GZA
GeoEnvironmental, Inc.

Engineers and Scientists

March 28, 2008
File 32795.16-C

Ms. Joan Taylor
Rhode Island Department of Environmental Management
Office of Waste Management
235 Promenade Street
Providence, Rhode Island 02908-5767

Re: Responses to RIDEM's February 26, 2008 Comments
Proposed Bedrock Aquifer Investigation
Charbert Facility, Richmond, Rhode Island

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

Dear Ms. Taylor:

The purpose of this letter is to provide responses to comments provided in your February 26, 2008 letter regarding the Overburden Remedial Action Work Plan (RAWP) and the January 29, 2008 ***Phase II Bedrock Aquifer Evaluation Work Plan/Phase IV Subsurface Investigation Program*** Charbert, Division NFA Corporate Facility. RIDEM's comments are provided in regular text format and GZA's responses are provided in italics, below. We prepared this correspondence on behalf of Charbert, a Division of N.F.A. Corp.

GENERAL COMMENTS TO THE OCTOBER 2007 RAWP

Comment 1: On 10 October 2007 the OWM verbally requested additional detail on Closure of Lagoon 5. As of this date, OWM had not received the additional detail that was requested. Please provide details regarding dewatering procedures, handling and storage of contaminated sediment, erosion controls, etc.

Response: *GZA is currently working with a contractor to develop a more detailed plan to remediate Old Lagoon 5 as specified in the February 2008 RAWP. Once the details have been worked out with the contractor, GZA will present the closure plan to RIDEM for review and approval prior to the start of work associated with the closure of Lagoon 5. We anticipate providing this submission to RIDEM by April 11, 2008.*

SPECIFIC COMMENTS TO THE OCTOBER 2007 RAWP

Comment #2: Page 13, Section 4.22, Groundwater, Paragraph 1:

"A groundwater residual zone will be established between the identified source areas and the compliance boundaries."

The OWM wishes to clarify that Charbert must make every effort to achieve RI GA Groundwater Objectives throughout the entire site. In the event that, after making every effort, Charbert is unable to achieve RI GA Groundwater Objectives through out the entire site, Charbert may apply for a groundwater residual zone through the Office of Water Resources, which if approved, may be granted by the Department. Until that time, Charbert should proceed with the assumption that RI GA Groundwater Objectives will be met.

Response: *Regarding the overburden contaminants, Charbert has installed a remediation system that was designed to meet the goals set forth in the RIDEM GA Groundwater Objectives. The bedrock portion of the Site Investigation is not complete at this point and it may be technically impractical to remediate the contaminants in the bedrock aquifer. At this time we are still identifying the nature and extent of the bedrock contamination. Once that work is complete we will be in a position to evaluate compliance boundaries and the potential need for a residual zone.*

Comment #3: Page 21, Section 5.07, Soil Stockpile Reuse:
Page 22, Section 5.08, ISDS Cross Connection:

The soil stockpiles, and sewer lines and industrial wastewater collection system must be reviewed by the appropriate Department programs that being the Underground Injection Control and Individual Septic Disposal System programs, respectively. For this reason, the OWM is not including the soil stockpiles, sewer lines and industrial wastewater collection system as part of the RAWP review. Charbert must apply to the applicable programs for approval of those tasks.

Response: *So Noted*

Comment #4: Page 24, Section 5.13, Environmental Monitoring:

"The environmental monitoring plan will be submitted for RIDEM's review following completion of the bedrock aquifer assessment".

In accordance with Item D of the SIR, Charbert has proposed to implement a monitoring program as part of the RAWP, however, the RAWP indicates that an environmental monitoring plan will not be implemented until after the bedrock aquifer assessment is completed. As discussed during a meeting on 10 December 2007, the OWM does not concur with this schedule and requires that a site-wide Interim Environmental Monitoring Plan be implemented prior to issuance of a Remedial Approval Letter for the overburden RAWP and in conjunction with shutdown of the Charbert facility.

We believe this is necessary in order to monitor changes in the aquifer after the production wells and lagoons are no longer in use. Please be advised that the Interim Compliance Monitoring Plan for Source Control Remedy dated 4 December 2007, which was specifically designed to monitor Soil Vapor Extraction/Air Sparge remedial system, may be a component of the required monitoring plan but does not meet the requirements for a site wide monitoring plan. See *Phase II Bedrock Aquifer Evaluation Work Plan* / Phase IV Subsurface Investigation Program Specific Comment C below.

Response: *GZA believes that the current sampling and analysis programs on the Site provide adequate coverage for the entire Site in terms of an Interim Environmental Monitoring Plan. The current monitoring and reporting programs include the quarterly and yearly Interim Compliance Monitoring Plan (ICMP), the quarterly underground injection control (UIC) program and yearly raw well water samples from 14, 16 and 18 River Street.*

For the ICMP, GZA is monitoring and reporting the 14 groundwater wells (Shown in Orange on Figure A, attached) as described in the December 4, 2007 Interim Compliance Monitoring Plan (ICMP). These wells are monitored for the primary site contaminants of concern (COCs) which are volatile organic compounds (VOCs) via EPA Method 8260 and total petroleum hydrocarbons (TPH) via EPA Method 8100M. In addition to the ICMP monitoring, GZA also performs quarterly sampling, analysis and reporting for the Site underground injection control (UIC) program permit. Samples are collected from the pump house effluent and 6 groundwater monitoring wells, (shown in blue on Figure A) and analyzed for VOCs via EPA Method 8260, TPH via EPA Method 8100M, total and dissolved chromium and the single semi-volatile organic compound (SVOC) Bis(2-Ethylhexyl)phthalate via EPA Method 8270. In addition, the pump house sample is analyzed for RCRA-8 metals. The pump house will no longer be sampled after the facility shut down, but the monitoring wells will be monitored until the UIC closure of the lagoons is complete.

In addition to the monitoring programs described above, GZA has modified the residential water treatment performance monitoring to include yearly VOC analysis, via EPA Method 524.2, of the raw well water at 14, 16 and 18 River Street, (also shown in blue on Figure A). The first set of samples was collected on February 1, 2008. When GZA submits the quarterly and yearly ICMP reports, we will include the current quarterly UIC report as an appendix, and the results of the yearly well water results from the residential wells will be included in the first quarterly ICMP report of each year. Thus, RIDEM will have comprehensive assessment of overburden water quality in the interim period until the bedrock aquifer assessment is completed.

Comment #5: Page 25, Section 6.00, Contingency Plan:

> In accordance with Rule 9.13 of the RI Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (the Remediation Regulations), the Contingency Plan must clearly explain the procedures to be followed and the persons to be notified in the event of an unexpected incident involving hazardous materials at the site. Section 6.00 of the RAWP did not clearly explain the procedures to be followed in the event of emergency involving hazardous materials. The Contingency Plan must contain a section that outlines all emergency response procedures and arrangements. In addition, the Contingency Plan should include contact information for RIDEM's Emergency Response Section.

Response: *GZA has revised Section 6.00 of the RAWP and attached it to this document for your review.*

Comment #6: Page 26, Section 8.00, Compliance Determination:

> The RAWP must include a section outlining the procedures to be employed in order to demonstrate that the remedial objectives for each remedial action outlined in Section 5.00 have been met. This does not appear to be clearly defined in the RAWP.

Response: *GZA believes that the RAWP Section 4.20 (Remedial Objectives and Associated Points of Compliance) adequately describes the procedures to be employed to demonstrate that the remedial objectives for each remedial action outlined in Section 5.00 have been met.*

For soils, paragraph 2, Section 4.21 states:

Compliance will be demonstrated through the implementation of a confirmatory sampling and analytical program meeting the requirements of Section 8.10 of the Remediation Regulations. Confirmatory sampling for direct removal actions will be conducted immediately following any removal actions in accordance with the schedule provided in Section 10, below. While clean-up confirmation sampling associated with the bioventing process will be conducted after a sufficient period of fulltime operation of the SVE/Sparge treatment systems. We anticipate that these initial confirmatory soil samples will be collected 24 to 36 months from system start-up.

For groundwater, paragraphs 2 and3 , section 4.22 states:

The points of compliance for the source control remedy are the downgradient Charbert property boundaries along the Wood and Pawcatuck Rivers, and along River Street. Contaminant concentrations at the points of compliance will be reduced to RIDEM's GA Groundwater Objectives. A groundwater residual zone will be established between the identified source areas and the compliance boundaries. Compliance with RIDEM's GA Groundwater Objectives will be demonstrated through the implementation of a routine groundwater sampling and analytical program conducted in a downgradient monitoring well network to be selected following completion of the bedrock aquifer evaluation and bedrock SIR estimated to be completed in 9 to 12 months.

Compliance with the remedial objective for the three point-of-use groundwater treatment systems will be assessed through routine monitoring of tap water at the three residents with water treatment systems. As noted below, these systems were installed and are maintained by subcontractors (Culligan Water Conditioning of Warwick, Rhode Island) on behalf of Charbert.

For surface water and sediment Section 4.23 states:

No exceedances of RIDEM's ambient water quality criteria were observed during the site investigation. As such, the objective is to prevent the degradation of surface water quality during and following the implementation of the Lagoon 5 remedial program described in Section 6, below. Compliance with this objective will be evaluated through pre- and post-remedial surface water analysis within the lagoon limits.

The upper layer of sediment in the eastern portion Old Lagoon 5 was found to exceed ecological risk-based screening criteria (New Jersey DEP sediment criteria Lowest Effects Levels) for PAHs and metals and Method 1 Residential Direct Exposure criteria for petroleum products. The remedial objective for sediments is thus to remove sediments exceeding these criteria to a depth of 24 inches below existing sluiceway bottom and install a physical barrier (geotextile and petroleum cutoff trench) to the future migration of contaminants into the clean soils to be replaced in the sluiceway.

Contaminated materials removed from the lagoon channel will be properly disposed of at an off-Site facility. Contact with remaining residual contaminants will be prevented by the installation of an engineered control (permeable barrier) at the base of the excavated sediments, and future migration of residual petroleum contamination to the lagoon area will be controlled through the installation of a cutoff trench immediately adjacent to the lagoon.

Exposure to residual contaminants in soils, groundwater and sediments will also be controlled through the implementation of an Environmental Land Use Restriction (ELUR). The ELUR, as described in detail in Section 5, will restrict future Site use industrial/commercial activities and place limitations on the use of on-Site groundwater.

For air, Section 4.24 states:

No exceedances of RIDEM's air quality standards were noted during the performance of the Site Instigation Program. Prior occurrences of off-site odors allegedly emanating from Lagoon 1 to 3 were addressed in 2004 by Charbert through the installation of a lagoon aeration system.

The objective of the current remedial program with respect to air quality is to prevent soil and groundwater contamination mobilized by the air sparging system from adversely impacting indoor air quality in the manufacturing facility and in surrounding homes. A soil vapor extraction system has been installed outboard of the sparge points below the facility and will be used to control vapor migration. A sparge curtain has also been proposed along the Wood River just west of the facility. Groundwater discharge to the river and the significant distance to the any buildings and homes will prevent vapor from this sparge curtain from causing a violation of RIDEM's air toxics standards as provided in Air Pollution Control Regulation #22.

Comment #7: Page 27, Section 10.00, Project Schedule:

Charbert must submit a revised/updated Project Schedule.

Response: *The following table presents a revised tentative Project Schedule. Please note that this schedule is subject to change based on the availability of subcontractors, materials and other factors outside of Charbert's control.*

Task	Estimated Completion (after receiving RIDEM approval)
Soil Vapor Extraction/Air Sparge System	October 31, 2007 - Ongoing
Residential Well Treatment Systems	Installed, Monitoring Ongoing
Solid Waste Area Cleanup & Restoration	Completed in 2006 (exclusive of wetland plantings) as reported to RIDEM in May of 2007 Wetland Plantings are ongoing
Begin Groundwater Monitoring Program	January 2008 (ICMP, UIC, Residential Wells)
Site Wide Comprehensive VOC Sampling and Analysis, Overburden and Bedrock	June 2008 (as part of Phase II Bedrock Study)
Submit Draft ELUR for RIDEM Review	April 2008
Soil Stockpile Reuse	September 2008 (For Lagoon closure)
Locate Old Lagoon 5 Soil Scraping	October - November 2008
ISDS Cross Connection	Complete - November 2007

Task	Estimated Completion (after receiving RIDEM approval)
Sediment Removal From Old Lagoon 5 Channel	August - September 2008
Oil Line Rupture Impacted Soils	August - September 2008
Product Recovery Trench	August - September 2008
Submit *Remedial Action Summary Report*	December 2008
Submit First ELUR annual status report	March 2009

Office of Waste Management Comments to *Phase II Bedrock Aquifer Evaluation Work Plan* / Phase IV Subsurface Investigation Program

GENERAL COMMENTS

Comment A: Because the monitoring plan and the *Phase II Bedrock Aquifer Evaluation Work Plan* / Phase IV Subsurface Investigation Program were submitted in the same document, OWM's comments stated herein apply only to portions of the document that address overburden monitoring. Comments pertaining to the bedrock aquifer investigation will be addressed in a separate response.

Response: *The overburden piezometric monitoring plan submitted in the January 29, 2008 Phase II Bedrock Aquifer Evaluation Work Plan/Phase IV Subsurface Investigation Program was intended to be part of the bedrock work plan and not part of the Site-wide monitoring plan. GZA feels it is necessary to re-evaluate the overburden groundwater flow patterns after cessation of pumping and discharge to the lagoons. To evaluate contamination concentrations or the change in contamination concentrations in the overburden aquifer after the groundwater table has been restored to a natural or recovered state, GZA proposed to perform a comprehensive sampling and laboratory analytical program including shallow and deep overburden and bedrock groundwater monitoring wells. The number and location of these wells will be determined based on the stabilized groundwater flow directions following the mill closure and in conjunction with other ongoing monitoring programs (UIC and ICMP). We intend this work to be performed in conjunction with the June 2008 ICMP and UIC sampling and analysis program*

Comment B: In the cover letter accompanying the Interim Compliance Monitoring Plan for Source Control Remedy dated 4 December 2007, the monitoring plan is referred to as the Interim Compliance Monitoring Plan (CMP). In the *Phase II Bedrock Aquifer Evaluation Work Plan* / Phase IV Subsurface Investigation Program dated 29 January 2008, page 4 of the Comprehensive Groundwater Sampling and Analysis section, the monitoring plan is referred to as the Interim Environmental Compliance and Monitoring Plan (IEMP). It is not clear whether the CMP and the IEMP are the same document. In order to facilitate review, please ensure that the consistent terminology is used throughout the document(s).

Response: *GZA will be more consistent with terminology in future correspondence.*

SPECIFIC COMMENTS TO THE PHASE II BEDROCK AQUIFER EVALUATION WORK PLAN:

Comment C: Page 3, Task 1 - Data Collection and Evaluation:

Under Task 1, the overburden groundwater gauging proposed in the Piezometric Monitoring section appears adequate. However, the analytical sampling for VOCs proposed in the Comprehensive Groundwater Sampling and Analysis section indicates that analysis will not take place until June 2008. As stated in Comment 4 above, OWM does not believe the lack of analytical sampling is acceptable and requires that a site-wide Interim Environmental Monitoring Plan, to include analytical sampling, be implemented prior to issuance of a Remedial Approval Letter for the overburden RAWP and in conjunction with shutdown of the Charbert facility. We believe this is necessary in order to monitor changes in contaminant levels in the aquifer after the production wells and lagoons are no longer in use. OWM requires that analysis begin within 2 weeks after shutdown of the Charbert facility and continue at 2 week intervals until groundwater reaches a natural or recovered state, at which time Charbert can propose an alternative frequency. OWM recommends that analysis be conducted prior to shut down to establish base line conditions. Please submit a revised monitoring proposal, to include analytical parameters, the number, location and justification of monitoring wells to be monitored in the plan.

Response: *As stated in our response to Comments 4 and B, above, we feel that there are currently adequate sampling and analysis programs in place to evaluate the overall Site. The quarterly UIC sampling was performed on February 22, 2008, just prior to the mill shutdown, the residential wells were sampled on February 1 and IEMP sampling was performed the first week of January, 2008. Figure A, attached shows all the wells currently being monitored and the analysis for each has been described in the response to Comment 4, above. GZA has also proposed to perform a comprehensive sampling and laboratory analytical program including shallow and deep overburden and bedrock groundwater monitoring wells. The number and location of these wells will be determined based on the stabilized groundwater flow directions following the mill closure and in conjunction with other ongoing monitoring programs (UIC and ICMP). We intend this work to be performed in conjunction with the June 2008 ICMP and UIC sampling and analysis program.*

6.00 CONTINGENCY PLAN - REVISED

This Contingency Plan (CP) has been prepared to establish procedures that will be followed during remediation activities at the Charbert Manufacturing Facility site at 299 Church Street in Richmond, Rhode Island. The procedures in this plan are intended to address activities associated with site remediation and future excavation and maintenance activities at the property.

Given the types of contaminants, the historic nature of the releases at the facility and the remedial activities proposed, the risk of a new release that poses an immediate threat to human health or the environment is low. Best management practices and appropriate health and safety procedures will be followed during the implementation of all remedial measures. An emergency response contractor (such as Marshall Environmental Clean Harbors, etc.) will be on call during soil excavation activities to assist in the response to any unforeseen conditions.

BASIC HEALTH AND SAFETY PROCEDURES

The basic health and safety procedures outlined below will be implemented while performing excavation work within the areas of concern at the Site. The procedures are intended as a general guideline for use. The contractor conducting during the site remediation activities described above and in other excavation/construction may be required to develop a site-specific health and safety plan in accordance with the OSHA requirements contained in 29 CFR Part 1910.120.

Based on the documented Site conditions, the potential routes of exposure to workers included in remedial activities include dermal contact (absorption) or incidental ingestion of impacted soil, and the possible injection of contaminants through broken skin. As contaminants present at the Site are generally volatile in nature, inhalation hazards may also be encountered. Utilization of the appropriate personal protective equipment (PPE) and the general safety guidelines provided below will minimize the potential for worker exposure while performing work within areas that may contain contaminants.

Personal Protective Equipment (PPE)

In general, the level of protection that will be used by workers will be determined by the task that the person is performing; however, at a minimum Level D PPE will be worn at all times while performing excavation activities within the ELUR area. Level D PPE will, at a minimum, consist of the following PPE:

1. Steel-toe work boots with over-boots, as needed;
2. Eye protection (safety glasses or chemical splash goggles);
3. Nitrile gloves/inner latex or PVC gloves;
4. Hard hat; and
5. Work coveralls.

If Level C or higher level of PPE is determined to be necessary to complete a specific task, a task-specific health and safety plan will be developed for the work to be performed.

All contractors and and/or workers involved with the soils excavated from within the areas of concern must be trained in accordance with OSHA standards. For full details on training requirements refer the following federal regulations:

29 CFR 1910.120
29 CRF 1926.65

Emergency Response Actions

In the unlikely event that an emergency arises associated with the remediation, handling or storage of hazardous materials or oil, the following procedures will be followed by oversight personnel and/or contractors.

In the event of an emergency related to personnel exposure to contaminants or personal injury the following steps will be taken:

1. Summon appropriate emergency response agency by using the emergency phone numbers listed below and convey the following information:

    a. Nature of emergency,
    b. Location of victim, (if appropriate)
    c. Specific information about exposure or accident (gases, chemical, asphyxiation, etc.),
    d. Length of exposure, and
    e. Hazards which may be involved in rescue or treatment;

2. If taken to a hospital, notify the hospital of the background of the problem:

    a. Potential for hospital contamination,
    b. Any contaminated items and the nature of the contamination, and
    c. Estimated arrival time.

3. Follow additional documented Charbert specific procedures for reporting injuries or accidents.

Response Agency	Phone Number
Ambulance	911 or (401) 539-8289
Richmond Police	911 or (401) 539-8289
Alton Volunteer Fire Association	911 or (401) 539-2211
RIDEM/Office of Compliance & Inspection	(401) 222-1360
RIDEM Emergency Response Section	Work Hours (401) 222-1360 After Hours (401) 222-3070
USEPA/Hazardous Materials Spills	(800) 424-8802
National Response Center	(800) 424-8802
Poison Control Center	(800) 562-8236
Dig Safe (Utility Clearance)	1-888-DIGSAFE
Hospital	
Westerly Hospital 25 Wells St Westerly, RI 02891	(401) 596-6000

Route to Hospital

Total Distance:	10.4 miles
Estimated Time:	20 Minutes

Directions	Distance
1: Start Out Going WEST On CHURCH ST / RI-91 Toward COLLINS RD. Continue To Follow RI-91 W.	4.8 Miles
2: Turn SLIGHT RIGHT Onto RI-91 W / Westerly Bradford Rd.	2.4 Miles
3: Merge Onto RI-78 E / WESTERLY Bypass Via The Ramp On The LEFT Toward MISQUAMICUT	1.8 Miles
4: Take The US-1 South Ramp	<0.1 Miles
5: Stay STRAIGHT to go onto FRANKLIN ST / US-1 / RI-2.	0.6 Miles
6: Turn LEFT onto WELLS ST.	0.4 Miles
7: Arrive At Westerly Hospital, 25 Wells St, Westerly, RI	0.0 Miles

In the event of an emergency related to a release of hazardous materials or oil the following steps will be taken:

1. **In the event of a spill/release** - extinguish all sources of ignition and isolate/block/cover all potential environmental receptors including drains, sumps, soil, etc., and determine if the spill/release is incidental[i] or non-incidental[ii].

2. **Non-incidental spills/releases** - Stop/contain the spill/release at the source without endangering yourself and others.

A. First isolate all potential environmental receptors including drains, sumps, soil, etc.
B. Notify the site supervisor immediately and try to contain spilled material.
C. The site supervisor or designee will conduct necessary reporting to outside agencies if:

1. A spill/release exceeds the reportable quantity (RQ) and has entered the environment - report to Rhode Island Department of Environmental Management (RIDEM).
2. A spill/release migrates off the property and/or results in personal injury - also report to the Fire and Police Departments.
4. A spill/release enters a storm water drain system - also report to the Fire and Police Departments and the National Response Center (NRC).
5. A spill/release causes a sheen or discoloration of navigable waters or adjoining shorelines - also report to the National Response Center (NRC).

D. The site supervisor will conduct follow-up written notifications to applicable agencies.

E. The site supervisor will ensure proper follow-up, corrective action and planning to prevent recurrence.

3. **Incidental spills/releases** - Immediately report the spill/release to the site supervisor and conduct the following activities.

A. Isolate all potential environmental receptors including drains, sumps, soil, etc.
B. Recover material spilled and clean-up spill area, decontaminate tools and equipment, and collect all rinsate and debris.
4. C. The site supervisor will ensure proper waste disposal, follow-up, corrective action and planning to prevent recurrence.

DEFINITIONS:

"Incidental" spill/release is defined as a spill/release which meets ALL of the following criteria: 1) **DOES NOT** reach the environment directly (e.g., to a ground surface other than concrete or asphalt surfaces in contained areas of the facility) or indirectly (e.g., sump, sink, floor drain); 2) a small quantity (less than 25 gallons and/or below RQ) of material is spilled/released which **DOES NOT** pose potential or actual health hazards; 3) personnel in the immediate area are familiar with the hazards associated with the spilled material and can readily absorb, neutralize, or otherwise control the spilled material at the time of release; and 4) containment/clean-up does not pose or create potential or actual health and safety hazards (e.g. fire, explosion, chemical exposure, etc.).

"Non-incidental" spills generally include one or more of the following: 1) greater than 25 gallons of spilled/released Oil and/or Hazardous Materials that **DOES** reach the environment (i.e., discharges to a floor drain, discharges to a storm drain, enters a water body, discharges to the ground surface outside the facility containment areas, etc.); 2) major spills/releases (e.g., equal to or above the reportable quantity (RQ) that cannot be

readily absorbed, neutralize, or otherwise controlled at the time of release; 3) any quantity of spilled/released Oil and Hazardous Materials which personnel **are not familiar with or are unaware** of the potential or actual health and safety hazards; and 4) an injury (actual or suspected) has occurred as a result of the spill/release.

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