



PHASE II TECHNICAL MEMORANDUM #2

TO: Joan Taylor and Cynthia Gianfrancesco (RIDEM)

FROM: Steve Andrus and Edward Summerly (GZA)

DATE: May 5, 2008

FILE NO: 32795.12-C

SUBJECT: Supplemental Perimeter Groundwater Sampling and Analysis

During a March 23, 2008 conference call that included Cynthia Gianfrancesco and Joan Taylor of RIDEM, Michael Healey of Charbert and Ed Summerly and Stephen Andrus of GZA, it was requested by RIDEM that Charbert conduct additional sampling of five site perimeter wells along River Street and the property line east of River Street. The purpose of this memorandum is to document the results of the additional sampling and analysis.

Groundwater Sampling

GZA personnel were on site on Friday, April 25, 2008 and collected samples from five monitoring wells, RIZ-1, RIZ-14, RIZ-21, GP-22 and GZ-1. Groundwater sampling was performed in general accordance with EPA's July 30, 1996 *Low Stress (low flow) Purging and Sampling Procedure* (Low Flow SOP). Low flow sampling equipment (exclusive of tubing which was dedicated to the wells) was decontaminated prior to use on-site and between each location following EPA's required protocols. Water quality monitoring for stabilization was conducted utilizing a Horiba multi-meter in a flow through cell.

Analysis

As agreed upon, groundwater was analyzed for volatile organic compounds (VOCs) via EPA Method 8260B in samples from all five monitoring wells. The detected analytes have been summarized and compared to RIDEM's Method 1 GA Groundwater Objectives and Groundwater Quality Preventative Action Limits (PALs) as defined in the RIDEM's *Remediation Regulations*, in the attached Table 1. The laboratory certificates of analysis are provided in Attachment A.

Results

The April 25, 2008 groundwater results have been compared to the applicable groundwater standards for Rhode Island and there are GA Groundwater Standard exceedances

for VOCs in one of the five wells. The remaining four wells had no VOCs detected above the method detection limit. The sample from monitoring well GZ-1 has four VOCs detected with cis-1,2-dichloroethene present at 29 µg/L, (above the PAL of 35 µg/L), and trichloroethene present at 5 µg/L, (equal to the GA objective). The two other detects were 1,1 dichloroethane at 1 µg/L and 1,2,4-trichlorobenzene at 3 µg/L. All four of the VOCs detected in monitoring well GZ-1 were previously detected in August of 2004 and in February of 2005 with detected levels approximately twice that of this April 25, 2008 sampling round. For reference all previous analytical testing results for the five wells tested on April 25, 2008 have been included in Table 1.

At this time, we do not see any evidence of migration of contaminants from the previously delineated areas of concern, no changes in groundwater elevations that would suggest that a significant change in contaminant distribution is occurring have been observed. Please feel free to call Ed or Steve at (401) 421-4140 (or via email at esummerly@gza.com or stephen.andrus@gza.com) with any questions or comments.

cc: Mary Morgan, Richmond Town Clerk
Clarks Memorial Library – Charbert Repository

Attachments: Table 1 – Summary of Groundwater Analytical Results
Figure 1 – Additional Groundwater sampling Locations
Attachment A – Laboratory Certificates of Analysis

TABLE 1

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS

Charbet Facility
Alton, Rhode Island

PARAMETERS	UNITS	RIDEM STANDARDS		GZ-1						GP-22				RIZ-14	
		GA	PALs	8/6/2004		2/15/2005		4/25/2008		2/15/2005		4/25/2008		4/25/2008	
				Result	Limit	Result	Limit	Result	Limit	Result	Limit	Result	Limit	Result	Limit
VOLATILE ORGANICS															
1,1-Dichloroethane	ug/L (ppb)	---	---	2.2	1.0	2.0	1.0	1.0	1.0	<	1.0	<	1.0	<	1.0
1,2,3-Trichlorobenzene	ug/L (ppb)	---	---	<	1.0	8.3	1.0	<	1.0	<	1.0	<	1.0	<	1.0
1,2,4-Trichlorobenzene	ug/L (ppb)	70	35	9.5	1.0	<	1.0	3.0	1.0	<	1.0	<	1.0	<	1.0
cis-1,2-Dichloroethene	ug/L (ppb)	70	35	73	1.0	68	1.0	29	1.0	<	1.0	<	1.0	<	1.0
Tetrachloroethene	ug/L (ppb)	5	2.5	2.2	1.0	2.0	1.0	<	1.0	<	1.0	<	1.0	<	1.0
trans-1,2-Dichloroethene	ug/L (ppb)	100	50	<	1.0	1.0	1.0	<	1.0	<	1.0	<	1.0	<	1.0
Trichloroethene	ug/L (ppb)	5	2.5	12	1.0	8.6	1.0	5.0	1.0	<	1.0	<	1.0	<	1.0
Vinyl Chloride	ug/L (ppb)	2	1	1.1	1.0	1.4	1.0	<	1.0	<	1.0	<	1.0	<	1.0

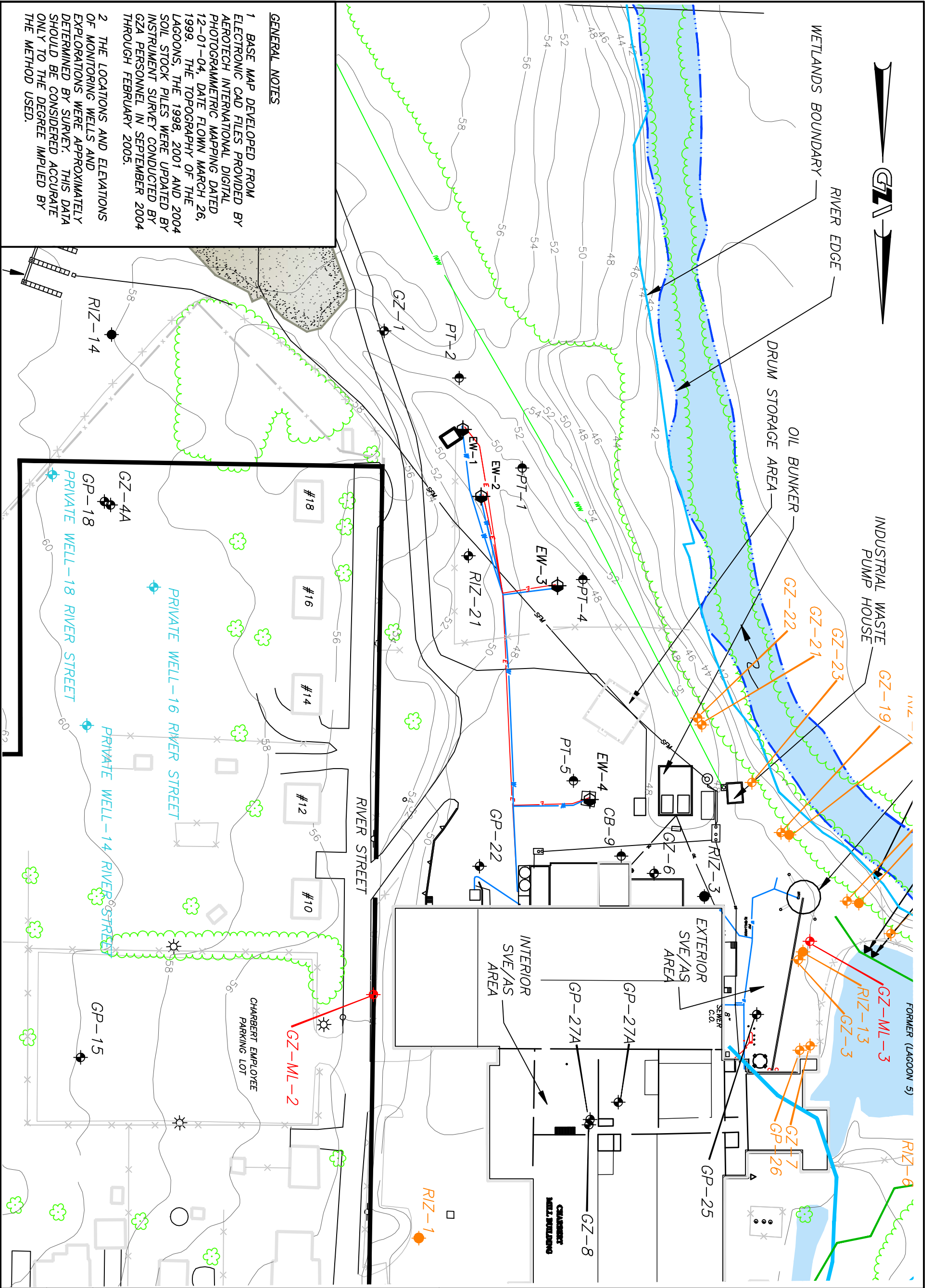
PARAMETERS	UNITS	RIDEM		RIZ-1						RIZ-21		TRIPBLANK	
		GA	PALs	01/02/2008		4/1/2008		4/25/2008		4/25/2008		4/25/2008	
				Result	Limit	Result	Limit	Result	Limit	Result	Limit	Result	Limit
VOLATILE ORGANICS													
1,1-Dichloroethane	ug/L (ppb)	---	---	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0
1,2,3-Trichlorobenzene	ug/L (ppb)	---	---	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0
1,2,4-Trichlorobenzene	ug/L (ppb)	70	35	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0
cis-1,2-Dichloroethene	ug/L (ppb)	70	35	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0
Tetrachloroethene	ug/L (ppb)	5	2.5	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0
trans-1,2-Dichloroethene	ug/L (ppb)	100	50	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0
Trichloroethene	ug/L (ppb)	5	2.5	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0
Vinyl Chloride	ug/L (ppb)	2	1	<	1.0	<	1.0	<	1.0	<	1.0	<	1.0

Notes:

1. Cells shaded yellow have results above the method detection limit.

2. Cells shaded orange are above RIDEM GA Groundwater Objective.

3. Cells shaded green are above RIDEM Preventative Action Limit.



GENERAL NOTES

1 BASE MAP DEVELOPED FROM ELECTRONIC CAD FILES PROVIDED BY AEROTECH INTERNATIONAL DIGITAL PHOTOGRAMMETRIC MAPPING DATED 12-01-04, DATE FLOWN MARCH 26, 1999. THE TOPOGRAPHY OF THE LAGOONS, THE 1998, 2001 AND 2004 SOIL STOCK PILES WERE UPDATED BY INSTRUMENT SURVEY CONDUCTED BY GZA PERSONNEL IN SEPTEMBER 2004 THROUGH FEBRUARY 2005.

2 THE LOCATIONS AND ELEVATIONS OF MONITORING WELLS AND EXPLORATIONS WERE APPROXIMATELY DETERMINED BY SURVEY. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

<p>CHARBERT FACILITY ALTON, RHODE ISLAND</p>		REV. NO.	DESCRIPTION	BY	DATE
		<p>1 INCH = 80 FEET</p>		<p>PROJ MGR: SMA DESIGNED BY: SMA REVIEWED BY: EAS</p>	<p>OPERATOR: DL DATE: MAY, 2008</p>
<p>SUPPLEMENTAL GROUNDWATER SAMPLING LOCATIONS</p>				<p>GZA GeoEnvironmental, Inc. Engineers and Scientists 530 BROADWAY PROVIDENCE, RI 02909</p> <p>(401) 421-4140 (401) 751-8613</p>	
JOB NO.	<p>32795.12</p>				
FIGURE NO.	<p>1</p>				