CHARBERT
DIV. OF NFA CORP.

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April 14, 2006

Ms. Terry Simpson
Principal Environmental Scientist
Division of Water Resources
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, Rhode Island 02903

Re: **Proposal to Construct a Rapid Infiltration Bed for the Disposal of Process Wastewater**
Charbert, Division of NFA Corp.
Alton, Rhode Island

Dear Ms. Simpson:

As we discussed during our project meeting on March 23, 2006, Charbert, Division of NFA Corp. ("Charbert") is submitting this proposal to construct two Rapid Infiltration Beds (RIBs) on its property for the disposal of process wastewater Charbert generates from its dyeing and finishing operation. The proposed RIB locations are approximately 50 feet south of Lagoon #3.

As set forth in detail below, using these RIBS will allow for the closure and restoration of the holding pond (Pond 4) and allow for the more aggressive management of the water levels in the existing lagoons to minimize the potential for a release of process wastewater caused by high surface water elevations. The use of the proposed RIBs will not have an adverse impact on ground water quality because only water from lagoon 3, which has better water quality compared to lagoon #1, will be discharged to the proposed RIBs. Current ground water monitoring data supports this interpretation as well as the water quality data from lagoon #3. The RIBs will also allow Charbert to maintain a volume of water in the lagoons that will allow for continuation of the odor management methods used successfully to date to control odors in the warmer months of the year. Use of the RIBs will also allow for routine maintenance of the lagoons and in particular the installation of a check valve on the discharge pipe entering Lagoon #1. These proposed RIBS are a part of the wastewater treatment options Charbert is currently evaluating and would be used for disposal of treated wastewater when the treatment plant is constructed.

I. Benefits of the RIBs

There are several reasons why using the RIBs would be beneficial and aid Charbert in the management of its wastewater.

1. Charbert has been working aggressively to reduce process water use and maximize the leaching rate from the existing lagoons. While Charbert has successfully reduced the total volume of water in lagoon #1, this has resulted in maintaining the water in both lagoons #2 and #3 at near maximum levels. This carries some risk, because a sudden or intense storm could cause a rapid rise in surface water elevation, causing potential overflow or erosion of lagoon walls. In addition, the leaching rates from the lagoons have been affected by seasonal groundwater recharge rates (due to precipitation) over time, which have in turn resulted in increased groundwater elevations in the areas surrounding the lagoons. These high groundwater elevations in turn cause leaching rates to slow, and keep the water levels in the lagoons high. The RIBs would allow Charbert to more effectively and safely manage these high water levels, and limit the decreasing leaching rates in the lagoons.

2. The leaching rates have also been affected by an increase in the deposition of particulates caused by the operation of the aerators (installed to control odors). The ability to use the RIBs would allow Charbert to maintain the lagoon water elevations at a lower level, thus making the aeration and mixing devices more effective in reducing the potential odors, and increase the treatment level in the lagoons. Charbert is concerned that the existing aeration system may not be sufficient to properly manage odors with the extra water volume and depth in the lagoons during the warmer weather. The lower water levels in the lagoons will allow Charbert to operate its odor control system as designed.

3. Another benefit of the proposed RIBs relates to the lower water level and Charbert's ability to perform maintenance. Charbert personnel recently discovered that there is no check valve on the end of the pipeline that delivers wastewater from the pump house to the lagoon #1. The pipe is 5 to 6 feet below the water level. If a failure should occur in the check valve in the pump house or if a leak should develop in the pipeline, a large volume of water from lagoon #1 potentially could be discharged to the ground surface or back-siphon into the facility's wastewater piping system. The RIBs will allow Charbert to lower the water elevation in lagoon #1 to expose the pipe and install a check valve to prevent this potential release.

4. Currently, when the lagoon surface water elevations are high, the potential for a release of process wastewater can only be prevented by discharging process wastewater into the holding pond. With the RIBs in place, Charbert would be able to permanently close the holding pond, and restore that portion that is located within the 200 foot riverbank setback. Charbert would then be able to use the RIBs on an intermittent basis to manage the surface water more effectively and safely.

II. Hydrogeologic Study

The following outlines in detail the site specific hydrogeologic study.

Charbert conducted a hydrogeologic study in the proposed RIB area, which determined that process wastewater can be discharged at a rate of ±120,000 gallons per day into an area 80 feet wide by 300 feet long, 24,000 square feet. The proposed RIBs area is depicted on the design drawings, Attachment 1. Charbert submitted the hydrogeologic study to RIDEM in a report dated March 21, 2006. This loading rate equals an application rate of 5 gallons per day per square foot of area. The proposed RIBs would have an area of 65,000 square feet and would receive the estimated 120,000 gallons per day of process wastewater or 1.8 gallons per day per square foot of area.

This reduction in the application rate of water per square foot will reduce the anticipated ground water mound resulting from the discharge of process wastewater. The actual ground water elevations will be monitored as described in the Monitoring Wells section, below. The proposed RIB area will be constructed as two areas, which would allow for the discharging of water to one RIB while the other RIB "rests." This configuration would also allow for maintenance on the RIBs should it be required. The actual loading rates and time that each RIB is used for process wastewater disposal will be determined in the field by monitoring ground water elevations in monitoring wells installed for that purpose.

III. Groundwater Quality

Charbert reviewed the groundwater sampling results from the existing monitoring wells near the existing lagoons to evaluate the likely impact on the groundwater in the area of the proposed RIBs. This quarterly groundwater sampling data shows that the groundwater meets the GA Groundwater Objectives. Each of the three lagoons has a capacity to hold about 12 days of process wastewater. The process wastewater is initially discharged into Lagoon #1 and is then transferred using pumps to lagoon #2, and then lagoon #3. Given the capacity of each lagoon, water entering lagoon #1 on day one would end up in Lagoon #3 about 24 days later. Lagoon #3 also holds about 12 days of process wastewater. During this 36 day time period, the water is being aerated with the electric aerators and mixing devices that are installed in each lagoon.

The aeration of the water promotes chemical/physical treatment and some biological treatment. The effect of this treatment can be determined by comparing the water quality between lagoon #1 and lagoon #3. Water samples were collected from lagoons #1 and #3 on August 16, 2005 and tested for Lead, Zinc, Copper, Chromium, Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), and Biological Oxygen Demand (BOD). Table 1 presents the results of these analyses. A comparison of the results from lagoon #1 to lagoon #3 indicates that there is a significant decrease in these parameters between the lagoons, which means that there is some degree of treatment occurring as the water makes its way through the lagoon system.

Table 1 also presents the results of three subsequent sampling events that were tested for a subset of the parameters tested for in the first round. All of these results indicate an improvement in water quality between lagoon #1 and #3, based on a decrease in the reported values for COD and

TSS, which are key parameters used to asses the quality of wastewater. This improvement in water quality in lagoon #3 compared to lagoon #1 indicates that the subsequent discharge of water from lagoon #3 into the proposed RIBs would not represent any significant change in groundwater quality compared to the water quality that has been observed around the existing lagoons.

IV. Plans and Specifications

The plans and specification to construct the two RIBs with a combined surface area of 65,000 square feet are presented below. Details of the RIB design are presented on the attached design drawings in Attachment 1.

Charbert plans to install a silt fence with hay bales around the work area just outside the 200 foot river setback to reduce potential soil erosion and sedimentation. The trees will be cleared and the brush chipped and stored on site for future use. The top and sub soils will be removed and stockpiled on site for use during berm construction. The underlying sand will be graded to elevation 60.0 feet msl +/- 0.08 feet. All silty soils encountered during the grading will be removed and stockpiled on the property.

The process wastewater distribution pipes will be installed a minimum of 4 feet below grade, except at the start and terminus of each pipe. The end of each discharge pipe will be installed within a splash pad that will prevent the erosion of the sand around the pipe during use.

V. Use of the RIBs

As described above, the proposed RIBs would allow for the management of the water elevation in the existing lagoons. A maximum surface water elevation of 61.0 feet in each existing lagoon is proposed. This elevation represents a freeboard of about 3.0 feet below the lowest dike elevation in the lagoons. If conditions indicate that the lagoon elevation would exceed this maximum elevation, Charbert would pump water from lagoon #3 into the RIBs. This management strategy would maintain the existing lagoon elevations at a safe level and only require the intermittent use of the RIBs.

Once the new RIBs are approved and in service, Charbert agrees to submit a plan for closure and restoration of that portion of the holding pond located within the 200 foot river set back, and to implement the restoration process within 90 days of receipt of approval of the plan by RIDEM (weather permitting).

VI. Proposed Monitoring Wells

Charbert proposes to install groundwater monitoring wells at two locations (one to the east and one to the west of the proposed RIBs) to monitor the groundwater in the location of the RIBs. The actual location of the monitoring wells will be determined based on site conditions, and after consultation with RIDEM. Charbert will conduct quarterly sampling of these wells consistent with the requirements and parameters in its existing UIC permit, with the addition of chromium. Charbert will also evaluate the groundwater elevations as part of this quarterly monitoring.

Thank you for your time and consideration on this matter. Please let me know if you need any additional information to evaluate this proposal.

Very truly yours,

Michael S. Healey, P.G.
Director of Environmental Affairs
Charbert, Division of NFA Corp.

Cc: Mr. David Chopy, Supervising Sanitary Engineer, RIDEM Office of Compliance and Inspection
Mr. William Ball, P.E. Acheron, Inc
Mr. John Hartley, P.E. GZA GeoEnvironmental

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M. Healey
April 14, 2006

TABLE 1
Lagoon Chemical Data
Proposal to Construct a Rapid Infiltration Bed for Disposal of Process Wastewater
Charbert Div. NFA Corp.
Alton, RI

	Lagoon 1	Lagoon 3	Lagoon 1	Lagoon 3	Lagoon 1	Lagoon 3	Lagoon 1	Lagoon 3
Analyte (mg/l)	8/16/2005		12/1/2005		12/27/2005		1/3/2006	
Lead	<0.003	na	na	na	na	na	na	na
Zinc	0.018	0.012	na	na	na	na	na	na
Copper	0.034	0.022	na	na	na	na	na	na
Chromium	0.390	0.240	na	na	na	na	na	na
COD	716.0	288.0	779.0	318.0	898.0	296.0	779.0	318.0
TSS	54.0	14.0	160.0	26.0	114.0	24.0	160.0	26.0
BOD	128.0	19.0	na	na	na	na	na	na

Notes:
COD = Chemical Oxygen Demand
TSS = Total Suspended Solids
BOD = Biological Oxygen Demand