

GZA
GeoEnvironmental, Inc.

Fighting and
Winning

January 21, 2008
File No. 32795.22-C



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



Re: Sanitary Sewer and Process Wastewater Cross-Connection Repair
Charbert, Division of NFA Corp.
Alton, Rhode Island

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Providence
Rhode Island
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Dear Ms. Taylor:

On behalf of our client, Charbert, Division of NFA Corp. (Charbert), GZA GeoEnvironmental, Inc. (GZA) has prepared this letter as a follow-up to our evaluation and repair of the apparent wastewater/sanitary sewer cross-connection observed at the Charbert facility located at 299 Church Street in Richmond, Rhode Island.

In section 2.80 of our June 2005 *Site Investigation Report* (SIR), we noted that "...while installing the new septic tank on April 7, 2005, it was observed that colored water was flowing to the septic tank. GZA and Charbert personnel used florescent dye to locate the source of the colored water. Floor drains on the east end of the dye room were determined to be the source. Charbert personnel are re-piping the floor drains to the industrial waste water pump house. This work is anticipated to be completed in the summer of 2005."

When Charbert attempted to locate the connection to the floor drains, however, no physical connections could be found. The wastewater flows that entered the sanitary sewer appear to be sporadic and, multiple dye tests were unable to replicate the original dye test results that identified the floor drains as the apparent connection. It was noted that the flows to the septic system appeared to occur when a certain combination of equipment is drained simultaneously and did not appear to be related to any one specific drain or piece of equipment.

Recognize that the facility has built in stages over time, with the initial structure having a construction date circa 1900. Consequently, the location, use and history of subfloor and sub-grade piping are not apparent. It is believed that prior to 1992 (installation date of first leachfield), the effluent from the septic tank discharged to the process water pump house and ultimately the lagoons. As such, the issue of potential cross-connections was of no significance. A bathroom that was located near the production floor may have been connected to both sanitary (ISDS) and wastewater systems (lagoons). It is suspected that when multiple pieces of specific dyeing equipment are drained simultaneously, the process water system backs up and overflows to the sanitary sewer line. However, though multiple attempts were made to duplicate the previously observed condition, we were unsuccessful at creating wastewater discharge (colored) to the sanitary sewer system.



In October 2005, Charbert contracted a line cleaning and video camera inspection company (Inland Waters Industrial Sewer) in an effort to locate the cross-connection. A crushed section of pipe, however, prevented the work from meeting all of its objectives. In November of 2005, the sanitary sewer line from the building to the newly installed septic system was excavated and replaced with new 6-inch schedule 40 piping.

In response to the 2005 release to "Old Lagoon 5," coupled with the inability to locate the cross-connection, in July of 2006, Charbert excavated and replaced the process waste water collection system and any sanitary sewer lines that were exposed. All existing external piping and manholes were removed and new cast iron pipe and precast concrete manholes were installed. The cross-connection was not located outside the building. After the new collection system was installed and wastewater flow improved, the frequency of flows of wastewater to the sanitary sewer appeared to decrease. A second attempt at video camera inspection was not successful at penetrating the entire sanitary line under the building.

On January 26, 2007, a smoke injection test was performed at the facility. This was accompanied by camera inspection of areas suspected to have a cross-connection. Smoke was injected with a blower connected to the sanitary sewer line cleanout located in the facility's rear maintenance yard. Smoke and air pushed by the fan were observed at multiple points in the production area of the facility. Video camera work showed what appeared to be interconnected box culverts under the floors of the production area. GZA understands that in the 1980's, the original basements and crawl spaces under the facility were filled with sand and a concrete floor poured over the top, making it infeasible to determine where the cross-connection is located.

Having drawn the conclusion that the actual location of the cross-connection cannot be reasonably located, Charbert asked GZA to evaluate alternatives for replacing the sanitary sewer lines and associated plumbing to ensure that process wastewater is not sent to the sanitary sewer system. GZA developed a plan to replace the sewer main within the building and close several bathrooms that could not easily be connected to the new sewer main.

The installation of the new sewer main was performed in conjunction with the installation of the interior air sparge and soil vapor extraction system. A new 6-inch PVC sewer main was installed under the existing concrete floor from an existing men's room located in the center of the building, through a basement area under the dye laboratory to the exterior of the building in the rear maintenance yard, see Figure 1, and Photos 1 through 4, attached. The bathrooms located on the second floor of the facility were connected to the new sewer main in the central men's room. The Town of Richmond Plumbing Inspector observed the interior installation for conformance with project plan and state and local codes.



After the completion of the new sewer main installation, an existing men's bathroom located in the maintenance area and a lady's room in the center of the building that could not reasonably be connected to the new main, were closed as part of this work, see Photos 5 and 6. Once the new sewer main was operable and all sanitary sewer flow were connected, the old sewer main was connected to an industrial waste water manhole in the rear of the facility to allow any waste water flows connected to that line to flow to the industrial waste water pump house.

We trust that this information fulfills your present needs. Please do not hesitate to call us with any questions or comments regarding this repair report.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.


Stephen Andrus
Environmental Engineer

John P. Hartley
Project Reviewer


Edward A. Summerly, P.G.
Associate Principal

SA/EAS:clz

Attachments: Photographs
Figures 1 and 2

cc: Cynthia Gianfrancesco, RIDEM-OWM
David Chopy, RIDEM-OCI
Mary Morgan, Richmond Town Hall
Clark Memorial Library - Charbert Repository

PHOTOGRAPHS

**CHARBERT BUILDING SEWER MAIN REPAIR
ALTON, RHODE ISLAND**

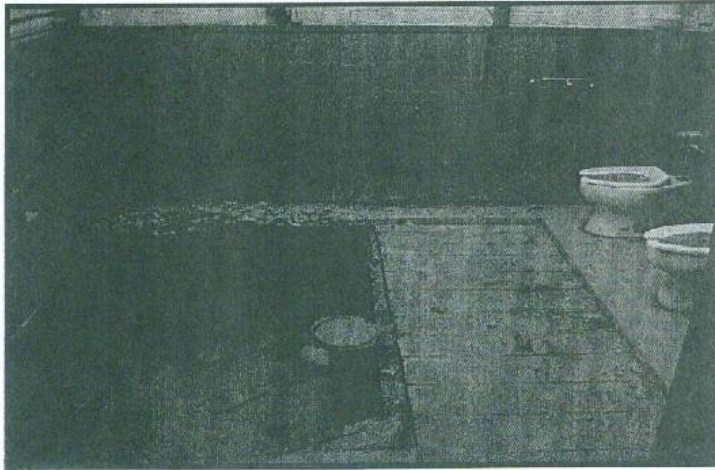


Photo No. 1 - Men's Room in Center of Building where New Sewer Main begins.

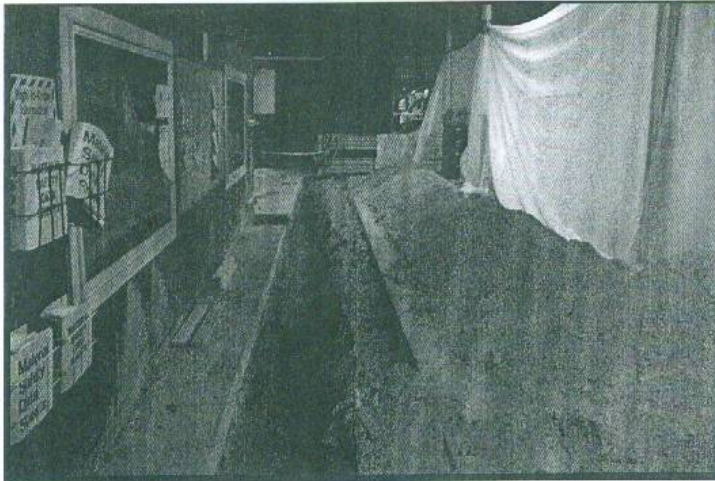


Photo No. 2 - New Sewer Main Trench through Facility.

CHARBERT BUILDING SEWER MAIN REPAIR
ALTON, RHODE ISLAND



Photo No. 3 - New Sewer Main Trench approaching Basement under Dye Laboratory.



Photo No. 4 - New Sewer Main Location in rear Maintenance Area.



CHARBERT BUILDING SEWER MAIN REPAIR
ALTON, RHODE ISLAND

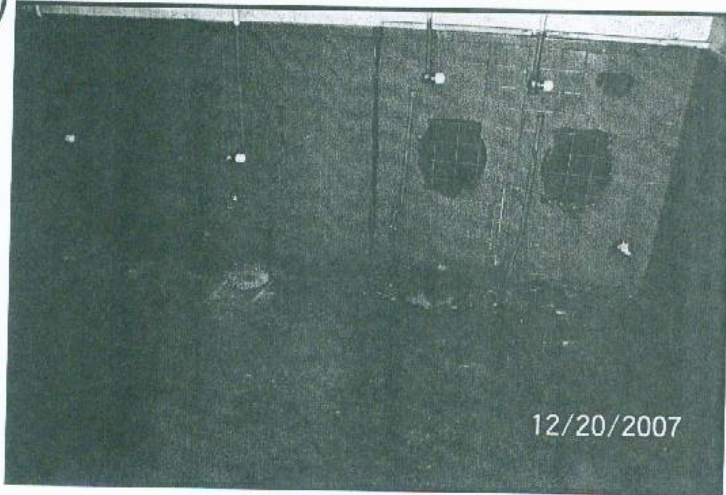


Photo No. 5 - Closed Men's Room in Maintenance Area.

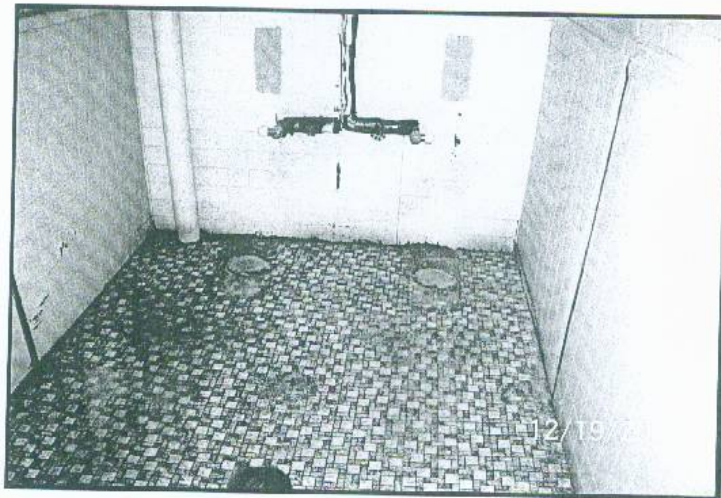


Photo No. 6 - Closed Ladies Room in Center of Building.