

February 1, 2010  
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: *Short-Term Response Action Summary Report*  
Former Tidewater Facility  
Pawtucket, Rhode Island  
RIDEM Case No. 95-022

Dear Mr. Martella:

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

On behalf of The Narragansett Electric Company d/b/a National Grid (National Grid), GZA GeoEnvironmental, Inc. (GZA) is pleased to present to the Rhode Island Department of Environmental Management (RIDEM) this *Short-Term Response Action Summary Report (STRASR)* for the former Tidewater Facility located in Pawtucket, Rhode Island (herein referred to as the "Site"). This report describes remedial activities related to a sheen outbreak area, conducted in accordance with GZA's *Short Term Response Action Plan (STRAP)* dated December 4, 2009 and has been prepared in accordance with Rule 6.09 of the RIDEM's *Rules and Regulation for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations)* dated February 2004. A Site Locus is presented as Figure 1. Note that a State Assent for the capping work was received from the Rhode Island Coastal Resource Management Council (CRMC) prior to construction.

This STRASR is subject to the Limitations included as Appendix A.

## **PROJECT OBJECTIVE**

The remedial actions described in this report were completed to address a sheen outbreak area recently observed along a limited portion of the Seekonk River adjacent to the Former Gas Plant Area of the Site. The observation of this sheen warranted response actions prior to completion of the *Site Investigation Report* and preparation of a *Remedial Action Work Plan* for the remainder of the property, as required by Section 6 of RIDEM's Remediation Regulations.

## **BACKGROUND**

This Site was the location of the former Tidewater Manufactured Gas Plant (MGP) and the former 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.

The Site consists of approximately 28 acres located on the western bank of the Seekonk River in Pawtucket, Rhode Island. Prior investigations have termed the Site as being comprised of four principal areas:

- The Former Gas Plant Area – Plat 65B, Lot 662 (6 acres);
- The Former Power Plant Area – Plat 65B, Lot 645 (9.5 acres);

- The South Fill Area – Plat 65B, Lots 649 (1.0 acre), 647 (1.5 acres), 648 (2.5 acres) and Plat 67B, Lot 11 (1.1 acres); and
- The North Fill Area – Plat 54B, Lot 826 (6 acres).



A multi-colored sheen had been periodically observed since it was first observed by GZA in late October 2009 on the water surface of the Seekonk River adjacent to the Former Gas Plant Area, apparently emanating from an approximate 30-ft length of river bank, as shown on Figure 2. This sheen appeared prior to low tide and dissipated after low tide. The presence of the sheen constitutes a release as defined per Section 3.54 of RIDEM's Remediation Regulations.

Upon discovery of the sheen, National Grid provided verbal and written notification to RIDEM. In addition, National Grid provided verbal notification to the National Response Center, Local Emergency Response Commission/Pawtucket Fire Department and State Emergency Response Commission. The United States Coast Guard was notified by the National Response Center, who in turn contacted National Grid. Oil containment booms were installed in the Seekonk River, along the shoreline where the sheen was observed approximately 50-feet north of the sheen area to approximately 50-feet south of the sheen area during the week of October 18, 2009. In addition to the oil containment booms, oil snares were placed on the inside of the booms to absorb additional sheens that may not be collected by the booms. The location of the installed boom system relative to the shoreline and observed sheen area is shown on Figure 2.

Prior to implementation of the STRAP, GZA performed weekly Site visits at various tidal stages to further observe and document the sheen and perform any required maintenance of the boom system. During these weekly visits, the sheen area has been observed to be limited to the approximate 30 foot length shown on Figure 2.

In an effort to install a more effective interim remedy, National Grid received RIDEM approval to install a temporary cap over the shoreline in the affected area. The purpose for the temporary cap is to limit the migration of sheen materials into the Seekonk River and limit potential exposure of the aquatic environment to sheen materials. The cap is intended to be temporary and will remain in place until the final Site remedy is selected and implemented. National Grid is currently completing a *Site Investigation Report* (SIR) for the Site. As part of the SIR, soil explorations will be conducted in the area adjacent to the observed sheen and appropriate long-term remedial steps will be recommended at the completion of the investigation.

## **RESPONSE ACTIONS COMPLETED**

The following sections present a description of the completed temporary cap installed to address the sheen observations. As described previously, a more permanent remedy will likely be included as part of SIR currently being performed for this Site. Photographs of cap construction are provided in Appendix B. The location of the installed cap is shown on Figure 2.

### Temporary Cap Location and Cross Section

The temporary cap was installed in the area of the sheen and extends from the top of the bank to the river, to the elevation on the bank where the waterline contacts the bank near the time of low tide. The cap is approximately 50 feet long (measured parallel to the shoreline) and extends from

the top of the riverbank bank slope to approximately 1 foot below the water surface at low tide. As such, the total width of the cap varies from approximately 10 to 25 feet based on field conditions. A typical cap cross section is provided as Figure 3.



The temporary cap was installed between December 15 and 17, 2009, and was completed in general accordance with the December 4, 2009 STRAP. In summary, the temporary cap consists of the following, from top layer to bottom layer:

- An armor layer constructed from 8-foot by 8-foot armor mats, to retain underlying cap materials in place. Under the submerged edge of the armor layer, a sorbent boom was attached with a cable to the toe of the mattresses installed closest to the water and oriented parallel to the shoreline. The armor layer was secured to the top of the bank as required to prevent sliding of the armor mats on the bank. A minor deviation occurred at the northern water-side corner of the slope. Due to the presence of several large stones that were unable to be removed from the toe of the slope with the on-site equipment, the RCM and armor mattresses were unable to reach to design elevation near the low tide water line. The two affected RCM and armor mattress units were placed as far down the slope as possible, hard up against the stones, as seen Photograph 10. An additional deviation from the STRAP involved substituting an alternative approach for anchoring of the armor mats at the top of the bank. Rather than anchored at the top of the bank using bin blocks, armor mats were anchored by extending the mats over the top of the bank. Extending the mats provides a combination of additional mass and surface area/friction that resists potential sliding of the cap and therefore substitutes for the bin blocks. These deviations from the design proposed in the STRAP are not expected to affect the cap performance.
- Under the armor layer, reactive core mats (RCM), constructed from two geotextile layers enclosing an approximately ½-inch thick layer of organoclay to provide capacity to absorb the sheen before it forms on sediment or surface water.
- Under the RCM a thin layer of sand (approximately 12 inches thick) was placed to form a smooth surface for the RCM to be placed upon. Bulk organoclay was mixed with the sand in the vicinity of the sheen outbreak to provide additional capacity to absorb sheen materials.

Prior to placing the sand/organoclay layer, large boulders/rocks were removed to level out the bank area. Site preparation included limited clearing of vegetation along a path to the top of the bank to accommodate construction equipment working at the top of the bank. Note that clearing was limited to accommodate accessing the bank for placing the cap.

Minor sheens were observed on the water at the bottom of the bank during cap construction, as indicated in attached photographs. The sheens were observed within the boom system that had been installed at the site. The boom system remained in place during construction, and sheens were not observed to migrate beyond the boom.

The cap will be inspected periodically to ensure the cap is functioning as intended and to ensure that the cap is not subject to erosion.

We trust the information presented in this letter report meets your current needs. If you have any questions or need additional information, please feel free to contact either of the undersigned at 401-421-4140 or Michele Leone from National Grid at 781-907-3651.

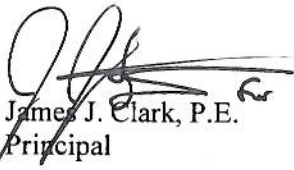


Very truly yours,

GZA GEOENVIRONMENTAL, INC.

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

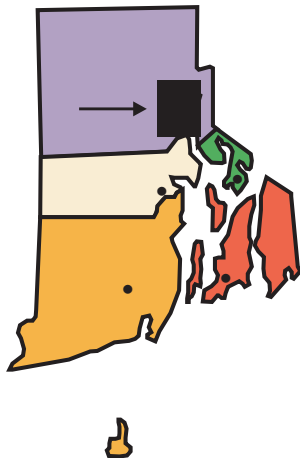
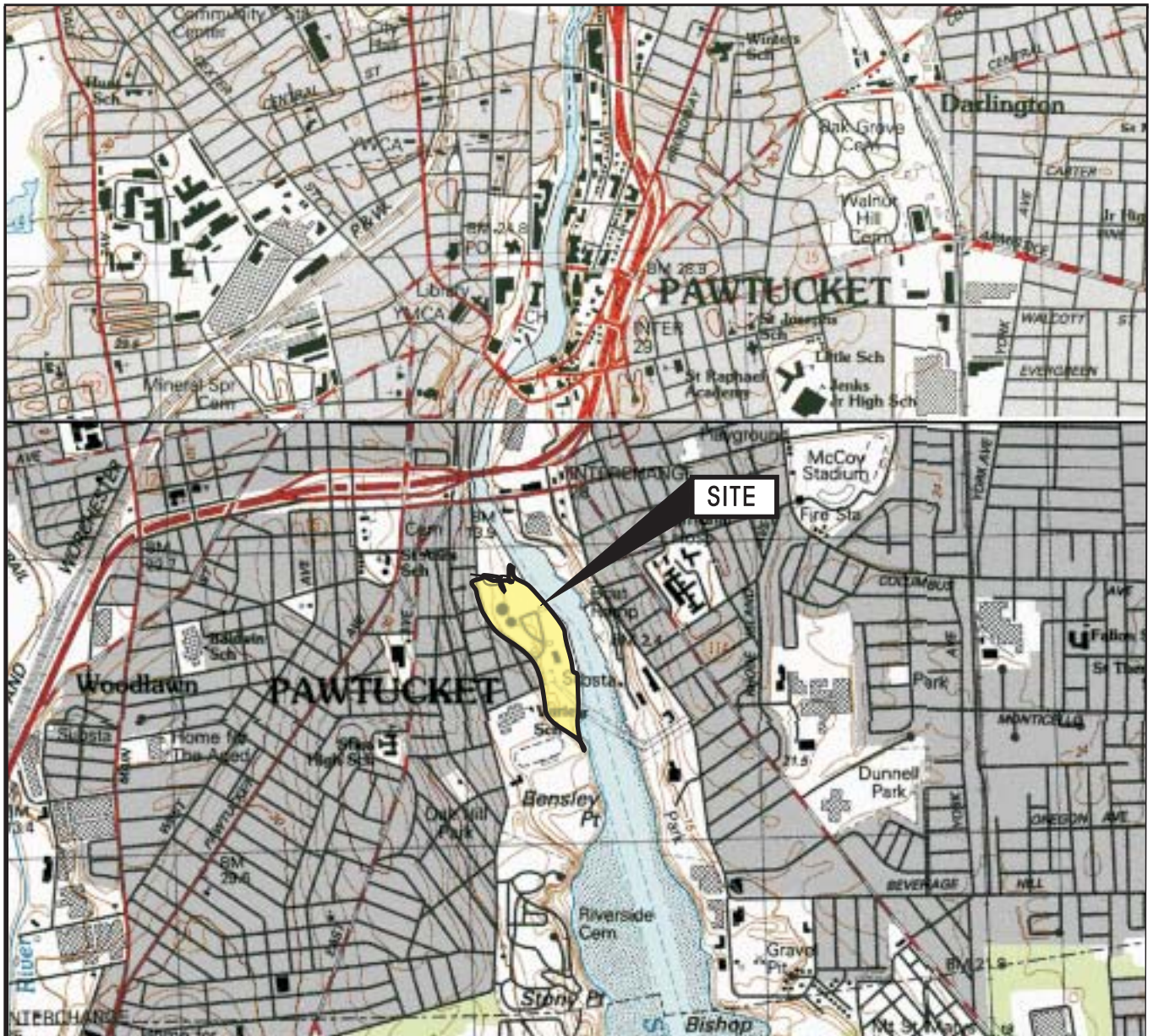
  
John P. Hartley  
Project Reviewer

  
James J. Clark, P.E.  
Principal

MSK/JJC:tja

Attachments: Figures 1 through 3  
Appendix A – Limitations  
Appendix B – Photographs

Cc: Michele Leone, National Grid  
Mark Malhoney, Ancor QEA, LLC



FROM USGS PROVIDENCE, RI QUADRANGLE MAP  
 (DIGITAL TOPOGRAPHIC MAPS PROVIDED BY MAPTECH, INC.)  
 (CONTOUR ELEVATIONS ARE IN METERS ABOVE NGVD, AT 3 METER INTERVALS)

APPROXIMATE SCALE IN FEET



TIDEWATER FACILITY

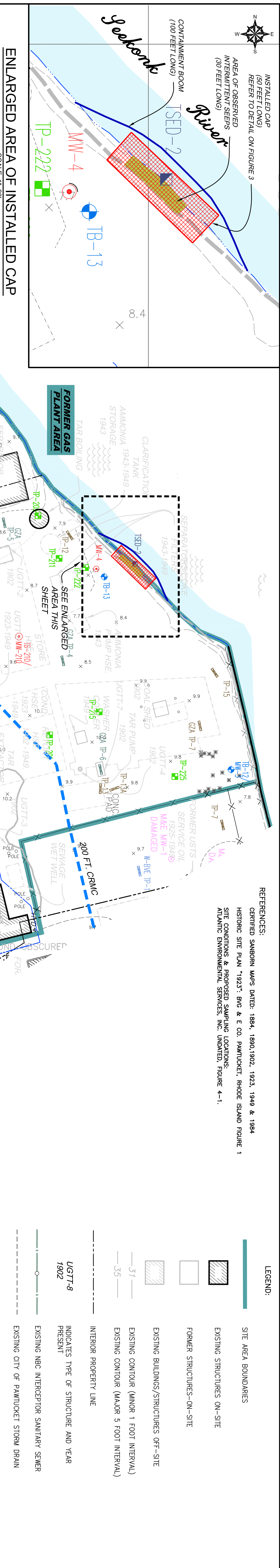
PAWTUCKET  
 RHODE ISLAND

# LOCUS PLAN

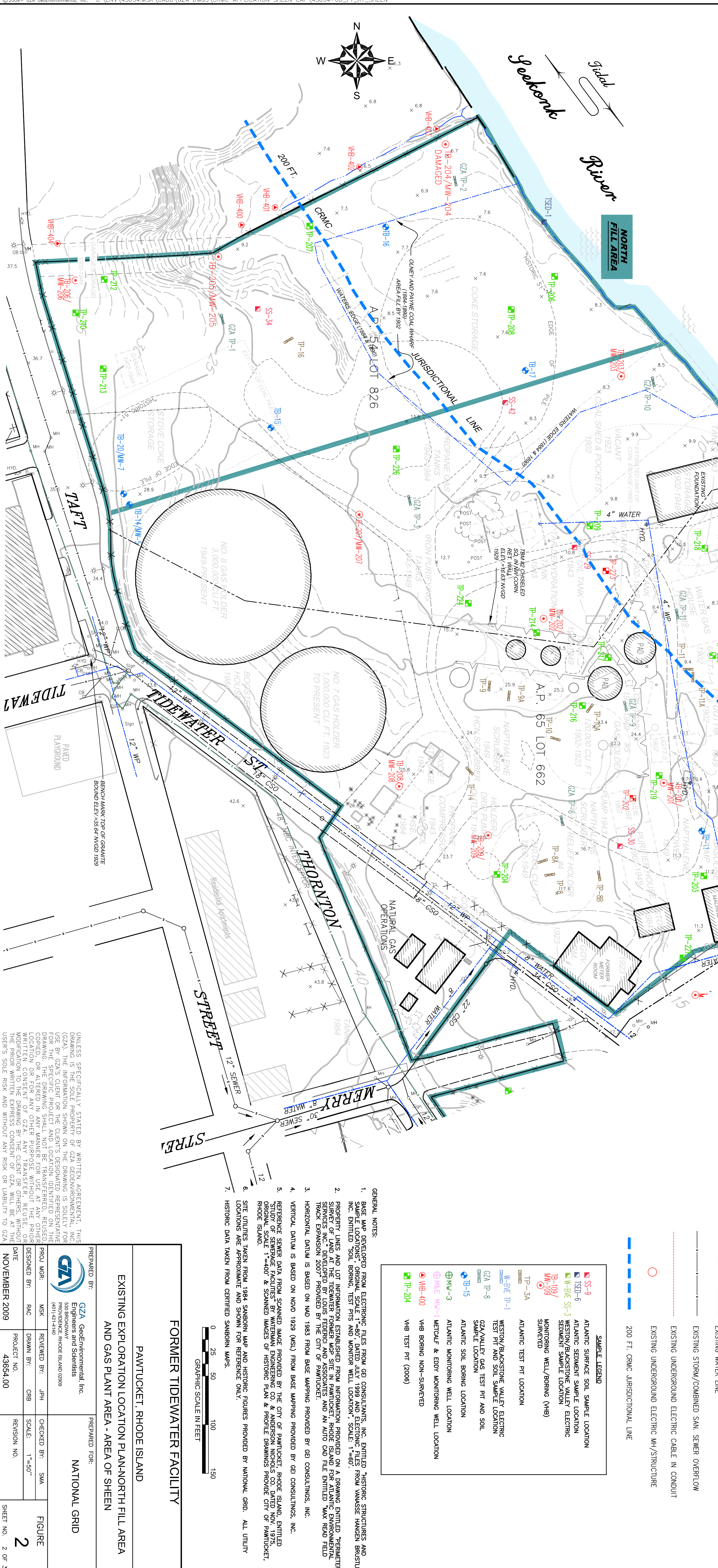
JANUARY 2007

FIGURE NO. 1

Sheet Monday, January 25, 2010 10:09:26 AM CHRISTOPHER DAVIS Plotted Friday, January 29, 2010 11:17:43 AM Christopher Doss



### ENLARGED AREA OF INSTALLED CAP SCALE: 1"=20'



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- REFERENCES:
- CERTIFIED SANBORN MAPS DATED: 1894, 1900/1902, 1923, 1949 & 1984
  - HISTORIC SITE PLAN "1923" BNG & E CO. PAWTUCKET, RHODE ISLAND FIGURE 1
  - SITE CONDITIONS & PROPOSED SAMPLING LOCATIONS: ATLANTIC ENVIRONMENTAL SERVICES, INC. UNDATED, FIGURE 4-1-1.

**LEGEND:**

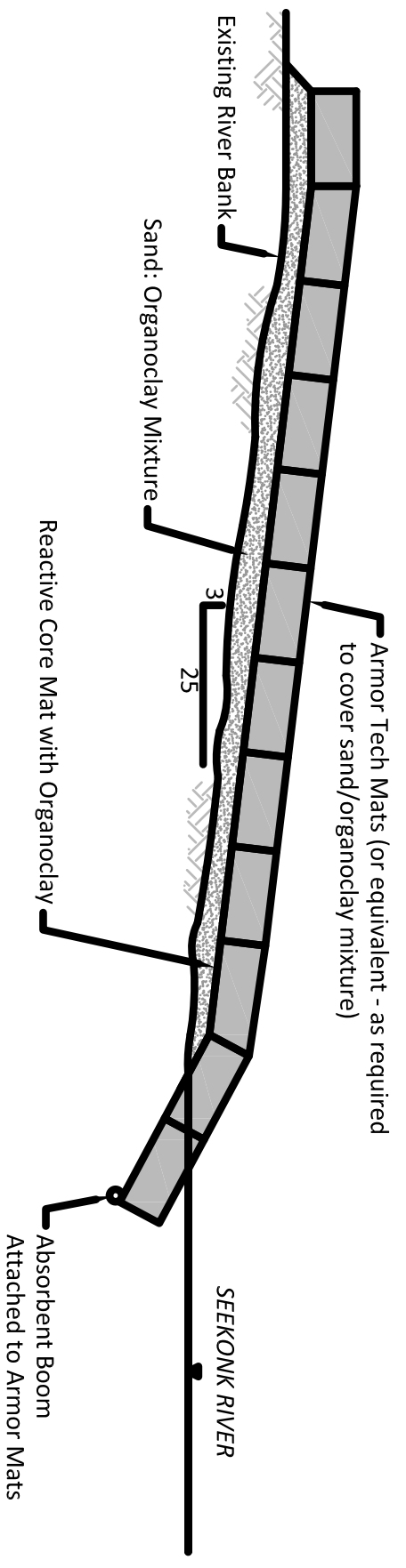
- SITE AREA BOUNDARIES
- ▢ EXISTING STRUCTURES ON-SITE
- ▢ EXISTING STRUCTURES-OFF-SITE
- - - EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- - - EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- INTERIOR PROPERTY LINE
- UGTT-8 1902 INDICATES TYPE OF STRUCTURE AND YEAR PRESENT
- EXISTING NRC INTERCEPTOR SANITARY SEWER
- EXISTING CITY OF PAWTUCKET STORM DRAIN
- EXISTING WATER LINE
- EXISTING STORM/COMBINED SAN. SEWER OVERFLOW
- EXISTING UNDERGROUND ELECTRIC CABLE IN CONDUIT
- EXISTING UNDERGROUND ELECTRIC WIRE/STRUCTURE
- 200 FT. CRMIC JURISDICTIONAL LINE

- SAMPLE LEGEND**
- SS-9 ATLANTIC SURFACE SOIL SAMPLE LOCATION
  - ISD-6 ATLANTIC SEDIMENT SAMPLE LOCATION
  - W-BE SS-3 WESTON/BLAIRSTONE VALLEY ELECTRIC SEDIMENT SAMPLE LOCATION
  - TP-109/ TP-107 MONITORING WELL/BORING (MWB) SURVEYED
  - TP-3A ATLANTIC TEST PIT LOCATION
  - W-BE TP-1 WESTON/BLAIRSTONE VALLEY ELECTRIC TEST PIT AND SOIL SAMPLE LOCATION
  - GZA TP-8 GZA VALLEY GAS TEST PIT AND SOIL SAMPLE LOCATION
  - BP-15 ATLANTIC SOIL BORING LOCATION
  - W-BE TP-3 ATLANTIC MONITORING WELL LOCATION
  - MBE TP-1 Meticule & Eddy Monitoring Well Location
  - WB-400 MBE BORING NON-SURVEYED
  - TP-204 WB TEST PIT (2009)

- GENERAL NOTES:**
- BASE MAP DEVELOPED FROM ELECTRONIC FILES FROM GEI CONSULTANTS, INC. ENTITLED "HISTORIC STRUCTURES AND SAMPLE LOCATIONS", ORIGINAL SCALE 1"=80', DATED JULY 1999 AND ELECTRONIC FILES FROM VANASSE HANGEN BRUSTLIN, INC. ENTITLED "SOIL BORING, TEST PITS AND MONITOR WELL LOCATION", SCALE 1"=60'.
  - PROPERTY LINES AND LOT INFORMATION ESTABLISHED FROM INFORMATION PROVIDED ON A DRAWING ENTITLED "PERIMETER SURVEY OF LAND AT THE TIDEWATER FORMER GAS SITE IN PAWTUCKET, RHODE ISLAND FOR ATLANTIC ENVIRONMENTAL SERVICES, INC. DEVELOPED BY GEI CONSULTANTS, INC. FOR ASSOCIATED AND AN AUTO CAD FILE ENTITLED "MAY ROAD FIELD SURVEY" DATED 09/23/09.
  - HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY GEI CONSULTANTS, INC.
  - VERTICAL DATUM IS BASED ON MGD 1929 (MGS) FROM BASE MAPPING PROVIDED BY GEI CONSULTANTS, INC.
  - REFERENCE SPHERE DATA FROM SPANER WERE PROVIDED BY THE CITY OF PAWTUCKET, RHODE ISLAND, ENTITLED "REFERENCE SPHERE DATA FOR THE TIDEWATER FORMER GAS SITE" DATED 05/20/09 AND PROVIDED TO GZA BY ATLANTIC ENVIRONMENTAL SERVICES, INC. ORIGINAL SCALE 1"=400' & SCANNED IMAGES OF HISTORIC PLAN & PROFILE DRAWINGS PROVIDE CITY OF PAWTUCKET, RHODE ISLAND.
  - SITE UTILITIES TAKEN FROM 1984 SANBORN MAP AND HISTORIC FIGURES PROVIDED BY NATIONAL GRID. ALL UTILITY LOCATIONS ARE APPROXIMATE AND SHOWN FOR REFERENCE ONLY.
  - HISTORIC DATA TAKEN FROM CERTIFIED SANBORN MAPS.



PREPARED BY: GZA Geotechnical, Inc. Engineers and Scientists 530 BROADWAY PROVIDENCE, RHODE ISLAND 02909		PREPARED FOR: NATIONAL GRID	
PROJECT NO: 43654.00	DATE: NOVEMBER 2009	FIGURE: 2	SHEET NO. 2 OF 3
<b>EXISTING EXPLORATION LOCATION PLAN-NORTH FILL AREA AND GAS PLANT AREA - AREA OF SHEEN</b> <b>FORMER TIDEWATER FACILITY</b> PAWTUCKET, RHODE ISLAND		<b>PAWTUCKET, RHODE ISLAND</b> <b>EXISTING EXPLORATION LOCATION PLAN-NORTH FILL AREA AND GAS PLANT AREA - AREA OF SHEEN</b>	



# TIDEWATER TYPICAL CAP CROSS-SECTION

GRAPHIC SCALE IN FEET (1"=5'±)

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<b>FORMER TIDEWATER FACILITY</b>		<b>PAWTUCKET, RHODE ISLAND</b>	
<b>ANCHOR O&amp;E</b>		<b>ANCHOR O&amp;E</b>	
TYPICAL CROSS-SECTION		TYPICAL CROSS-SECTION	
PREPARED BY: GZA Geotechnical, Inc. 550 BROOKDAVE RHODE ISLAND 02909 (401) 421-4440	DESIGNED BY: MSK RAC	REVIEWED BY: JPH TJB	CHECKED BY: MSK SCALE: AS NOTED REVISION NO.
PROJECT NO. 43654.00	DATE JANUARY 2010	PREPARED FOR: NATIONAL GRID	FIGURE 3
			SHEET NO. 3 OF 3

## **GEOHYDROLOGICAL LIMITATIONS**

1. The conclusions and recommendations submitted in this report are based in part upon the data obtained from a limited number of soil samples from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until further investigation. If variations or other latent conditions then appear evident, it will be necessary to reevaluate the recommendations of this report.
2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more gradual. For specific information, refer to the boring logs.
3. Water level readings have been made in the test pits, borings and/or observation wells at times and under conditions stated on the exploration logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall and other factors different from those prevailing at the time measurements were made.
4. The conclusions and recommendations contained in this report are based in part upon various types of chemical data and are contingent upon their validity. These data have been reviewed and interpretations made in the report. As indicated within the report, some of these data are preliminary "screening" level data, and should be confirmed with quantitative analyses if more specific information is necessary. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their flow paths may occur due to seasonal water table fluctuations, past disposal practices, the passage of time, and other factors. Should additional chemical data become available in the future, these data should be reviewed by GZA, and the conclusions and recommendations presented therein modified accordingly.
5. Chemical analyses have been performed for specific parameters during the course of this study, as detailed in the text. It must be noted that additional constituents not searched for during the current study may be present in soil and groundwater at the site.
6. It is recommended that this firm be retained to provide further engineering services during design, implementation, and/or construction of any remedial measures, if necessary. This is to observe compliance with the concepts and recommendations contained herein and to allow design changes in the event that subsurface conditions differ from those anticipated.





**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 1 - Upland portion of worksite prior to clearing**



**Photo No. 2 - Clearing and grading the riverbank**

**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 3 - Sheen emanating from voids following rock removal**



**Photo No. 4 - Spreading of sand along riverbank**

**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 5 - Sheen emanating from toe of slope during bank work**



**Photo No. 6 - Application of bulk organoclay to sand surface**

**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 7 - Riverbank prior to RCM placement**



**Photo No. 8 - Placement of RCM**



**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 9 - Placement of armor mattress**



**Photo No. 10 - RCM and armor mattress at northern corner showing minor design deviation where armor mattress could not be installed to low water line due to presence of obstructions, including boulders**

**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 11 - Armor mattresses submerged at high tide the morning of December 17, 2009**



**Photo No. 12 - Sand spreading to the top of the bank**

**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 13 - Final RCM coverage**



**Photo No. 14 - Placement of final two rows of armor mattresses**

**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 15 - Completed temporary cap, looking north**

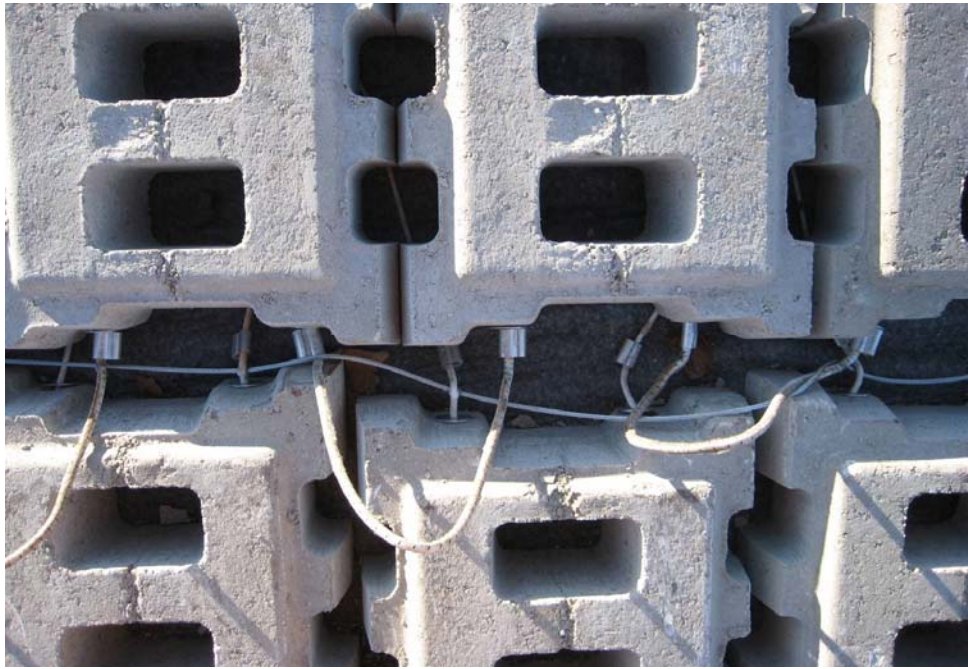


**Photo No. 16 - Completed temporary cap, looking south**





**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 17- Cabling of armor mattress rows**



**Photo No. 18 - Rocks covering exposure of RCM in southeast corner of temporary cap**

**APPENDIX B  
PHOTOGRAPHS**



**Photo No. 19- Project waste bundled in poly-sheeting, stored upland**