

July 3, 2008
File No. 05.0043654.00-C



Mr. Joseph Martella
Rhode Island Department of Environmental Management
Office of Waste Management
235 Promenade Street
Providence, Rhode Island 02908

Re: *Sediment Investigation Work Plan*
Former Tidewater Facility
Pawtucket, Rhode Island
RIDEM Case No. 95-022

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Rhode Island
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Dear Mr. Martella:

On behalf of our client, Narragansett Electric Company d/b/a National Grid (National Grid), GZA GeoEnvironmental Inc. (GZA) is pleased to submit to the Rhode Island Department of Environmental Management (RIDEM) this investigation work plan for the former Tidewater Facility.

This work plan was prepared to inform the RIDEM of the proposed sediment coring that will be conducted by National Grid in the Seekonk River adjacent to the former Tidewater Manufactured Gas Plant (MGP) and the Pawtucket No. 1 Power Station Site in Pawtucket, Rhode Island. The purpose of the sediment coring is to investigate sediment conditions along the Seekonk River which may have been impacted by the historical operation of the adjacent Site as a manufactured gas plant. As described in the work plan, the sampling activities are intended to be of sufficient quality for subsequent use in further site characterization and/or risk assessment activities, if needed.

The proposed work is projected to take 2 to 3 weeks, with an estimated start date of July 7, 2008. These investigation activities will be conducted to address the applicable requirements of the RIDEM's Remediation Regulations and will be performed by Arcadis on behalf of National Grid.

A copy of the *Sediment Investigation Work Plan* prepared by Arcadis is included as Attachment A. As the proposed sampling will occur in the Seekonk River with limited activities proposed to be conducted on the Tidewater site within 200 feet of the river (i.e., sediment core processing), an application has been submitted to the Coastal Resources Management Council (CRMC); a copy of the CRMC application is included as Attachment B.


Should you have any questions or require additional information, please do not hesitate to contact Meg Kilpatrick at (401) 421-4140.

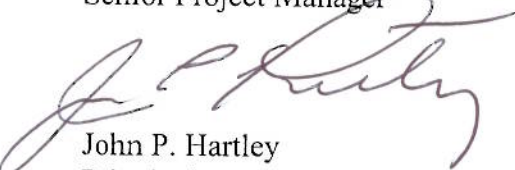


Very truly yours,

GZA GeoEnvironmental, Inc.


Margaret S. Kilpatrick, P.E.
Senior Project Manager


Igor Runge, Ph.D., P.H.
Project Consultant/Reviewer


John P. Hartley
Principal

Enclosures: Attachment A – Sediment Investigation Work Plan
Attachment B – CRMC Application

MSK/IR:lal

cc: Michele Leone, National Grid
Mark Mahoney, Arcadis

national**grid**

Sediment Investigation Work Plan

Former Tidewater Facility

July 2008

ARCADIS

**Sediment Investigation Work
Plan**

Former Tidewater Facility

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National Grid

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1. Introduction/Objectives

This Sediment Investigation Work Plan (SdIWP, or work plan) has been prepared on behalf of The Narragansett Electric Company d/b/a National Grid (National Grid) by ARCADIS. The SdIWP presents the rationale and approach for conducting a sediment investigation in the Seekonk River near the former Tidewater Facility site on Tidewater Street in Pawtucket, Rhode Island. This site is the location of the former Tidewater Manufactured Gas Plant (MGP) and the Pawtucket No. 1 Power Station.

The site investigation activities completed to date have focused on the upland portion of the site located on the Seekonk River and limited sediment sampling investigations. Sediment sampling to date has included the collection and laboratory analysis of samples from nine locations (three in 1988 and six in 1996). Eight of the nine samples were located near the shoreline of the site on the western bank of the River. One of the 1996 sediment samples was collected from the far (eastern) side of the Seekonk River. This SdIWP proposes a sediment sampling program intended to evaluate impacts to Seekonk River environmental conditions associated potentially with the former MGP.

The objectives of this SdIWP are to collect investigation information in the portions of the River near the former Tidewater Facility in compliance with Rhode Island Department of Environmental Management's (the Department) February 2004 Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations). The data collected during the site investigation activities described in this work plan will be used to preliminarily analyze potential impacts to the Seekonk River in the vicinity of the former MGP.

The data collected during the sediment investigation activities described in this work plan are intended to be of sufficient quality for subsequent use in further site characterization and/or risk assessment activities, if needed. Because additional investigations will be used for further characterization if necessary, this SdIWP may not include all field and laboratory investigation activities needed for a site characterization or a risk assessment. The need, if any, for additional field and laboratory investigation activities will be reviewed after the data collected under this initial SdIWP are evaluated.

2. Site Description

The upland portion of the site is comprised of approximately 23 acres on the western shore of the Seekonk River in Pawtucket, Rhode Island. The site location is shown on Figure 1. The portion of the Seekonk River that is the subject of this SdIWP is referred to in this SdIWP as the "Study Area". The Study Area is approximately 315 feet wide at the northern end of the site, approximately 440 feet wide at the southern end of the site and occupies approximately 18 acres. An aerial photograph showing the site location is included as Figure 2.

The upland portion of the site is the location of the former Tidewater MGP and the Pawtucket No. 1 Power Station. The majority of the site is currently vacant with the exception of an active natural gas regulating station, and active switching and electrical substations; both owned and operated by National Grid. Narragansett Electric d/b/a National Grid (National Grid) acquired the electrical side of the Site in May 2000. More recently, in August 2006, National Grid acquired the majority of the assets of New England Gas Company which included the "gas side" of the Site. National Grid is currently completing the *Site Investigation Report* for the entire Site (both the electric and gas portions) and anticipates submitting the report to the Department in the third quarter of 2008.

The Study Area is a navigable portion of the Seekonk River located approximately 4 miles upstream from where the Seekonk discharges to the Providence River and about 0.5 mile south and downstream of the Division Street Bridge in Pawtucket, RI. The River channel is monitored by the US Army Corps of Engineers. Recent hydrographic survey data from 2006 indicate that shoaling was observed in the River channel. The River channel is generally less than 16 feet deep in the site vicinity, and was surveyed at depths ranging in general from about 6 to 10 feet deep in 2006. The channel is approximately 150 feet wide in the site vicinity. River flow rates in this area are highly seasonal with average daily flows measured at the USGS gage at Roosevelt Ave (gage 01113895) ranging from 124 cubic feet per second (cfs) in September 2007 to 3,100 cfs in April of 2007 (<http://waterdata.usgs.gov/nwis/uv?01113895>).

3. Previous Investigation Findings

Investigations have been conducted to characterize the nature and extent of MGP-related materials in the upland soil and groundwater of the site and to assess remedial alternatives for the site. Site topography generally slopes from west to east towards the Seekonk River. The maximum elevation change from west to east is approximately 25 to 30 feet. Site stratigraphy generally consists of fill materials underlain by stratified gravel, sand, silt and clay, underlain by glacial till and bedrock. These fill materials generally consist of sandy materials mixed with varying percentages of relatively inert materials such as coal ash, coal dust, brick, slag, and wood. The thickness of these fill materials have been observed to range from approximately 2.5 feet in the northwestern portion of the Site to over 35 feet thick in the southern portion of the property. The native materials encountered in the northwestern portion of the Site were consistent with estuarine deposits while the materials encountered beneath the fills across the remainder of the Site consisted of glacial outwash and marine deposits. The elevation of the top of the glacial till is inferred to drop from west to east as the estuarine and outwash deposits thicken. With the exception of the central portion of the Gas Plant Area, the top of the bedrock surface slopes from west to east towards the Seekonk River. Shallow bedrock, approximately five feet below grade, and a bedrock outcrop were observed in the Gas Plant Area.

Previous investigations performed at the site indicate that soil and groundwater have been impacted by the historical operations which took place at the property. Based on the findings of the investigations performed, Method 1 soil exceedances due to the presence of total petroleum hydrocarbons (TPH), certain polycyclic aromatic hydrocarbons (PAHs) and volatile organic compounds (VOCs), and certain inorganic compounds (primarily arsenic and lead) exist at the Site. In addition, exceedances of the Method 1 GB Groundwater Objectives and Upper Concentration Limit (UCL) were noted in isolated areas of the site. Specifically, the presence of light and dense non-aqueous phase liquid (NAPL) was observed in certain site monitoring wells. Dissolved phase exceedances of the GB Groundwater Objectives were limited to two wells (one for naphthalene and one for benzene).

Limited sediment sampling was conducted in 1988 and 1996. Previous sampling locations are shown on Figure 2. In summary, three samples were collected in 1988 and six samples were collected in 1996. PAHs and cyanide were found in sediment collected from near the shoreline of the site. Total PAH concentrations ranged from not detected (in two of the three 1988 samples, SS-2 and SS-3) to 145 mg/kg (in SS-1) in the 1988 samples, and from 24

mg/kg (SED 1) to 3,381 mg/kg (SED 5) in the 1996 sediment samples. Cyanide concentrations along the shoreline ranged from not detected (in SS-3) to 260 mg/kg (in SS-2) in the 1988 samples, to 6 (in SED 1) to 49 mg/kg (in SED 2) in the 1996 samples. Results from SED 6 collected in 1996 on the far side of the river from the site had a total PAH concentration of 20 mg/kg and a cyanide concentration of 0.34 mg/kg.

4. Scope of Work

This initial sediment sampling program is intended to evaluate sediment near the site for MGP-related materials and contaminants from other sources. Identification of MGP-related materials will be conducted based on field observations and on chemical analyses. The data collected during the sediment investigation activities described in this work plan are intended to be of sufficient quality for subsequent use in further site characterization and/or risk assessment activities, if needed.

4.1 Permit

It is anticipated that the work described in this Work Plan will require Rhode Island Coastal Resource Management Council (CRMC) review. Accordingly, National Grid will apply to the CRMC for a Letter of Permission or Finding of No Significant Impact.

4.2 Sediment Field and Laboratory Investigation

The objectives of the field and laboratory investigation are to evaluate Study Area sediment for potential impacts associated with the former Tidewater Facility and other potential contaminant sources. This evaluation includes visual characterization of sediment cores and collecting sediment samples for field characterization and laboratory analyses.

To characterize sediments in the Study Area, a series of sediment cores will be advanced in the Study Area as shown on Figure 2. Core locations were established by placing transects approximately 200 feet apart along the shoreline of the site with 2 to 3 coring locations for each transect. An additional five locations were selected on the far side of the navigational channel from the site to obtain representative information about this area and two locations are proposed upstream from the site to provide an indication of upstream conditions. Sampling locations are also proposed downstream of the site to assess the potential for downstream migration.

In addition, sediment cores will be advanced within the mapped cable and pipeline area shown on available drawings (the subsurface cable and pipeline area location has been mapped on Figure 2). Special care and precaution will be used in association with sampling in this area. Utility mapping will be confirmed prior to advancing cores in this area. Health and safety will take precedence over the scope of work described in this SdIWP and the actual coring locations and samples collected may be adjusted in the field accordingly.



Figure 2 shows preliminary proposed sediment core locations based on the objectives stated above. The majority of cores are proposed to be advanced to depths of 5 feet with the presumption that MGP materials, if present, would likely be observed in this interval. Selected cores were chosen to be advanced to 20 feet or refusal, whichever is first encountered, to provide a preliminary indication of deeper sediment stratigraphy and subsurface conditions. The sampling plan as shown on Figure 2 is intended as preliminary and flexible and may be changed in the field, depending on the actual field conditions that are encountered. If visible oil and/or tar (VOT) are identified or if other evidence of MGP-related materials is observed in cores, such as sheen or odors, additional core locations may be advanced on tighter grid spacing or cores may be advanced to greater depth to better delineate the horizontal and vertical extent of such impacts.

Table 1 includes coordinates for the locations shown on Figure 2 and also includes planned samples and laboratory analyses. Similar to the proposed coring locations, the samples selected for laboratory analyses may be adjusted based on field observations. Samples will not be collected for chemical analyses from intervals containing VOT. If VOT is observed, samples will be collected near the VOT location to characterize the sediment outside of the area of VOT. Table 1 provides a preliminary sampling plan if no VOT are observed. As shown in the Table, the shallow biologically active zone (top six-inch interval) from each core is proposed to be sampled for PAH, metals, cyanide, TOC, and grain size analyses to provide a preliminary characterization of the surface sediment in the Study Area.

Sediment samples will be collected using vibratory core equipment. Sediment coring and sampling will be performed to preliminarily assess the horizontal and vertical extent of potential MGP impacts to the Study Area. Vibratory cores will be collected by suspending a vibrating head from the A-frame from the work boat. The vibratory head has a 3-inch diameter core barrel suspended below it. The head/core barrel apparatus will be lowered on a cable until the core barrel bottom rim contacts the sediment. The core barrel penetrates the sediment by vibrating the core barrel and concurrently pushing the core barrel into the sediment. The sediment in contact with the core barrel lower rim is liquefied and loses strength as a result of contact with the vibrating rim, and the core barrel penetrates into the sediment as relatively intact sediment enters the core barrel interior. The process of sediment coring typically only minimally disturbs sediment structure, so sediment stratigraphy and other details can be observed in the sediment cores.

After the sediment core barrel is penetrated to the target depth, the core barrel is withdrawn and returned to the deck of the work boat where the sediment recovery within the core barrel is measured. Then, the top portion of the core barrel that does not contain sediment is cut off, the ends of the core barrel are sealed, and the top and bottom of the

core are marked on the core barrel. The core is maintained in an upright position until the core is delivered to the processing area.

In the processing area, the core barrel is split vertically into two longitudinal halves. Then, the core is photographed and visually evaluated for sediment type and other physical characteristics. Observations are recorded in a logbook. After the core has been logged, sediment samples are collected and placed in the appropriate laboratory containers.

The intent of the field and laboratory investigation program is to maintain flexibility in the field, should observations in sediment cores indicate a need to modify the program. The sampling grid is intended to allow for moving sample locations or adding samples, based on field observations. Additionally, as indicated on Table 1, portions of selected sediment cores may be archived for subsequent laboratory testing depending on the outcome of initial laboratory testing.

For the sediment coring locations, the depth from the waterline to the sediment surface at the sample location will be measured, and position coordinates recorded using GPS equipment. This information will be recorded in the field logbook or on the onboard computer. The GPS antenna will be located as close as possible to the vibracoring rig.

The following information will be logged for each core:

- penetration distance and general penetration resistance (very stiff, stiff, loose, very loose)
- photograph split sediment core
- log core in accordance with American Society for Testing of Materials (ASTM) Procedure D2487
- VOT will be defined as the presence of oil and/or tar within the sediment pore space, with an estimate of the percentage of sediment pore space that is occupied by the oil/tar
- Collect samples from appropriate depth intervals in core (Table 1).

For this preliminary sediment investigation, samples of the top 6-inches of sediment at each proposed sample location are proposed for laboratory analyses. Samples will also be



collected from most sample locations from depths greater than the top 6 inches and archived for possible later analysis, based on the results from the 0 to 6-inch interval. Proposed archive intervals are the 6 to 12-inch depth interval and in selected 12-inch increments below that. If a change in sediment stratigraphy is observed in the sediment core, the depth of the change will be logged and separate samples will be collected of the different types of material.

In cases where a deeper sediment layer is thicker than 12 inches, the depth interval sampled may be greater than 12 inches. The depth intervals indicated in Table 1 should be considered guidance subject to change based on field observations.

For shallow sediment (within the top foot), the depth intervals sampled will not exceed 6 inches regardless of the homogeneity of the sediment layer – it is standard practice to sample depth intervals of 0 to 6 inches, and 6 to 12 inches (i.e., depths below the top of sediment) to evaluate sediment chemistry in these biologically active zones.

Samples will be analyzed by Alpha Analytical for the following:

- PAHs.
- Grain size
- Total organic carbon
- Total cyanide.
- 13 Priority Pollutant Metals

Samples may be analyzed for additional chemical and/or physical properties based on initial laboratory analyses results and/or field observations.

4.3 Management of Investigation Derived Wastes

Investigation derived waste (IDW) is expected to include sediment, disposable equipment that contacts sediment, cleaning materials, and used personnel protective equipment (PPE). IDW management practices will be implemented by field personnel in the sediment core processing area and on work boats. The following IDW practices will be implemented: During sediment coring activities, a spill control kit will be available on the work boat. The spill control kit will include absorbent materials for removing sheens that might form on

surface water during coring. The area used for sediment core processing will be lined with plastic sheeting to catch spills and drips from the sediment cores. Waste will be segregated into ordinary rubbish and IDW in the sediment processing area. Ordinary rubbish will include cleaned core barrel refuse, paper, plastic, and other non-hazardous waste. IDW will include sediment removed from the core barrels, other oily materials (e.g., soiled rags, sorbents), and decontamination fluids. Ordinary rubbish will be contained in plastic bags or barrels and removed from the site for disposal as non-hazardous solid waste. IDW will be containerized and stored in a secure location at the site for proper disposal.

4.4 Quality Control

Quality Control (QC) samples include duplicate samples, field blanks and additional volume for laboratory control samples (MS/MSD for organics and duplicate and spiked sample for inorganics). QC samples will be prepared and submitted for laboratory analyses on the basis of one duplicate sample and extra volume for laboratory QC at a frequency of one for each 20 field samples submitted. In addition, one field blank for the sampling event will be collected.

5. References

“Seekonk River Pawtucket, Providence, and East Providence, Rhode Island, Condition Survey, 16-Foot Channel”. US Army Corps of Engineers. Concord, Massachusetts. October 12, 2007. 9-sheet drawing set.

<http://waterdata.usgs.gov/nwis/uv?01113895>, United States Geological Survey river gauge data, USGS 01113895 BLACKSTONE R AT ROOSEVELT ST AT PAWTUCKET RI

ARCADIS

Table

**TABLE 1
PROPOSED SEDIMENT CORE LOCATIONS, SAMPLES AND ANALYSES**

**SEDIMENT INVESTIGATION WORK PLAN
FORMER TIDEWATER MGP SITE, PAWTUCKET, RHODE ISLAND**

Core station	Station Location		Core Depth (feet)	Sample Depth (inches)	Laboratory Analyses					
	Northing	Easting			PAHs	TOC	grain size	PACN	13pp metals	archive
1	360070	286780	20	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
2	360370	286430	20	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
3	360520	286330	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
4	360570	286180	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
5	360669	285980	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
6	360669	285779	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
7	360820	284731	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
8	360920	284730	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
9	360770	285580	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
10	360220	286580	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
11	360320	286580	20	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
12	360420	286430	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
13	360620	286180	20	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
14	360620	285980	20	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
15	360720	285780	20	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
16	360720	285580	20	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
17	360820	285480	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
18	361020	284731	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X

**TABLE 1
PROPOSED SEDIMENT CORE LOCATIONS, SAMPLES AND ANALYSES**

**SEDIMENT INVESTIGATION WORK PLAN
FORMER TIDEWATER MGP SITE, PAWTUCKET, RHODE ISLAND**

Core station	Station Location		Core Depth (feet)	Sample Depth (inches)	Laboratory Analyses					
	Northing	Easting			PAHs	TOC	grain size	PACN	13pp metals	archive
19	361020	285430	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
20	360920	285780	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
21	360420	286730	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
22	359870	287180	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
23	359970	287030	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
24	360170	286780	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
25	360470	286430	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
26	360770	286130	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
27	361120	285080	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
28	360820	285330	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
29	360770	285330	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
30	360720	285330	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
31	360720	285130	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
32	360770	285130	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
33	360870	285130	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
34	360920	285030	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
35	360820	285030	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X
				deeper (1-ft)						X
36	360720	285030	5	0-6	X	X	X	X	X	
				6-12						X
				12-18						X

**TABLE 1
PROPOSED SEDIMENT CORE LOCATIONS, SAMPLES AND ANALYSES**

**SEDIMENT INVESTIGATION WORK PLAN
FORMER TIDEWATER MGP SITE, PAWTUCKET, RHODE ISLAND**

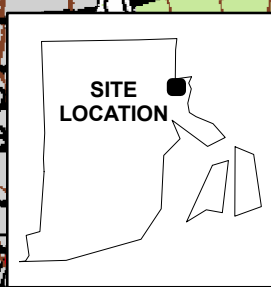
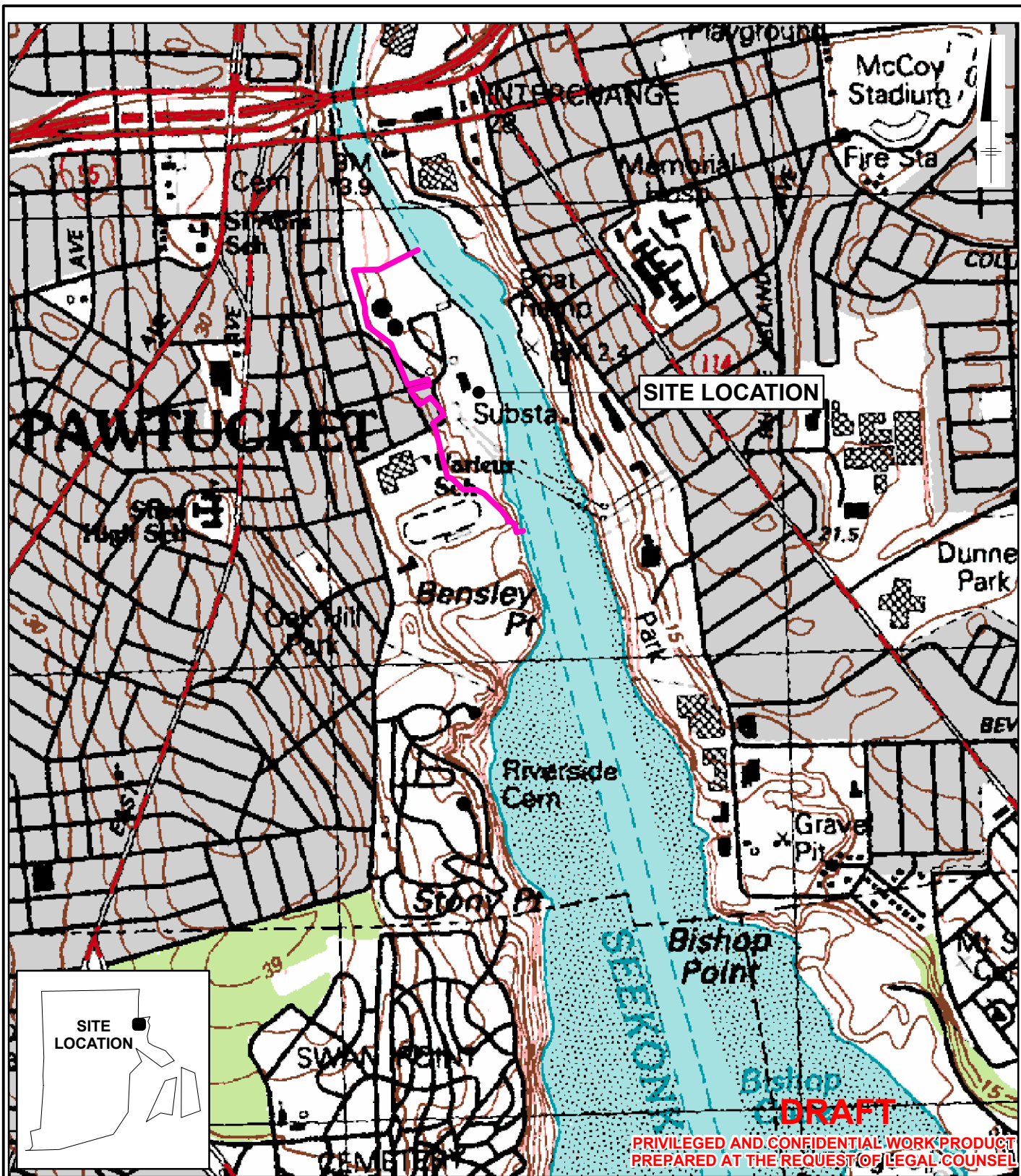
Core station	Station Location		Core Depth (feet)	Sample Depth (inches)	Laboratory Analyses						
	Northing	Easting			PAHs	TOC	grain size	PACN	13pp metals	archive	
				deeper (1-ft)							X
37	360820	284930	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
38	360870	284930	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
39	360920	284930	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
40	360620	286330	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
41	360770	285980	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
42	360870	285580	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
43	360920	285330	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
44	361020	284930	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
45	361121	284730	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
46	361120	284581	5	0-6	X	X	X	X	X		
				6-12							X
				12-18							X
				deeper (1-ft)							X
Total native samples					46	46	46	46	46		
QC					10	6	0	10	10		
Total samples					56	52	46	56	56		

Notes:

- Sample depths and laboratory analyses are subject to change based on field observations. Intervals with observed VOT will not be sampled for chemical analysis.
- Additional cores may be advanced, observed, photographed and logged, with no samples for chemical analysis collected, especially to define the extent of VOT.
- If VOT is observed, the next deepest sample interval with no VOT may be collected for chemical analysis.
- Additional samples may be collected from cores and analyzed or archived based on visual observations of the cores while in the field
- Field work will also include visual observation of the tidal flats south of the site at low tide for VOT.
- Northing and Easting are provided in NAD83 RI State Plane.
- Laboratory analyses key:
 - PAHs using EPA Method 8270
 - TOC using EPA Method 9020
 - Grain size analyses (mechanical only)
 - Physiologically available cyanide
 - 13 Priority Pollutant Metals using EPA Methods
 - Samples from deeper intervals will be collected in 1 foot increments and archived for potential analysis

ARCADIS

Figures



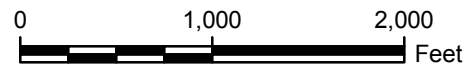
DRAFT
 PRIVILEGED AND CONFIDENTIAL WORK PRODUCT
 PREPARED AT THE REQUEST OF LEGAL COUNSEL

LEGEND:

SITE BOUNDARY

NOTE:

1. USGS QUADRANGLE DOWNLOADED FROM THE UNIVERSITY OF RHODE ISLAND'S DIGITAL IMAGERY SERVER AT <http://ortho.edc.uri.edu/>



GRAPHIC SCALE

TIDEWATER
 PAWTUCKET, RHODE ISLAND
SEDIMENT INVESTIGATION WORK PLAN

SITE LOCATION



FIGURE
1

CITY: SYR DIV/GROUP: AIT DB: KEW PM: HD
Tidewater (0036687.000.0000.0000)
C:\Tidewater\pawtucket\Sediment\WIP\mxd\SampleLocations.mxd - 7/2/2008 @ 1:14:21 PM



LEGEND:

- FORMER 1988 SEDIMENT SAMPLING LOCATION
- FORMER 1996 SEDIMENT SAMPLING LOCATION
- PROPOSED SEDIMENT CORE LOCATIONS**
- 20' OR REFUSAL
- 5' OR REFUSAL
- SITE BOUNDARY
- 16-FOOT CHANNEL
- ▨ CABLE AND PIPELINE AREA

NOTE:

- 1997 IMAGERY DOWNLOADED FROM THE UNIVERSITY OF RHODE ISLAND'S DIGITAL IMAGERY SERVER AT <http://ortho.edc.uri.edu/>

0 200 400
Feet
GRAPHIC SCALE

TIDEWATER
PAWTUCKET, RHODE ISLAND
SEDIMENT INVESTIGATION WORK PLAN

SEDIMENT CORING LOCATIONS

July 1,, 2008
File No. 43654.00



Mr. Thomas Medeiros, P.E.
Coastal Resources Management Council
4808 Tower Hill Road, Suite 3
Wakefield, Rhode Island 02879

Re: Application for Letter of Permission/Finding of No Significant Impact
Sediment Coring
Tidewater Manufactured Gas Plant (MGP)
& Pawtucket No. 1 Power Station Site
Pawtucket, Rhode Island

530 Broadway
Providence
Rhode Island
02909
401-421-4140
FAX 401-751-8613
www.gza.net

Dear Mr. Medeiros:

This application is submitted by GZA GeoEnvironmental Inc. (GZA) on behalf of our client, Narragansett Electric Company d/b/a National Grid (National Grid), and pursuant to the requirements of the Coastal Resources Management Program.

National Grid is seeking approval to conduct sediment coring in the Seekonk River adjacent to the former Tidewater Manufactured Gas Plant (MGP) and the Pawtucket No. 1 Power Station Site. This location of the Site is shown on the Locus Plan provided by Arcadis (Figure 1), with the delineated site encompassing portions of the following properties:

Owner of Record	Plat	Lot
The Narragansett Electric Company	65B	645
	65B	662
	65B	649
	65B	647
	54B	826

The locations of these properties are shown in the attached copies of the above-listed Plats. As you advised during our recent telephone conversation, we have attached a completed application for State Assent for the site. However, there will be no investigative activities performed on the site itself; only the processing of sediment samples collected from the Seekonk River. As you requested, the following paragraphs describe the proposed activities in the Seekonk River and the limited activities proposed to be conducted on this site within 200 feet of the river. We are hopeful that a Letter of Permission will be issued for the proposed activities in the Seekonk River.

Project Description

Sediment coring will be performed in the the Seekonk River, adjacent to the Tidewater MGP site. The CRMC has designated this portion of the Seekonk River as Type 4, "Multi Purpose Waters." According to the CRMC, these waters are "(1) large expanses of open water in Narragansett Bay and the Sounds which support a variety of commercial and recreational



activities while maintaining good value as a fish and wildlife habitat; and (2) open waters adjacent to shorelines that could support water dependant commercial, industrial, and/or high-intensity recreational activities.”

Samples will be collected at the approximate locations shown on the “Sediment Coring Locations” plan provided (GZA Figure 1).

Sediment coring will be conducted from a small work boat 24 feet in length or less, with less than a 2 foot draft. In shallow water, samples will be collected at high tide to minimize the potential for grounding. If anchoring is necessary, the work boat will use a typical small-boat anchor. The boat will be launched from a public dock on the opporsite shoreline (Massachusetts) of the Seekonk River.

Sediment cores will be collected in 3-inch diameter aluminum or lexan core barrels. The cores, attached to a vibrating head, will be vibrated to a depth of 2 to 10 feet below the river bottom. If the bottom is soft, the core barrel may be pushed to the target depth. The barrel is removed from the bottom with a small winch, with the hole closing upon removal of the core barrel. A spill control kit will be available on board to removal any sheens that may form on the surface during coring.

The core samples will be processed on land, adjacent to the shoreline, within the CRMC’s 200-foot jurisdictional limit. The sediment processing area will be lined with a plastic tarpaulin to catch spills and drips, and a spill control kit will be available in the sediment processing area.

Waste will be sorted, and then removed off site. General refuse (cleaned core barrel refuse, paper, plastic, non-hazardous wastes) will be placed into plastic bags or barrels, and then disposed of off-site as non-hazardous waste. Investigation derived wastes (sediment removed from core barrels, soiled rags, sorbents) will be collected separately and disposed of off-site in a manner consistent with its classification. General refuse and waste will be removed from the work site at the end of each work day.

Approximately 35 to 45 samples will be collected. The majority of samples will be taken within 50 feet of the shoreline. Several samples will be taken at distances of 100 and 200 feet from shore. The proposed work is projected to take 2 to 3 weeks, with an estimated start date of July 7, 2008.

Based on the project scope, we believe that the proposed work remains consistent with the activities described in the Coastal Resources Management Program, and as such, the applicant is requesting a Letter of Permission.

Property ownership documentation is available in CRMC Permit #A2007-03-014 issued March 14, 2007 for activities performed on the Tidewater site itself.

Four copies of the following information are provided for your review:

1. Completed application form from National Grid;
2. Application fee check of \$500.00 (EPC = \$40,000);
3. Site location map;

4. Site figure depicting proposed activities;
5. Photograph of the coastal feature.

Should you have any questions or require additional information, please do not hesitate to contact Igor Runge at (401) 421-4140. Thank you for your attention to this matter.

Very truly yours,



GZA GeoEnvironmental, Inc.

A handwritten signature in blue ink, appearing to read "A. Harvey".

Angela L. Harvey, E.I.T.
Project Engineer

A handwritten signature in blue ink, appearing to read "Igor Runge".

Igor Runge, PhD., P.H.
Project Manager

A handwritten signature in blue ink, appearing to read "John P. Hartley".

John P. Hartley
Project Reviewer

Enclosures:

JPH/IR:tja

cc: Michele Leone, National Grid

J:\ENV\43654.MSK\SEDIMENT SAMPLING\CRMC APPLICATION\SED SAMPLING NARRATIVE.DOC

Abutters List – Sediment Sampling
Former Tidewater MGP Site
Pawtucket, Rhode Island

Plat	Lot	Owner(s)	Property Address	Mailing Address
54B	827	NF City of Pawtucket	486 Pleasant Street	137 Roosevelt Avenue Pawtucket, RI 02860
65B	594	NF City of Pawtucket, Max Read Field	486 Pleasant Street	137 Roosevelt Avenue Pawtucket, RI 02860
65B	646	NF City of Pawtucket, Max Read Field	486 Pleasant Street	137 Roosevelt Avenue Pawtucket, RI 02860
65B	650	NF City of Pawtucket, Max Read Field	486 Pleasant Street	137 Roosevelt Avenue Pawtucket, RI 02860
65B	644	NF City of Pawtucket, Francis J. Varieur Elementary School	486 Pleasant Street	137 Roosevelt Avenue Pawtucket, RI 02860
65B	613	NF Carline Claude Hilaire	24 Thornton Street	24 Thornton Street Pawtucket, RI 02860
65B	614	NF Jose A. and Erika L. Rodriguez	22 Thornton Street	22 Thornton Street Pawtucket, RI 02860
65B	615	Raymond P. Adam Jr.	20 Thornton Street	20 Thornton Street Pawtucket, RI 02860
65B	616	Bank of New York	14 Thornton Street	1080 Main Street Pawtucket, RI 02860
65B	648	NF City of Pawtucket, Max Read Field	486 Pleasant Street	137 Roosevelt Avenue Pawtucket, RI 02860

NF = Now or formerly of

Abutters' information (names and property addresses) obtained on June 25, 2008 from "Pawtucket, RI: Assessor's Database." Mailing addresses obtained on June 25, 2008 from the City of Pawtucket Tax Assessor's Office.

C R M C

COASTAL RESOURCES MANAGEMENT COUNCIL

Stedman Government Center; 4808 Tower Hill Road, Wakefield, RI 02879
(401)783-3370

Application for State Assent to perform work regulated by the provisions of Chapter 279 of the Public Laws of 1971 Amended.

Thornton St., Pleasant St., Tall St. Location No. Street City/Town Pawtucket			File No. 43654
Owner's Name National Grid	Plat No. 54B	645, 649, 647, 662 Lot No. 826	
Mailing Address 25 Research Drive City/Town Westborough State MA Zip Code 01532			Res. Tel. # Bus. Tel. # 508-389-4296
Contractor RI Lic. #	Address		Tel. No.
GZA GeoEnvironmental, Inc.	530 Broadway, Providence,		
Designer	Address Rhode Island 02903		Tel. No. 401-421-4140
Name of Waterway Seekonk River	Est. Project Cost \$ 40,000	Fee/Costs \$ 500	

Have you or any previous owner filed an application for and/or received an assent for any activity on this property?
(If so please provide the file and/or assent numbers). Lot 41: #2006-03-081, #2007-03-14,
#2006-03-081; Lot 647: #2006-03-081; Lot 662: #2006-03-081;

Lot 236: #2006-03-081, #2006-05-040

IS THIS APPLICATION BEING SUBMITTED IN RESPONSE TO A COASTAL VIOLATION? YES NO
IF YES, YOU MUST INDICATE NOV OR C&D NUMBER _____

Name and Addresses of adjacent property owners whose property adjoins the project site. (Accurate addresses will ensure proper notification.)

See attached "Abutter's List, Sediment Sampling".

I hereby certify that the names and addresses of adjacent property owners whose property adjoins the project site are accurate and current as of the date of application. If said names and addresses are found to be not accurate and/or current, any subsequent Assent may become Null and Void.

Signed: [Signature]

Describe accurately the work proposed. (A brief description must be provided below; however, additional sheets may be provided if necessary and attached to this form.)

National grid is seeking approval to conduct Sediment coring in the Seekonk River adjacent to the former Tidewater Manufactured Gas Plant (MGP) and the Pawtucket No. 1 Power Station site. Sediment cores will be collected via a work boat and then processed on land. Disturbance to any shoreline features will be minimal.

[Signature]
Owner's Signature

NOTICE: The applicant acknowledges by evidence of their signature that they have reviewed the Rhode Island Coastal Resources Management Program, and have, where possible, adhered to the policies and standards of the program. Where variances or special exceptions are requested by the applicant, the applicant will be prepared to meet and present testimony on the criteria and burdens of proof for each of these relief provisions. The applicant also acknowledges by evidence of their signature that to the best of their knowledge the information contained in the application is true and valid. If the information provided to the CRMC for its review is inaccurate or did not reveal all necessary information or data, then the permit granted under this application may be found to be null and void. Applicant requires that as a condition to the granting of this assent, members of the CRMC or its staff shall have access to the applicant's property to make on-site inspections to insure compliance with the assent. This application is made under oath and subject to the penalties of perjury.

STATEMENT OF DISCLOSURE AND APPLICANT AGREEMENT AS TO FEES

The fees which must be submitted to the Coastal Resources Management Council are based upon representations made to the Coastal Resources Management Council by the applicant. If after submission of this fee the Coastal Resources Management Council determines that an error has been made either in the applicant's submission or in determining the fee to be paid, the applicant understands that additional fees may be assessed by the Coastal Resources Management Council. These fees must be paid prior to the issuance of any assent by the Coastal Resources Management Council.

The applicant understands the above conditions and agrees to comply with them.

M. Leone
Signature

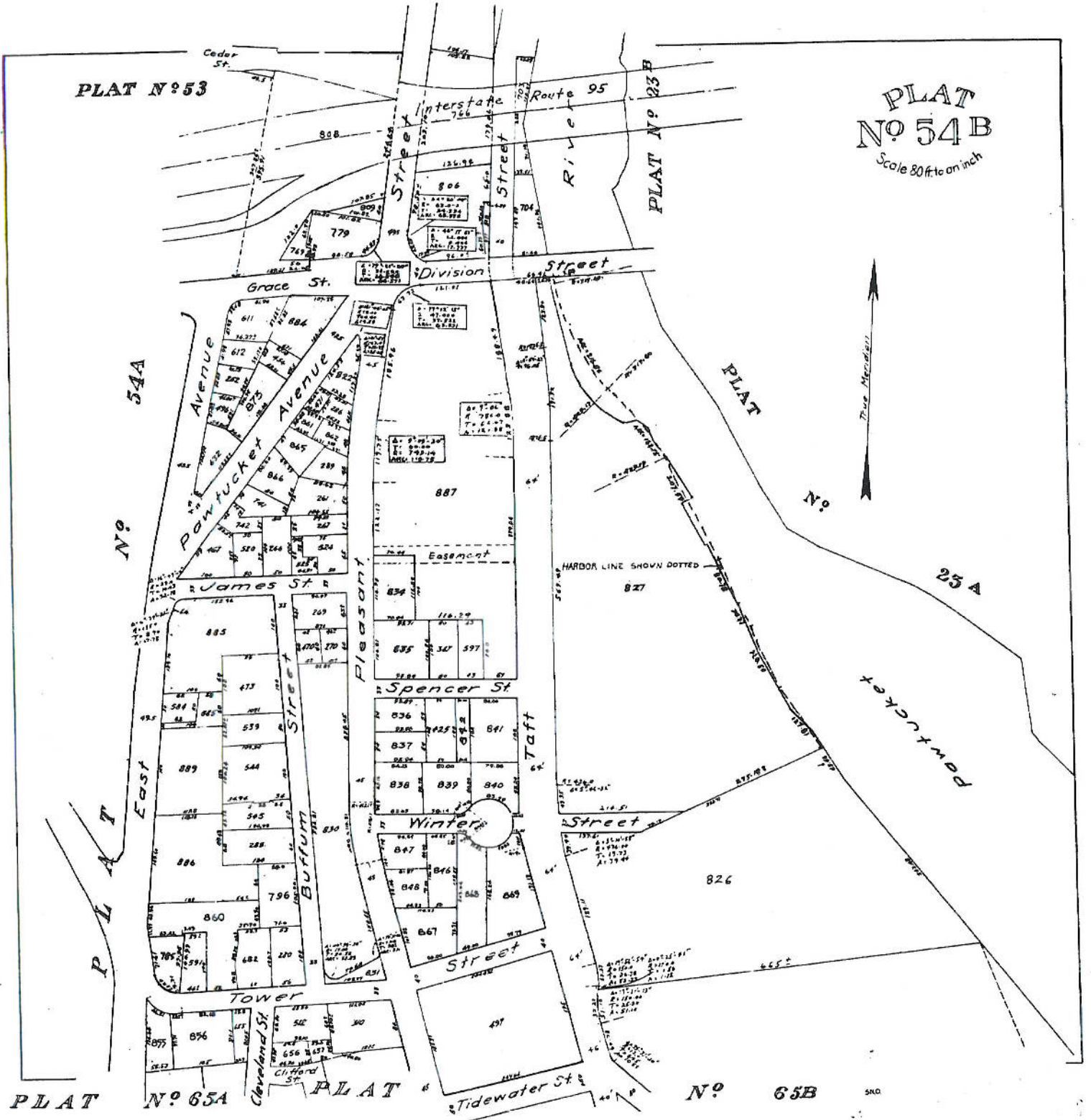
06/30/2008
Date

MICHAEL V. LEONE, 25 RESEARCH DR, WESTBORO, MA 01581
Print Name and Mailing Address

PLAT N^o 53

PLAT N^o 54B

Scale 80 ft. to an inch





PLAT No 65A

54B

PLAT No 65B

Scale 80ft to an inch

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No 65A Street

Harvey St

Rhodes St

Clyde St

Manning St

Cleveland St

Lyman St

Shoreham Court

PLAT No 66B

644

594

662

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PLAT No 67B

River

Pawtucket

Easement

Easement

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Encroachment

Encroachment

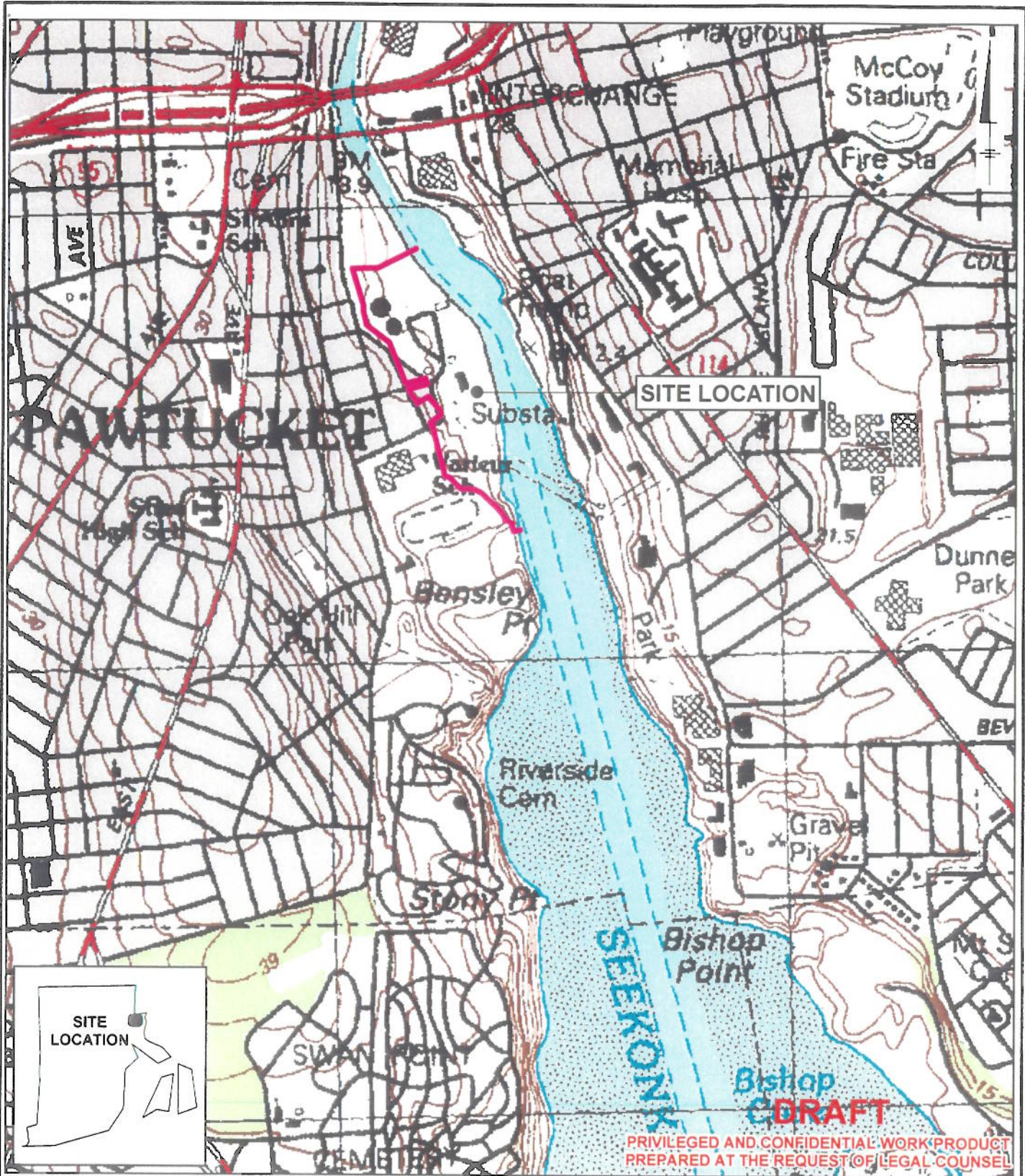
Encroachment

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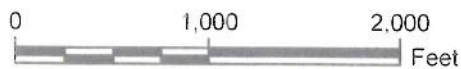


LEGEND:

 SITE BOUNDARY

NOTE:

1. USGS QUADRANGLE DOWNLOADED FROM THE UNIVERSITY OF RHODE ISLAND'S DIGITAL IMAGERY SERVER AT <http://ortho.edc.uri.edu/>



GRAPHIC SCALE

PRIVILEGED AND CONFIDENTIAL WORK PRODUCT
PREPARED AT THE REQUEST OF LEGAL COUNSEL

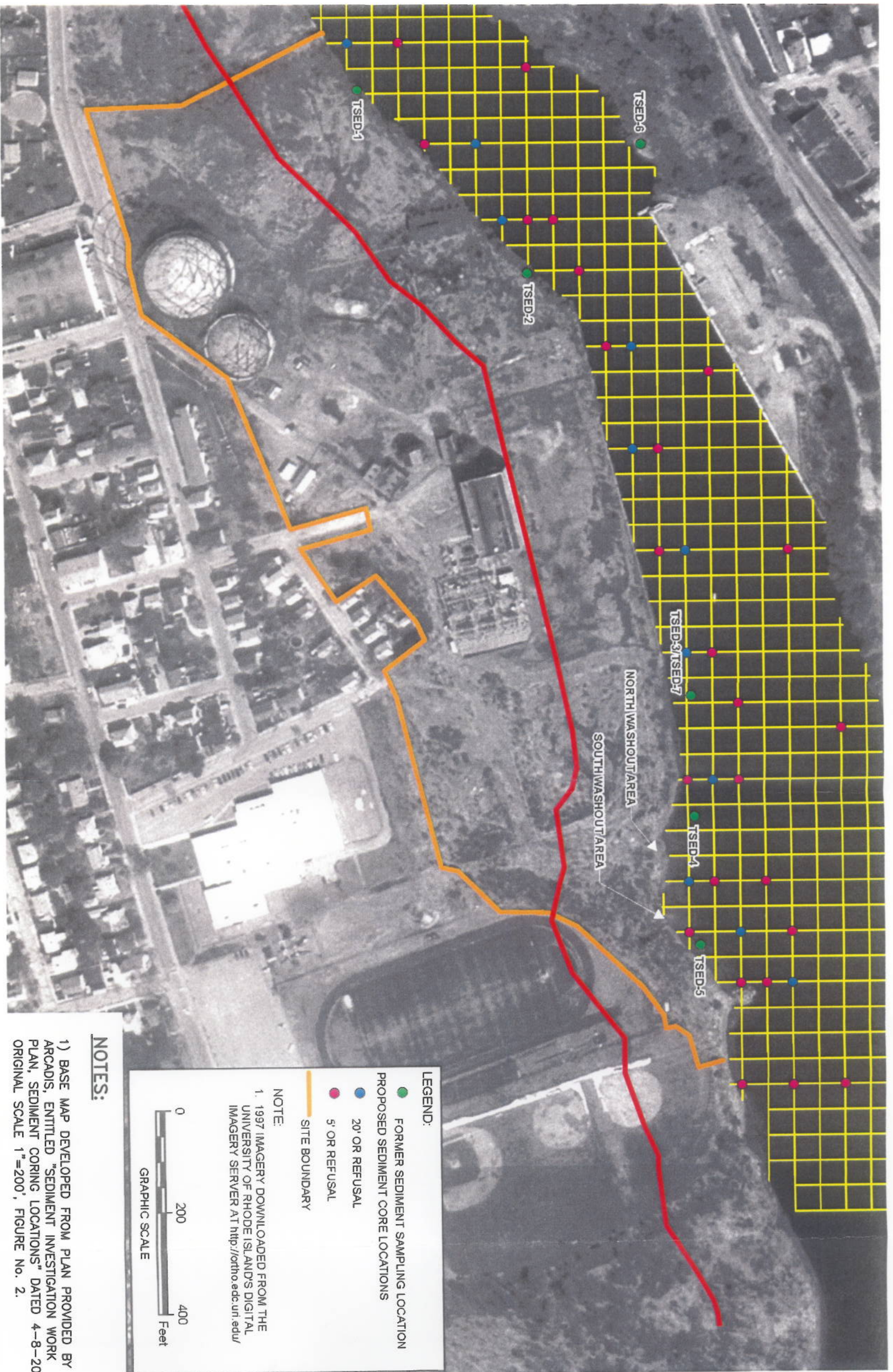
TIDEWATER
PAWTUCKET, RHODE ISLAND

SEDIMENT INVESTIGATION WORK PLAN

SITE LOCATION








FIGURE
1



LEGEND:
 200 FOOT RIVER BANK LINE

LEGEND:

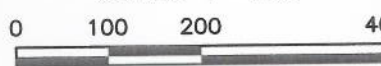

-  FORMER SEDIMENT SAMPLING LOCATION
-  PROPOSED SEDIMENT CORE LOCATIONS
-  20' OR REFUSAL
-  5' OR REFUSAL
-  SITE BOUNDARY

NOTE:
 1. 1997 IMAGERY DOWNLOADED FROM THE UNIVERSITY OF RHODE ISLAND'S DIGITAL IMAGERY SERVER AT <http://ortho.edc.uri.edu/>

GRAPHIC SCALE
 0 200 400 Feet

NOTES:

- 1) BASE MAP DEVELOPED FROM PLAN PROVIDED BY ARCADIS, ENTITLED "SEDIMENT INVESTIGATION WORK PLAN, SEDIMENT CORING LOCATIONS" DATED 4-8-2008, ORIGINAL SCALE 1"=200', FIGURE NO. 2.
- 2) THE LOCATION OF THE SUPERIMPOSED 200 FOOT LINE IS APPROXIMATE ONLY.

<p>TIDEWATER SEDIMENT CORING WORK PLAN PAWTUCKET, RHODE ISLAND</p>		REV. NO.	DESCRIPTION	BY	DATE
		<p>SCALE: 1"=200'</p> 		PROJ MGR: IR DESIGNED BY: AH REVIEWED BY: AH	OPERATOR: CB DATE: 6-26-08
<p>SEDIMENT CORING LOCATIONS</p>				<p>GZA GeoEnvironmental, Inc. Engineers and Scientists 530 BROADWAY PROVIDENCE, RI 02909</p>	
JOB NO.	43654.05				
FIGURE NO.	1				



Photograph of Coastal Feature: Seekonk River in the vicinity of the former Tidewater MPG site.

43654

186106

GZA GeoEnvironmental, Inc.
ONE EDGEWATER DR.
NORWOOD, MA 02062

KEYBANK NATIONAL ASSOCIATION
SALT LAKE CITY, UTAH 84115
31-300-1243

CHECK DATE June 25, 2008

PAY Five Hundred and 00/100 Dollars

AMOUNT \$500.00

TO CRMC

NOT VALID IN EXCESS OF \$10,000 UNLESS COUNTERSIGNED

David Brown MP

⑈ 186106 ⑈ ⑆ 124303007⑆ 440991900109⑈