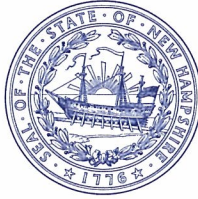


THE STATE OF NEW HAMPSHIRE

CHAIRMAN
Thomas B. Getz

COMMISSIONERS
Graham J. Morrison
Clifton C. Below

EXECUTIVE DIRECTOR
AND SECRETARY
Debra A. Howland



PUBLIC UTILITIES COMMISSION

21 S. Fruit Street, Suite 10
Concord, N.H. 03301-2429

Tel. (603) 271-2431

FAX (603) 271-3878

TDD Access: Relay NH
1-800-735-2964

Website:
www.puc.nh.gov

September 19, 2008

Debra A. Howland, Executive Director
New Hampshire Public Utilities Commission
21 S. Fruit St., Suite 10
Concord, NH 03301



Re: DW 08-078 Eastman Sewer Company, Inc.
Capital Reserve Fund Request of May 30, 2008

Dear Ms. Howland:

On May 30, 2008 the Commission received a request from John W. Mueller, President of Eastman Sewer Company, for authorization to use \$15,800 from Eastman's capital reserve fund. The request relates to a proposed replacement of the headworks facility that is the initial component in the sewer system's treatment train. Staff posed data requests to the company. Those requests and the company's responses are attached.

The company indicates the headworks facility is over 30 years old and provides a constricted workspace; that the existing comminutor (solids shredder) is nonfunctional and needs replacement; and that newer NH Department of Environmental Services requirements mandate influent flow and pH metering at this location. A recent engineering review of the overall Eastman system indicates these upgrades to be a high priority. The requested funds are solely for the engineering design of the upgrades.

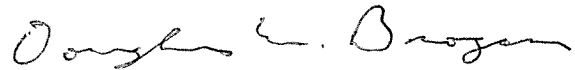
The proposed improvements are among a number that are being contemplated in the system over the next several years, totaling some \$540,000. Approval of financing and a rate increase associated with the first two years of improvements, including the headworks upgrade, is being sought in a separate docket, DW 08-086. While those larger improvements and the associated rate impacts will be reviewed in that case, the information presented in the instant docket indicates that proceeding with design of an upgraded headworks facility at this time is reasonable.

Eastman's capital reserve fund was established by Commission Order No. 20,390 in 1992 when rates were first set for Eastman, as a way of addressing Eastman's

undercapitalization. A portion of all customer rates collected by Eastman is dedicated to this account. The Commission directed that Eastman obtain Commission approval for all uses of these funds. Staff is satisfied that the proposed expenditure is an appropriate use of the reserve funds. Therefore Staff recommends that Eastman be permitted to withdraw up to \$15,800 for engineering design of a replacement headworks facility.

If there are any questions regarding this, please let me know.

Sincerely,

A handwritten signature in black ink, appearing to read "Douglas W. Brogan". The signature is fluid and cursive, with the first name "Douglas" being the most prominent part.

Douglas W. Brogan
Utility Engineer

Attachments

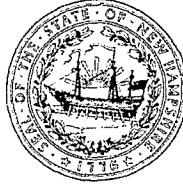
cc: Eastman Sewer Company

THE STATE OF NEW HAMPSHIRE

CHAIRMAN
Thomas B. Getz

COMMISSIONERS
Graham J. Morrison
Clifton C. Below

EXECUTIVE DIRECTOR
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June 5, 2008

John W. Mueller
Eastman Sewer Company
PO Box 470
Grantham, NH 03753

Re: DW 08-078
Staff Data Requests – Set No. 1

Dear Mr. Mueller:

Attached please find Staff's Data Requests, Set No. 1 for the above referenced docket. Thank you for your prompt attention in this matter.

If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Marcia A. B. Thunberg".

Marcia A. B. Thunberg
Staff Attorney/Hearings Examiner

cc: Service List
Attachments

STATE OF NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION
STAFF DATA REQUESTS
DW 08-078
EASTMAN SEWER COMPANY

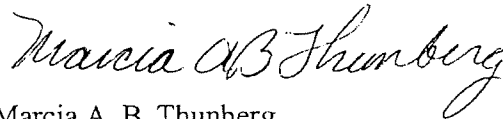
Now comes the Public Utilities Commission Staff and respectfully requests responses to the attached data requests in writing and under oath.

Pursuant to N.H. RSA 365:10, 365:14, 365:15 and 365:19, the Commission shall have the power to obtain data and documents necessary to the performance of its duties as they are prescribed by law.

You are hereby requested to supply the Commission with the data and/or documents delineated in the attached data requests. If you are unable or unwilling to produce a response to a particular request, you must nonetheless provide a written response and state the basis for the inability or unwillingness to furnish the requested information. RSA 365:12 provides that willful failure to comply with this request will subject you to contempt proceedings in Superior Court pursuant to N.H. RSA 491:19 and 491:20.

Please provide copies of all documents produced to all parties listed on the discovery portion of the service list. If you seek confidential treatment of any response, you should mark that material as confidential and submit a motion for confidential treatment for the Commission's consideration. Anything submitted pursuant to a motion for confidentiality will be kept confidential pending Commission action.

Respectfully,

A handwritten signature in cursive script that reads "Marcia A. B. Thunberg".

Marcia A. B. Thunberg
Staff Attorney

Dated: June 5, 2008

DATA REQUESTS OF N.H. PUBLIC UTILITIES COMMISSION STAFF

INSTRUCTIONS

1. Please furnish data responses within the schedule established in the procedural hearings.
2. For the purposes of these requests, "document" as used herein, is defined as any writing of every kind in the possession, custody or control of the Company, including but not limited to letter, facsimiles, minutes and records of meetings, memoranda, reports, notes, maps, recordings, transcripts, records of telephone or other communications, vouchers, and other accounting records, lists, engineering studies, rate studies, and economic studies, computer files.
3. For each response, please identify the individual who will be available for cross-examination concerning each response.
4. If the Company has no "document" (study, report, etc.) which is responsive in any way to any portion of a data request, please so indicate. In addition, please identify the person who determined that no such "document" exists.
5. If requested data is duplicative of that furnished in response to another data request, please identify the response wherein the information is contained.
6. If you find a request to be unclear or imprecise, please request clarification, by telephone, to the Staff member who forwarded these requests as soon as possible.

DW 08-078
Eastman Sewer Company
Request for Withdrawal from Capital Reserve Fund
Staff Data Requests – Set 1

Staff 1-1

Please provide a copy of the recently completed Eastman Sewer Capital Study referenced in the company's filing.

Staff 1-2

To the extent not discussed in the Capital Study, please describe the need for upgrade of the headworks facility.

Staff 1-3

Does the company intend to seek quotes from engineering firms other than CLD for the proposed headworks design study? If not, why not?

Staff 1-4

Please indicate whether the company believes upgrade of the headworks meets the criteria established for use of the Capital Reserve Fund; and if so, why.

Staff 1-5

Please indicate the current status of the Capital Reserve Fund.

Staff 1-6

Please indicate, to the extent known:

- a) The approximate cost or range of costs anticipated for actual construction of a new headworks; and
- b) Whether the company anticipates using the Capital Reserve Fund for that as well.

Staff 1-7

Please provide a copy of any Groundwater Discharge Permit issued as a result of the renewal application filed with the NH Department of Environmental Services in October 2006.

Staff 1-8

Please comment on the annual progress made in locating, inspecting and cleaning the Eastman sewer mains since issuance of Order 24,368 in docket DW 04-013 (September 2, 2004).

JOHN MUELLER
EASTMAN SEWER COMPANY INC
PO BOX 470
GRANDTHAM NH 03753

Docket #: 08-078 Printed: June 05, 2008

FILING INSTRUCTIONS: PURSUANT TO N.H. ADMIN RULE PUC 203.02(a),

WITH THE EXCEPTION OF DISCOVERY, FILE 7 COPIES (INCLUDING COVER LETTER) TO:

DEBRA A HOWLAND
EXEC DIRECTOR & SECRETARY
NHPUC
21 SOUTH FRUIT STREET, SUITE 10
CONCORD NH 03301-2429

PURSUANT TO N.H. ADMIN RULE 203.09 (d), FILE DISCOVERY

DIRECTLY WITH THE FOLLOWING STAFF

RATHER THAN WITH THE EXECUTIVE DIRECTOR

LIBRARIAN
NHPUC
21 SOUTH FRUIT ST, SUITE 10
CONCORD NH 03301-2429

BULK MATERIALS:

Upon request, Staff may waive receipt of some of its multiple copies of bulk materials filed as data responses. Staff cannot waive other parties' right to receive bulk materials.

AMANDA NOONAN
CONSUMER AFFAIRS DIRECTOR
NHPUC
21 SOUTH FRUIT ST, SUITE 10
CONCORD NH 03301-2429



August 25, 2008

Ms. Marcia A.B. Thunberg
Public Utilities Commission
State of New Hampshire
21 S. Fruit Street, Suite 10
Concord, N.H. 03301-2429

Re: Your Letter of June 5, 2008 DW 08-078

Dear Ms. Thunberg,

I apologize for the long delay in responding to your letter of June 5th. Most of my time has been spent working with our C.P.A. to prepare the Eastman Sewer Company's rate increase request, which was submitted to the P.U.C. a few days ago. Thank you for your patience.

In your letter you indicate the P.U.C. needs additional information to make a decision on the Eastman Sewer Company's request to use funds from our Capital Reserve to upgrade the headworks facility for our sewer system. Please note the following answers to the questions outlined in your letter:

1. **Staff 1-1** Attached is a copy of the recent Capital Study completed by CLD Consulting Engineers. I have also attached the proposed capital replacement schedule the ESC Board intends to follow, based on the Capital Study. Please note the capital replacement schedule reflects an accelerated timeline when compared with the CLD Capital Study
2. **Staff 1-2** In addition to the reasons cited in the Capital Study, the headworks facility will house the Influent Flowmeter and pH Meter. The influent metering is a requirement of our current N.H. D.E.S. permit and must be constructed as soon as possible to comply with the permit requirements. Also, the existing headworks building which houses the communitor and bar screen is small, not well ventilated, and poses a difficult working environment for our sewer system operator, Water System Operators.

To the best of our knowledge the prior Eastman Sewer Company owner and operator did not complete any significant upgrades to the existing headworks facility. This means the headworks' systems, mechanics and components are over 30 years old. The headworks receives all of the wastewater which enters the sewer system and prepares it for the aeration lagoons, and it is vitally important this system be upgraded before it reaches the end of its usable life.

3. **Staff 1-3** We do not intend to seek quotes from engineering firms other than CLD Consulting Engineers. CLD has done engineering work for the Eastman Community Association for many years and they have always proven themselves to be very thorough and professional in their work. Over the many projects they've engineered for the Association, I'm not aware of a single instance where an error or misstep on their part created a problem for us. Given the scope of this project, we prefer to work with an engineering firm that has a proven track record with us and is very familiar with our facilities and systems.

4. **Staff 1-4** Yes, we believe the upgrade of the headworks meets the criteria established for use of the Capital Reserve Fund. This will be a significant upgrade of a critical component of the sewer system. The upgrade will entail the construction of a new building, the installation metering equipment required by N.H. D.E.S. and the replacement of the machinery (communitor) which grinds the solids before the wastewater flows to the aeration lagoons. The new building and the new system mechanical and electrical components will be incorporated into the Company's database of fixed assets.
5. **Staff 1-5** As of August 22, 2008 the balance in the Capital Reserve Fund was \$64,130. Please note that permission was given by the P.U.C. in June 2007 to withdraw \$15,000 from the Fund to pay for a pump at the main Sewer plant for pumping to the holding ponds. Our sewer operator has been very busy with other system priorities. The new pump has not yet been purchased and the \$15,000 has not been withdrawn from the Capital Reserve Fund. Therefore, the uncommitted fund balance as of today is \$49,130.
6. **Staff 1-6**
- a) The Eastman Sewer Board has requested CLD Consulting Engineers to complete a detailed cost estimate for the headworks project. As you will note on the attached Capital Replacement Schedule, the estimated total cost for the headworks structure, grinder and influent flowmeter & pH meter is \$104,725. This differs from the estimate provided by CLD in the Capital Study because we propose to build a slightly larger building than the one included in CLD's original estimates. The detailed cost estimate being done by CLD will reflect the change in building design.
- b) Yes, ESC anticipates using the Capital Reserve for construction of the new headworks.
7. **Staff 1-7** Attached is a copy of the Groundwater Discharge Permit issued on May 29, 2007
8. **Staff 1-8** Since 2004, the Eastman Sewer Company has worked with two different contractors to inspect Eastman sewer mains via camera-mounted devices that are placed within those mains. Sewer mains which have been inspected are located in the areas in and around West Cove, Butternut Road, South Shore, East Lake, portions of Slalom and Summit Drives, and the main line going down Clearwater Drive into the existing headworks facility. For the most part, the mains which have been inspected have been clear and in good condition. Last year, a near blockage caused by tree roots intruding into a manhole on Summit Drive was located and cleared. During inspection of the same area using the camera device, another partial blockage was identified. The inlet pipe to the sewer main coming from a residence on Summit Drive was shown to be intruding into the main itself and creating the potential for a blockage. The plans are to excavate that area sometime this fall and cut the excess pipe. Starting with the inspections of Summit & Slalom Drives last fall, all sewer main inspections utilizing the camera-mounted equipment are being recorded onto DVD's and kept for future reference.

I believe this answers the questions posed in your June 5th letter. If I can be of further assistance, please contact me at 863-4240. Thank you.

Respectfully,



Brian G. Harding
General Manager
Eastman Sewer Company

CAPITAL IMPROVEMENTS RECOMMENDATIONS

FOR

**Eastman Sewer Company
Treatment Facility and Collection System**

Prepared for

**Eastman Sewer Company
33 Draper Road, P.O. Box 53
Graham, NH 03753**

March 13, 2008

Submitted by



GENERAL INFORMATION

The wastewater collection and treatment system serving a portion of the Eastman Community is over 35 years old. The system includes gravity collection sewers and associated manholes, pumping stations and associated forcemains, an aerated lagoon treatment system, effluent pumping to a series of three holding (polishing) ponds, transfer pumping and chlorination of holding pond effluent to a golf course storage pond, and land application of effluent via a spray irrigation system on the Eastman Golf Course. The system was originally constructed and operated by the developer of Eastman, the Controlled Environment Corporation incorporated under the title of the Eastman Sewer Company. Approximately six years ago the Eastman Sewer Company was purchased and placed under the ownership of the Eastman Community Association. There have been several different operators of this system over the years. Currently the system is operated by Water System Operators, Inc. contracted by the Eastman Sewer Company.

Over the life of the system there have been few capital improvements. Repairs to components of this system have typically been pump and/or pump motor replacements and band aid type repairs. Many of the current system components are outdated by today's standards. CLD has reviewed and examined many of the existing wastewater system components. The following information describes existing system components, discusses proposed improvements, provides a recommended schedule of improvements, and gives costs associated with these improvements.

DESCRIPTION OF EXISTING SYSTEM COMPONENTS

Collection System

The existing sewage collection system is comprised of gravity sewer and force main sewer. The system collects sewage from condominiums and single-family homes from the West Cove area south to Snow Hill and in the East Cove and South Cove area. The majority of the sewer mains are 8" lines with many drop manholes. The gravity sewer system in the West Cove area flows to two pump stations: West Cove B Lift Station and West Cove A Pumping Station. West Cove B Lift Station pumps sewage from the station on the north side of the West Cove bridge to the south side of the bridge where it outlets into a sewer manhole and flows by gravity to the West Cove A Pumping Station. This gravity line ties into a collection system that flows to the West Cove A Station. The flow collected at the West Cove A Pumping Station is then pumped via a 6" force main along the west shore of Eastman Lake to a sewer manhole east of Snow Hill Section 3. The Snow Hill area and the South Cove area are served by the gravity collection system. The East Cove area is served by a gravity collection system and pump station. This East Cove section of the collection system is owned, operated and maintained by East Lake Condo Association. CLD is aware that there have been some problems with the East Cove Pumping Station but that portion of the system is operated independently from the contract with Water System Operators and no further information or detail was available on the East Cove area. At this time the East Cove area will not be discussed further in this report. The entire collection system, including the East Cove area, combines at the intersection of Road Round the Lake and Clearwater Drive where it flows by gravity sewer down Clearwater Drive to the treatment facility.

The collection system has been in operation for over 30 years, so some deterioration of materials and accumulation of sludge should be expected. The gravity and force main sewers have had very little maintenance throughout their existence. Recently, Eastman Community Association began taking video recordings of the sewer lines. The investigations revealed some roots in the lines and some issues such as poorly installed service lines on Slalom Drive and Summit Drive. Rocks have been observed in the wet well at West Cove B Lift Station and the gravity sewer lines flowing into the wet well seem to flow 24 hours a day. This could mean that the collection sewer system that flows into the lift station may have some infiltration and line damage. This area includes the condominiums located east of Road Round the Lake in Parcel 'B' and the areas served along Butternut Road and Otter Road in Parcel 'D'.

Wastewater Treatment Lagoons Headworks Building

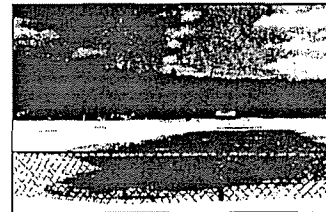
The existing headworks building located at the Aerated Lagoon treatment site contains a comminutor and a bar screen. The collection system was designed to outlet directly into the headworks channel where the flow can be sent through the comminutor or the bar screen based on operator preference and system functionality. The



comminutor, when functioning properly, will shred solids. However, the comminutor has been taken out of operation and is in need of replacement. The bar screen catches solids before sewage exits the headworks building and is functional, but requires regular cleaning. Once sewage is either shredded or screened, it passes into an outlet pit where it is distributed by gravity flow to the aeration lagoons. This Headworks Building is served by 3-phase power and is functional, but very small.

Lagoons and Aeration System

The treatment facility has four lagoons that function as two parallel systems with two lagoons on each side. The headworks channel is designed to distribute flow evenly between the two parallel lagoon systems. The aeration system has three blowers that supply air to the bubblers located in the four lagoons. Only two blowers are required, so the third blower is available to rotate in to accommodate maintenance procedures. The aeration system is functional, but old and inefficient compared to systems currently available. The blowers are extremely loud and not energy efficient and the bubblers produce large air bubbles that do not easily activate the decomposition process. The accumulated sludge has not been removed from the bottom of the lagoons and the sludge depth is unknown. The lagoons and aeration system are in fair condition and are currently functioning properly.



Treatment Plant Effluent Pump Station

The Treatment Plant Effluent Pump Station houses the wet well, the pump, and electrical components that are used to pump treated effluent from the aeration treatment lagoons to the holding ponds. Effluent from the aerated lagoons flows by gravity into junction manholes, where the effluent from each lagoon system is combined and then flows into the effluent pump station wet well. The wet well is approximately six feet in diameter and seventeen feet deep. The station has only one pump: a ten horsepower suction turbine pump. The pump operates on a very short cycle, which will likely decrease the life of the pump motor. There is no back up pump, so if the pump or motor breaks, it must be fixed or replaced promptly to avoid flooding. The pump has a highwater alarm that sounds a local alarm, but it has been deactivated since there is no one there to hear the alarm. An in-line ultrasonic flow meter has been installed on a vertical section of the outflow pipe. This section of pipe never flows at full capacity, so the flow meter does not function properly. The pump control panel is functional, but outdated. The pump station is served by 3-phase power



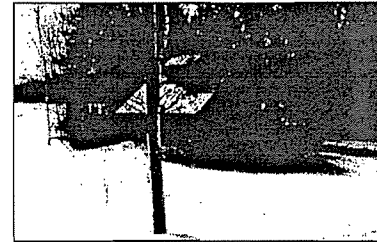
and the enclosed station has a heater to maintain adequate room temperature in the winter. There is no remote warning system associated with this pump station.

Holding Ponds

The treatment plant pump station sends treated effluent via a 6-inch force main from the aeration lagoons to three holding ponds. The holding pond fill berms were designed to have a clay section and a vertical, bituminous coated steel liner to prevent effluent from leaving the holding ponds by infiltrating the berms. It is unclear if the berms were constructed with the designed clay and steel liner. The holding ponds are used to store treated effluent until it is needed for irrigation operations on the golf course. The ponds seem to have adequate capacity, but there is some concern that a portion of the treated effluent is migrating to nearby Eastman Brook, although there is no documentation to support this concern.

Holding Ponds Pump Station

The Holding Pond Pump Station houses the wet well, pump, chlorination system, and electrical components that are used to pump treated and chlorinated effluent from the holding ponds to the 14th fairway pond on the golf course. Effluent is collected from the holding ponds into the wet well, which is approximately six feet in diameter. The station has only one pump: a ten horsepower suction turbine pump that is similar to the pump in the Treatment Plant Effluent Pump Station. The Holding Pond Pump Station is served by single-phase power. A phase converter is used to operate the 3-phase pump and motor. Since there is no heater in the winter or cooling mechanism in the summer, the phase converter is forced to operate in difficult conditions. This station is only used when water is needed for golf course irrigation, so the phase converter sits idle for long stretches including the entire winter and most of the spring and fall. The variable temperatures and long idle times cause a harsh environment that negatively affects the function and life expectancy of the phase converter. The chlorination system is an in-line liquid feed continuous drip system that provides chlorine to the force main whenever the pump is running.



The force main that is in place between the Holding Ponds and the Aeration Lagoons is a shared line. A series of shut-off valves are used to change the direction of the force main flow so that it can be used to pump from the Treatment Plant to the Holding Ponds or from the Holding Ponds to the 14th fairway pond on the golf course.

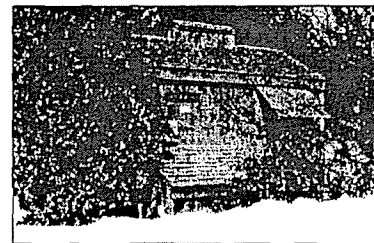
West Cove B Lift Station

This lift station collects sewage from the West Cove area north of the cove in a cylindrical metal wet well. The wet well contains a duplex pump system with two-1 horsepower submersible pumps that pump sewage up to a 4-inch force main. The wet well is approximately six feet in diameter and fifteen feet deep and has an above grade metal hatch for access. The station also has a small auxiliary building that houses a generator, the electrical control panel, and electrical service. The building is served by single-phase power and the pumps currently operate on single-phase power. A high water alarm with a dialer is in place and is used by the system operator. The building is not heated. The generator is a single-phase generator that is in relatively good condition. The two submersible pumps have plugged and malfunctioned many times in recent history. The pumps have been repaired and replaced several times, but the problems seem to persist. The existing pumps have a 2-inch intake, which seems to be one of the problems. According to the operator, the wet well has accumulated rocks and sediment in the past, which also may have lead to issues with the pumps. The electrical service panel has malfunctioned in the past and is somewhat unreliable. According to the system operator, West Cove B Lift Station is the most problematic component of the overall sewage collection and treatment system.



West Cove A Pumping Station

West Cove A Pumping Station collects sewage from West Cove B Lift Station and the West Cove area south of the cove in a metal wet well. The wet well is approximately six feet in diameter and sixteen feet deep and has an above grade hatch for access. Since the wet well is metal, it has rusted and ground water may be infiltrating the wet well. The wet well houses two 20 horsepower submersible pumps. The station has a building that contains the phase converter, generator, and electrical service and controls. The building is served by single-phase power and currently uses an old, inefficient phase converter to provide 3-phase power to the pumps. The phase converter is not evenly distributing the three legs of power. This uneven distribution is causing unnecessary wear on the pump motors and electrical system. The station is equipped with a high water alarm with a dialer that is currently used by the operator. There is evidence of problems with the capacitors on the current control panel. The generator is old, but functions properly and operates on 3-phase power.



PROPOSED IMPROVEMENTS

Collection System

The video analysis and inspection of the gravity collection lines and manholes should continue. Some of the lines that are damaged and allowing groundwater to infiltrate into the system should be slip lined. The collection system that flows into West Cove B Lift Station should be given priority when scheduling the video analysis. According to the system operator, there is a constant flow coming into the West Cove B Lift Station wet well at all hours of the day and night. This condition suggests that the gravity collection system that flows into the wet well is damaged and is allowing ground water to infiltrate into the lines.

Headworks Building at the Aerated Lagoons

The existing comminutor should be replaced with a new solids shredder. A Muffin Monster is recommended since it is a proven, quality grinder that will provide high performance with little maintenance. A Muffin Monster can be installed in the existing concrete channel in the Headworks Building. The existing 3-phase electrical service is adequate for a new Muffin Monster. The bar screen should remain in place as a back up should the Muffin Monster require maintenance.

Treatment Plant Effluent Pump Station

A second pump should be installed at this station because a treatment facility of this size should have two pump system in case one pump fails. An alternating duplex system will increase the life of the pump motors and will provide a much improved situation with respect to pump maintenance and repair. With only one pump in place, if that pump fails, the pump must be repaired or replaced immediately to prevent the lagoons from flooding. The existing pump is a vertical turbine pump. The second pump could be a similar vertical turbine pump for system continuity or it could be a submersible pump. The submersible pump is more energy efficient, but the vertical turbine pump is easier to observe and maintain. A new alarm system with a dialer should be installed. With a dialer, the operator will be called or paged any time an alarm is triggered, so that an investigation can be performed. Without a dialer, the pump(s) could fail and back up into the lagoons for a day or longer before the problem is discovered. If a second pump is installed a new duplex control panel should be installed. A new panel will ensure proper distribution of power to the two pumps and will improve monitoring capabilities. A chlorination system should be installed to chlorinate effluent as it is pumped to the holding ponds. An injection system similar to the one in use at the Holding Pond Pump Station is recommended. This is a relatively small expense that will improve the water quality of the water that is used for golf course irrigation.

Holding Ponds

Water samples should be taken from Eastman Brook and tested. If the tests show poor water quality, monitoring wells should be installed between the Holding Ponds and Eastman Brook to observe ground water quality entering the brook. A water quality monitoring program should be implemented to periodically test samples from the wells to ensure the holding ponds are not discharging effluent into the ground water.

Holding Ponds Pump Station

The phase converter in this pump station should be replaced with a Variable Frequency Drive (VFD) phase converter in a heated panel enclosure. The VFD will improve the efficiency of the station and the heated enclosure will reduce the impact of weather on the life of the phase converter. If the existing phase converter were to fail, a replacement converter like the existing one would not be readily available for purchase and delivery because that type of phase converter is outdated. If this were to occur during the summer when the golf course needs water for irrigation, the delay could cause major problems for the golf course maintenance crew. A second pump should be purchased and installed in this pump station to create a duplex pump system. As mentioned earlier in this report, a duplex system will increase the life of the pump motors and will provide a much improved situation with respect to pump maintenance and repair. If a duplex system is installed, a new duplex control panel will be required.

West Cove B Lift Station

A new submersible pump capable of handling 3" solids was recently ordered for this lift station. The new pump should be installed and operated. If the pump performs well with improved solids handling ability, a second pump should be ordered to complete a duplex pump system. This should eliminate most of the problems with clogged pumps. The control panel should be inspected and probably upgraded to improve the issues with the pump capacitors. The existing metal wet well should eventually be replaced with a watertight wet well to prevent groundwater from infiltrating into the system.

West Cove A Pumping Station

The phase converter for this station should be replaced with a VFD phase converter. This will eliminate the problems with uneven power distribution and will improve the overall energy efficiency of the station. The wet well should be replaced with a watertight wet well to prevent infiltration. An overflow structure should be installed for this pump station for use during times of pump failure to prevent sewage backups in the nearby condominiums. The existing pumps should eventually be replaced. Two alternatives for new pump configurations were investigated: submersible pumps in a wet well and vertical turbine pumps in an aboveground enclosure with a wet well.

Energy Efficiency associated with the use of Motors

Public Service Company of New Hampshire (now Northeast Utilities) has a grant program associated with upgrades in equipment that reduces and improves energy use. This program can assist in reducing the costs associated with purchasing equipment upgrades that result in significant energy savings. This program should be researched to provide funding for upgrading pumps and pump motors and converting the old inefficient phase converters to VFD phase converters. Assistance from this grant program suggests that upgraded equipment may be advantageous in reducing operating energy costs and result in relatively short term equipment cost payback.

RECOMMENDED SCHEDULE OF IMPROVEMENTS

This recommended schedule of improvements outlines estimated costs and provides a general schedule for the proposed improvements discussed in this report. The estimated costs were compiled by working with equipment representatives to evaluate system requirements and to determine costs for the new system components. Most of the representatives visited the site and observed the existing system in operation before recommending products and providing estimated costs. For each system component the 2008 estimated cost has been provided based on the estimates provided by the product representatives or as estimated by CLD. Each component has a recommended schedule for installation such as immediate, within 5 years, etc. A projected cost associated with the schedule for installation has also been provided. This was calculated based on a 4% increase in cost for each year after 2008. For example, a component that is scheduled for installation within 5 years will have a 2008 Estimated Cost and a 2013 Projected Cost.

Influent Flowmeter & pH Meter

2008 Estimated Cost = \$33,500 Installed

2010 Projected Cost = \$36,234 Installed

Recommended Schedule: Immediate

The influent metering recommended is a requirement of the current New Hampshire Department of Environmental Services (NHDES) permit and must be constructed as soon as possible to comply with the permit requirements. The estimate for the metering system includes a 4' diameter manhole with a Palmer-Bowlus flume and an ultrasonic flowmeter to monitor influent flow volume. It also includes a pH probe with a stilling well to monitor influent pH. These devices will be powered via the power supply in the Headworks Building. The construction of the metering system including excavation, bypass pumping, manhole installation, electrical work, backfill, and clean up has been included in the estimated costs.

Video Analysis & Inspection of Collection System

2008 Estimated Cost = \$4,000 per day

2010 Projected Cost = \$4,326 per day

Recommended Schedule: Immediate

According to the Eastman Sewer Company, the following areas have been inspected by video analysis: West Cove, Butternut Road, Slalom & Summit Drive, South Shore, East Lake, and Clearwater Drive. Records of the video analysis are on file at the ECA office for Slalom and Summit Drive, but the other areas were not documented. Due to the continuous flow observed in the wet well at West Cove B Lift Station, the areas that flow into this wet well should be inspected and documented. This area includes West Cove B, West Cove D, and Butternut Road. The video analysis and inspection program should continue as required to monitor the condition of the sewage collection system. Roots in the pipes indicate that it is possible for ground water to infiltrate into the collection system. This condition is detrimental to the lift station pumps and the wastewater

treatment facility. The problem could be remedied by slip-lining the existing sewer pipes. The estimated cost of slip-lining pipe is \$12 per linear foot.

Headworks Modifications

2008 Estimated Cost = \$36,225 Installed

2010 Projected Cost = \$39,181 Installed

Recommended Schedule: Within 2 Years

A Muffin Monster grinder should be installed in the existing channel within the next two years. The bar screen requires frequent maintenance and may not catch small solids. The proposed grinder is a low maintenance alternative that will provide improved treatment in the aerated lagoons by reducing the amount of solids entering the system. The estimated cost includes a Muffin Monster grinder suitable for up to 700 gpm, channel mounted frame assembly, and control panel. The cost of installing the grinder and frame, all electrical work, one day of start up service, and a one year warranty have been included in the estimated cost.

West Cove A Overflow Structure

2008 Estimated Cost = \$57,500 Installed

2013 Projected Cost = \$69,958 Installed

Recommended Schedule: Within 5 Years

The wet well at West Cove A Pump Station is metal and currently has some rust damage. It is difficult to determine if the wet well is infiltrating groundwater because there is typically sewage flowing into it. The wet well has been in place for over 30 years and will require replacement within the next 15 years. In addition to the deteriorating condition of the existing wet well, this station should include an overflow structure. The proposed improvement includes the installation of a new wet well and piping to connect the new wet well to the existing wet well. The new wet well would be used as an overflow structure during pump failure until the new pumps are installed. The new pumps would be installed in the new wet well and the old wet well would then be used as an overflow structure. The estimated cost includes the installation of a new concrete wet well adjacent to the existing one and the piping and valves required to connect the two structures.

West Cove B Lift Station Pump Replacement

2008 Estimated Cost = \$6,000 Installed

2013 Projected Cost = \$7,300 Installed

Recommended Schedule: Within 5 Years

The lift station at West Cove B has been the most problematic component of the entire collection and treatment facility according to the system operator. The control panel has significant electrical issues and the duplex pumps have consistently had problems handling solids. A new 3" submersible pump was recently ordered for this lift station and it should be installed and operated. If the pump functions properly, a second pump should be ordered and installed to complete the duplex system. An initial investigation of

the electrical system and control panel should be conducted by an outside professional to troubleshoot the existing setup. The estimated cost is based on an installation in the existing wet well and includes installation of the pump, all related plumbing, and all electrical work. The existing generator, alarm with dialer, and duplex controller would be left in place and are compatible with the proposed improvements.

Treatment Plant Effluent Pump Station

2008 Estimated Cost (Submersible) = \$34,500 Installed

2013 Projected Cost (Submersible) = \$41,975 Installed

2008 Estimated Cost (Vertical Turbine) = \$37,950 Installed

2013 Projected Cost (Vertical Turbine) = \$46,172 Installed

Recommended Schedule: Within 5 Years

A second pump should be installed in this pump station. The existing station has a vertical turbine pump with a wet well, so the second pump could be another vertical turbine pump or a submersible pump. A submersible pump will operate more efficiently while a vertical turbine pump will provide system continuity and easier maintenance. No matter which type of pump is selected, a new duplex control panel with a dialer alarm system should be installed and has been included in the prices shown. A new chlorine injection system should be installed in this station as well and that cost has also been included. NHDES has requested a chlorination system be installed in this station for years. The submersible pump installation includes a VFD to regulate pump cycles and improve operation efficiency. A VFD for the vertical turbine pump alternative could be installed at an additional cost. These improvements should be completed within the next five years to significantly reduce the risk of wastewater overtopping the aeration lagoons in the event of pump failure.

West Cove A Pumping Station

2008 Estimated Cost (Submersible) = \$46,575 Installed

2018 Projected Cost (Submersible) = \$68,942 Installed

2008 Estimated Cost (Centrifugal) = \$77,050 Installed

2018 Projected Cost (Centrifugal) = \$114,053 Installed

Recommended Schedule: Within 10 Years

The pumping station at West Cove A has had few problems when compared to the rest of the collection system. The station does, however, have significant electrical issues and the pumps have failed in the past. A new VFD should be installed to replace the existing phase converter and a new duplex control panel should be installed. The existing pumps should be replaced and two different options for new pumps were investigated as a part of the research done for this report. The first option involves the installation of a Gorman Rupp Mini Station that includes duplex 4" centrifugal pumps in an aboveground enclosure. The second option is to install new duplex 4" submersible pumps and a new rail system. The estimated costs for each option have been shown and the estimates include VFD for phase conversion and a duplex controller. The submersible pump alternative is recommended since it offers a considerable cost savings and very similar

performance to the mini station. The existing generator and dialer alarm will remain in place.

West Cove B Wet Well Replacement

2008 Estimated Cost = \$69,000 Installed

2023 Projected Cost = \$124,265 Installed

Recommended Schedule: Within 15 Years

The wet well at West Cove B Lift Station is metal and currently has some rust damage. It is difficult to determine if the wet well is infiltrating groundwater because there is typically sewage flowing into it. The wet well has been in place for over 30 years and will require replacement within the next 15 years. The estimated cost includes the installation of a new concrete wet well adjacent to the existing one and moving all the necessary equipment from the existing wet well to the new one.

Lagoon Aeration System Replacement

2008 Estimated Cost = \$ Installed

2023 Projected Cost = \$ Installed

Recommended Schedule: Within 15 Years

The existing aeration system is an older blower and piping system that produces coarse bubbles. A new aeration system would improve energy efficiency and would provide improved treatment by using fine bubbles. The recommended improvement involves the installation of Submersible ChannelAire Aerators in the lagoons. A Submersible ChannelAire Aerator is a submerged aerator, mixer, blower, and pump combined in one unit with the power to meet the most demanding oxygen transfer requirements. These units can be placed directly in the lagoons and the existing piping can be abandoned and the noisy blowers can be removed. An estimated cost will be provided as soon as it is available from the supplier.

Holding Ponds Pump Station

2008 Estimated Cost = \$32,200 Installed

2023 Projected Cost = \$57,990 Installed

Recommended Schedule: Within 15 Years

The Holding Ponds Pump Station should have a new VFD with a heated enclosure panel installed to replace the existing phase converter. This will help the dependability of this station. A new pump should also be installed to create a duplex system at this pump station. This improvement is a relatively low priority item because the holding ponds have a large capacity, so there would be plenty of time to repair the existing pump if it were to fail. The estimated cost includes a new VFD for phase conversion, a new duplex controller, and a new submersible pump with rail package. Installation is included in the estimate.

Generator and Transfer Switch Replacement

2008 Estimated Cost = \$ Installed

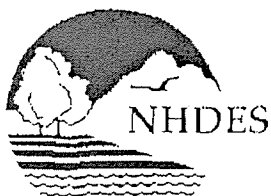
2023 Projected Cost = \$ Installed

Recommended Schedule: Within 15 Years

The existing generators in all the pump stations are functioning properly, but will soon require replacement. When the generators are replaced the transfer switches will also need to be replaced. This is a low priority item, but should be included in future improvement plans. An estimated cost will be provided as soon as it is available from the supplier.

Eastman Sewer Company
Proposed Capital Replacement Schedule
as of 8/01/08

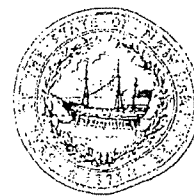
Proposed Projects	2008	2009	2010	2011	Total	Est. Life (Years)
West Cove B Pump Installation	7,209				7,209	10
Influent Flowmeter & pH Meter	33,500				33,500	25
Headworks Modifications (Structure)	49,725				49,725	50
Headworks Modifications (Grinder)	21,500				21,500	25
West Cove A Overflow Structure		59,800			59,800	50
W.C. A Pump Station & Generator & Transfer Switch Replacement		46,846			46,846	50
W.C. A Pump Replacement		20,000			20,000	10
W.C. B Wet Well Replacement & Gen. & Trans. Switch Replacement			93,774		93,774	50
Treatment Plant Effluent Pump Station			27,315		27,315	25
Pump Motor Replacements			10,000		10,000	10
Lagoon Aeration System Replacement & Gen. & Trans. Switch Repl.				134,646	134,646	50
Holding Ponds Pump Station				26,221	26,221	25
Pump Motor Replacements				10,000	10,000	10
Total	111,934	126,646	131,089	170,867	540,536	



The State of New Hampshire
Department of Environmental Services

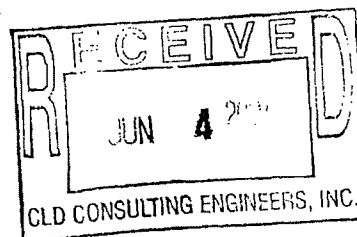
Thomas S. Burack, Commissioner

FILE COPY



May 29, 2007

Mr. Ken H. Ryder, General Manager
Eastman Community Association
Eastman Wastewater Treatment Facility
P.O. Box 470
Grantham, New Hampshire 03753



**SUBJECT: GRANTHAM- EASTMAN WASTEWATER TREATMENT FACILITY,
GROUNDWATER DISCHARGE PERMIT (DES #198801026)**

Dear Mr. Ryder:

Please find enclosed Groundwater Discharge Permit Number GWP-198801026-G-003 issued by the Water Division of the Department of Environmental Services (Department), for the discharge of treated disinfected wastewater to the facility golf course with disposal via infiltration from unlined storage ponds and slow rate spray irrigation to the existing golf course.

Please note that the sampling frequency and parameters for the wastewater effluent used for spray irrigation have been revised in Condition #12 to better substantiate that the effluent discharged does not pose a risk to human health or the environment.

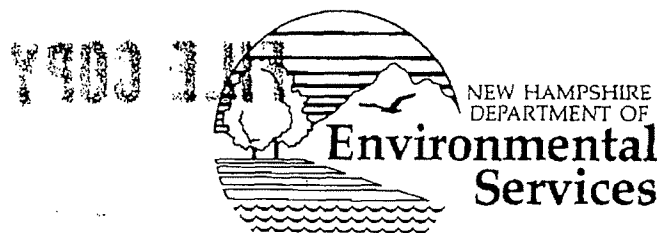
Please review the permit conditions carefully for changes and revisions. Should you have any questions, please contact me at the Department at (603) 271-2858.

Sincerely,

Mitchell Locker
Water Supply Engineering Bureau

MDL/ml/h:\swp\uic1\2007mdl\permits\198801026-G-003pmt
Enclosure

c: Rene Pelletier Assistant Director, WD
John Bush, P.E., Administrator, WWEB
Charles I. Hirshberg, CLD, Curtis House, 256 Route 5 South, Norwich, VT 05055
Joe Damour, Waster Systems Operators, Inc., PO Box 69, Henniker, NH 03242
File



The

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

hereby issues

GROUNDWATER DISCHARGE PERMIT

NO. GWP-198801026-G-003

to the permittee

TOWN OF GRANTHAM

for the discharge of up to 2 inches per week including precipitation
of domestic wastewater from the Eastman Community Wastewater Treatment Facility

to the groundwater via infiltration and slow rate spray irrigation

as depicted on the drawings titled

Eastman Wastewater Groundwater Discharge Permit "Facility Plan" and

"Groundwater Discharge Zone Map"

both dated October 2006

Prepared by CLD Consulting Engineers

TO: EASTMAN COMMUNITY ASSOCIATION
EASTMAN SEWER COMPANY
P.O. BOX 470
GRANTHAM, NH 03753

Date of Issuance: May 29, 2007
Date of Expiration: April 28, 2012

(continued)

Pursuant to authority in N.H. RSA 485-A:13, I(a), the New Hampshire Department of Environmental Services (Department), hereby grants this permit to discharge treated disinfected wastewater to the groundwater via infiltration from unlined holding ponds and slow rate spray irrigation at the above described site, subject to the following conditions:

STANDARD DISCHARGE PERMIT CONDITIONS

1. The permittee shall not violate Ambient Groundwater Quality Standards adopted by the Department (N.H. Admin. Rules, Env-Ws 1500) in the groundwater, at the boundary of the groundwater discharge zone, as shown on the referenced site plan.
2. The permittee shall not cause groundwater degradation, which results in a violation of the surface water quality standards (N.H. Admin. Rules, Env-Ws 1700), in any surface water body at the boundary of the Groundwater Discharge Zone, as shown on the referenced site plan.
3. The permittee shall allow any authorized member of the Department's staff, or its agent, to enter the property covered by this permit for the purpose of collecting information, examining records, performing routine inspections, collecting samples, or undertaking other action associated with the permit.
4. The permittee shall apply for renewal of this permit at least 90 days prior to its expiration date. The permittee shall continue to comply with all conditions in this permit until the permit is renewed or the facility is closed in accordance with all applicable requirements, regardless of whether a renewal application is filed.
5. This permit is transferable only upon written request to, and approval of, the Department. Compliance with the existing permit shall be established prior to ownership transfer. Transfer requests shall include the name and address of the person to whom the permit transfer is requested, signature of the current permittee, and a summary of all monitoring results to date.
6. Department approval is required for changes in volume or character of pollutants received by the facility and/or its appurtenances. If there is any additional sewer construction, with increases of more than 5000 gpd and/or 50 population equivalents and greater, the permittee shall submit a "Sewer Connection Request Form" to the Administrator of the Wastewater Engineering Bureau for review and approval.
7. The Department reserves the right, under N.H. Admin. Rules, Env-Ws 1500, to require additional hydrogeologic studies and/or remedial measures if the Department receives information indicating a need for such work.
8. All federal, state, and local permits required for this activity shall be obtained and remain current.
9. All grit, oil, sludge, or other wastes that result from the operation of the treatment system shall be disposed of only in a facility approved by the Department for such disposal.
10. Issuance of this permit is based on the groundwater discharge permit application package dated October 5, 2006 and information in the DES file #198801026

(continued)

GWP-198801026-G-003

11. The permittee shall submit detailed design plans to the Department's Wastewater Engineering Bureau for review and approval of proposed improvements and/or expansions prior to any construction activity. No discharge to expanded facilities shall be allowed without the written approval from the Department.
12. The permittee shall maintain a water quality monitoring program and submit monitoring results to the Department's Groundwater Discharge Permits Coordinator no later than 45 days after sampling. Effluent to the 14th fairway storage pond shall meet the following criteria for reuse prior to blending:

Effluent sampling shall be conducted at the point of discharge into the Fairway #14 holding pond. Effluent discharged to the Fairway holding pond shall meet the following criteria:

<u>Parameter</u>	<u>Effluent limit</u>
BOD ₅	10 mg/l
TSS	5 mg/l
Fecal Coliform	no detectable - 7 day median (1 day max 14cts/100 ml)
Chlorine Residual	≥ 1 mg/l after 30 minute contact time

Samples and readings shall be taken from on-site monitoring wells, piezometers, and surface water sampling points listed on the following table in accordance with the schedule outlined therein.

<u>Monitoring Locations</u>	<u>Sampling Frequency</u>	<u>Parameters</u>
RFW-1,2,3,4 and PZ-6	May and November of each year	Arsenic, Chloride, Nitrate, <u>Escherichia Coli</u> , pH, TKN, Ortho-Phosphorus, Specific Conductivity @25°C, & Static Water Elevation
*SG-1&2	May and November of each year	BOD ₅ , Dissolved Oxygen, Nitrate, pH, TKN, Total Phosphorus, & Specific Conductivity @ 25°C
**14 th Fairway	Daily	BOD ₅ , Chlorine, Dissolved Oxygen, <u>Fecal Coliform</u> , TSS
	Monthly	Nitrate, TKN, & Total Phosphorus
***Piezometers	Monthly during spray season	Static Water Elevation
RFW-1,2,3,4,	November 2009 & 2012	VOCs using EPA Method 8260B & Drinking Water Metals

*SG-1&2 are surface water sampling points

** testing required during spray irrigation season only

***See Condition #19

(continued)

GWP-198801026-G-003

Treatment Facility Sampling

<u>Monitoring Locations</u>	<u>Sampling Frequency</u>	<u>Parameters</u>
Influent and Effluent	Daily Weekly Monthly	Continuous flow (gpd) & pH BOD ₅ , DO, and TSS, Ammonia, nitrate, and Total Phosphorus

Samples shall be obtained using sampling procedures and protocol described in "Practical Guide for Ground-Water Sampling," USEPA current edition, and "RCRA Ground-Water Monitoring Enforcement Guidance," USEPA current edition. Samples shall be analyzed by a laboratory certified by the U.S. Environmental Protection Agency or the Department.

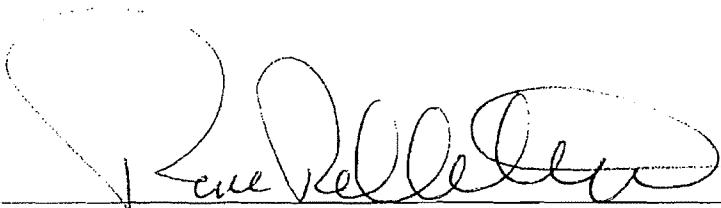
An annual summary of water quality data shall be submitted to the Department's Groundwater Discharge Permits Coordinator in the month of January using a format acceptable to the Department.

13. PZ-6 shall be installed as a groundwater monitoring point and be capable of obtaining a sample of groundwater. PZ-6 will be part of the regular sampling locations as noted in Condition #12.
14. The wastewater treatment facility shall be operated and maintained by qualified operators, licensed by the Department under the requirements of the N.H. Admin. Rules, Env-Ws 901.
15. The permittee shall notify the Administrator of the Wastewater Engineering Bureau, in writing, when the wastewater treatment facility reaches 80% of its design capacity for 90 consecutive days.
16. The permittee shall submit completed monthly operation reports to the Department's Wastewater Engineering Bureau, Operations Section. Monthly reports shall include site spray application rates and the observation well readings.

CONDITIONS SPECIFIC TO SPRAY IRRIGATION

17. Spray irrigation shall be applied only to the areas as specified on the referenced plan. Discharge volumes of treated disinfected effluent shall not exceed 2" per week including precipitation. The facility includes 106 acres of spray irrigation area which allows for discharge of up to 5.75 million gallons/week of wastewater effluent (with no precipitation).
18. Design and operation of slow rate irrigation systems shall follow the "Process Design Manual-Land Treatment of Municipal Wastewater," USEPA current edition.
19. No spray application shall be allowed during rainfall or after leaf fall. Spray shall be allowed only from May 1 thru October 31 unless otherwise approved by the Department in writing.

20. The permittee shall maintain a one-foot minimum of unsaturated soil depth in the spray irrigation areas at all times and shall maintain piezometers as shown on Figure #3 "Facility Plan" to record the unsaturated thickness during the spray season. Proposed piezometers shall be installed and maintained as noted in figure #3 of the permit application and include the following:
 - PZ-2, 4, 5, 6, 7, 9, 11, 12, 13, 14, 15, 16, 17 (located at corresponding golf course hole)
 - PZ-LG- A&B (located near the treatment works lagoons)
 - PZ-HP-A & B (located near the holding ponds)
21. PZ-6 shall be installed as a groundwater monitoring point and be capable of obtaining a sample of groundwater. PZ-6 will be part of the regular sampling locations as noted in Condition #12.
22. The wastewater irrigation activities shall not cause surface erosion or result in a direct discharge to a surface water body. Spray activities shall be conducted so as to minimize any overland flow on site.
23. Complete records shall be kept of spray application rates (gallons/day/spray area) and water levels in the observation wells. These records shall be tabulated and submitted to the Department's Groundwater Discharge Permits Coordinator monthly during the spray period and an annual summary shall be submitted in the month of January of each year.
24. The permittee shall notify the Department's Groundwater Discharge Permits Coordinator in writing of alteration to, or abandonment of, the wastewater treatment lagoons, storage lagoons, or spray irrigation system.

A handwritten signature in black ink, appearing to read "Rene Pelletier", is written over a horizontal line.

Rene Pelletier, P.G., Assistant Director
Water Division

Under RSA 21-0:14 and 21-0:7-IV, any person aggrieved by any terms or conditions of this permit may appeal to the Water Council in accordance with RSA 541-A and N.H. Admin. Rules, Env-WC 200. Such appeal must be made to the Council within 30 days and must be addressed to the Chairman, Water Council, 6 Hazen Drive, PO Box 95, Concord, NH 03302-0095.

JOHN MUELLER
EASTMAN SEWER COMPANY INC
PO BOX 470
GRANDTHAM NH 03753

Docket #: 08-078 Printed: September 19, 2008

FILING INSTRUCTIONS: PURSUANT TO N.H. ADMIN RULE PUC 203.02(a),
WITH THE EXCEPTION OF DISCOVERY, FILE 7 COPIES (INCLUDING COVER LETTER) TO:
DEBRA A HOWLAND
EXEC DIRECTOR & SECRETARY
NHPUC
21 SOUTH FRUIT STREET, SUITE 10
CONCORD NH 03301-2429

PURSUANT TO N.H. ADMIN RULE 203.09 (d), FILE DISCOVERY

DIRECTLY WITH THE FOLLOWING STAFF

RATHER THAN WITH THE EXECUTIVE DIRECTOR

LIBRARIAN
NHPUC
21 SOUTH FRUIT ST, SUITE 10
CONCORD NH 03301-2429

BULK MATERIALS:

Upon request, Staff may waive receipt of some of its multiple copies of bulk materials filed as data responses. Staff cannot waive other parties' right to receive bulk materials.

JIM CUNNINGHAM
NHPUC
21 SOUTH FRUIT ST, SUITE 10
CONCORD NH 03301-2429

EDWARD DAMON
NHPUC
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JAYSON LAFLAMME
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AMANDA NOONAN
CONSUMER AFFAIRS DIRECTOR
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