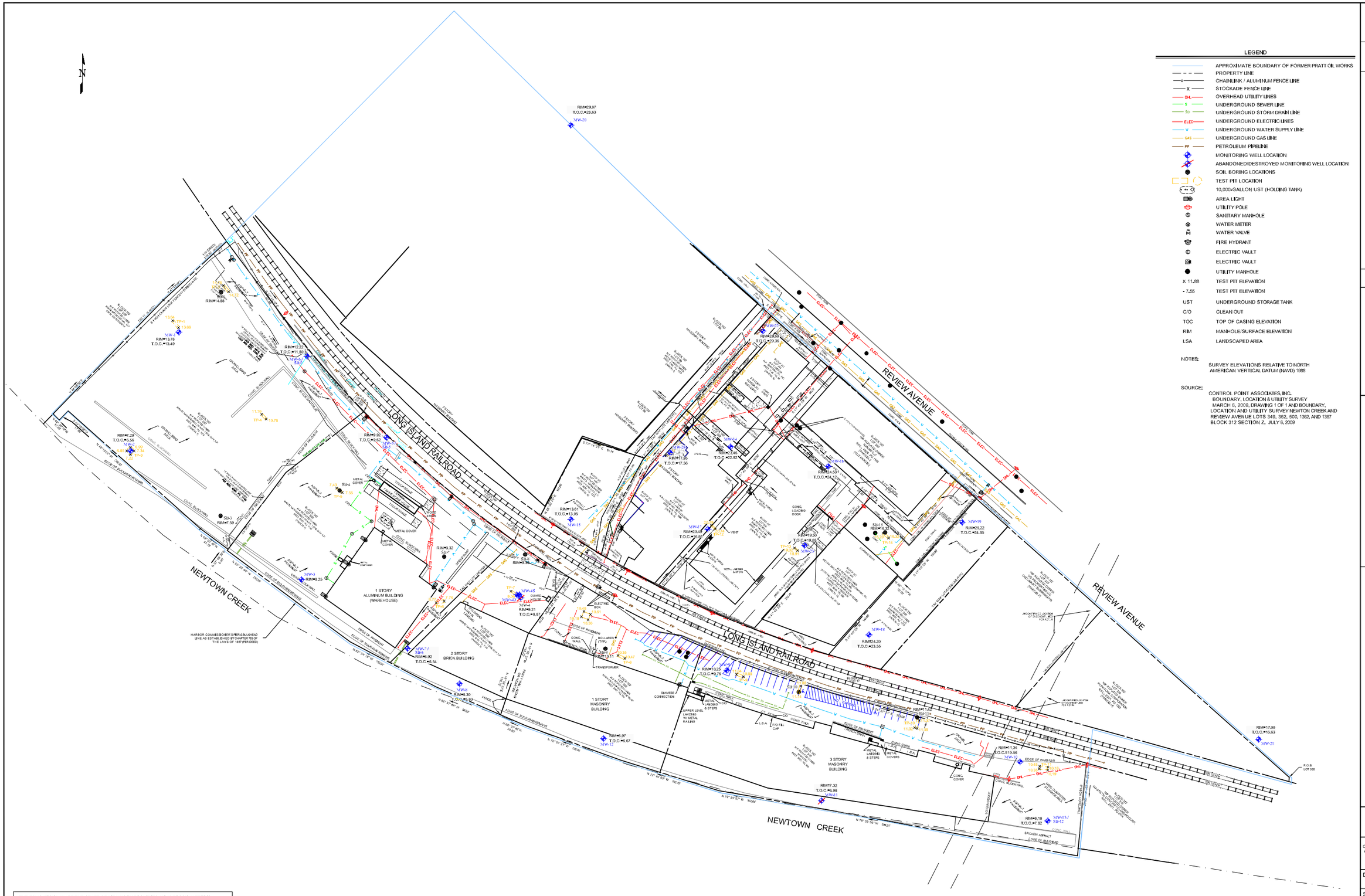
PROJECT NO.	108988
DRAWN:	07/16/2010
DRAWN BY:	JR
CHECKED BY:	
FILE NAME:	

LOCUS PLAN

FORMER PRATT OIL WORKS
THE INLAND PARCELS (TRACT I)
THE WATERFRONT PARCELS (TRACT II)
LONG ISLAND CITY, NEW YORK

FIGURE
1

BOHEMIA, NY



LEGEND

- APPROXIMATE BOUNDARY OF FORMER PRATT OIL WORKS
- PROPERTY LINE
- CHAINLINK / ALUMINUM FENCE LINE
- STOCKADE FENCE LINE
- OVERHEAD UTILITY LINES
- UNDERGROUND SEWER LINE
- UNDERGROUND STORM DRAIN LINE
- UNDERGROUND ELECTRIC LINES
- UNDERGROUND WATER SUPPLY LINE
- UNDERGROUND GAS LINE
- PETROLEUM PIPELINE
- MONITORING WELL LOCATION
- ABANDONED/DESTROYED MONITORING WELL LOCATION
- SOIL BORING LOCATIONS
- TEST PIT LOCATION
- 10,000-GALLON UST (HOLDING TANK)
- AREA LIGHT
- UTILITY POLE
- SANITARY MANHOLE
- WATER METER
- WATER VALVE
- FIRE HYDRANT
- ELECTRIC VAULT
- ELECTRIC VAULT
- UTILITY MANHOLE
- X 11.88 TEST PIT ELEVATION
- • 7.55 TEST PIT ELEVATION
- UST UNDERGROUND STORAGE TANK
- C/O CLEAN OUT
- TOC TOP OF CASING ELEVATION
- RIM MANHOLE/SURFACE ELEVATION
- LSA LANDSCAPED AREA

NOTES:

SURVEY ELEVATIONS RELATIVE TO NORTH AMERICAN VERTICAL DATUM (NAVD) 1988

SOURCE:

CONTROL POINT ASSOCIATES, INC., BOUNDARY, LOCATION & UTILITY SURVEY MARCH 6, 2009, DRAWING 1 OF 1 AND BOUNDARY, LOCATION AND UTILITY SURVEY NEWTON CREEK AND REVIEW AVENUE LOTS 349, 352, 500, 1352, AND 1367 BLOCK 312 SECTION 2, JULY 6, 2009

NO.	REVISION	BY	DATE
1			

KLEINFELDER ENGINEERING P.C.
ONE CORPORATE DRIVE
KINGS PARK, NEW YORK
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PROJ. NO. 108888 | ACAD FILE: FROW SITE PLAN WATERFRONT.dwg | DESIGNED BY: - | DRAWN BY: AR | CHECKED BY: -

SITE PLAN

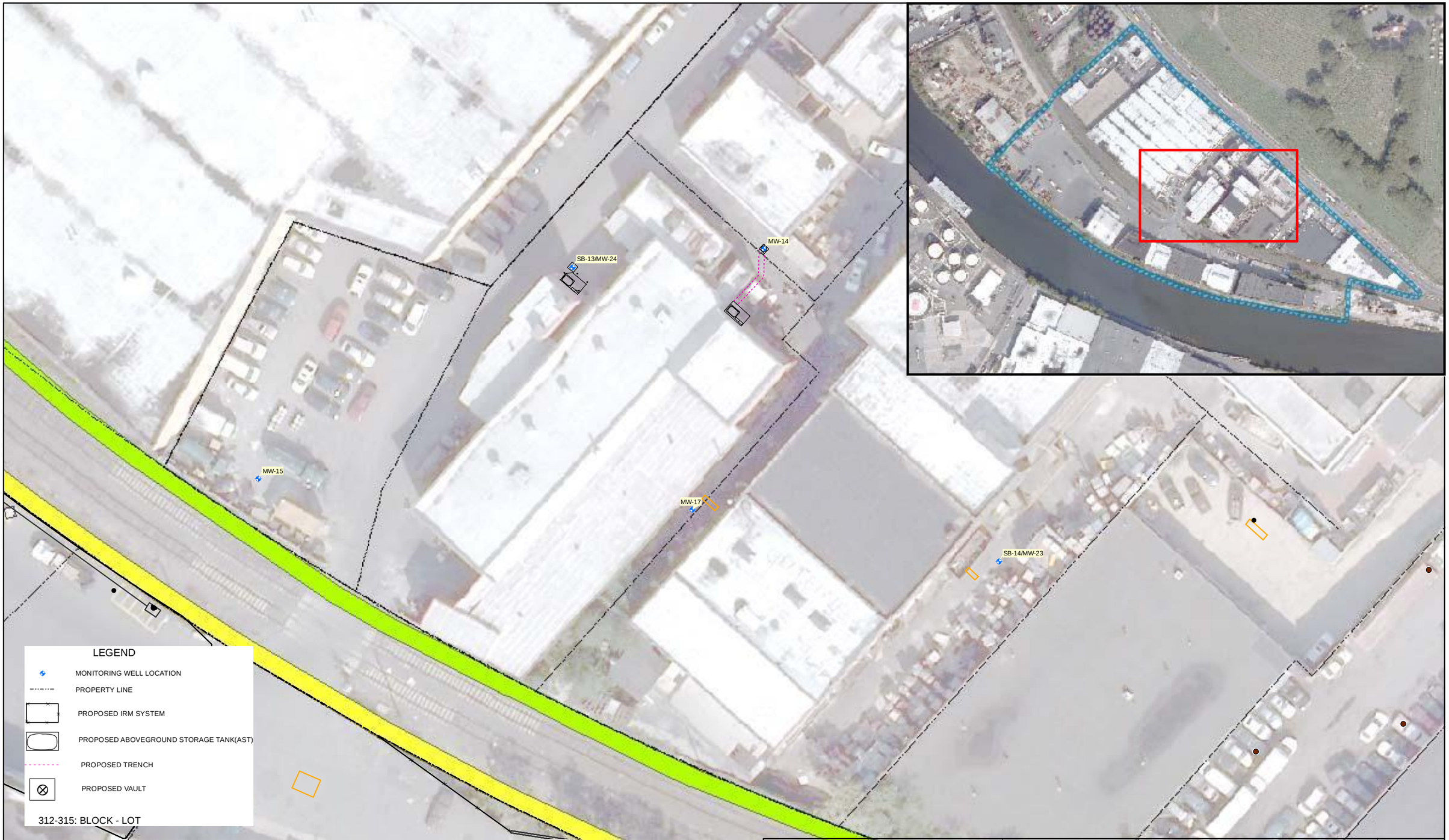
FORMER PRATT OIL WORKS
THE INLAND PARCELS (TRACT I)
THE WATERFRONT PARCELS (TRACT II)
LONG ISLAND CITY, NEW YORK

FOR REDUCED PLANS: ORIGINAL IN INCHES
0 0.5 1.0 1.5 2.0

DATE: 05/28/2010

SCALE: 1" = 60'

FIGURE 2



N

1 inch = 20 feet

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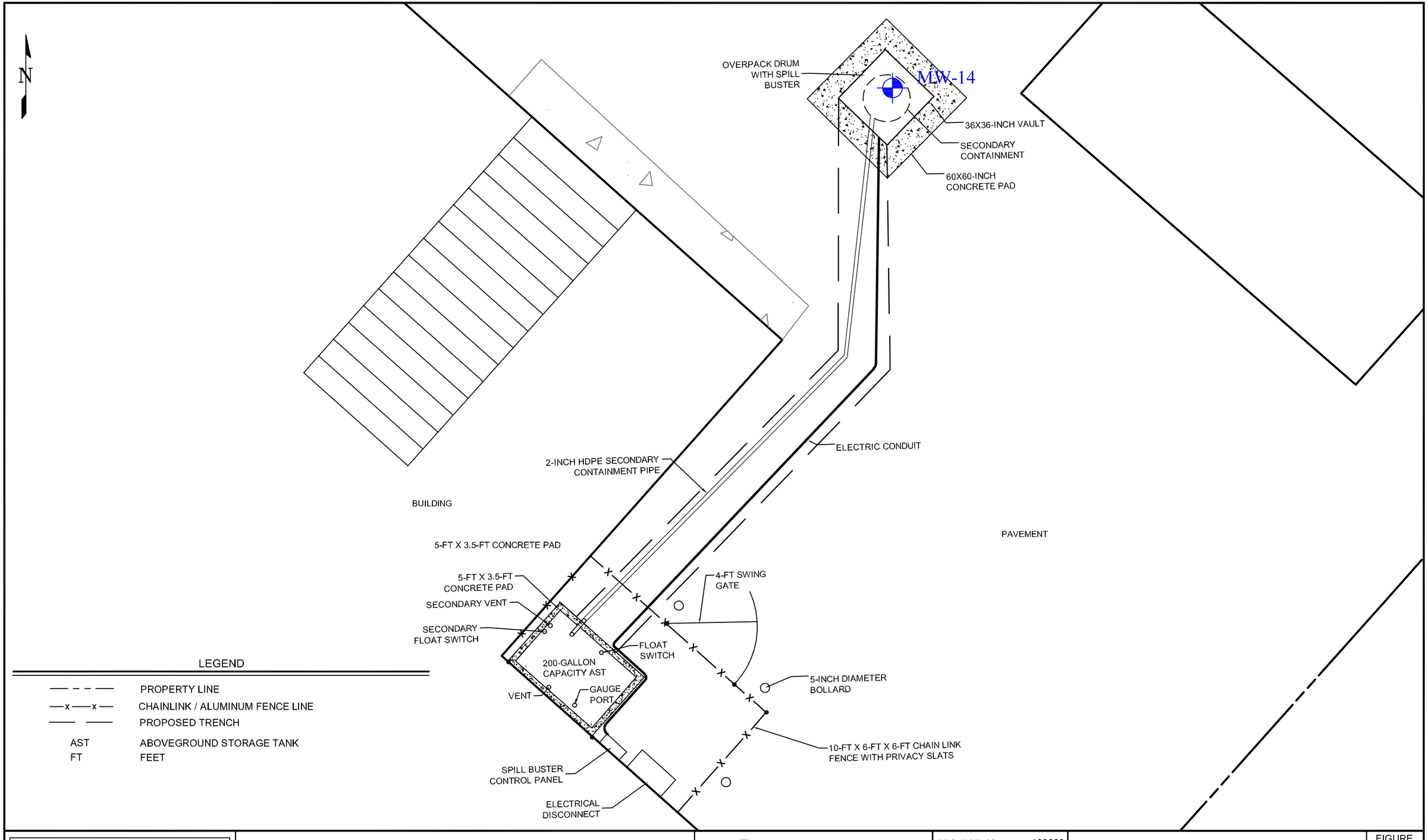
DRAWN BY:	J.R.
CHECKED BY:	
FILE NAME:	

AERIAL PLAN WITH PROPOSED IRM SYSTEMS LOCATIONS

FORMER PRATT OIL WORKS
THE INLAND PARCELS (TRACT I)
THE WATERFRONT PARCELS (TRACT II)
LONG ISLAND CITY, NEW YORK

FIGURE
3



0 2.0 4.0 8.0
SCALE (feet)

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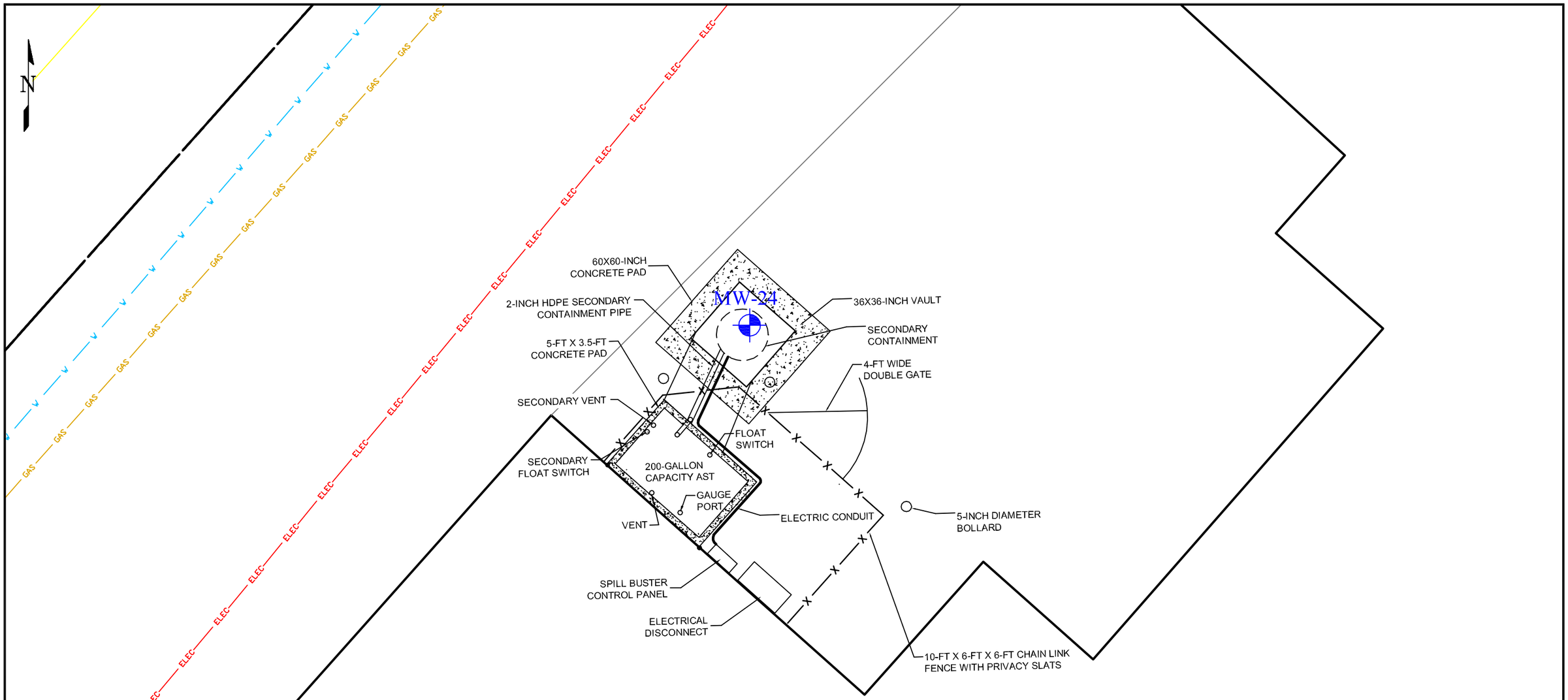
PROJECT NO.	108988
DRAWN:	09/16/2010
DRAWN BY:	JC
CHECKED BY:	
FILE NAME:	

PROPOSED IRM SYSTEM LAYOUT FOR MW-14

FORMER PRATT OIL WORKS
THE INLANDS PARCELS (TRACT I)
THE WATERFRONT PARCELS (TRACT II)
LONG ISLAND CITY, NEW YORK

FIGURE
4

BOHEMIA, NY



0 2.0 4.0 8.0
SCALE (feet)

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PROJECT NO.	108988
DRAWN:	09/16/2010
DRAWN BY:	JC
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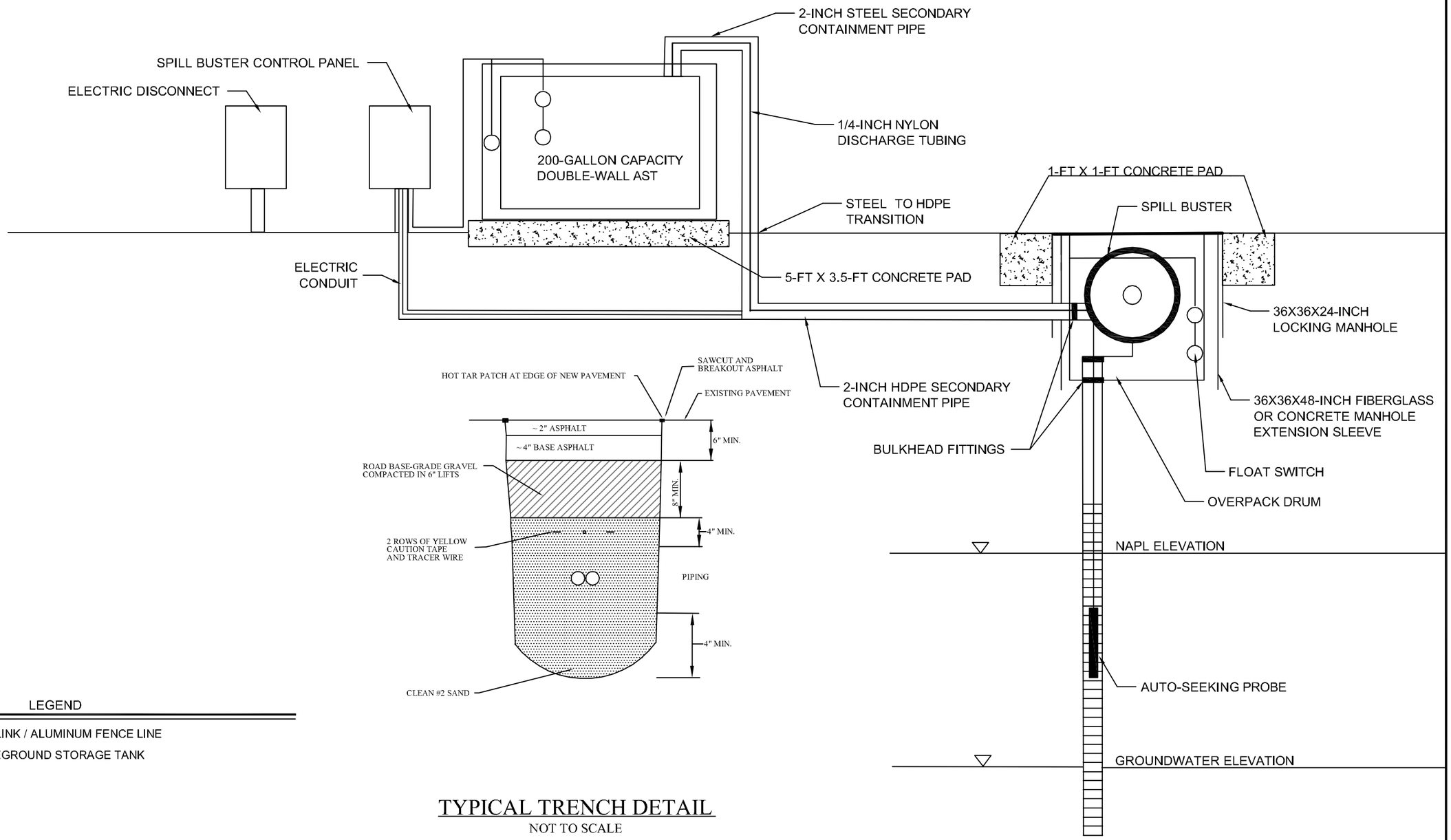
FILE NAME:	

PROPOSED IRM SYSTEM LAYOUT FOR MW-24

FORMER PRATT OIL WORKS
THE INLANDS PARCELS (TRACT I)
THE WATERFRONT PARCELS (TRACT II)
LONG ISLAND CITY, NEW YORK

FIGURE
5

BOHEMIA, NY



LEGEND

—o—	CHAINLINK / ALUMINUM FENCE LINE
AST	ABOVEGROUND STORAGE TANK
FT	FEET

TYPICAL TRENCH DETAIL

NOT TO SCALE

0 1.0 2.0 4.0

SCALE (feet)

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DRAWN BY:	JC
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FILE NAME:	

CONCEPTUAL CROSS SECTION OF IRM SYSTEM LAYOUT

FORMER PRATT OIL WORKS
THE INLANDS PARCELS (TRACT I)
THE WATERFRONT PARCELS (TRACT II)
LONG ISLAND CITY, NEW YORK

FIGURE
6

BOHEMIA, NY

APPENDIX A

Equipment and Product Specifications Sheets

8.0 System Specifications

Complete Magnum Sill Buster™ System includes: Magnum Spill Buster™ Control Box, Magnum Spill Buster™ Probe with 50' cable, Auto Seeker with 25' cable, and Product Tank Shutoff Probe with 25' cable, and 50 ft. Product Discharge Tubing.

Input Power: 115vac or 230vac, 100 watts max. or 24vdc, 75 watts max. with optional battery cable and deep discharge batteries. 5 amp circuit breaker in System Power switch.

Operating Temperature Range: Ambient air temperature of -40F to +140F (-40C to 60C).

Pumping Rate: up to 46 gal/hr (175 liter/hr) @ 0 psi (zero depth & no discharge back pressure), ***or up to 37 gal/hr (140 liter/hr) @ 25 psi discharge back pressure. [See Pump Performance Curve, next page.]***

Product Viscosity: Products with viscosity of less than 10 Cp at 70 degrees F. Examples: gasoline, diesel fuel, #2 heating oil, JP-4, JP-5, paint thinners.

Well Diameter: 2 inch minimum for product recovery only.

Standard Well Depth: 50 ft. max

Maximum Well Depth: 100 ft (30.5 m) on special order with 100 ft (30.5m) down-well cable. Special booster pumps and power supplies are available for deeper wells.

Minimum Well Head Clearance for AUTO SEEKER: 24"x24"x22" Deep (61 cm x 61 cm x 56.4 cm deep).

Probe Dimensions: 1.93" (4.9cm) dia. x 15.25" (38.7cm) long [cable size including the discharge tube is 5/8" thickness x 1 1/2' width]. Standard Probe cable length is 50 ft. (15.2m)

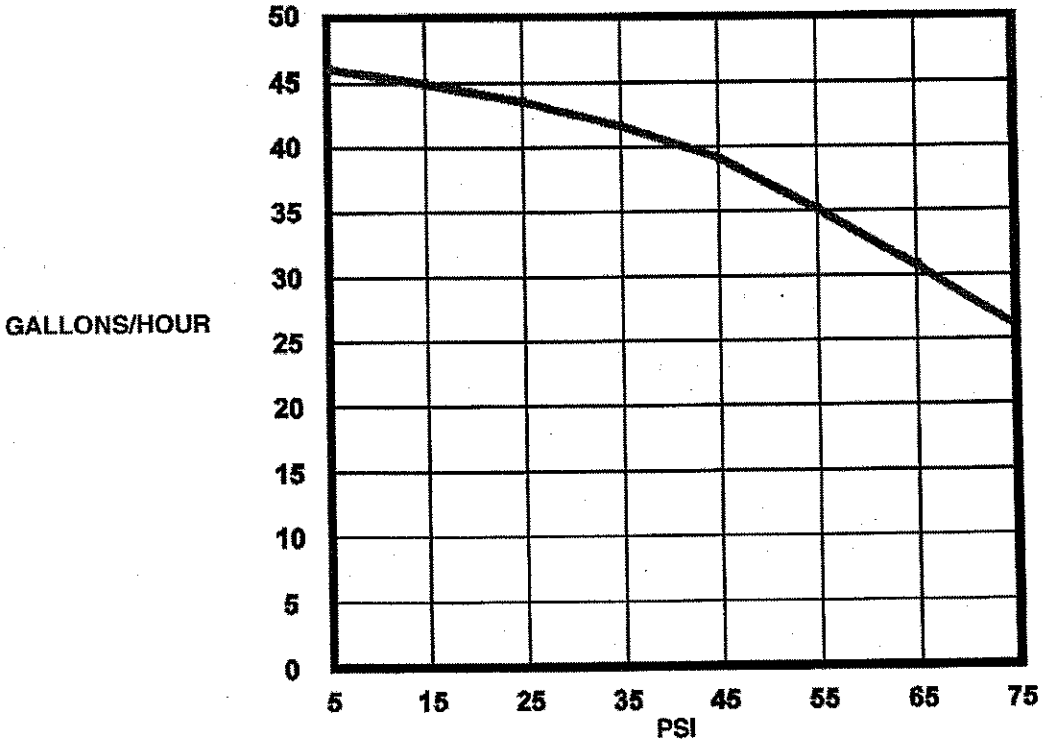
Control Box Dimensions: 14" (36cm) wide x 23" (59cm) high x 6" (15.4cm) deep. An additional 10" is required below for cable exit and an additional 14" is required in front and to the left for door swing.,

Standard cable length: 25 ft (7.6m) from Control Box to well head.

Product Tank Probe: threads into a standard 2" barrel bung. Standard cable length is 25 ft (7.6m)

Total System Weight: 68 Lbs. (31kg)

Magnum Spill Buster Pump Performance



NOTES: 1.) 75 ft. Probe Product Tube
2.) Pump speed NORMAL

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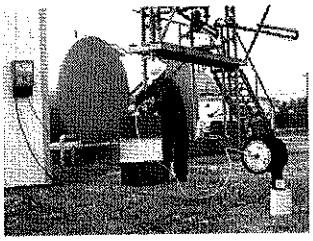
Magnum Spill Buster

1. Summary of Product -

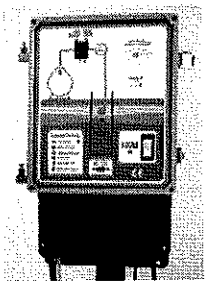


The Magnum Spill Buster™ is an automated free phase petroleum contamination pumping system. It is specifically designed to remove NAPL petroleum product from the water table via a 2" or larger diameter well. Its unique auto-seeking device allows the pump intake to automatically follow the elevation of the oil/water interface as it fluctuates throughout the entire length of the well. The Magnum Spill Buster will not pump any amount of water.

The system can be wired to 115 VAC or 230 VAC power or is capable of true 24 VDC deep cycle battery/solar panel operation for remote site locations.

Optional water depression can be added to the system through a Clean Earth Technology Water Depression Module and a Grundfos Redi-Flo 3 water pump. The Magnum is also very compatible with vacuum extraction systems when a dual phase recovery system is desired.

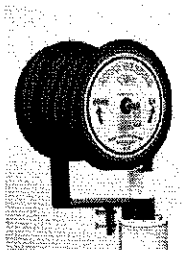
The Magnum Spill Buster™ system is composed of three interactive modules:



The Magnum Spill Buster™ **Control Box** coordinates and displays the condition of the system operation. The control box also allows certain system parameters to be varied and provides an RS-485 communications port for connection to up to 256 other units and a Personal Computer (PC) up to 3,000 ft. away.

The NEMA 4 weatherproof enclosure with its connector "pouch" (shown at right with its protective cover) provides easy access to the cables, adjustable controls, and AC. wiring.

Cable terminations within the connector pouch utilize our unique, size-coded SLIMLINE connectors that pull through underground conduits easily and are color-coded for intuitive placement. They are extremely rugged and very easy to clean.

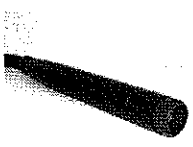


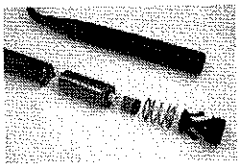
The **Auto Seeker** is a small, motorized, reel assembly installed on the wellhead. It automatically raises and lowers the probe to follow the NAPL interface through the entire depth of the well. This makes the system operation highly efficient even with large changes in the level of the ground water. The cable fully winds onto the Auto Seeker, allowing the system to freely operate in a vault as small as 24" x 24" x 22" deep.

This self-winding feature also means that routine maintenance of the product pump is a matter of pushing a button to reel the probe to the top of the wellhead- eliminating the need to haul an oil-covered cable up by hand to spread out all over the ground.

The 1.93" diameter probe contains the patented ALPHA ARRAY™ interface sensors, as well as a small but powerful 12vdc electric product pump. These sensors are multiple field array, all solid state, monolithic, non-contact, fluid-interface sensors that are a spin-off of spacecraft fuel gauging developed for NASA. The use of this interface sensor in the environmental industry is unique. Since it is a non-contact sensor, it is highly immune to fouling, which is a problem with virtually all other types of sensing methods (including conductive, float, optical and even radio frequency methods).

The pump used in the Magnum is a modified diesel fuel pump. This same pump is widely used in the automotive and aeronautic industries as well as military applications. The typical pump installation is inside the fuel tank, operating at 15 volts and fuse limited to15 amps. Even though the pump clearly operates safely under these conditions, we reduce the power output to no more than 12 volts and 7 amps, with redundant amperage limiting circuits. In spite of the fact that we under-drive the pump to ensure safe, reliable operation, it is capable of an industry leading recovery rate (see System Specifications below).





Also included with every standard system:

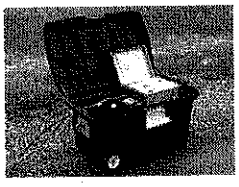
- **A Recovery Tank Overflow Sensor with 30' of cable**
- **30' Set of Auto Seeker and Probe cable extensions**
- **50' of nylon discharge tubing with bung**

2. Features and Benefits-

- **All-modular system installs in 20 minutes**
- **Pumps only product; the water stays behind- no costly, messy, surface separation**
- **Keeps on pumping through temperatures -40 to 60°C**
- **24/7 automatic operation yields steady, impressive, results**
- **Quiet & low profile- doesn't draw attention in public places**
- **Speedy, no-fuss maintenance**
- **Uses less power to operate than a 60 watt bulb**
- **Technical support from the designer and manufacturer is only a phone call away**

3. Accessories -

- **Immediate Response Box -**

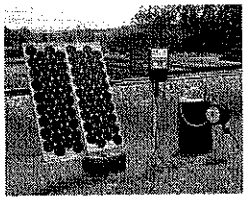


The Immediate Response Box (I.R. Box) is a rugged plastic box that contains a Magnum Spill Buster system. The I.R. Box provides an extremely portable system to start removal of product in a 2" or larger well with minimal equipment set-up. A large forged shackle is attached on one end of the box for security.

The I.R. Box can easily be carried in a small pick-up or van. The basic setup involves mounting the Auto Seeker onto the well head, connecting the product tank discharge tube and overflow sensor to the product tank, and connecting the Auto Seeker and Probe signal cables to the Control Panel mounted in the I.R. Box.

The system is powered by 115VAC from an extension cord or is hard-wired, or cables can be provided to operate the system from a 24 volt deep cycle battery setup (2 12 volt batteries connected in series).

- **Solar Panel Charging Option -**

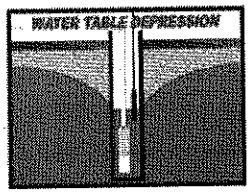


For sites with no utility connection available, batteries with a photovoltaic recharging system (solar panels) can fully power the Magnum Spill Buster. The Solar Panel Charging system includes the panels, a heavy-duty frame and mounting hardware, deep-cycle batteries, waterproof control box with regulator, and custom cabling. Configuration of the charging system (size and number of panels) primarily depends on the location of the site and the amount of sunlight available. The duty cycle, or percentage of time the system will run, is also determined by the amount of product present at the site.

- **Water Depression Option -**

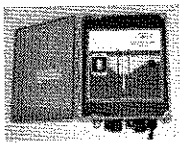
A secondary water pump can be used to create a huge hydraulic funnel that pulls product towards the well from greater distances than are attainable with product skimming alone.

The result looks something like this:



Dual pump product recovery operation can be accomplished with the Magnum Spill Buster System plus a Water Depression Control Module and a Grundfos Redi-Flo 3 SQE-NE pump sized to your well (minimum well diameter required is 4 inches). The Magnum Water Depression system is designed specifically to take advantage of all the features of the Grundfos Redi-Flo 3 SQE-NE pump.

Grundfos Redi-Flo 3 pump With NEC fittings



Water Depression Control Module

This Module obtains its water level signals and control logic from the Magnum system control box and in turn controls water flow by using the soft start feature of the Grundfos pump to turn it on and off. Clean Earth Technology offers this line of Grundfos submersible pumps with NEC fittings to safely bring the high level AC voltage through the recovery zone to the pump.

A set of normally open contacts is provided for use with a safety override probe, which will shut down the water pump when closed.

- **Site Master Monitoring and Control Software -**

The Magnum Spill Buster may be operated individually or under an optional network control. The network capabilities are provided such that the user may monitor and, if desired, control many Magnums from a single, central location (up to 3,000 feet from the site). The physical layer configuration used by Clean Earth Technology is the industry standard RS-485 differential, multi-drop protocol. This standard provides an inexpensive and robust physical connection to up to 256 units. To this Clean Earth technology has added the simple-to-use Site Master Network software program.

The Site Master, or host, is a Windows application. It can be operated on any system running Microsoft Windows, and configures with a standard RS-485 communications engine. It can also operate as a stand-alone software package. The Site Master polls the Magnum system (slave) continuously to update the current operating status. The status of every unit on the network is displayed on the computer screen for easy monitoring. The operator can change the parameters of a unit or control the unit directly through the graphical user interface of the Site Master.

4. System Specifications -

The Complete Magnum Spill Buster™ System includes:
Magnum Spill Buster™ Control Box, Magnum Spill Buster™ Probe with 50' cable, Auto Seeker with 30' cable set, Recovery Tank Overflow Sensor with 30' cable and Recovery Tank bung, 50' nylon NAPL discharge tubing.

Input Power
115 VAC or 230 VAC, 100 Watts max. or 24 VDC, 75 watts max.
with optional battery cable and deep discharge batteries.

Operating Temperature Range
-40 to +140 degrees F or
-40 to +60 degrees C

Fluids:
Most hydrocarbons, floaters (LNAPLS) or sinkers (DNAPLS) **Note:** The pump used in the Magnum system contains aluminum parts that are potentially reactive with halogenated hydrocarbons.

Viscosity Ranges
Standard Pump- 0 to 10cp at 70° F
Optional Medium Viscosity Pump- Up to 25cp

Pumping Rate
Up to 45 GPH (171 LPH) @ 0 PSI (Zero depth and no discharge back pressure.)
Or Up to 15 GPH (57 LPH) @ 50 PSI (50' deep and 25 PSI discharge back pressure.)

Standard Well Depth
50'. max.

Maximum Well Depth
150' on special order with 150' down-well cable.

Minimum Well Head Clearance for AUTO SEEKER
24" X 24" X 22" deep

Probe Dimensions
1.9" dia. x 16" long (cable dia. including the discharge tube is 0.5")
Standard Probe cable length is 50'.

Control Box Dimensions
14" wide x 19" high x 6" deep. An additional 10" is required below for cable exit and an additional 14" is required in front and to the left for door swing.

Standard Cable Length
30' from Control Box to well head

NAPL Recovery Tank Overflow Sensor
Threads into a standard 2" barrel bung. Standard cable length is 30'.

Total system Weight
67 lbs.

Raco Mfg. & Engineering Co., Inc
1400 62nd St
Emeryville,CA,94608,US
Phone: 510-658-6713
Fax: 510-658-3153
Toll-free: 800-722-6999
Email: sales@racoman.com
Website: http://www.racoman.com

Model Number 802AA-102DCNEMA4X, AlarmAgent Digital WRTU with NEMA 4X Enclosure and Phantom antenna

$1,795.00

AlarmAgent Digital WRTU with NEMA 4X Enclosure and Phantom antenna

AlarmAgent.com wireless remote terminal unit with NEMA 4X enclosure. Monitors 8 digital inputs and 2 universal inputs. Controls 2 digital outputs. Supplied in a NEMA 4X enclosure, with Phantom tamper resistant antenna, and 24hr battery backup. 12 to 24VDC powered.

SPECIFICATIONS · RELAY OUTPUT · ELECTRICAL · ENVIRONMENTAL · MONITOR · REPORT · CONFIGURE · CUSTOMIZABLE NOTIFICATION · FLEXIBLE SERVICE PLANS · WIDE-RANGING APPLICATIONS · FEATURES · SYSTEM CONFIGURATION · ALARM AND SYSTEM MESSAGES · OPERATOR INTERFACE · VIEW PDF SPECIFICATIONS · VIEW PDF SAMPLE GRAPHS · VIEW PDF SAMPLE DATA LOG FILES

SPECIFICATIONS

Digital Inputs	8
Universal Inputs	2
Relay Output	2
Enclosure	NEMA 4X
Antenna	Phantom, omni-directional, 0 - 3 dB gain
Power	12 -24 VDC
Trade Name	AlarmAgent.com
Field Upgrades	AlarmAgent.com WRTU firmware is field upgradeable.
Warranty	3 years

Communications	Bi-directional WRTU communications are handled by the AlarmAgent.com secure server via the wireless cellular network.

RELAY OUTPUT

2

ELECTRICAL

Battery Backup	24 hours, 12 volt at 1.2 Amp hr
Power Management	System intelligently manages power during power failure
Battery Charging	Precision voltage controlled to maximize battery life and rapidly recharge the battery after power failure.
Power Failure	Automatic alarm for external power failure and low battery detection
Solar Power	The WRTU is operable directly from a 13.6 VDC solar power unit. Average current is 175 mA or less
Surge Protection	Digital inputs are opto-isolated and rated at 5000 volts Universal inputs are rated at 600 watts. Power input is protected to 1500 watts peak. The fuse is automatically reset.

ENVIRONMENTAL

Operating Temperature Range	-30 to + 70 °C -22 to +158 °F
Storage Temperature Range	-40 to + 85 °C -40 to +185 °F
Humidity	0 to 95%, Non-condensing

MONITOR

View your system activity on a single, straightforward 'dashboard' screen. AlarmAgent.com's user-friendly, Web based interface puts everything you need right at your fingertips. The easy-to-use control panel allows you to access WRTU status, notification order and contact preferences, alarm activity (even across multiple stations), and details of alarm acknowledgment activity. And no additional software is required.

REPORT

Generate comprehensive reports on-demand with just the click of a mouse. AlarmAgent.com gives you immediate access to the custom reporting you need, and creating your reports is simple. We've made it easier than ever for you to generate comprehensive reports and pump-station analyses. The collected data can be analyzed to optimize system efficiency for your operation. The onscreen interface provides customizable ranges, which allow you to view your data as you specify.

With a few simple clicks, your interface will produce your selected reports, including Pump Runtime, Pump GPM, Pump Starts Ratio, Pump Station Flow, WRTU Commands, Analog Reading, and Arm/Disarm..

ONFIGURE

Easily set and administrate the parameters of your system. AlarmAgent.com provides extreme flexibility for custom configuration. Add stations. Change

alarm parameters. Manage users and update their notification preferences. All this functionality and more is possible through clear instructions and drop-down menus that allow you to manage your selections in just seconds.

CUSTOMIZABLE NOTIFICATION

Today's technology allows people to be reached wherever they go. That's why AlarmAgent.com's notification features employ all of today's personal and business communications technology to help you ensure, and document, that your alarms are received and responded to as quickly as possible.

In an alarm condition, AlarmAgent.com will send notification through cell phone, e-mail, landline, pager, or SMS. Recipients may acknowledge these alarm notifications during voice calls or through e-mail responses. Users can also proactively respond using a toll-free number or the AlarmAgent.com system dashboard.

On-screen, administrators can easily add users, customize their methods of contact, and determine the proper hierarchy for notification.

FLEXIBLE SERVICE PLANS

AlarmAgent.com provides several advantages over landline-based service, including lower cost, greater reliability, the ability to go where land-based systems can't, and no cellular provider contract.

AlarmAgent.com is available through a number of service plans, with a variety of options to suit your specific system requirements. Choose from a range of plans within the Standard, Enhanced Analog, Enhanced Arm/Disarm, and Premium divisions, and select your preferred terms of 1 Year, 2 Years, 3 Years, or Monthly agreement.

Service plans vary by the type of AlarmAgent.com WRTU template you select. A range of variables, such as Digital Input Alarms, Power Failure Alarms, Analog Alarms, certain Reporting details, and others will determine which service plan is right for you.

WIDE-RANGING APPLICATIONS

ıter & Waste
Electric Utility
Building Management
HVAC & Refrigeration
Equipment Rentals
Agricultural
Oil & Gas
And More

FEATURES

Totally Wireless RTU
Easy to install. Goes where landlines can't, with 98% availability across North America.
Reliable, Web-Based Communication
Triple redundant, secure Web site links WRTU with AlarmAgent.com system.
Secure, 24/7 Access
Retrieve equipment and status info anytime, from any Web-enabled device or by calling a toll-free number.
Robust Monitoring & Control Functionality
Simple configuration through system templates. Integrates 8 digital and 2 universal inputs, and 2 relay outputs.
Straightforward User Interface
Immediate status updates for a number of functions: Signal strength, transmission, local service registration, armed/disarmed, AC/battery, on/off.
Custom User Templates
Simplify configuration remotely or locally. Optimized for water and wastewater pump applications.
On-Demand Custom Reporting
Web based access anytime to system alarm and status reports. View and export data as you specify with customizable ranges.
Flexible Alarm Notification
Instant notification of alarm conditions by voice, SMS, pager, and e-mail

ↄYSTEM CONFIGURATION

The WRTU is configurable via any of three possible means: via dipswitch, via notebook computer connected to the serial port, or wirelessly via AlarmAgent.com. In most cases, a notebook computer connection is not required. By selecting from 4 templates that are optimized for duplex pump stations with or without totalizer and triplex pump stations with or without totalizer, rapid installation and error proof startup are virtually guaranteed. Three additional plates are available for more general applications.

ALARM AND SYSTEM MESSAGES

User defined alarm and system messages are delivered via voice calls, SMS messages, alphanumeric pagers, and e-mail to an unlimited number of user specified destinations. Authorized personnel acknowledge alarms during voice calls via a toll free number, e-mail, or through the AlarmAgent.com Web site.

OPERATOR INTERFACE

The AlarmAgent.com WRTU includes pushbuttons to turn the unit on or off, to arm or disarm the unit, to cause a special Test Call to be generated, and a digital input Accept function to assist in the setup of the WRTU. LEDs are used extensively throughout to indicate the status of the following subsystems: AC power status, battery status, network service availability, a 10 segment LED bar graph for service signal strength, actively transmitting, test report, customer account status, template setting status, individual input channel state, individual relay output state, and if any channels have exceeded their daily limit of transmissions.

VIEW PDF SPECIFICATIONS

Specifications	Dialer Specifications - AlarmAgent.com

VIEW PDF SAMPLE GRAPHS

mple Graphs	Duplex Pump Station – Pump Station Efficiency Report Triplex Pump Station – Pump Station Efficiency Report Triplex Pump Station with Pulse Flow Meter – Analog Report

VIEW PDF SAMPLE DATA LOG FILES

Sample Data Log Files	Duplex Pump Station – Arm / Disarm Report Duplex Pump Station with Pulse Flow Meter – Pump Station Efficiency Report Multipurpose Process Performance – Analog Report Triplex Pump Station with Pulse Flow Meter – Pump Station Efficiency Report