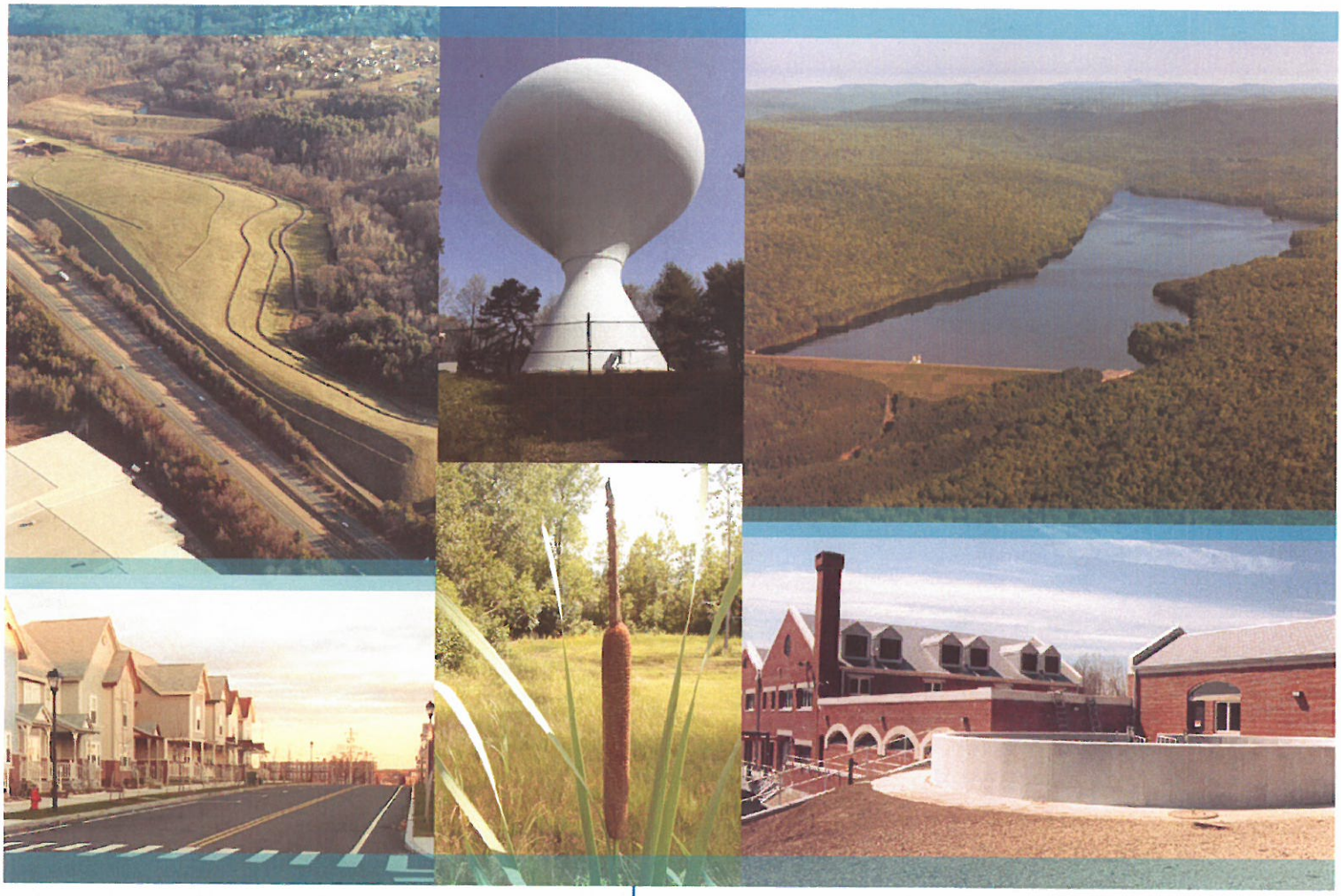

Tighe&Bond

Town of Wayland
Town Office Building
41 Cochituate Road
Wayland, Massachusetts

Engineering Design Report

Prepared For:
Town of Wayland
Wastewater Management District Commission
41 Cochituate Road
Wayland, MA

August 2013

COMMONWEALTH OF MASSACHUSETTS
IAN B. CATLOW
CIVIL
NO. 49112
REGISTERED PROFESSIONAL ENGINEER

8/29/13

Section 1
Introduction

The Wayland Wastewater Treatment Plant (WWTP) is located on the former Raytheon property in Wayland Massachusetts. The property is situated along the Sudbury River off Route 20 between Boston Post Road and Old Sudbury Road as shown in Figure 1-1. The WWTP was originally constructed in 1961 by Raytheon and designed to treat effluent from its facilities to secondary standards. The WWTP was upgraded in 1973, through the addition of a multimedia filter and chemical feed system, to provide tertiary treatment for the reduction of phosphorus. The original WWTP outfall discharged to a wetland adjacent to the Sudbury River.

The Town acquired the WWTP in 1999 via eminent domain from the Wayland Business Center, LLC. The town agreed to continue to provide sewer service to the former Raytheon property and committed to provide 45,000 gallons per day (GPD) (Title 5 basis) of the WWTP's capacity to the Wayland Business Center, LLC. developer. In taking over the plant, the Town also accepted the responsibility for treating the flows from more than two dozen aging and potentially inadequate septic systems in the area.

In 2003, the parcel surrounding the plant was purchased by Twenty Wayland, LLC. Twenty Wayland, LLC. is currently redeveloping the existing office buildings as a mixed use development. This development project is slated for completion in late 2013. Based on MassDEP's concern that actual flows discharged by the WWTP will exceed the permitted 12-month rolling average flow limit of 52,000 GPD, MassDEP has required the Wastewater Management District Commission (WWMDC) to permit additional discharge capacity under the Groundwater Discharge Permitting Program prior to the release of any additional connections to the WWTP.

In summer 2009, the Town commenced design of a new WWTP utilizing membrane bioreactor technology to handle the more stringent NPDES permit. The new WWTP has been designed, constructed, and is accepting flow. As part of the construction project, the original WWTP will be demolished.

In order to accommodate flows exceeding the 52,000 GPD 12-month rolling average flow limit for the NDPES permit, the Town is pursuing a Groundwater Discharge permit to accommodate additional flow produced throughout the service area. The Groundwater Discharge permit that the Town is pursuing is for 17,000 GPD to be located at the site of the Town Office Building on Cochituate Road as shown in Figure 1-1. This 17,000 GPD will provide sufficient capacity to release the remaining allotment of Twenty Wayland LLC's committed capacity.

As part of this project, the Town Office Building will abandon its existing septic system and will discharge to a grinder pump station where the wastewater will be ground into a slurry and pumped to the low pressure sewer system in Cochituate Road. This low pressure system distributes wastewater to the WWTP where it will be treated. This system has been sized for 3,000 GPD based on Title 5 flow generation guidelines.

The following Engineering Design Report addresses issues related to the design and operation of the proposed Groundwater Discharge System including layout and design of the proposed force main, Town Office Building connection, soil absorption system (SAS), and pumps.

FIGURE 1 - 1
PROPOSED DISCHARGE PIPING AND AREA

New Wastewater Treatment Plant Location

Proposed Sewer Line from WWTP to Groundwater Discharge Pump Station at Town Office Building (3,460 LF)

Proposed E-One Grinder Pump for Town Office Building Flow

Proposed Force Main from E-One Pump for Town Office Building to Existing Sewer Manhole (1,310 LF)

Proposed Forcemain Lines to Field 'A' and Field 'B' (430LF)

Proposed Groundwater Discharge Pump Station

Proposed Discharge Area

BOW RD
PLAIN RD
PARMENTER RD
OLD SUDBURY RD
CONCORD RD
NOB HILL RD
MILLBROOK RD
GLEN RD
WINTHROP RD
BOSTON POST RD
PELHAM ISLAND RD
JEFFREY RD
BENNETT RD
TRINITY PL
WINTHROP TER
COCHITUATE RD

LEGEND

- Proposed Valve Chamber
- Proposed Force Main
- Proposed Groundwater Discharge
- Discharge Area
- 3' Wide Leaching Trench
- WWTP Parcel

LOCUS MAP

N
W E
S

0 200 400
Feet

1:4,800

NOTES

1. Based on MassGIS Color Orthophotography (April 2008) Orthophoto Sheet ID # 21179020

Wayland Town Offices
Wayland, Massachusetts

August 2013

Tighe&Bond

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W-1396

Section 2
Project Design Criteria

The existing WWTP is located adjacent to the Sudbury River off Route 20 between Boston Post Road and Old Sudbury Road. The WWTP is accessed via a driveway off Old Sudbury Road. The proposed soil absorption system is located in the southeast corner of the Town Office Building property at 41 Cochituate Road. The force main connecting the WWTP to the soil absorption system will begin at the existing WWTP site and run to Old Sudbury Road before continuing south on Cochituate Road to the entrance of the Town Office Building site. Treated effluent will flow under pressure generated by the discharge elevation at the WWTP. The force main will enter the property at the driveway entrance on 41 Cochituate Road where it will discharge into a wet well. The wet well will have two submersible pumps and will discharge to two force mains that will run parallel to the baseball and soccer field to the soil absorption system. Each force main will be associated with one of the two zones of the soil absorption system.

The following subsections provide an overview of effluent limits, design flows and loads for the Wayland WWTP.

2.1 Service Area

The service area contributing to the flow at the WWTF is composed of residential, commercial, and municipal properties. Table 2-1 below lists the facilities connected to the WWTF. The Town Building is currently not connected but will be connected as part of this project if the groundwater discharge system is constructed as the existing leach field for the Town Building will need to be demolished.

TABLE 2-1
WWTF Service Area

Facilities Connected to WWTF	Addresses
Russell's Garden Center	397/372 Boston Post Road
Residential	364 Boston Post Road
Residential	311 Boston Post Road
Nails/Olga's	310B Boston Post Road
304 BPR LLC	304 Boston Post Road
Wayland Cleaners	298 Boston Post Road
KaBloom (Beautiful Nails)	298 Boston Post Road
Whole Foods	317 Boston Post Road
State Road Auto Body	292R Boston Post Road
Somerby's Hair Salon	292 Boston Post Road
U.S. Post Office	277 Boston Post Road
Residential	264 Boston Post Road
Corner Store Café	234 Boston Post Road
Dr. Carapezza	233 Boston Post Road
Wayland Capital Management	231 Boston Post Road
Pheonix Veterinary Service	9 Pelham Island Road
Moodz Day Spa & Salon	30 Cochituate Road
Residential	105 Pelham Island Road
Residential	101 Pelham Island Road
Residential	11 Cochituate Road
Residential	25 Cochituate Road
Residential	31 Cochituate Road
Public Safety Building	38 Cochituate Road
267 BPR LLC	267 Boston Post Road
Residential	19 Pelham Island Road
241 BPR LLC	241 Boston Post Road
Residential	310A Boston Post Road
Mini Mart	334 Boston Post Road
Residential	40 Hastings Way
Residential	38 Hastings Way
Residential	36 Hastings Way
Residential	21 Hastings Way
Residential	23 Hastings Way
Residential	25 Hastings Way
Residential	27 Hastings Way
Residential	29 Hastings Way
Residential	31 Hastings Way
Residential	33 Hastings Way
Library	5 Concord Road
Wayland Commons	Old Sudbury Road
Residential	338 Boston Post Road
Residential	336 Boston Post Road
Sovereign Bank	326 Boston Post Road
Residential	300 Boston Post Road
Bank of America	289 Boston Post Road
Shepard House	274 Boston Post Road
Shepard Mobil	268 Boston Post Road
Residential	13 Pelham Island Road
Olde Collins Market	21 Cochituate Road
Verizon	244 Boston Post Road
Residential	32 Pelham Island Road
Twenty Wayland	
Wayland Town Building	41 Cochituate Road

2.2 Infiltration/Inflow Removal in Collection System

Since most of the Wayland collected system is composed of low pressure sewers infiltration is a limited problem. In spite of this, the WWTP has experienced elevated flows for relatively short durations in recent years. The Town of Wayland is currently attempting to remove infiltration from the collection system. The Town has identified the wastewater pump station at the Public Safety Complex as a potential source of infiltration. The fiberglass tank that houses the E-one grinder pumps is potentially leaking at the seams in the tank and allowing groundwater to seep into the system. Another source of infiltration was identified at the Public Safety Complex system in the 8" cleanout pipe. The Town of Wayland is working with Tighe & Bond to prepare plans and details for the method of leak mitigation. Other potential leaks will be addressed if and when elevated flows are observed at the WWTP.

2.3 Sewer Use Regulations

The Wayland Wastewater District Commission Sewer Use Regulations can be found in Appendix A. The WWMDC established these regulations for the use of public sewers and drains, the installation and connection of building sewers, the discharge of water and wastes into the public sewer system, and providing penalties for violation of these regulations.

2.4 Effluent Requirements

The NPDES permit and the Groundwater Discharge permit limit the flow and amount of pollutants that the facility may discharge to the receiving water and the groundwater respectively. Effluent requirements for both groundwater discharge and surface discharge to the Sudbury River are discussed in this section.

The majority of the conventional flow and pollutant limits for the Wayland WWTP permit are similar to those imposed on other municipal treatment facilities. Specifically, limits on effluent BOD, TSS, pH, and fecal coliform are similar to those observed at other plants located on the Sudbury, Assabet or Concord Rivers. Additionally, the monthly average flow, reported as an annual rolling average limit, is EPA's standard method of limiting facility flows. This method of flow measurement has benefited communities that experience seasonal high flows due to excessive infiltration and inflow. While Wayland does not appear to have a significant problem with infiltration and inflow, this method of flow reporting may help the Town remain in compliance with its permit as its service area expands and there are seasonal variations in the quantity of wastewater produced by commercial users.

As discussed above, the NPDES permit provides two different sets of discharge limits based on the location of the outfall. Table 2-2 lists the NPDES permit limits for the WWTP discharge to the Sudbury River outfall. Table 2-3 lists the Groundwater Discharge permit limits for the WWTP discharge to soil absorption system at the Town Office Building.

TABLE 2-2
NPDES Permit Limits for a Discharge to the Sudbury River

Parameter	Average Annual	Average Weekly	Maximum Daily
Flow	0.052 MGD		

Parameter	Average Monthly Concentration	Average Weekly Concentration	Maximum Daily Concentration
$CBOD_5$	30 mg/l	45 mg/l	Report
TSS	30 mg/l	45 mg/l	Report
Total Phosphorus	0.1 mg/l		
pH Range	Must be maintained within the range:		6.5 - 8.3 SU
Fecal Coliform	200 cfu/100ml		400 cfu/100ml
Whole Effluent Toxicity	Acute $LC_{50} \geq 100\%$ measured Yearly		

TABLE 2-3
Anticipated Groundwater Discharge Permit Limits

Parameter	Average Annual
Flow	0.017 MGD

Parameter	Average Monthly Concentration
$CBOD_5$	30 mg/l
TSS	30 mg/l
Nitrate Nitrogen	10 mg/l
Total Nitrogen	10 mg/l
Oil and Grease	15 mg/l
Surfactants	1.0 mg/l

The upgrade of the WWTP has taken into consideration the removal of nitrogen for the purposes of compliance with the Groundwater Discharge permit as well as the potential that nitrogen removal may be a NPDES permit requirement over the design life of the facility upgrade. There are several additional reasons why nitrogen removal was included in the design of the upgraded WWTP, including the following:

- Nitrogen removal at the WWTP will protect water quality at municipal supply wells located downstream of the plant;
- Nitrogen removal at the WWTP will reduce nutrients available to noxious aquatic plants in the Sudbury River, thereby potentially limiting their growth;

- Performing nitrification and denitrification (both needed to remove nitrogen) within the plant can reduce process alkalinity demand by up to 40%;

- Performing nitrification and denitrification within the plant can reduce process oxygen demands by over 15%;

The WWTP was designed for a total nitrogen limit of 10 mg/l for compliance with the groundwater discharge permit, potential future NPDES limits, and for other environmental and process benefits.

2.5 Design Flow

To develop the wastewater treatment plant upgrade design a number of key plant loading and water quality parameters were defined. The loading parameters are usually determined based on historical operating data and projected future flows and loads. In the case of the Wayland WWTP, the historical flows are significantly less than the future flows and loads anticipated from the new development. Since the new development will be providing more than 85% of the future flow, it was necessary to perform the flow and load calculations by taking into account the planned uses within the development as well as the existing offsite flows. A brief summary of design conditions and effluent limitations follows.

Design flows for the basis of WWTP design were based on the average annual daily flow of 52,000 GPD listed in the facility's NPDES permit. Peaking factors developed to evaluate systems under a variety of flow conditions were also utilized to generate maximum monthly, daily and hourly peak flows. These peaking factors are based on data published in the Guide for the Design of Wastewater Treatment Works (TR-16) (NEWIWPCC, 1998), as well as operational data collected from similar facilities. Various peaking factors and projected flows are summarized in Table 2-4.

TABLE 2-4
Design Flow Projections

	Projected Flow Rate		
Flow Parameter	**(GPD)**	**(MGD)**	**Peaking Factor**
Average Daily Flow	52,000	0.052	1.0
Maximum Monthly Flow	78,000	0.078	1.5
Maximum Daily Flow	135,200	0.135	2.6
Peak Hourly Flow	218,400	0.219	4.2

Peaking Factors from New England Interstate Water Pollution Control Commission, Technical Report #16

To achieve consistent compliance with the specified monthly NDPDES permit limits, all biological processes considered were designed to meet permitted effluent limits at maximum monthly flow. Additionally, the WWTP is generally designed with a sufficient hydraulic capacity to pass the peak day flow with one treatment train out of service.

2.6 Design Loads

Generating an accurate estimate of influent pollutant and nutrient loads is important to sizing process units within a WWTP. Influent loadings for this evaluation were determined based on an analysis of the wastewater treatment plant records as well as

projected loads for the new development. Anticipated Wayland Town Center loading projections were created using land use information from the Final Environmental Impact Report, written by Epsilon Associates, Inc. dated February 15, 2008. Using historical user data and standard statistical techniques, influent pollutant loadings were estimated for biochemical oxygen demand (BOD), total suspended solids (TSS), ammonium (NH4), and total phosphorus (TP). Influent pollutant loadings for BOD, TSS total Kjeldahl nitrogen (TKN), and total phosphorus at both average day and maximum month design conditions are summarized in Table 2-5. Corresponding influent concentrations at average day and maximum month design flows are presented in parentheses following the design load.

TABLE 2-5
Design Load Projections

Parameter	Average Daily Load	Maximum Monthly Load
BOD_5	164.90 lb/day (380 mg/l)	230.87 lb/day (355 mg/l)
TSS	164.90 lb/day (380 mg/l)	230.87 lb/day (355 mg/l)
Total Phosphorus	4.34 lb/day (10 mg/l)	5.64 lb/day (9 mg/l)
Total Kjeldahl Nitrogen (as N)	17.36 lb/day (40 mg/l)	22.57 lb/day (35 mg/l)

Peaking Factor created from Figure 3-8 M&E p. 195. (BOD-1.4; TSS-1.4; TP-1.3; TKN - 1.3)

2.7 Summary of Existing Discharge Monitoring Reports (DMR) Data

The WWTF has been on-line for approximately one year and has been operated by WhiteWater, Inc. ("WhiteWater"). A spreadsheet summarizing the Discharge Monitoring Report (DMR) data has been attached as Appendix B. During this time influent flows and loads have consistently been below the levels assumed during the design process. However, influent strength, particularly for BOD, has produced higher concentrations than anticipated. This has been attributed to two factors. First, high efficiency water fixtures decrease the volume of water available for dilution, and second, the Wayland Town Center project has built out several food service establishments in the first phase of the project which can contribute high strength waste to the plant.

Section 3
Existing Wastewater Treatment System

This section describes the systems and processes of the existing wastewater treatment plant.

3.1 Existing System Overview

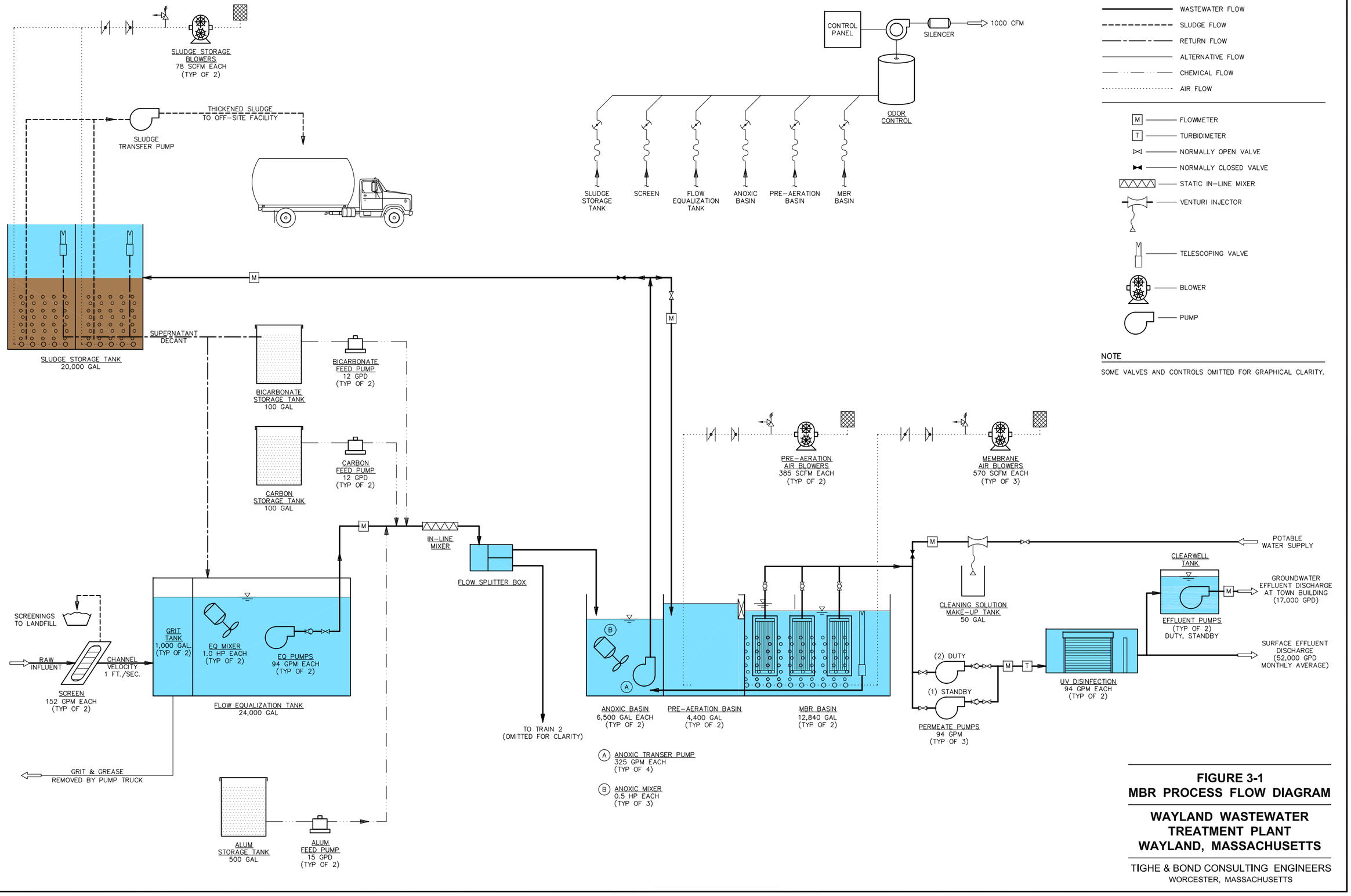
Membrane bioreactor systems incorporate many of the components of conventional activated sludge processes which are designed to remove solids, biochemical oxygen demand (BOD), and nitrogen compounds. Conventional systems often include a series of aerated and non-aerated tanks where biological processes occur, followed by a clarifier where solids are removed. Membrane bioreactors eliminate the clarifier from the process by adding submerged membrane filters to the aeration tanks. The membrane filters have pore sizes that are fractions of a micron which keep solids within the aeration tank while allowing clarified water to pass through the system for discharge or additional treatment.

Typical membrane bioreactor (MBR) designs include preliminary treatment, flow equalization, biological nutrient removal, membrane filtration and ultraviolet disinfection prior to discharge. Odor control is often provided for aerated process tanks, or other processes such as sludge thickening that generate odors. All of these functions are located within the new WWTP building located near the Wayland Town Center project. Sludge storage is provided in a tank also located in the new WWTP building. A process flow diagram for the WWTP is included in this section as Figure 3-1. The design of the MBR system consists of the following components.

Fine Screens – Two (2), 2 mm fine screens are located at the head of the plant to provide coarse solids removal and protect the membranes from fouling and damage. Fine screens have been located to accept flow from both gravity and pressure sewers. Each screen is sized for the peak hourly flow of 152 GPM to provide the facility with 100% redundancy. The screens are operated in a duty/standby fashion, so that in the event of clogging or mechanical failure, influent will be re-directed to the standby unit.

Grit Tank – A grit tank follows the screens to remove grit prior to contact with pumps and mixers. The grit tank is designed to remove particles with a specific gravity of greater than 2.65 at the peak hourly flow rate and provide grit storage. A baffle is located at the effluent end of the tank to prevent oil, grease and other floatables from passing into the biological treatment system. Both of these design objectives are accomplished within a 1,000 gallon tank. The tank is manually cleaned by a sludge pumping truck. The tank is located in the lower level of the WWTP so that screened influent can flow by gravity through the grit tank and into the equalization tank.

Equalization Tank – An equalization tank (EQ tank) dampens the effects of flow variations to minimize the size of the membrane filters. Influent enters the EQ tank and mechanical mixing prevents solids settling and the development of septic conditions within the tank. Pumps provide a consistent flow rate out of the tank to a flow splitter box, which feeds one or both of the two process trains. The flow equalization pumps are designed to distribute the maximum daily flow of 135,200 GPD over a 24-hour period. The pumps can either be controlled by the liquid level of the tank or cycle timers in the plant's control system. A flow equalization tank volume of



11/24/12 O:\PROJECTS\WT\WT396 WAYLAND\CONCEPTUAL\PROCESS\MBR New FIG 3-1

FIGURE 3-1
MBR PROCESS FLOW DIAGRAM

WAYLAND WASTEWATER TREATMENT PLANT
WAYLAND, MASSACHUSETTS

TIGHE & BOND CONSULTING ENGINEERS
WORCESTER, MASSACHUSETTS

24,000 gallons is provided based on the maximum daily flow described above and diurnal flow variation observed at similar WWTPs.

Chemical Addition Systems – Three (3) chemical addition systems are utilized in the treatment process. Each system consists of a chemical storage tank with mixer and two chemical feed pumps.

- Potassium aluminum sulfate (alum) is used as a coagulant to assist in floc formation and phosphorus removal. The alum system is designed to provide 20 GPD of alum prior to the anoxic tanks.
- A carbon source chemical feed system is also provided to augment the food requirements in the biological process as needed. While process calculations do not presently indicate a need for supplemental carbon, the system is being provided for conditions which may occur during startup or if the influent loadings are substantially different than presently assumed.
- Bicarbonate is also fed to the system to control the alkalinity within the system to aid in the nitrogen removal process. The alum, carbon, and bicarbonate feeds all take place prior to the static mixers which preceed the anoxic tanks.

Biological Treatment Process – The MBR system is operated using the Modified Ludzack-Ettinger (MLE) process, which uses anoxic tanks followed by aeration tanks for BOD reduction, nitrification, and denitrification.

- Anoxic Tanks – Two (2) anoxic tanks provide an anoxic zone for denitrification and alkalinity recovery, both of which are necessary to achieve an effluent total nitrogen concentration of less than 10 mg/l. These tanks are operated without aeration as completely mixed reactors through the use of submersible mixers. Process calculations indicate that a volume of 13,000 gallons is needed to reduce the total nitrogen concentration to the level stated above at the maximum monthly flow. This volume is split evenly between two cast-in-place concrete tanks located below grade within the treatment plant building. Denitrified flow from the anoxic tanks is pumped to the pre-aeration and MBR tanks at a rate of four to six times the influent flow rate. In the aeration tanks, wastewater is nitrified and then returned to the anoxic tank via recycled flow piping. This internal recycling process reduces the total nitrogen present in the waste and recovers alkalinity lost during aeration. To accomplish this process, two anoxic pumps, each capable of pumping 325 GPM, are provided in each process train. These pumps are operated in duty/standby mode to provide 100% redundancy.

- Pre-Aeration Tanks – Process calculations indicate that a total aerated volume of 34,400 gallons is needed to completely nitrify influent ammonia and remove BOD to permitted levels. This volume is split between the membrane tanks and the pre-aeration tanks. The size of the membrane tanks is governed largely by the size and spacing requirements of the membrane filters and any excess aeration volume is dedicated to the pre-aeration tanks. This configuration allows the Operator to 'fine tune' process aeration by adding or subtracting the amount of air provided within the pre-aeration tank to meet process needs. Based on the anticipated size of the membrane filters, the pre-aeration tanks have been sized at 4,400 gallons each. Two (2) pre-aeration tanks, each containing independent fine bubble air diffuser process air blowers have a capacity of 385 SCFM each and are operated in a duty/standby mode. Process air blowers are controlled by dissolved oxygen probes located in each of the pre-aeration basins. The pre-aeration basins are designed as cast-in-place concrete tanks and share common walls with the anoxic tanks and membrane tanks. Effluent flows by gravity to the membrane tanks.

- Membrane Tanks – As described in the pre-aeration tank section, two (2) membrane tanks house the membrane filters and coarse bubble diffusers used for membrane cleaning. These tanks are sized based on manufacturer requirements for membrane cartridge size and spacing. Two membrane tanks, each roughly 13,000 gallons in size are required. The design is a plate membrane configuration and the installed equipment was manufactured by Enviroquip, Inc. This configuration was selected for its high flux rate, low operational pressure requirements, durability, and simple cleaning procedures. Plate membranes are also less susceptible to fouling by hair, oil, and grease, all of which will likely be present in the Wayland waste stream.

  Individual membrane cartridges (i.e. plates) are assembled in cassettes which each hold approximately 200 plates in a parallel orientation above a coarse bubble diffuser. Plates are evenly spaced such that diffused air introduced below the plates provides a constant air scour across the plate surface to prevent solids accumulation. This is important to the membrane system design because excessive solids build-up reduces the membrane flux rate. Cleaning air is typically applied to the cassettes at a rate of 0.35 SCFM per plate. Based on preliminary vendor information this yields a minimum cleaning air flow of roughly 210 SCFM. An additional factor of safety of 1.5 is typically applied to this number which yields a total cleaning air requirement of roughly 315 SCFM. This air is provided to the membranes by three tri-lobe positive displacement blowers operated in a 2 duty/1 standby configuration. The blowers are located in sound attenuating enclosures within the plant building to produce less than 69 dB at a distance of 3 meters from the unit.

  Membrane flux is a measure of the liquid filtration capacity of the membranes, typically expressed in units of gallons/ft^2-day. Membrane flux varies with water temperature, solids concentration, and a number of other operating parameters, so it is often defined with other operating conditions. The membrane filters are capable of passing the maximum daily flow (135,200 GPD) at a mixed liquor suspended solids (MLSS) concentration of 10,000 mg/l with one treatment train out of service for a period of 24 hours. The system is designed to meet permitted effluent limits at the maximum monthly flow (78,000 GPD) indefinitely with a MLSS concentration of 10,000 mg/l.

  Flow through the membranes is induced by three permeate pumps, two operated in a duty mode with a single standby. Pump capacity is regulated by variable frequency drives and flow control valves based on the WWTP's influent flow rate. To meet the peak day flow condition described above, the permeate pumps must have a peak capacity of 94 GPM. Inlet and discharge pressures are measured on permeate pumps to monitor membrane fouling. The pressure required to pull water through the membranes is often referred to as trans membrane pressure or TMP. For the plate system, the ideal TMP is between 2 and 4 PSI. Values over 4 PSI indicate that the operator should perform regenerative chemical cleaning of the membranes. These cleanings typically involve pumping a weak bleach or citric acid solution through the membranes in the reverse direction and allowing the solution to diffuse through the membranes over a couple hours. Following the soaking process, forward flow is re-instantiated and the cleaning solution is returned to the head of the plant. Filtered water is pumped to the UV disinfection system.

UV Disinfection Units – Two (2) channel type ultraviolet (UV) disinfection systems are installed in series to meet the WWTP's permit limits for fecal coliform. Each system provides a minimum UV dose of 30,000 uWsec/cm2 after 8,760 hours of

operation based on the maximum month design flow with a 65% transmittance @ 254 nanometers wave length.

Solids Handling – Since the MBR system removes sludge from the anoxic tank the sludge produced is usually wasted at between 1 and 1.5% solids. Some settling/thickening will take place in the sludge holding tank. Sludge wasted from the process is diverted to the 20,000 gallon sludge storage tank. Redundant sludge blowers provide mixing and prevent septic conditions from occurring. Under average daily flow conditions, there is adequate storage capacity to hold waste activated sludge for seven days. It is assumed that sludge will be trucked off site roughly twice a week.

Process Building – The process building houses much of the process equipment associated with the MBR system. The building houses pre-aeration and membrane tanks and blowers, membrane permeate pumps, WAS pumps, chemical storage and dosing equipment, sludge storage blowers, UV disinfection equipment, and process controls. The process building also houses the Operator's office, a laboratory, and restroom facilities.

The building was designed and built using cast-in-place concrete foundations, a concrete block (CMU) superstructure, and exterior clapboard finish. The interior CMU finish provides the durability and water resistance needed at a WWTP, while the exterior clapboard skin is similar to other Planning Board approved buildings in the area.

Process tank volumes and equipment operating points for major unit operations are summarized in Table 3-1 and depicted on Figure 3-1.

TABLE 3-1
Design Summary - MBR

Unit Operation	Design Basis	Design Capacity	Notes
Fine screens	2 mm Opening per MBR Mfr. - Peak Peak Instantaneous Flow	152 GPM each	2 screens - 100% Redundancy 218,400 GPD÷1440 min/d = 151.67 GPM
Grit tank	Minimum 5 minutes of residence time at Peak Instantaneous Flow	1,000 GAL each	2 tanks to provide redundancy 152 GPM x 5min= 760 gal
Flow Equalization Tank	33% Peak Day Flow Ability to equalize peak day flow over 24-hours	24,000 GAL	78,000 GPD x 30%=23,400 gal Assume 8ft tank sidewalls with 1ft freeboard 24,000galx0.1337ft^3/gal÷(8ft-1ft) = 458.5ft^2 base Assuming 10ft width, the length would be approximately 45.85ft
Equalization Tank Mixer	0.3 HP/1,000 ft3 per TR-16	1.0 HP each	2 mixers – 100% Redundancy 24,000gal x 0.1337ft3/gal=3208.8ft3 3208.8ft3*0.0003ft3/HP= 0.97 HP
Process feed pumps	Designed to equalize Peak Daily Flow to the process equipment over 24-hour operation	94 GPM @ 20ft of head each	2 pumps - 100% Redundancy 135,200GPD÷1440min/d = 94 GPM The head required to enter anoxic basin is 15 ft. 2" Solids Capacity Operate using VFD off of tank level.
Alum Feed system	Alum Addition	20 gal/day of alum	Standard chemical feed system design with chemical tank (1 month capacity), 2 chemical feed pumps 1duty/1standby, tank level indication
Anoxic basin	Anticipated system capability <5 mg/l NO3 & <10 TN at 10oC	6,500 GAL each	2 basins - 50% of Anoxic basin capacity each. Based on an anoxic basin detention time of 4.0 hours at Max. Month Flows 78,000GPD÷1440 min/d =55 GPM 55 GPM x 60 min/hr x 4.0 hr=13,000 gal 13,000 gal÷2 = 6,500 gal each basin
Anoxic Basin Mixer	0.3 HP/1,000 ft3	0.27 HP each required	3 mixers – 50% Redundancy (1 per anoxic tank with 1 shelf spare) 6,500 gal x 0.1337 ft3/gal=870.1 ft3 870.1 ft3 x0.0003 ft3/HP= 0.261 HP (required)

Unit Operation	Design Basis	Design Capacity	Notes
Anoxic transfer pump	Provide Max Month Flow plus the recycle of Return Activated Sludge (RAS) flow. Assume RAS is 6x.	325 GPM	2 pumps - 100% Redundancy RAS recycle rate of 6 times the Peak Daily Flow (78000 GPD/1440 min/day) x 6 = 325 GPM
Supplemental Carbon Feed system	Carbon Addition TBD	N/A	Standard chemical feed system design with chemical tank (1 month capacity), 2 chemical feed pumps 1duty/1standby, tank level indication
Pre-Aeration Basin	System Capacity - <30 mg/l BOD & <10 mg/l TN at 10oC	4,400 GAL each	2 basins – PA tanks & MBR = 100% of Aeration basin capacity each. Based on an aeration time of 2.71 hours at Max. Month Flows 78,000 GPD÷1440 min/d =55 GPM 55 GPM x 60 min/hr x 2.7 hr=8,776 gal 8,776 gal÷2 = 4,388 gal each basin
Pre-Aeration Basin Blowers	Maintain 2 mg/l DO between 10oC and 20oC Based on Max. Month Flow and loads	385 SCFM each Slate the SOR	2 blowers - 100% Redundancy Blowers discharge to fine bubble diffusers in PA basin.
MBR Basin	To hold membrane trains sized to contain membrane filtration units	12,840 GAL each	2 basins - 50% of membrane capacity each. MBR tank required to hold membrane trains bubble diffusers are used in the MBR basin.
MBR – membrane filters	Peak Day Flow for 24-hours max. monthly flow with 1 train offline	67,600 GPD	100% of max. monthly Flow with one train offline; 100% of Peak Day Flow for 24 hours with one train offline; 100% of Peak Daily Flow with both units operating, indefinitely 135,200 GPD÷2 =67,600 GPD each train
MBR – Blowers	Provide 0.35 SCFM per Membrane Cartridge Based on Peak Day Flow	570 SCFM each	3 blowers - 50% redundancy Blowers discharge to coarse air diffusers in base of membrane cassettes. 35% factor of safely in blower design. Blowers operated on VFDS.

Unit Operation	Design Basis	Design Capacity	Notes
MBR - Permeate Pump	Filter effluent at Peak Day Flow	94 GPM each	3 pumps - 100% redundancy each train 135,200 GPD÷1440 min/d = 94 GPM
MBR basin RAS	Provide 6 Recycle of RAS flow. Assume RAS is 5.3x.	325 GPM pipe flow	2 pumps - 100% Redundancy RAS recycle rate 6 times the max. monthly Flow 55 GPM x 6 = 325 GPM
UV disinfection	Filter effluent at Peak Day Flow	94 GPM each	2 UV trains - 100% redundancy 135,200 GPD÷1440 min/d = 94 GPM 65% ultraviolet radiation transmittance at 254 nanometers wave length; UV radiation dosage not less than 30,000 µWsec/cm2 after adjustments for maximum tube fouling, lamp output reduction after 8760 hours of operation, and other energy absorption losses
Sludge Storage Tank	7 days of storage volume at Average Daily Flow	20,000 gal.	0.83 pounds of TSS per pound of BOD removed. Assuming 153 lb of BOD removed daily… 153lbBODx0.83lbBOD/lbTSS+212lbTSS=339lbTSS …Given a 1.5% Solids concentration. 339lbTSS ÷ 1.5% x 98.5% ÷ 8.342lbH20/gal= 2668.5/gal/day 7 days of storage: 2670 gal/d x 7day = 18,676 gal. Say 20,000 Assume 14 ft tank sidewalls with 2 ft freeboard 25,000 gal x 0.1337 ft3/gal ÷ (14 ft - 2 ft) = 279 ft2 Assuming 10 ft width, the length would be approximately 27.9 ft
Sludge Storage Tank Blowers/Mixing	30 SCFM/1,000 ft3	78 SCFM each	2 mixers – 100% Redundancy 20,000gal x 0.1337ft3/gal=2674.5ft3 2674.5ft3*0.03ft3/HP= 78.3 SCFM
Sludge Transfer pumps	450 GPM		Design to load 9,000 gallon truck in 20 minutes

3.2 Modifications or Operational Changes at WWTF

Based on the existing influent and effluent data at the WWTF, the membrane bioreactor supplier has run a Biowin simulation for the revised design conditions and has confirmed that the system will be able to achieve the effluent permit levels without problems for average flow without any modifications or operational changes to the WWTF.

3.3 Staffing Plan and Operations and Maintenance Manual

The Wayland WWTF been rated by the Department of Environmental Protection as a Grade 4 facility. As such, the facility must be manned by an operator with a Grade 4 license. A backup operator with a minimum Grade 4 license is also available through WWMDC's Contract Operator.

Based on the NPDES Permit requirements the plant must be staffed for 2 hours per day, five days per week. A single operator will be at the facility during this time. As this facility is operated by a contract operator, there are also additional operators, mechanics, and electricians available on an as-needed basis.

The Chief Operator for the facility is David Boucher (MA Lic. #5443). The Assistant Operator is Jeremiah Murphy (MA Lic. #2791). In the event of an emergency, Whitewater has a 24/7 emergency line that can be reached at 888-377-7678. In addition to an Operator always being on call and available through this emergency line, there are additional back-up Operators on call at all times.

The contract between the Wayland Wastewater District Commission and Whitewater detailing the scope of operator services is attached in Appendix C. The Operations and Maintenance Manual for the Wayland WWTP is being updated by Tighe & Bond and will include provisions for the remote pump station, force main, Town Office Building grinder pump system, and the soil absorption system prior to the construction and operation of the proposed facilities.

Section 4
Proposed Groundwater Discharge System

This section discusses design considerations for the proposed groundwater discharge system as well as the selected designs for the force main, Town Office Building facilities, and soil absorption system (SAS). All corresponding calculations and conceptual design drawings are located in Appendices D and E respectively.

4.1 System Overview

Typical operations will discharge to the outfall at the Sudbury River under the existing NPDES permit. If the flow exceeds the NPDES flow limit on a given day, the additional flow will be diverted to the groundwater discharge system located at the Town Office Building. To get flow from the WWTP to the SAS, a tee is proposed off the existing discharge pipe inside of the WWTF to divert flow from the discharge outfall to another effluent line that will transport the effluent by a gravity fed force main to a pump station located at the Town Hall building. This pipe will run out to Old Sudbury Road then south on Cochituate Road to the entrance of the Town Office Building located at 41 Cochituate Road in Wayland where the pump station will be located off of the driveway near the parking lot. The pump station tank will be a precast concrete tank with two submersible pumps (one duty, one standby) that will discharge the effluent from the tank to one of two force mains to the SAS. One force main will discharge to Zone A of the SAS and the other will discharge to Zone B of the SAS. These force mains will run parallel to the soccer and baseball field to the SAS located in the southeast corner of the Town property.

The existing effluent flow meter at the plant will be used to control the diversion of wastewater between the two discharge alternatives. Daily flows will be recorded by the WWTP SCADA system and the 12-month rolling average will be computed on a daily basis. If this value exceeds the NPDES limit of 52,000 GPD, the effluent will be directed to the SAS. A new meter on the groundwater discharge pump line will provide flow measurement for compliance monitoring purposes.

The Town Office Building will be connected to the WWTP via an approximately 1,400 linear foot pressure line. The line will run from the building along the driveway to Cochituate Road then north on Cochituate Road to a manhole located at the intersection with Mill Brook Road.

4.2 System Design Flows

The WWTP holds a NPDES permit for discharge of 52,000 GPD to surface waters. This flow rate may be exceeded in the future due to flow committed to a local developer and residents currently using aging septic systems. The permitted flow will not be exceeded by more than 17,000 GPD as a result of these future connections. The groundwater discharge system has been designed to handle this additional capacity.

4.3 Force Main and Pump Station Design

If the 12-month rolling average daily flow exceeds the NPDES limit of 52,000 GPD, the effluent will be directed to the SAS. A motorized actuator will be added to the existing

valve located in the basement of the building on the 4" PVC force main before exiting the WWTP building. This valve will close if the 12-month rolling average exceeds 52,000 GPD. The system will continue to divert up to 17,000 gallons per day to the leachfield until the rolling average drops below 52,000 GPD. A tap will be added in the basement to the existing 8" PVC effluent discharge line from the UV disinfection system. Below the tap will be another motorized valve that will open and direct flow to the 4" HDPE force main on the east side of the WWTF building. This 4' HDPE gravity fed force main line will direct flow to a pump station located at the Town Office Building at 41 Cochituate Road. The pump station will include two submersible pumps that will discharge to the discharge area.

Since the leachfield has been designed as two separate, equally-sized zones, the dosing station has been designed to alternate which zone is dosed. This will be accomplished through the use of a valve chamber and motor actuated valves. Controls will open one valve and close the other to dose a single zone of the leachfield with each pumping cycle. The controls will cycle through each of the leachfield zones to ensure equal dosing to all portions of the leachfield.

The volume of the proposed effluent clear well for the pump station is based the soil absorption system dose volume. The soil absorption system dose volume was determined based on the assumption that both zones of the soil absorption system would be dosed a total of 2 times per day for a total of four daily doses. The dosing force main volume and SAS pipe volume was added to the dose volume to account for water flowing back to the clear well after the dosing pumps have completed a pumping cycle. This approach resulted in a dose volume of approximately 5,000 gallons. The pump station tank will be designed to hold at least 5,000 gallons. Initial float settings will reflect the dose and storage volumes expressed above and the remaining additional volume can be utilized by the operator as system performance warrants.

4.4 Town Building Facilities Design

The Town Building currently discharges wastewater to a Title 5 septic system inclusive of a septic tank located behind the building. The existing leachfield is located where the new SAS is proposed. This system will be demolished to build the SAS, and the Town Building flow will need to be discharged to the sewer system located in Cochituate Road. The Town Building flow is approximately 3,000 gallons per day based on Title 5 projections. This flow will now discharge to a grinder pump station located in the back of the building which will pump, via a force main, the flow down the driveway of the Town Building to Cochituate Road where it will run down the road and discharge into a manhole on Cochituate Road and enter into the low pressure sewer system that ultimately ends up at the WWTP for treatment. The proposed E-one grinder pump model will be able to handle the 3,000 gallons per day of wastewater generated by the Town Office Building

4.5 Hydrogeologic Summary and Soil Absorption System Design

Tighe & Bond prepared a Hydrogeological Evaluation Report dated March 2012 on behalf of the Town of Wayland for the proposed SAS. An addendum to the report dated October 1, 2012 was submitted by Tighe & Bond in response to a MassDEP's request for additional information.

The Town of Wayland is seeking to add 17,000 gallons per day (gpd) of capacity to its Wastewater Management District by permitting a groundwater discharge under the playing fields adjacent to the Town Office Building. The proposed effluent disposal area will accommodate flows that exceed the existing wastewater treatment facility's NPDES permitted flow rate of 52,000 gpd.

The proposed groundwater discharge will be beneath the playing fields located southeast of the Wayland Town Office Building. The specific site lies northeast of the baseball field and includes the existing leach field of the Town Office Building Title 5 septic system as shown in Figure 1-1. This location does not lie within any MassDEP designated nitrogen sensitive areas. The primary source for potable water within the Town is the Wayland Water Department. The nearest public water supply well is located approximately 1.1 miles northwest of the proposed location, and the nearest private drinking water well is approximately 5,000 feet to the northeast.

Soil tests and borings performed within the footprint of the proposed soil absorption system (SAS) encountered up to 33 inches of fill underlain by 5 to 7 feet of loamy, fine sand that coarsens downward to a medium-to-coarse sand. These deposits in turn overlie a horizon of gray silt, interpreted locally to be the bottom of the unconfined aquifer. Percolation testing of the loamy, fine sand yielded a percolation rate of less than 2 minutes per inch. The proposed subsurface disposal system was evaluated at a design flow of 17,000 gpd. Soil evaluation and percolation testing of the proposed site support a long term application rate (LTAR) of 2.5 gallons/day/square foot (gpd/ft^2). The proposed design for the SAS uses an LTAR of 1.47 gpd/ft^2. This design will spread the hydraulic load across a greater area and thereby minimize groundwater mounding and site grading impacts. The minimum leaching area required for the proposed discharge is 11,560 square feet. The SAS design consists of twenty nine (29), 100-foot long trenches having a leaching area of 11,600 square feet. Trenches will be spaced 6 feet apart to accommodate MassDEP's required reserve area between the active trenches. The proposed design has an area of 22,600 square feet (100 feet by 226 feet) for primary and reserve purposes. This system will be divided into two zones, Zone A and Zone B. Zone A will consist of fifteen (15) 100-foot long trenches and Zone B will consist of fourteen (14) 100-foot long trenches.

Pursuant to 314 CMR 5.09 (1) (f), MassDEP approved the Hydrogeologic Report on October 26, 2012. Additional details regarding water resources, hydrogeological investigations, and impacts to the proposed SAS can be found in the Hydrogeological Evaluation Report prepared by Tighe & Bond, dated March 2012.

To be able to monitor impacts of the proposed discharge system, one up gradient and two down gradient monitoring wells have been proposed. Well MW-2 developed for this study is proposed for use as the up gradient monitoring point, and MW-5 and MW-4 are proposed as the down gradient monitoring points. Final monitoring wells will be installed and sampled for all groundwater quality parameters listed in the issued permit prior to the start of discharge.

Section 5
Permits Required for Construction

This section discusses additional permits that will be required before commencing construction.

Wetland Permitting

A Notice of Intent (NOI) or Request for Determination of Applicability (RDA) will be required for proposed work within jurisdictional resource areas in accordance with the Massachusetts Wetlands Protection Act (310 CMR 10.00), the Wayland Wetlands and Water Resources Bylaw (Chapter 194), and the Stormwater and Land Disturbance Bylaw (Chapter 193). Work associated with the project will likely occur within the 100-foot Buffer Zone. Portions of the project are also mapped for Priority Habitats of Rare Species and Estimated Habitats of Rare Wildlife by the Massachusetts Natural Heritage & Endangered Species Program (NHESP). A NOI or RDA application is required to be prepared for submittal to the Wayland Conservation Commission and Massachusetts Department of Environmental Protection (MassDEP) that includes, at a minimum:

- The appropriate permit application forms (ie. WPA Form 1 or 3, Notification to Abutters);
- Project narrative including restoration and construction sequence;
- Resource maps (i.e., USGS, orthophotographs, floodplain, tax);
- Site photographs;
- Site plans and drawings depicting the limits of proposed work and wetland resource area boundaries;
- Stormwater Management Report.

Since the work associated with the proposed discharge area is within areas mapped by NHESP, review under the Massachusetts Endangered Species Act (MESA) is also required. A copy of the Notice of Intent can be submitted to NHESP for streamlined review under MESA during final design. If an RDA is filed for the project, a separate MESA Project Review Checklist will be required to be submitted to NHESP for review.

EPA Notice of Intent and Stormwater Pollution Prevention Plan

The proposed project may result in the disturbance of greater than one acre of land due to clearing, grading and/or excavation activities. To obtain coverage under the National Pollutant Discharge Elimination System (NPDES) 2012 Construction General Permit (CGP) (issued by EPA on February 16, 2012), a Notice of Intent (NOI) must be submitted to the Environmental Protection Agency (EPA). Coverage under the CGP also requires that a Stormwater Pollution Prevention Plan (SWPPP) be developed for the project, and that it be maintained at the construction site.

Appendix A
Wayland Wastewater District Commission
Sewer Use Regulations

RULES AND REGULATIONS OF THE WAYLAND WASTEWATER MANAGEMENT DISTRICT COMMISSION

THESE RULES establish the regulations for the use of public sewers and drains, the installation and connection of building sewers, and the discharge of water and wastes into the public sewer system(s) and providing penalties for violations thereof:

WHEREAS, the Federal government has enacted and amended the Federal Water Pollution Control Act now known as the Federal Clean Water Act (33 U. S. C. 1150 et seq.) and the Town of Wayland desires to remain in compliance therewith, and

WHEREAS, the Town of Wayland, through the Wastewater Management District Commission desires to assure that the use of the public wastewater system operated by it will conform to standard sanitary engineering practices, and

WHEREAS, Chapter 461 of the Acts of 1996 of the Massachusetts Legislature authorizes the Commission to establish such Rules and Regulations, and

WHEREAS, the Town of Wayland desires to regulate the use of the public wastewater system operated by it:

NOW, THEREFORE, BE IT enacted by the Commissioners of the Wastewater Management District Commission of the Town of Wayland, Commonwealth of Massachusetts, as follows:

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ARTICLE 1. DEFINITIONS

SECTION 1. SPECIFIC DEFINITIONS

Unless the context of usage indicates otherwise, the meaning of specific terms in these Rules and Regulations shall be as follows:

Act shall mean the Federal Clean Water Act, as amended.

ASTM shall mean the American Society for Testing and Materials.

BOD (denoting Biochemical Oxygen Demand) shall mean the quantity of oxygen used in the biochemical oxidation of organic matter under standard laboratory procedure in five days at 20C, expressed in milligrams per liter.

Building Sewer shall mean the extension from a building wastewater plumbing facility to the public wastewater management system and includes any pump, grinder pump, or accessory equipment required to connect to the wastewater management system.

Combined Sewer shall mean a sewer intended to receive both wastewater and storm or surface water.

Class I User shall mean all premises connected to the wastewater management system not classified as a Class 11 or Class III (Industrial) User.

Class II User shall include any property connected to the Wastewater Management System that has a wastewater strength that exceeds 250 milligrams per liter of BOD-5 and or 300 milligrams per liter of suspended solids based upon effluent monitoring, and is not classified as a Class III User.

Class III - Industrial User shall mean any nonresidential user identified in Division A, B. D, E, or I of the Standard Industrial Classification Manual. Class III shall also include any user that discharges wastewater containing toxic or poisonous substances, or any substance(s) which cause(s) interference in the wastewater management system.

Commission shall mean the Wayland Wastewater Management District Commission.

Day shall mean the 24-hour period beginning at 12:01 a.m.

Easement shall mean an acquired legal right for the specific use of land owned by others.

EPA shall mean the United States Environmental Protection Agency.

Garbage shall mean the solid animal and vegetable wastes resulting from the domestic or commercial handling, storage, dispensing, preparation, cooking, and serving of foods.

Groundwater shall mean water within the earth.

Interference shall mean inhibition or disruption of any sewer system, wastewater treatment process, sludge disposal, or their operation, which substantially contributes to a violation of applicable discharge permits.

Director shall mean the Executive Director of the Wastewater Management District Commission or an authorized designee.

"May" is permissible, "shall" is mandatory.

Natural Outlet shall mean any outlet into a watercourse, pond, ditch, lake, or any other body of surface or groundwater.

NPDES shall mean National Pollutant Discharge Elimination System permit program, whether administered by the EPA or by the Commonwealth of Massachusetts.

Owner shall mean the person or persons who legally own, lease, or occupy private property with wastewater management system that discharge, or will discharge to the Town's wastewater management system.

Person shall mean any individual, firm, company, association, society, partnership, corporation, municipality, or other similar organization, agency, or group.

pH shall mean the logarithm of the reciprocal of the hydrogen ion concentration expressed in grams per liter of solution as determined by Standard Methods.

Pretreatment shall mean the reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to discharge to the Town of Wayland wastewater management system.

Pretreatment Standard shall mean any regulation containing pollutant discharge limits promulgated by the EPA in accordance with Section 307(b) and (c) of the Act, which applies to Industrial Users.

Properly Shredded Garbage shall mean garbage that has been shredded to such a degree that all particles will be carried freely under flow conditions normally prevailing in the wastewater sewers, with no particle greater than % inch in any dimension.

Sanitary Wastewater shall mean wastewater discharged from the sanitary conveniences of dwellings, office buildings, industrial plants, or institutions.

Standard Methods shall mean the latest edition of Standard Methods for the Examination of Water and Wastewater, published by the American Public Health Association, Water Pollution Control Federation and American Water Works Association.

State shall mean the Commonwealth of Massachusetts.

Storm Sewer shall mean a sewer for conveying storm, surface, and other waters, which is not intended to be transported to a wastewater treatment facility.

Surface Water shall mean water that occurs when the rate of precipitation exceeds the rate at which water may infiltrate into the soil.

Suspended Solids shall mean the total suspended matter that either floats on the surface of, or is in suspension in, water or wastewater, as determined by Standard Methods.

Town shall mean the Town of Wayland, Massachusetts.

Toxics shall mean any of the pollutants designated by Federal regulations pursuant to Section 307(a)(1) of the Act.

Wastewater shall mean a combination of liquid and water-carried wastes from residences, commercial buildings, industries, and institutions, together with any incidental groundwater, surface water, or storm water that may be present.

Wastewater Management System shall mean the combination of the wastewater sewers and treatment facilities under the control of the Commission as defined in Chapter 461 of the Acts of 1996 of the Massachusetts Legislature.

Wastewater Sewer shall mean the structures, processes, equipment and arrangements necessary to collect and transport wastewater to the treatment facility.

Wastewater Treatment Facility shall mean the structures, processes, equipment and arrangements necessary to treat and discharge wastewater.

WEF shall mean the Water Environment Federation.

WWMDC shall mean the Wayland Wastewater Management District Commission.

SECTION 2. GENERAL DEFINITIONS

Unless the context of usage indicates otherwise, the meaning of terms in these Rules and Regulations and not defined in Section 1 above, shall be as defined in the Glossary: Water and Wastewater Control Engineering prepared by Joint Editorial Board of the American Public Health Association, American Society of Civil Engineers, American Water Works Association, and Water Environment Federation, copyright 1969.

ARTICLE II. GENERAL PROVISION

SECTION 1. PURPOSE

The purpose of these Rules and Regulations is to provide for the maximum possible beneficial public use of the Town's wastewater management system through regulation of sewer construction, sewer use, and wastewater discharges; to provide for equitable distribution of the costs of the Town's wastewater management system; and to provide procedures for complying with the requirements contained herein.

SECTION 2. SCOPE

(a) The definitions of terms used in these Rules and Regulations are found in Article 1. The provisions of these Rules and Regulations shall apply to the discharge of all

wastewater to facilities under the control of the Commission. These Rules and Regulations provides for use of the Town's wastewater management system, regulation of sewer construction, control of the quantity and quality of wastewater discharged, wastewater pretreatment, equitable distribution of costs, assurance that existing customers' capacity will not be preempted, approval of sewer construction plans, minimum sewer connection standards and conditions, and penalties and other procedures in cases of violation of these Rules and Regulations.

(b) These Rules and Regulations shall apply to the Town of Wayland and users of the Town's wastewater sewers or wastewater treatment facilities.

SECTION 3. ADMINISTRATION

Except as otherwise provided herein, the Director of the WWMDC's wastewater systems shall administer, implement, and enforce the provisions of these Rules and Regulations.

SECTION 4. NOTICE OF VIOLATION

Any person found in violation of these Rules and Regulations or any requirement of a permit issued hereunder, may be served with a written notice stating the nature of the violation and providing a reasonable time limit for compliance. Any such notice given shall be in writing and served in person or by registered or certified mail. The notice shall be sent to the last address of the violator known to the Director. Where the address is unknown, service may be made upon the owner of record of the property involved. If satisfactory action is not taken in the time allotted by the notice, Section 5 of this article shall be implemented,

SECTION 5. VIOLATIONS

(a) Any person who continues to violate the discharge provisions of these Rules and Regulations beyond the time limit provided for in Section 4 above, may be charged with commission of a misdemeanor and upon conviction thereof, shall be fined not more than the maximum amount allowed by law, for each day the violation continues, or may be subject to disconnection from the Town's wastewater management system.

(b) Each day or portion thereof a violation continues shall constitute a separate violation.

SECTION 6. FEES AND CHARGES

(a) All fees and charges payable under the provisions of these Rules and Regulations shall be paid to the Town. The Commission shall establish such fees and charges from time to time. The Commission may set a minimum user charge which shall be paid

regardless of actual wastewater discharge to the System.

(b) All fees, penalties and charges collected under these Rules and Regulations shall be used for the sole purpose of constructing, operating, maintaining, or replacing the wastewater management system of the Town, establishing reserves, or the retirement of debt incurred for same.

(c) All fees and charges payable under the provisions of these Rules and Regulations are due and payable within thirty (30) days of the receipt of notice of charges. Unpaid charges shall become delinquent and shall be subject to penalty and interest charges as provided by law. Bills unpaid for ninety (90) days shall be turned over to the Board of Assessors for collection as a lien against the property.

SECTION 7. INSPECTIONS

(a) The Director or designee, bearing proper credentials and identification, shall be permitted to enter properties at any reasonable time for the purposes of inspection, observation, measurement, and sampling of the wastewater discharge to ensure that discharge to the Town's wastewater management system is in accordance with the provisions of these Rules and Regulations.

(b) The Director or designee, bearing proper credentials and identification, shall be permitted to enter all private property through which the Town holds an easement for the purposes of inspection, observation, measurement, sampling, repair, and maintenance of any of the Town's wastewater management system lying within the easement. All entry and any subsequent work on the easement shall be done in full accordance with the terms of the easement pertaining to the private property involved.

(c) While performing the necessary work on private properties referred to in Sections 7(a) and (b) above, the Director or designee shall observe all reasonable safety rules established by the owner or occupant of the property and applicable to the premises.

(d) During the performance of inspections on private properties, wastewater sampling, or other similar operations referred to in Sections 7(a) and (b) above, the owner and occupant shall be: (1) held harmless for personal injury or death of the Director or designee and the loss of or damage to Town supplies or equipment; (2) indemnified against loss of or damage to property of the owner or occupant by the Director or designee; and (3) indemnified against liability claims asserted against the owner or occupant for personal injury or death of the Director or designee or for loss of or damage to property of the Town, except as such may be caused by negligence or failure of the owner or occupant to maintain safe conditions as required by Article V of these Rules and Regulations.

SECTION 8. VANDALISM

No person shall maliciously, willfully, or negligently break, damage, destroy, uncover, deface, or tamper with any structure, appurtenance or equipment which is a part of the Town's wastewater management system. Any person who violates this section shall be charged with a misdemeanor and, upon conviction, is punishable by a fine in an amount not to exceed the maximum allowed by law.

SECTION 9. SEVERABILITY

A finding by any court or other jurisdiction that any part or provision of these Rules and Regulations is invalid shall '- not affect the validity of any other part or provision of these Rules and Regulations which can be given effect without the invalid parts or provisions.

SECTION 10. AMENDMENTS OF THE RULES AND REGULATIONS

These Rules and Regulations may be revised from time to time by formal vote of the Commission.

ARTICLE III. BUILDING SEWERS AND CONNECTIONS

SECTION 1. CONNECTION PERMIT

(a) No unauthorized person shall uncover, make any connections with or opening into, use, alter, or disturb any wastewater management system under the control of the Commission without first obtaining a written permit from the Director.

(b) There shall be three (3) classes of permits for connections to the Town's wastewater management system: Class 1, Class 11, and Class Ill- industrial. In all cases, the owner shall make application for a permit to connect to the Town's wastewater management system on a form furnished by the Town. The permit application shall be supplemented by wastewater information required to administer these Rules and Regulations. Permit and inspection fees, as established by the Commission, for a Class 1, Class 11, Class Ill connection permit shall be paid to the Town at the time the application is filed.

SECTION 2. CONNECTION COSTS

The costs and expenses incidental to the building sewer installation and connection to the Town's wastewater management system shall be borne by the owner. The owner shall indemnify the Town from any loss or damage that may directly or indirectly be occasioned by the installation of the building sewer.

SECTION 3. SEPARATE CONNECTIONS REQUIRED

A separate and independent building sewer shall be provided for every building, except where one building stands at the rear of another on an interior lot and no private sewer pipe is available or can be constructed to the rear building through an adjoining alley, court yard, or driveway, the building sewer serving the front building may be extended to the rear building and the whole considered as one building sewer. The Town assumes no obligation or responsibility for damage caused by or resulting from any single building sewer that serves two buildings.

SECTION 4. EXISTING BUILDING SEWERS

Existing building sewers may be used for connection of new buildings only when they are found, on examination and test by the Director to meet the requirements of these Rules and Regulations.

SECTION 5. BUILDING SEWER DESIGN

The size, slope, alignment, construction materials, trench excavation and backfill methods, pipe placement, jointing and testing methods used in the construction and installation of a building sewer shall conform to the building and plumbing code or other applicable requirements of the Town, including the Board of Health, or the Commonwealth of Massachusetts. In the absence of code provisions or in amplification thereof, the materials and procedures set forth in appropriate specifications of the ASTM and WEF shall apply.

SECTION 6. BUILDING SEWER ELEVATION

Whenever practicable, the building sewer shall be brought to a building at an elevation below the basement floor. In buildings in which any building drain is too low to permit gravity flow to the Town's wastewater sewer, wastewater carried by such building drain shall be lifted by an approved means and discharged to a building sewer connected to the Town sewer.

SECTION 7. SURFACE RUNOFF AND GROUNDWATER DRAINS

No person shall connect roof, foundation, areaway, parking lot, roadway, or other surface runoff or groundwater drains to any sewer that is connected to a wastewater treatment facility unless such connection is authorized in writing by the Director.

SECTION 8. CONFORMANCE TO APPLICABLE CODES

The connection of a building sewer into a wastewater sewer shall conform to the requirements of the building and plumbing code or other applicable requirements of the Town or Commonwealth of Massachusetts, or the procedures set forth in appropriate specifications of the ASTM or the WEF. The connections shall be made gastight and watertight and verified by proper testing. Any deviation from the prescribed procedures and materials must be approved in writing by the Director before installation.

SECTION 9. CONNECTION INSPECTION

The applicant for a building sewer connection permit shall notify both the Commission and the Board of Health when such sewer connection is ready for inspection prior to its connection to the Town's facilities. Such connection and testing as deemed necessary by the Board of Health shall be made under the supervision of the Board of Health.

SECTION 10. EXCAVATION GUARDS AND PROPERTY RESTORATION

Excavations for building sewer installation shall be adequately guarded with barricades and lights so as to protect the public from hazard. Streets, sidewalks, parkways, and other public property disturbed in the course of the work shall be restored in a manner satisfactory to the Town.

SECTION 11. PROTECTION OF CAPACITY FOR EXISTING USERS

The Director shall not issue a permit for any connection to the Town's wastewater sewers or wastewater treatment facilities unless there is sufficient capacity, not legally committed to other users, in the wastewater sewers and treatment facilities to convey and adequately treat the quantity of wastewater which the requested connection will add to the system.

SECTION 12. BUILDING SEWER MAINTENANCE

The Owner shall be responsible for the operation and maintenance of the building sewer, including all pumping facilities, as defined in Article 1.

SECTION 13. INCREASE IN CAPACITY

An existing user seeking to purchase additional, increased capacity in the System shall make an application to the Commission setting forth the increased capacity requested in gallons per day using the **Sewer Use Discharge Permit Application.**

The user shall provide a copy of Board of Health approval of building expansion or use expansion plans. **The Board of Health approval must include written approval of the on-site disposal system which would be needed to be built to accommodate such expansion or additional wastewater flow as though all the wastewater associated with this property was to be disposed of on-site using Title 5 guidelines.**

For large systems permitted by the Department of Environmental Protection, the applicant must provide written proof that the DEP would grant a permit for on-site disposal of the entire amount of flow required for the property (as expanded) by Title 5.

The Director or Commission shall determine if the System can accommodate the requested increase and if so shall grant the request. A privilege fee will be levied upon any such user seeking additional capacity at a rate determined by the Commission at the time of such application. The privilege fee will be calculated with reference to the initial betterment paid by the user. The amount of the privilege fee and payment terms for the fee will be set forth in the grant of such additional capacity.

ARTICLE IV. CONDITIONS TO USE SEWERS

SECTION 1. RESERVED

SECTION 2. RESTRICTED DISCHARGES

(a) No person shall discharge or cause to be discharged to any of the Town's wastewater management system any substances, materials, waters, or wastes in such quantities or concentrations which will:

1. Create a fire or explosion hazard including, but not limited to, gasoline, benzene, naptha, fuel oil, or other flammable or explosive liquid, solid, or gas;

2. Cause corrosive damage or hazard to structures, equipment, or personnel of the wastewater management system, but in no case discharges with the following properties:

having a pH lower than 5.0 or greater than 10.Ofor more than 10% of the time in a 24-hour period;

having a pH lower than 3.5 or greater than 12.0 for any period exceeding 15 minutes.

3. Cause obstruction to the flow in sewers, or other interference with the operation of wastewater management system due to accumulation of solid or viscous materials. If the drainage or discharge from any establishment causes a deposit, obstruction, or damage to any of the Town's wastewater management system, the Director shall cause the deposit or obstruction to be promptly removed or cause the damage to be promptly repaired. The cost for such work, including materials, labor, and supervision shall be borne by the person causing such deposit, obstruction, or damage.

4. Constitute a rate of discharge or substantial deviation from normal rates of discharge, ("slug discharge"), sufficient to cause interference in the operation and performance of

the wastewater management system;

5. Contain heat in amounts which will accelerate the biodegradation of wastes, causing the formation of excessive amounts of hydrogen sulfide in the wastewater sewer or inhibit biological activity in the wastewater treatment facilities, but in no case shall the discharge of heat cause the temperature in the Town wastewater sewer to exceed 580 C (150* F) or the temperature of the influent to the treatment facilities to exceed 40' C (104' F) unless the facilities can accommodate such heat;

6. Contain more than 100 milligrams per liter of nonbiodegradable oils of mineral or petroleum origin;

7. Contain floatable oils, fat, or grease;

8. Contain noxious, malodorous gas or substance which is present in quantities that create a public nuisance -or a hazard to life;

9. Contain radioactive wastes in harmful quantities as defined by applicable state and federal regulations;

10. Contain any garbage that has not been properly shredded;

11. Contain any odor or color producing substances exceeding concentration limits that may be established by the Director for purposes of meeting the Commission's NPDES permit.

SECTION 3. FEDERAL CATEGORICAL PRETREATMENT STANDARDS

(a) No person shall discharge or cause to be discharged to any wastewater management system, wastewater containing substances subject to an applicable Federal Categorical Pretreatment Standard promulgated by EPA in excess of the quantity prescribed in such applicable pretreatment standards except as otherwise provided in this section. Compliance with such applicable pretreatment standards shall be within three (3) years of the date the standard is promulgated; provided however, compliance with a categorical pretreatment standard for new sources shall be required upon promulgation.

(b) Upon application by a Class III user, the Director shall revise any limitations on substances specified in the applicable pretreatment standards to reflect removal of the substances by the wastewater treatment facility. The revised discharge limit for specified substances shall be derived in accordance with Federal law.

(c) Upon application by a Class III user, the Director shall adjust any limitation on substances specified in the applicable pretreatment standards to consider factors relating to such person which are fundamentally different from the factors considered by EPA during the development of the pretreatment standard. Requests for and determinations of a fundamentally different adjustment shall be in accordance with Federal law.

(d) The Director shall notify any Class III user affected by the provisions of this Section

and establish an enforceable compliance schedule for each.

SECTION 4. SPECIAL AGREEMENTS

Nothing in this article shall be construed as preventing any special agreement or arrangement between the Town and any user of the wastewater management system whereby wastewater of unusual strength or character is accepted into the system and specially treated subject to any payments or user charges as may be applicable.

SECTION 5. WATER & ENERGY CONSERVATION

The conservation of water and energy shall I be encouraged by the Director. In establishing discharge restrictions upon industrial users, he/she shall take into account already implemented or planned conservation steps revealed by the Class III user. Upon request of the Director, each industrial user will provide the Director with pertinent information showing that the quantities of substances or pollutants have not been nor will be increased as a result of the conservation steps. Upon such a showing to the satisfaction of the Director, he/she shall make adjustments to discharge restrictions, which have been based on concentration to reflect the conservation steps.

SECTION 6. GREASE TRAPS

All users required to have grease traps by either town or state regulations shall pump out and maintain their grease traps to avoid excess accumulations but no less often than annually. The traps shall be maintained in accordance with the requirements of the Board of Health, the Commission, or the plumbing code whichever is more stringent. The Commission may require a specific pump out schedule for a user if it is determined that the user is contributing excess grease to the System. Proof of pumping in the form of a receipt indicating the date and address of the pump out and the description of the pumping results (among pumped out) shall be forwarded to the Commission within 30 days of pumping.

ARTICLE V. CLASS III INDUSTRIAL DISCHARGERS

SECTION 1. INFORMATION REQUIREMENTS

(a) All Class III dischargers shall file with the Town wastewater information deemed necessary by the Director for determination of compliance with this Ordinance, the Town's NPIDES permit conditions, and state and Federal law. Such information shall be provided by completion of a questionnaire designed and supplied by the Director and by supplements thereto as may be necessary. Information requested in the questionnaire and designated by the discharger as confidential is subject to the conditions of confidentiality

as set out in Section 1 (c) of this article.

(b) Where a person owns, operates or occupies properties designated as a Class III discharger at more than one location, separate information submittals shall be made for each location as may be required by the Director.

(c) The Director shall implement measures to ensure the confidentiality of information provided by a Class III discharger pursuant to these Rules and Regulations. In no event shall the Director delegate this responsibility or disclose any claimed confidential information to any person without prior notice in writing to the owner and without providing the owner with the opportunity to protect such confidential information, including the right to seek judicial relief.

SECTION 2. PROVISION FOR MONITORING

(a) When required by the Director, the owner of any property serviced by a building sewer carrying Class III wastewater discharges shall provide suitable access and such necessary meters and other appurtenances in the building sewer to facilitate observation, sampling, and measurement of the wastewater. Such access shall be in a readily and safely accessible location and shall be provided in accordance with plans approved by the Director. The access shall be provided and maintained at the owner's expense so as to be safe and accessible at reasonable times.

(b) The Director shall consider such factors as the volume and strength of discharge, rate of discharge, quantities of toxic materials in the discharge, wastewater treatment facility removal capabilities, and cost effectiveness in determining whether or not access and equipment for monitoring Class III wastewater discharges shall be required.

(c) Where the Director determines access and equipment for monitoring or measuring Class III wastewater discharges is not practicable, reliable, or cost effective, the Director may specify alternative methods of determining the characteristics of the wastewater discharge which will, in the Director's judgment, provide an equitable measurement of such characteristics.

SECTION 3. DETERMINATION OF WASTEWATER CHARACTERISTICS

(a) Measurements, tests, and analyses of the characteristics of wastewater to which reference is made in these Rules and Regulations shall be determined in accordance with the latest edition of "Standard Methods for the Examination of Water and Waste water," published by the American Public Health Association or such alternate methods approved by the Director and which comply with state and Federal law. Sampling methods, locations, times, duration, and frequencies are to be determined on an individual basis subject to approval by the Director. The discharger shall have the option to use, at his own expense, more complete sampling methods, locations, times, duration, and frequencies than specified by the Director.

(b) Measurements, tests, and analyses of the characteristics of wastewater required by these Rules and Regulations shall be performed by a qualified laboratory. When such analyses are required of a discharger, the discharger shall make arrangement with a qualified laboratory to perform such analyses.

(c) Monitoring of wastewater characteristics necessary for determination of compliance with applicable pretreatment standards shall be conducted on the basis of the following schedule, unless more frequent monitoring is required by authority other than these Rules and Regulations, or if the Director, in his/her judgment, determines that the characteristics of the specific discharge warrant a different frequency monitoring:

Average Actual

Daily User Discharge Monitoring Frequency

less than 1,000 gpd	semi-annually
1,000-2,000 gpd	quarterly
more than 2,000 gpd	monthly

(d) Monitoring of wastewater characteristics for any purpose other than the determination of compliance with pretreatment standards shall be conducted on a frequency deemed necessary by the Director.

(e) Upon demonstration by any person that the characteristics of the wastewater discharged by that person are consistent, the Director may reduce the frequency as may be required by authority other than these Rules and Regulations, except in no case shall the frequency of monitoring be less than semi-annual for the determination of compliance with pretreatment standards.

(f) In determining the discharge characteristics factors such as continuous or batch operation, and seasonal operation and the information requirements of other provisions of these Rules and Regulations shall be considered by the Director. The Director may obtain wastewater samples as required to verify the consistency of discharge characteristics.

(g) Fees for any given measurement, test, or analysis of wastewater required by these Rules and Regulations and performed by the Town shall be the same for all classes of dischargers, regardless of the quantity or quality of the discharge and shall reflect only direct cost. Costs of analyses performed by an independent laboratory at the option of discharger shall be borne directly by the discharger.

ARTICLE VI. PRETREATMENT

SECTION 1. WASTEWATERS WITH SPECIAL CHARACTERISTICS

(a) While the Director may initially rely upon the Federal Categorical Pretreatment Standards to protect wastewater management system or receiving waters, if any

wastewater which contains substances or possesses characteristics shown to have deleterious effect upon the wastewater management system, processes, equipment, or receiving waters, or constitutes a public nuisance or hazard, is discharged or is proposed for discharge to the wastewater sewers, the Director may:

1. Require pretreatment to a condition acceptable for discharge to the waste water sewers,

2. Require control over the quantities and rates of discharge,

3. Require payment to cover added cost of handling and treating the waste waters not covered by existing fees or charges,

4. Require the development of compliance schedules to meet any applicable pretreatment requirements,

5. Require the submission of reports necessary to assure compliance with applicable pretreatment requirements,

6. Carry out all inspection, surveillance, and monitoring necessary to determine compliance with applicable pretreatment requirements,

7. Obtain remedies for noncompliance by any user. Such remedies may include injunctive relief, the civil penalties specified in Article 11 of these Rules and Regulations, or appropriate criminal penalties, or

8. Reject the wastewater-if scientific evidence discloses that discharge will create unreasonable hazards or have unreasonable deleterious effects on the wastewater management system.

(b) When considering the above alternatives, the Director shall assure that conditions of the Town's NPDES permit are met. The Director shall also take into consideration cost effectiveness and the economic impact of the alternatives on the discharger. If the Director allows the facilities shall be subject to review. The Director shall review and recommend any appropriate changes to the program, within sixty (60) days of submittal.

(c) Where pretreatment or flow-equalizing facilities are provided or required for any wastewater, they shall be maintained continuously in satisfactory and effective operation at the expense of the owner.

SECTION 2. COMPLIANCE WITH PRETREATMENT REQUIREMENTS

Persons required to pretreat wastewater in accordance with Section 1 above, shall provide a statement, reviewed by an authorized representative of the user and certified to by a qualified person indicating whether applicable pretreatment requirements are being met on a consistent basis and, if not, describe the additional operation and maintenance or, additional pretreatment required for the user to meet the pretreatment requirements. If additional pretreatment or operation and maintenance will be required to meet the

pretreatment requirements the user shall submit a plan (including schedules) to the Director. The plan (including schedules) shall be consistent with applicable conditions of the NPDES Permit or other local, state or Federal laws.

SECTION 3. MONITORING REQUIREMENTS

Discharges of wastewater to the Town's wastewater management system from the facilities of any user shall be monitored in accordance with the provisions of these Rules and Regulations.

SECTION 4. EFFECT OF FEDERAL LAW

In the event that the Federal government promulgates a regulation for a given new or existing user in a specific industrial subcategory that establishes pretreatment standards or establishes that such a user- is exempt from pretreatment standards, such Federal regulations shall immediately supersede Section 1 (a) of this article.

SECTION 5. REVISION OF PRETREATMENT STANDARDS

The Director shall promptly apply for and obtain authorization from the EPA to revise discharge limitations for those substances listed in the Federal Categorical Pretreatment Standards for which consistent removal occurs in the wastewater treatment facilities of the Town. The Director shall not adopt or enforce discharge limitations more stringent than the requested limitations until the state or EPA acts on the application.

ARTICLE VII. WASTEWATER SERVICE

SECTION 1. WASTEWATER USER CHARGES

Charges and fees for the use of the public wastewater management system shall be based upon the use of such system, or contractual obligations for a level of use in excess of actual use.

SECTION 2. DETERMINATION OF SYSTEM USE

(a) The use of the Town's wastewater management system shall be based upon actual or estimated measurement and analysis of each user's wastewater discharges to the extent such measurement and analysis is considered by the Director to be feasible and cost-effective.

(b) Where measurement and analysis is considered not feasible, determination of each user's use of the facilities shall be based upon the quantity of water used whether purchased from a public water utility or obtained from a private source, or an alternative

means as provided by Section (c) below.

(c) The Director, when determining use of the Town's wastewater management system based on water use, shall consider consumptive, evaporative, or other use of water which results in a significant difference between a discharger's water use and wastewater discharge. Where appropriate, such consumptive water use may be metered to aid in determining actual use of the wastewater management system. The meters used to measure such water uses shall be of a type and installed in a manner approved by the Director.

SECTION 3. PENALTIES FOR EXCESSIVE USE

Each user is encouraged to conserve water. Each connection permit will specify the amount of capacity in the Wastewater Management System that has been allocated to that user. Discharges into the Wastewater Management System in excess of the permitted capacity are prohibited. In the event that a user discharges excessive amounts of wastewater, the Director may assess a penalty fee. The penalty fee shall be set in accordance with Section 6 of Article ll.

ARTICLE VIII. EFFECTIVE DATE

These Rules and Regulations shall be in full force and effect from and after its passage, approval and publication, as provided by law.

PASSED this 6th day of April, 1999

AYES:

Christopher Woodcock

Lana Carlsson-Irwin

Eugene Roberts

NAYS: None

ABSENT: None

NOT VOTING: None

AMENDED November 26,1999

AMENDED December 11,2003

Appendix B
WWTF DMR Data

WAYLAND OFFICE PARK #MA0039853

DATE	INFLUENT		EFFLUENT									
	BOD	TSS	BOD	TSS	NH3	Al	Copper	Lead	Total P	O&G	E-Coli	Fecal
			30mg/l	30mg/l								
6/3/09			0	0		0			0.08			0
6/17/09			0	0					0.16			0
6/24/09			5.4	4					0.14			0
7/1/09			0	0					0.11			0
7/8/09			0	0		0.102			0.1			0
7/15/09			10	0					0.11			0
7/22/09			0	2					0.14			0
7/29/09			0	2					0.11			0
8/5/09			6.8	0		0.119			0.12			0
8/12/09			0	2					0.12			0
8/19/09			0	3					0.062			0
8/26/09			0	0					0.07			0
9/2/09			0	0		0			0.1			0
9/9/09			19	0					0.1			0
9/16/09			0	0					0.06			0
9/23/09			0	0					0			0
9/30/09			6.8	0					0.14			4
10/7/09			0	2		0			0.1			3
10/14/09			0	2					0.06			0
10/21/09			0	0					0.1			2
10/28/09			0	0					0.1			0
11/4/09			0	0		0			0.1			0
11/11/09			0	5			0.577	0	0.07		0	0
11/18/09			4.3	0	0				0.15		0	1
11/24/09			0	0	0				0.14		0	0
12/2/09			0	0	0.35	0	0.33	0	0.32		2	0
12/9/09			0	0					0.12		6	43
12/15/09			0	0	0.22				0.09		0	0
12/23/09			0	0	0.48				0.11		0	0
12/29/09			0	0	0.15				0.25		0	0
1/5/10			0	2	0	0.131	0.045	0	0.09	3.7	2	0
1/12/10			0	2	0.42				0.13		19	19
1/20/10			0	0	0				0.17		0	0
1/27/10			0	0	0.13				0.13		0	0
2/2/10			0	0	0.11	0	0.05	0	0.09	4	0	0
2/9/10			0	0	0.1				0.06		0	0
2/17/10	530	260	0	3.7	0				0.12		140	266
2/23/10	480	230	0	0	0.26				0.14		1	3
3/3/10	510	190	0	0	0	0	0.406	0	0.09	3.6	9	9
3/9/10	400	200	6.6	0	0.23				0.08		0	1
3/16/10	200	210	0	0	0.11				0.08		26	4
3/23/10	130	180	0	0	0.17				0.1		0	0
3/30/10	150	56	14	4.7	0.31				0.14		69	54
4/6/10	180	110	0	0	0.53	0.056	0.24	0.0012	0.08	4.7	2	0
4/13/10	250	150	0	0	0.1				0.09		3	52
4/20/10	1000	380	20	3	9.3				0.16		82	179
4/27/10	640	410	10	4	21				0.17		0	8
5/4/10	400	110	0	0	1.5	0.086	0.27	0.0014	0.11	5.5	32	29
5/11/10	500	110	0	0	0.8				0.1		0	0
5/18/10	690	120	0	0	0.46				0.11		0	0
5/25/10	540	260	0	0	0.3				0.081		0	0
6/3/10	410	170	0	2	0.27	0.0556	0.11	0.0023	0.11	4.5	0	0
6/8/10	470	160	0	0	0.4				0.09		0	0
6/16/10	810	300	0	0	0.11				0.15		0	0
6/22/10	370	96	0	0	0.2				0.1		0	0
6/29/10	720	40	0	0	0				0.26		9	0
7/7/10	580	220	0	0	0.22				0.14		0	0
7/14/10	560	200	4.3	0	0.13	0.0108	0.07	0.002	0.12	5.2	110	204
7/20/10	110	84	0	0	0.22				0.07		0	0
7/27/10	290	120	0	0	0.22				0.07		0	1
8/3/10	400	120	0	0	0.37				0		0	0
8/10/10	810	240	5.6	0	0.38				0		234	122
8/17/10	630	220	0	0	0	0.207	0.064	0.001	0.055	5.2	0	0
8/24/10	650	240	0	0	0				0		0	0
8/31/10	590	140	0	0	0				0.06		0	0
9/8/10	1000	120	0	0	0.3	0.318	0.061	0.001	0.05	6.5	16	19
9/14/10	430	130	0	0	0.26				0.06		0	0
9/21/10	300	100	0	0	0.27				0.1		0	0
9/28/10	420	210	0	0	0.81				0.05		0	0
10/5/10	460	240	0	0	0.22	0.078	0.051	0	0.05	5.5	0	0
10/12/10	1900	380	0	0	0.19				0.06		0	0
10/19/10	370	67	0	0	0				0		0	0
10/26/10	630	120	0	0	0.27				0.06		0	0

DATE	INFLUENT		EFFLUENT									
	BOD	TSS	BOD	TSS	NH3	Al	Copper	Lead	Total P	O&G	E-Coli	Fecal
			30mg/l	30mg/l								
11/2/10	510	100	0	0	0.15	0.07	0.054	0.001	0.097	1.4	0	0
11/9/10	370	110	0	0	0.3				0.09		0	0
11/16/10	510	120	0	0	0				0.08		0	0
11/23/10	650	91	0	0	0.18				0.09		0	0
11/30/10	130	65	0	0	0				0.08		0	0
12/7/10	310	330	0	0	0.37	0.042	0.4	0.0026	0.08	4.4	0	
12/14/10	150	39	0	0	0.55				0.07		0	
12/21/10	460	140	0	0	0.5				0.08		0	
12/29/11	750	380	0	2.5	0.74				0.1		0	
1/4/11	570	240	0	5.7	0.2	0.067	0.44	0.0022	0.13	4.2	0	
1/11/11	600	240	0	4.3	0.36				0		0	
1/18/11	1200	260	0	5.7	0.16				0.62		0	
1/25/11	400	120	0	5	1.8				0.14		0	
2/1/11	2000	560	0	4.7	3.6				0.24		5	
2/8/11	450	490	0	6.7	3.4	0.22	0.046	0.0012	0.27	4.5	0	
2/15/11	470	350	0	3.3	4.9				0.18		0	
2/23/11	180	260	0	2.8	2.7				0.15		0	
3/1/11	660	250	0	5	2.7				0.22		0	
3/8/11	38	19	0	7.2	4.4	0.21	0.23	0	0.25	4.7	0	
3/15/11	160	75	0	4.3	4.8				0.26		0	
3/22/11	340	180	0	3.5	2.9				0.21		0	
3/29/11	110	110	0	3.3	5.1				0.18		0	
4/5/11	1500	500	0	5.7	0.5	0.068	0.22	0	0.18	3.7	0	
4/12/11	210	85	0	2.2	0.67				0.11		0	
4/19/11	60	53	0	2.3	0.29				0.1		0	
4/26/11	140	76	0	0	0.29				0.14		0	
5/3/11	110	100	0	0	0	0.033	0.21	0.0011	0.16	4.4	0	
5/10/11	470	190	0	0	8.5				0.49		0	
5/17/11	300	47	0	0	0				0		0	
5/24/11	440	150	0	2.2	0				0.17		0	
6/2/11	490	290	0	5.3	0.25	0.08	0.29	0.0015	0	4	0	
6/7/11	540	220	0	0	0.45				0.11		0	
6/14/11	270	300	0	0	0.22				0.1		0	
6/21/11	750	160	7.8	3.3	0				0.15		0	
6/29/11	700	310	0	0	0				0.18		0	
7/6/11	480	160	0	2	0.29				0.11		0	
7/12/11	660	180	0	0	0.16	0.059	0.303	0.002	0.11	1.1	0	
7/19/11	630	360	0	0	0				0.12		0	
7/26/11	730	350	0	3.3	0				0.14		0	
8/2/11	1400	240	0	0	0	0.13	0.3	0.0025	0.09	1.4	0	
8/9/11	600	270	0	0	0.63				0.06		0	
8/16/11	310	130	0	0	0.18				0.05		0	
8/23/11	960	380	0	0	0.15				0.05		0	
8/30/11	180	70	0	0	0				0		0	
9/7/11	220	160	0	0	0	0.092	0.073	0.001	0.36	3.4	0	
9/13/11	130	62	0	0	0.4				0.09		0	
9/22/11	680	220	0	2	0.3				0		0	
9/27/11	690	170	0	0	0.32				0		0	
10/4/11	280	270	0	0	0	0.0469	0.045	0.001	0.19	2.5	0	
10/13/11	430	160	0	0	0.49				0.07		0	
10/18/11	450	140	0	0	0.53				0.09		0	
10/25/11	270	70	0	0	0.31				0.06		0	
11/1/11	200	64	0	0	0.35				0.09		0	
11/8/11	210	120	0	0	0	0.0265	0.039	0	0.1	4.8	0	
11/15/11	470	300	6.9	3.7	0.99				0.13		0	
11/22/11	450	170	0	3	0.2				0.1		0	
11/29/11	440	66	0	2.3	0				0.12		0	
12/6/11	330	120	0	0	0.45	0.0228	0.035	0	0.19	0.8	0	
12/13/11	360	110	0	0	0.81				0.26		0	
12/20/11	340	100	0	0	3.1				0.13		0	
12/29/11	310	140	0	0	0				0.08		0	
1/5/12	240	130	0	0	0.14				0.87		0	
1/10/12	320	360	0	0	0.38	0.0318	0.2	0.0017	0.07	0.87	0	
1/17/12	420	220	0	0	0				0.11		0	
2/7/12	230	260	0	0	0.52	0.038	0.365	0.0017	0.23	1.2	0	
2/14/12	210	260	0	4.3	0				0.14		0	
2/22/12	75	140	0	2	0.18				0.17		0	
2/28/12	510	400	0	0	0				0.09		0	
3/6/12	160	200	7.2	4.3	3.3	60	280	1.6	0.33	0	0	
3/13/12	870	320	0	3.7	1.9				0.22		0	
3/20/12	650	410	0	0	1.5				0.21		0	
3/27/12	760	220	0	0	1.8				0.15		0	
4/3/12	320	330	0	3.3	0.29	54	210	1.1	0.09	0.6	0	
4/10/12	220	200	0	2.3	0.15				0.12		0	
4/17/12	490	440	0	0	1.4				0.09		0	
4/24/12	830	380	0	0	8.1				0.18		0	

DATE	INFLUENT		EFFLUENT									
	BOD	TSS	BOD	TSS	NH3	Al	Copper	Lead	Total P	O&G	E-Coli	Fecal
			30mg/l	30mg/l								
5/1/12	330	300	0	2	4.6	56	180	1.1	0.07	0	0	
5/8/12	440	350	0	0	0.21				0.08		0	
5/15/12	410	360	0	0	4				0		0	
5/29/12	340	390	0	0	5.1				0.13		0	
5/30/12	750	280	0	0	1.6				0.1		0	
6/5/12	310	240	0	0	9.1	61	230	1.1	0.24	0	0	
6/12/12	210	220	0	0	3.1				0.22		0	
6/19/12	69	41	0	5	1.4				0.15		0	
6/26/12	120	120	0	2.7	0.16				0.13		0	
7/3/12	210	220	0	0	0.34	108	170	1.7	0.15	0.8		
7/5/12											0	
7/12/12	230	150	0	0	0.12				0.11		0	
7/17/12	350	270	0	0	0.39				0.08		0	
7/24/12	390	150	0	2.5	0.47				0.13		0	
7/31/12	1800	350	0	0	0				0.1		0	
8/8/12	350	250	0	2.7	0.39				0.18		0	
8/14/12	190	140	0	0	0				0.15		0	
8/21/12	420	420	0	0	0.13				0.13			
8/28/12	420	210	10	8	0				0.17		0	
9/5/12	1200	190	0	0	0.12	72	90	0	0.1	0	0	
9/11/12	690	200	0	0	0.17				0.11		0	
9/18/12	470	130	0	0	0.2				0.1		0	
9/25/12	490	660	0	0	0.48						0	
10/2/12	220	220	0	0	0.22	40.2	110	0	0.05	0.5	0	
10/9/12	280	310	0	0	0.15				0.08		0	
10/16/12	1300	390	5	0	0						0	
10/23/12	290	210	0	0	0.54						0	
11/1/12	1500	310	23	13	11						0	
11/8/12	440	160	0	0	0.22				0.17		0	
11/14/12	450	160	0	0	0.23						0	
11/20/12	250	390	2.4	0	0				4		0	
12/4/12	320	180	0	0	0.42	32.2	8.5	0	0.17	0.7	0	
12/11/12	510	210	0	0	0.13				0.14		0	
12/18/12	580	290	0	0	0						0	
12/27/12	510	280	0	2	0.46						0	
1/3/13	620	290	0	0	0.28	0	0	0	0.08	0.9	0	0
1/4/13											0	
1/8/13	550	300	0	0	0				0		0	
1/15/13	870	1100	0	0	0.88				0.1		0	
1/22/13	970	250	6.7	0	0				0		0	
1/29/13	500	340	0	0	0.29						0	
2/5/13	780	250	0	0	0.41	0	0.013	0	0	0	0	
2/12/13	1100	360	0	0	0.2				0.06		0	
2/20/13	690	280	2.4	2.7	0.28				0.13		0	
2/26/13	1000	270	0	0	0.25				0.18		0	
3/5/13	1100	260	5.6	0	0	0	0	0	0	0	0	
3/12/13	900	260	0	0	0.1						0	
3/19/13	520	270	0	0	1.4				0		0	
3/26/13	370	220	0	0	0.12						0	
4/2/13	570	290	0	0	0.32	0	0	0	0.06	2.9	0	
4/9/13	900	360	0	0	0.17						0	
4/16/13	1100	340	0	0	0.21						0	
4/23/13	730	250	3.2	0	0.18				0		0	
5/2/13	340	280	0	0	0.34	0.501	0.12	0	0.17	1.6	0	
5/7/13	720	400	0	0	0.35				0.12		0	
5/21/13	610	240	0	0	0.33				0		0	
5/29/13	690	320	0	0	0.27				0.08		0	
6/4/13	590	290	0	0	0	0	0	0	0.08	0	0	
6/11/13	950	290	3	0	0.43				0.09		0	
6/18/13	700	250	0	0	0.44						0	
6/25/13	660	290	0	0	0.16				0.06		0	
7/2/13	720	290	0	0	0	0	0.011	0	0.08	0	0	
7/9/13	900	340	0	0	0				0.13		0	
7/16/13	340	260	0	3.3	0.3				0.05		0	
8/6/13	530	280	0	0	0	0	0.018	0	0	0	0	
8/13/13	1400	150	0	0	0.32	0.022	0.016	0.001	0.08		0	

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
Jun-12	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	18,335	0.00	60	0	3166	3166	2000	0.9	2160
2	16,891	1.22	60	0				0.9	2160
3	12,280	0.24	60	0				1.2	2880
4	16,070	0.12	60	0	2934	2934	2000	0.8	1920
5	17,515	0.08	60	0	1949	1949	2000	0.9	2160
6	20,764	0.12	59	0	2902	2902	2000	1.1	2640
7	14,365	0.20	59	0				1.1	2640
8	19,420	0.16	59	0	3215	3215	2000	0.9	2160
9	13,070	0.12	60	0				0.9	2160
10	11,469	0.00	59	0				1.2	2880
11	18,705	0.00	60	0	3205	3205	2000	1.2	2880
12	14,964	0.00	60	0				0.9	2160
13	20,000	0.63	60	0	3147	3147	2000	1.2	2880
14	0	0.00	60	0				1.3	3120
15	13,095	0.00	60	0	2899	2899	2000	1.05	2520
16	13,095	0.00	60	0				1.05	2520
17	13,095	0.00	60	0				1	2400
18	20,068	0.00	60	0	3431	3431	2000	1.3	3120
19	14,880	0.00	60	0				1	2400
20	20,972	0.00	60	0	2292	2292	2000	1	2400
21	13,745	0.00	60	0				1.3	3120
22	15,419	0.00	60	0	3286	3286	2000	1.2	2880
23	15,419	0.12	60	0				1.2	2880
24	15,419	0.00	60	0				1	2400
25	15,552	0.83	60	0	3180	3180	2000	1	2400
26	13,489	0.00	60	0				1.3	3120
27	16,131	0.00	60	0	2733	2733	2000	1	2400
28	14,442	0.00	60	0				1.2	2880
29	17,457	0.04	66	0	3250	3250	2000	1	2400
30	9,778	0.00	60	0				1	2400
31									
TOTAL	**455,904**	**3.88**						17.6	42240
AVERAGE	**15,197**	**0.13**						1.1	2640

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
Jul-12	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	7,684	0.00	60	0				1	2400
2	12,392	0.00	60	0	3366	3366	2000	1.1	2640
3	10,300	0.00	60	0				1	2400
4	7,360	0.59	60	0				0.9	2160
5	8,890	0.00	61	0				1.1	2640
6	10,330	0.00	77	0	3000	3000	2000	0.8	1920
7	9,918	0.00	77	0				1.2	2880
8	7,398	0.00	77	0				1.2	2880
9	11,835	0.00	77	0	1932	1932	2000	1.3	3120
10	14,525	0.00	77	0				1.3	3120
11	13,012	0.00	75	0				1.1	2640
12	13,047	0.00	74	0				1.9	4560
13	14,962	0.00	75	0				1.9	4560
14	14,569	0.00	75	0				1.9	4560
15	12,179	0.00	75	0				1.2	2880
16	15,159	0.00	78	0	2802	2802	2000	1.2	2880
17	21,022	0.00	77	0				0.3	720
18	20,662	1.06	77	0				2.2	5040
19	23,233	0.12	86	0	2853	2853	2000	2.1	5280
20	15,853	0.00	61	0	2867	2867	2000	0.65	1560
21	13,133	0.00	60	0				0.65	1560
22	12,615	0.00	61	0				0.9	2160
23	16,065	0.00	62	0	2256	2256	2000	1.1	2640
24	21,194	0.12	62	0				1	2400
25	18,264	0.00	68	0	1944	1944	2000	1.8	4320
26	21,001	0.00	68	0				2	4800
27	20,948	0.00	63	0	2517	2517	2000	2.1	5280
28	18,284	0.71	64	0				2.1	5280
29	16,384	0.31	64	0				2	4800
30	22,308	0.00	63	0	2644	2644	2000	0	0
31	13,074	0.00	61	0				1.2	2880
TOTAL	**457,600**	**2.91**						22.5	54480
AVERAGE	**14,761**	**0.09**						1.32	3204.7

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
Aug-12	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	20,136	0.87	62	0	2614	2614	2000	0.9	2160
2	18,782	0.00	63	0				1.1	2640
3	20,709	0.00	62	0	3030	3030	2000	1.5	3600
4	15,258	0.00	62	0				1.5	3600
5	11,881	0.04	62	0				1.5	3600
6	15,568	0.20	62	0				1.1	2640
7	17,273	0.00	63	0				0.8	1920
8	21,159	0.00	72	0	3046	3046	2000	1.1	2640
9	18,025	0.00	73	0				1.1	2640
10	21,014	0.51	64	0	2967	2967	2000	1.2	2880
11	15,820	0.94	63	0				1.2	2880
12	13,330	0.59	63	0				1.1	2640
13	19,449	0.00	63	0	3000	3000	2000	0.2	480
14	16,787	0.00	63	0				1	2400
15	19,819	0.71	62	0	2723	2723	2000	0.9	2160
16	22,666	1.61	62	0				1.1	2640
17	19,340	0.00	64	0	2658	2658	2000	0.95	2280
18	13,286	0.43	63	0				0.95	2280
19	12,306	0.00	63	0				1.1	2640
20	19,680	0.00	63	0	3046	3046	2000	1.3	3120
21	15,868	0.00	63	0				0.9	2160
22	19,806	0.00	63	0	2949	2949	2000	0.9	2160
23	16,890	0.00	63	0				1.1	2640
24	15,263	0.00	63	0				1.7	4080
25	13,416	0.00	64	0				1.7	4080
26	12,413	0.00	63	0				1	2400
27	17,303	0.00	62	0	3190	3190	2000	1.1	2640
28	17,781	0.20	63	0				0.9	2160
29	23,981	0.00	63	0	3245	3245	2000	1.1	2640
30	23,817	0.00	63	0				0.8	1920
31	17,056	0.00	63	0	2550	2550	2000	1.4	3360
TOTAL	545,882	6.10						18.9	45360
AVERAGE	17,609	0.20						1.11	2668.2

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	*PLANT FLOW*	*RAINFALL*	*MAX*	*MIN*	*Backwash*	*Backwash*	*Flush*	*PS ETM*	*PS Flows*
Sep-12	*GPD*	*"*	*GPM*	*GPM*		*Tank*	*AT Line*	*Hours*	*GPD*
1	12,331	0.00	63	0				1.4	3360
2	10,072	0.00	63	0				1	2400
3	10,181	0.00	63	0				0.7	1680
4	18,616	0.55	63	0				1.2	2880
5	22,624	0.71	64	0	2522	2522		0.9	2160
6	23,848	0.00	64	0				1.1	2640
7	24,271	0.00	62	0	3074	3074		0.9	2160
8	14,554	0.00	63	0				0.9	2160
9	11,099	0.12	63	0				0.9	2160
10	25,763	0.00	63	0	2562	2562		1.9	4560
11	21,936	0.00	63	0				2.3	5520
12	24,378	0.00	63	0				2	4800
13	25,590	0.00	63	0				1.9	4560
14	23,663	0.00	65	0	3139	3139		1.8	4320
15	16,022	0.08	65	0				1.8	4320
16	14,469	0.00	65	0				1.8	4320
17	25,514	0.00	65	0	2500	2500		2.1	5040
18	29,910	0.00	65	0				1.8	4320
19	29,045	1.54	64	0				2	4800
20	26,391	0.00	64	0				1.8	4320
21	26,228	0.00	64	0	3168	3168		1.55	3720
22	22,962	0.00	64	0				1.55	3720
23	19,964	0.12	64	0				1.8	4320
24	24,817	0.00	64	0	2485	2485		1.9+	4560
25	23,782	0.00	64	0				1.9	4560
26	27,659	0.00	64	0	2533	2533		1.9	4560
27	26,055	0.00	64	0				1.7	4080
28	25,440	0.43	64	0				2	4800
29	27,062	0.71	64	0				2	4800
30	25,696	0.08	64	0				1.7	4080
31									
TOTAL	**659,942**	**4.34**						48.2	114112
AVERAGE	**21,998**	**0.14**						1.60	3804.0

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
Oct-12	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	29,730	0.00	64	0	3497	3497	2000	1.9	4560
2	27,310	0.04	64	0				1.5	3600
3	32,142	0.08	65	0	3012	3012	2000	1.9	4560
4	2,671	0.12	65	0				1.7	4080
5	20,407	0.04	63	0	2503	2503	2000	1	2400
6	22,218	0.00	63	0				1	2400
7	21,674	0.00	63	0				1.8	4320
8	23,495	0.20	64	0				2.2	5280
9	25,985	0.00	64	0	2534	2534	2000	1.9	4560
10	23,149	0.20	64	0				0.8	1920
11	21,853	0.00	64	0				1.2	2880
12	23,630	0.04	64	0	2826	2826	2000	1	2400
13	20,848	0.00	63	0				1	2400
14	19,327	0.12	64	0				1.1	2640
15	22,917	0.00	63	0	2648	2648	2000	1.1	2640
16	22,976	0.35	64	0				1	2400
17	24,559	0.00	64	0	3235	3235	2000	1.1	2640
18	22,245	0.00	64	0				1.1	2640
19	21,305	0.12	64	0				1.15	2760
20	22,755	1.42	64	0				1.15	2760
21	17,748	0.00	64	0				1.1	2640
22	32,133	0.00	64	0	6055	6055	2000	1.1	2640
23	26,128	0.00	63	0				1.1	2640
24	25,475	0.00	64	0				0.8	1920
25	26,034	0.00	63	0				0.8	1920
26	comp prob	0.00		0				0.55	1320
27	comp prob	0.00		0				0.55	1320
28	comp prob	0.04		0				1.2	2880
29	comp prob	1.69		0				1.2	2880
30	27,334	1.85		0				1.6	3840
31	25,786	0.47		0				1.8	4320
TOTAL	**631,834**	**6.78**						18.4	44160
AVERAGE	**23,401**	**0.22**						1.08	2597.6

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
Nov-12	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	26,779	0.00		0			2000		
2	27,167	0.00		0					
3	27,167	0.00		0			2000		
4	27,167	0.00		0					
5	21,152	0.00		0			2000		
6	21,201	0.00		0					
7	9,717	0.00		0					
8	37,990			0					
9	58,200			0			2000		
10				0					
11				0					
12	94,990	NO METER		0			2000		
13	111,260	NO METER		0					
14	124,220	NO METER		0					
15	154,100	NO METER		0			2000		
16	171,020	NO METER		0					
17	184,580	NO METER		0			2000		
18	206,720	NO METER		0					
19	216,670	NO METER		0					
20	245,850	NO METER		0					
21	274,060	NO METER		0					
22				0			2000		
23	314,540	NO METER		0					
24				0					
25				0					
26	378,340	NO METER		0					
27	408,700	NO METER		0					
28	436,060	NO METER		0					
29	456,450	NO METER		0					
30	473,120	NO METER		0					
31				0					
TOTAL	**4,507,220**	**0.00**						0	0
AVERAGE	**180,289**	**0.00**						#DIV/0!	#DIV/0!

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	*PLANT FLOW*	*RAINFALL*	*PS #1 ETM*	*PS #1 Flows*	*PS #2 ETM*	*PS #2 Flows*
Dec-12	*GPD*	*"*	*Hours*	*GPD*	*Hours*	*GPD*
1	20,690	0.00	3.2	7680	1.85	19425
2	17,880	0.00	33.5	80400	1.85	19425
3	17,320	0.00	0.8	1920	1	10500
4	15,710	0.00	2	4800	1.3	13650
5	20,150	0.00	2.6	6240	1	10500
6	18,560	0.00	1.9	4560	1.4	14700
7	19,185	0.00	1.9	4560	1.2	12600
8	19,185	0.00	1.9	4560	1.2	12600
9	17,580	0.00	3.3	7920	1.2	12600
10	18,870	0.00	5	12000	1.1	11550
11	17,920	0.00	3.4	8160	1.1	11550
12	18,380	0.00	2	4800	1.3	13650
13	18,580	0.00	3.7	8880	1.2	12600
14	19,465	0.00	1.3	3120	1.17	12285
15	19,465	0.00	1.3	3120	1.17	12285
16	16,790	0.00	3.8	9120	1.17	12285
17	17,440	1.02	2.9	6960	1.3	13650
18	20,140	0.00	3.2	7680	1.2	12600
19	19,240	0.00	3.7	8880	1.4	14700
20	19,190	0.00	3.3	7920	1.2	12600
21	17,230	0.75	3	7200	1.73	18165
22	17,230	0.00	2.9	6960	1.73	18165
23	17,230	0.00	2.7	6480	1.73	18165
24	17,230	0.00	2.7	6480	1.73	18165
25	8,390	0.00	3.3	7920	1.73	18165
26	17,270	0.00	3.3	7920	1.6	16800
27	23,670	2.24	4.2	10080	1.6	16800
28	18,415	0.04	2.1	5040	1.17	12285
29	18,415	0.00	2.1	5040	1.17	12285
30	15,150	0.00	2.1	5040	1.17	12285
31	14,290	0.00	1.7	4080	0.9	9450
TOTAL	**556,260**	**4.05**	**48.3**	**115,920**	**23.7**	**248,850**
AVERAGE	**17,944**	**0.13**	**2.84**	**6,819**	**1.39**	**14,638**

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	PS #1 ETM	PS #1 Flows	PS #2 ETM	PS #2 Flows
Jan-13	GPD	"	Hours	GPD	Hours	GPD
1	10,380	0.00	1.5	3600	0.9	9450
2	17,060	0.00	2	4800	1.3	13650
3	15,920	0.00	1.4	3360	1.3	13650
4	15,775	0.00	3.3	7920	3.5	36750
5	15,775	0.04	3.4	8160	3.5	36750
6	12,820	0.00	2	4800	3.5	36750
7	12,440	0.00	1.2	2880	1.1	11550
8	13,630	0.00	1.2	2880	1.1	11550
9	14,840	0.00	1.5	3600	1.1	11550
10	15,510	0.00	1.6	3840	1.3	13650
11	15,430	0.04	1.4	3360	0.9	9450
12	15,430	0.00	1.2	2880	0.9	9450
13	12,330	0.04	1.1	2640	0.9	9450
14	12,270	0.00	1.1	2640	1	10500
15	12,900	0.00	1	2400	1.1	11550
16	14,190	0.00	1.1	2640	0.9	9450
17	16,130	0.28	2	4800	1.2	12600
18	17,235	0.00	3.1	7440	3.7	38850
19	17,235	0.00	3.1	7440	3.7	38850
20	13,120	0.00	1.8	4320	3.7	38850
21	14,810	0.00	2. 7	6480	1	10500
22	14,780	0.00	1.9	4560	1.2	12600
23	14,660	0.00	1.5	3600	1.1	11550
24	13,260	0.00	1.4	3360	1.1	11550
25	13,955	0.00	1.3	3120	3.5	36750
26	13,955	0.00	1.4	3360	3.5	36750
27	12,080	0.00	1.4	3360	3.5	36750
28	12,430	0.04	1.2	2880	0.9	9450
29	12,830	0.00	1	2400	0.9	9450
30	16,420	0.16	1.4	3360	1.1	11550
31	17,710	0.20	1.2	2880	1.6	16800
TOTAL	447,310	0.80	25.8	68,400	33.7	353,850
AVERAGE	14,429	0.03	1.61	4,024	1.98	20,815

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	PS #1 ETM	PS #1 Flows	PS #2 ETM	PS #2 Flows
Feb-13	GPD	"	Hours	GPD	Hours	GPD
1	13,535	0.00	1.2	2880	1.1	11220
2	13,535	0.00	1.2	2880	1.1	11220
3	11,520	0.00	1.3	3120	1.1	11220
4	12,000	0.00	1.3	3120	1	10200
5	13,470	0.00	1.3	3120	1.1	11220
6	14,160	0.00	1.3	3120	1.2	12240
7	15,740	0.00	1	2400	1.2	12240
8	8,270	0.00	1	2400	0.75	7650
9	8,270	0.00	1	2400	0.75	7650
10	12,290	0.04	1.5	3600	0.75	7650
11	13,120	0.20	1.2	2880	1	10200
12	14,610	0.00	1.2	2880	1.3	13260
13	16,750	0.00	0.9	2160	1.7	17340
14	18,570	0.00	1.2	2880	1.8	18360
15	13,207	0.00	1.5	3600	1	10200
16	13,207	0.00	1.5	3600	1	10200
17	13,207	0.00	1.1	2640	1	10200
18	11,700	0.00	1.5	3600	1	10200
19	15,610	0.04	1.4	3360	1.5	15300
20	17,120	0.16	1.1	2640	1.4	14280
21	17,110	0.00	1.2	2880	1.4	14280
22	17,220	0.00	1.7	4080	1.4	14280
23	17,220	0.00	1.7	4080	1.4	14280
24	15,410	0.47	1.4	3360	1.3	13260
25	14,880	0.28	1.3	3120	1.1	11220
26	18,160	0.00	1.3	3120	2.1	21420
27	38,190	1.77	1.8	4320	4.4	44880
28	32,750	0.08	1.4	3360	1.8	18360
29						
30						
31						
TOTAL	440,831	3.04	19.9	47,760	21.8	222,360
AVERAGE	15,744	0.11	1.42	3,411	1.56	15,883

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
MAR-13	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	17,245	0.00	62	0				0.9	2160
2	17,245	0.00	61	0	2471	2471	2000	0.95	2280
3	13,660	0.00	60	0				0.95	2280
4	14,260	0.00	61	0				1.1	2640
5	15,210	0.00	62	0	2571	2571	2000	1.3	3120
6	16,610	0.12	61	0				0.9	2160
7	16,310	0.08	62	0	2895	2895	2000	0.9	2160
8	12,450	0.00	62	0				1	2400
9	12,450	0.16	61	0	2819	2819	2000	1.1	2640
10	14,230	0.00	62	0				1.1	2640
11	18,590	0.00	62	0				1.1	2640
12	19,520	0.35	62	0	2368	2368	2000	0.8	1920
13	21,230	0.08	61	0				1.1	2640
14	21,250	0.00	61	0	3231	3231	2000	1.1	2640
15	14,450	0.00	61	0				0.9	2160
16	14,450	0.00	60	0	2619	2619	2000	0.95	2280
17	12,360	0.00	61	0				0.95	2280
18	12,750	0.00	60	0				1.3	3120
19	17,500	0.43	61	0	2829	2829	2000	0.8	1920
20	17,160	0.24	61	0	2387	2387	2000	1	2400
21	21,110	0.04	61	0	2589	2589	2000	1.1	2640
22	14,535	0.00	61	0				0.8	1920
23	14,535	0.00	61	0	3240	3240	2000	0.95	2280
24	18,200	0.00	61	0				0.95	2280
25	18,690	0.00	61	0				0.8	1920
26	16,540	0.00	60	0	3426	3426	2000	1.2	1920
27	16,050	0.00	60	0	3365	3365	2000	1.2	2880
28	16,990	0.00	60	0	2453	2453	2000	1	2640
29	13,530	0.00	61	0				0.9	2400
30	13,530	0.00	60	0	2757	2757	2000	1.3	2160
31	12,550	0.00	63	0				1.3	3120
TOTAL	495,190	1.50						17.4	40320
AVERAGE	15,974	0.05						1.02	2371.76

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
APR-12	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	14,790	0.04	62	0				0.9	2160
2	17,220	0.00	61	0	2471	2471	2000	0.95	2280
3	15,390	0.00	60	0				0.95	2280
4	17,250	0.00	61	0				1.1	2640
5	13,090	0.00	62	0	2571	2571	2000	1.3	3120
6	13,090	0.00	61	0				0.9	2160
7	14,070	0.00	62	0	2895	2895	2000	0.9	2160
8	15,900	0.00	62	0				1	2400
9	16,510	0.08	61	0	2819	2819	2000	1.1	2640
10	16,090	0.04	62	0				1.1	2640
11	19,880	0.16	62	0				1.1	2640
12	15,460	0.47	62	0	2368	2368	2000	0.8	1920
13	15,460	0.08	61	0				1.1	2640
14	14,600	0.00	61	0	3231	3231	2000	1.1	2640
15	14,920	0.00	61	0				0.9	2160
16	18,270	0.00	60	0	2619	2619	2000	0.95	2280
17	17,740	0.00	61	0				0.95	2280
18	17,910	0.00	60	0				1.3	3120
19	15,180	0.00	61	0	2829	2829	2000	0.8	1920
20	15,180	0.28	61	0	2387	2387	2000	1	2400
21	20,100	0.00	61	0	2589	2589	2000	1.1	2640
22	16,440	0.00	61	0				0.8	1920
23	17,260	0.00	61	0	3240	3240	2000	0.95	2280
24	17,300	0.04	61	0				0.95	2280
25	16,950	0.00	61	0				0.8	1920
26	14,625	0.00	60	0	3426	3426	2000	1.2	1920
27	14,625	0.00	60	0	3365	3365	2000	1.2	2880
28	14,200	0.00	60	0	2453	2453	2000	1	2640
29	14,660	0.00	61	0				0.9	2400
30	15,000	0.00	60	0	2757	2757	2000	1.3	2160
31								1.3	3120
TOTAL	479,160	1.19						17.4	40320
AVERAGE	15,972	0.04						1.02	2371.76

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
MAY-13	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	18,710	0.00	62	0				0.9	2160
2	17,810	0.00	61	0	2471	2471	2000	0.95	2280
3	12,780	0.00	60	0				0.95	2280
4	12,780	0.00	61	0				1.1	2640
5	14,240	0.00	62	0	2571	2571	2000	1.3	3120
6	13,790	0.00	61	0				0.9	2160
7	16,460	0.00	62	0	2895	2895	2000	0.9	2160
8	17,130	0.00	62	0				1	2400
9	18,220	0.47	61	0	2819	2819	2000	1.1	2640
10	13,535	0.00	62	0				1.1	2640
11	13,535	0.00	62	0				1.1	2640
12	16,920	0.12	62	0	2368	2368	2000	0.8	1920
13	15,030	0.00	61	0				1.1	2640
14	15,770	0.00	61	0	3231	3231	2000	1.1	2640
15	16,590	0.00	61	0				0.9	2160
16	19,050	0.00	60	0	2619	2619	2000	0.95	2280
17	12,725	0.00	61	0				0.95	2280
18	12,725	0.00	60	0				1.3	3120
19	14,660	0.00	61	0	2829	2829	2000	0.8	1920
20	16,100	0.04	61	0	2387	2387	2000	1	2400
21	17,480	0.24	61	0	2589	2589	2000	1.1	2640
22	17,460	0.12	61	0				0.8	1920
23	17,760	0.00	61	0	3240	3240	2000	0.95	2280
24	11,490	0.31	61	0				0.95	2280
25	20,590	0.31	61	0				0.8	1920
26	9,410	0.00	60	0	3426	3426	2000	1.2	1920
27	14,130	0.00	60	0	3365	3365	2000	1.2	2880
28	16,160	0.00	60	0	2453	2453	2000	1	2640
29	18,420	0.24	61	0				0.9	2400
30	21,030	0.43	60	0	2757	2757	2000	1.3	2160
31	14,335	0.00	63	0				1.3	3120
TOTAL	**486,825**	**2.28**						17.4	40320
AVERAGE	**15,704**	**0.07**						1.023529	2371.765

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
JUNE-12	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	14,335		62	0				0.9	2160
2	19,870		61	0	2471	2471	2000	0.95	2280
3	17,830	0.28	60	0				0.95	2280
4	17,480		61	0				1.1	2640
5	16,790		62	0	2571	2571	2000	1.3	3120
6	17,910		61	0				0.9	2160
7	15,250	1.65	62	0	2895	2895	2000	0.9	2160
8	15,250	0.71	62	0				1	2400
9	16,140		61	0	2819	2819	2000	1.1	2640
10	16,140	0.51	62	0				1.1	2640
11	18,450	0.43	62	0				1.1	2640
12	20,140	0.96	62	0	2368	2368	2000	0.8	1920
13	21,160	0.63	61	0				1.1	2640
14	20,380	1.06	61	0	3231	3231	2000	1.1	2640
15	20,380		61	0				0.9	2160
16	18,020		60	0	2619	2619	2000	0.95	2280
17	17,440	0.16	61	0				0.95	2280
18	17,790	0.24	60	0				1.3	3120
19	18,740	0.04	61	0	2829	2829	2000	0.8	1920
20	18,820		61	0	2387	2387	2000	1	2400
21	14,355		61	0	2589	2589	2000	1.1	2640
22	14,355		61	0				0.8	1920
23	14,550		61	0	3240	3240	2000	0.95	2280
24	16,710		61	0				0.95	2280
25	19,330		61	0				0.8	1920
26	18,990		60	0	3426	3426	2000	1.2	1920
27	19,880	0.08	60	0	3365	3365	2000	1.2	2880
28	13,985	0.24	60	0	2453	2453	2000	1	2640
29	13,985		61	0				0.9	2400
30	16,990		60	0	2757	2757	2000	1.3	2160
31			63	0				1.3	3120
TOTAL	**521,445**	**6.99**						17.4	40320
AVERAGE	**17,382**	**0.54**						1.023529	2371.765

David P. Boucher

WAYLAND WASTEWATER TREATMENT PLANT

PERMIT NUMBER MA0039853

MONTH	PLANT FLOW	RAINFALL	MAX	MIN	Backwash	Backwash	Flush	PS ETM	PS Flows
JULY 13	GPD	"	GPM	GPM		Tank	AT Line	Hours	GPD
1	14,335		62	0				0.9	2160
2	19,870		61	0	2471	2471	2000	0.95	2280
3	17,830	0.28	60	0				0.95	2280
4	17,480		61	0				1.1	2640
5	16,790		62	0	2571	2571	2000	1.3	3120
6	17,910		61	0				0.9	2160
7	15,250	1.65	62	0	2895	2895	2000	0.9	2160
8	15,250	0.71	62	0				1	2400
9	16,140		61	0	2819	2819	2000	1.1	2640
10	16,140	0.51	62	0				1.1	2640
11	18,450	0.43	62	0				1.1	2640
12	20,140	0.96	62	0	2368	2368	2000	0.8	1920
13	21,160	0.63	61	0				1.1	2640
14	20,380	1.06	61	0	3231	3231	2000	1.1	2640
15	20,380		61	0				0.9	2160
16	18,020		60	0	2619	2619	2000	0.95	2280
17	17,440	0.16	61	0				0.95	2280
18	17,790	0.24	60	0				1.3	3120
19	18,740	0.04	61	0	2829	2829	2000	0.8	1920
20	18,820		61	0	2387	2387	2000	1	2400
21	14,355		61	0	2589	2589	2000	1.1	2640
22	14,355		61	0				0.8	1920
23	14,550		61	0	3240	3240	2000	0.95	2280
24	16,710		61	0				0.95	2280
25	19,330		61	0				0.8	1920
26	18,990		60	0	3426	3426	2000	1.2	1920
27	19,880	0.08	60	0	3365	3365	2000	1.2	2880
28	13,985	0.24	60	0	2453	2453	2000	1	2640
29	13,985		61	0				0.9	2400
30	16,990		60	0	2757	2757	2000	1.3	2160
31			63	0				1.3	3120
TOTAL	**521,445**	**6.99**						17.4	40320
AVERAGE	**17,382**	**0.54**						1.023529	2371.765

David P. Boucher

Appendix C
Contract between the Wayland Wastewater District Commission and Whitewater

Town of Wayland

General Contract for the Provision of Goods and/or Services

Agreement made this **Twentieth Day of August, Twenty-Twelve (08/20//2012)** by and between The Town of Wayland, a duly existing municipal corporation in the Commonwealth of Massachusetts, through its duly elected Board of Selectman with no personal liability to themselves, hereinafter referred to as the "Town" and **Whitewater, Inc.,** a duly existing corporation, hereinafter referred to as the "Contractor."

Recitals

WHEREAS the Contractor will furnish the Town for work described below: Contract Operation and Maintenance Services of the Wastewater Treatment Facilities Route 20 System, as specified in Technical Proposal dated July 26, 2012 in response to RFP. The said documents, specifications, addenda and the general and supplementary conditions of the contract are incorporated herein by reference and are made a part of this Agreement between Contractor and Owner;

WHEREAS the Town shall pay the Contractor for the performance of this Contract, subject to additions and deductions provided herein, in current funds, **Four-Thousand Dollars and No Cents ($4,000) one-time start-up cost, plus Three-Thousand, Nine-Hundred Eighty-One Dollars and Twenty-One Cents ($3,981.21) monthly cost, billable monthly to the Wayland Wastewater Management District Commission in care of the Facilities Department, Town of Wayland.**

WHEREAS the Town desires to purchase such goods and/or professional services from Contractor in a timely manner; and

WHEREAS it was one of the conditions of the award of the contract that a formal agreement should be executed by the Contractor and the Town, evidencing the terms of the award;

NOW THEREFORE in consideration of the mutual covenants contained, the parties agree as follows:

Article I

Contractor shall furnish the Town with all labor and materials to complete the above mentioned work subject to and in compliance with all conditions, covenants, stipulations, terms and provisions contained in the specifications, instructions to bidders, classifications and minimum wage rates, and related documents all of which is attached hereto as Exhibit "A" and incorporated herein by reference. Contractor shall provide these goods and/or services for the sum equal to the aggregate purchase prices of the goods and/or professional services to be furnished by the Contractor at the prices and rates specified in the Contractor's bid proposal also attached hereto as Exhibit "B" and incorporated herein by reference.

Article II

Contractor acknowledges that reliability of service is essential in this agreement with the Town, and agrees to adhere faithfully to the scope of services as described in the bid documents. In addition to any other warranties or guarantees attached hereto, Contractor warrants that the goods, items or materials which is the subject matter of this contract is fit for the use and purpose intended.

Article III

Contractor covenants and agrees to faithfully perform all its obligations under this agreement and the incorporated documents hereto. Said performance shall be in a professional and workmanlike manner and in accordance with the standard of care and conduct that is generally acceptable in the business or profession. Further, Contractor shall complete and sign all forms attached herein as Exhibits C and D.

Article IV

A. Contractor warrants that (1) the goods sold are merchantable; (2) that they are fit for the purpose for which they are being purchased; (3) that they are absent any latent defects; and (4) that they are in conformity with any sample which may have been presented to the Town.

B. Contractor guarantees that upon inspection, any defective or inferior goods shall be replaced without additional costs to the Town. Contractor will assume any additional costs accrued to the Town due to the defect or inferior goods.

C. Contractor guarantees all goods for a period of one (1) year provided that if any express or implied warranties exist of a term greater than one (1) year, then such warranties will supersede the one (1) year warranty specified herein.

Article V

Contractor certifies the suitability, professionalism and capability of all individuals employed to furnish services as specified herein by Contractor an in any documents incorporated herein by reference.

Article VI

The Town agrees to faithfully pay the Contractor, when due and payable, and under the terms of all such incorporated documents and instruments to this agreement, all such contracted sums.

Article VII

The term of this contract will be for a period of One-Year (1 year) with Two (2) One-Year (1 year) options for renewal.

Article VIII

1. Termination for Cause: If through any cause one party shall fail to fulfill in timely and proper manner, its obligations under this Agreement, or if one party shall violate one of the covenants, agreements or stipulations of this Agreement, the other party shall thereupon have the rights to terminate this Agreement hereunder by giving written notice of such termination. In case of termination, all finished and unfinished documents shall become property of the Town.

In the event of termination, the Contractor shall be compensated payment of an amount equal to the services or goods provided by the Contractor as of the date of termination.

2. Termination for Convenience: The Town many terminate this Agreement at any time for any reasons, upon submitting to Contractor thirty (30) days prior written notice of its intention to terminate. Upon receipt of such notice, Contractor shall immediately cease to incur expenses pursuant to this Agreement unless otherwise directed in the termination notice. Contractor shall promptly notify the Town of costs incurred to date of termination and the Town shall pay all such reasonable and supportable costs which payment shall not exceed the unpaid balance due on this Agreement.

3. Return of Property: Upon termination, Contractor shall immediately return to the Town without limitation, all documents, plans, drawings, tools and items of any nature whatever, supplied to Contractor by the Town in accordance with this Agreement.

4. Production of Documents: All records, documents, data, reports or other material, regardless of form or finish, produced by the Contractor as a result of services provided hereunder, are work for hire, and shall become the property of the Town upon creation. The Contractor may not assert any right, title or interest in any product produced under this Agreement.

The Town may request at any time during and/or after the termination of the Agreement any records, documents, data, reports or other materials produced by the Contractor under this Agreement.

Article IX

Nothing contained herein shall be construed as a joint venture between the Contractor and the Town. In this regard, Contractor shall be deemed for all purposes herein to be an independent contractor.

Article X

Contractor shall maintain the following types of insurance in full force and effect during the term of this Agreement and any renewals thereof. Copies of the Workers' Compensation Certificates and the General Liability and Vehicle Insurance Policies are to be furnished to the Facilities Dept in advance of commencement or work and reviewed by the Town on an annual basis.

A. Contractors working for the Town shall provide a Certificate of Insurance indicating coverage for Worker's Compensation, in accordance with minimum statutory coverage pursuant to Massachusetts General Laws. Employer's Liability of $ 1,000,000.

B. Contractors engaged in contracts in excess of $10,000 (Ten Thousand Dollars) shall provide the Town with a Certificate of Comprehensive General Liability Insurance for a minimum of $2,000,000 (Two Million Dollars), with complete operators coverage naming the Town of Wayland as *additional insured.*

C. Contractors engaged in work valued between $5,000 (Five Thousand Dollars) and $10,000 (Ten Thousand Dollars) shall provide the Town with a Certificate of Liability Insurance for a minimum of $500,000 (Five Hundred Thousand Dollars), naming the Town of Wayland as *additional insured.*

D. Contractors engaged in projects valued at less than $5,000 (Five Thousand Dollars) shall carry an appropriate amount of liability coverage, which shall be determined by the _____N/A_____

E. Motor vehicle liability insurance in the minimum of $1,000,000 (One Million Dollars) per accident.

Article XI

1
The Contractor agrees to take all necessary precautions to prevent injury to any persons or damage to property during the term of this Agreement and shall indemnify and save the Town harmless against all losses and expenses resulting in any way from any negligent or willful act or omission on the part of the Contractor, its agents, employees or sub-contractors, or resulting directly or indirectly from Contractor's performance under this Agreement.

Article XII

The Town's obligations under this Agreement are subject to appropriation.

IN WITNESS WHEREOF, the parties hereto have set their hand and seals to this Agreement on the day and date first above specified.

Attest: _____

Date: _____

For the Town of Wayland

Approved as to Form by Town Counsel:

Approval as to the Availability of Funds:

Town Accountant

Attest: _____

Date: 8-30-17

For the Contractor

General manager

SBO

REQUEST FOR PROPOSALS

Contract for
Contract Operation and Maintenance Services
of
Wastewater Treatment Facilities
Route 20 System

Town of Wayland, Massachusetts

June 21, 2012

SBP

INTRODUCTION

The Town of Wayland, through the Wayland Wastewater Management District Commission (WWMDC), is seeking proposals from qualified firms capable of operating and maintaining the Town's Wastewater Management System commonly known as the Route 20 System in a safe and efficient manner, and in compliance with all applicable laws and regulatory requirements. The initial term of the contract is for a period of one (1) year with two (2) one year options for renewal. The term "Wastewater Management System" shall mean the combination of the wastewater sewers and treatment facilities under the control of the Commission as defined in the Chapter 461 of the Acts of 1996 of the Massachusetts Legislature. The System consists of one treatment plant, one outfall pipe, gravity fed sewer pipes and a low-pressure collection pipe system and duplex submersible pump station all as further described below.

Proposals are due at the Wayland Town Building, Office of the Public Buildings Director, 41 Cochituate Road, 2nd Floor, Wayland, MA 01778 on or before 3:00 p.m., on Thursday, July 26, 2012.

Operations contractors possessing the necessary qualifications, experience, and technical expertise are invited to submit proposals for operations and maintenance services in accordance with the requirements of this RFP and the Proposal Submission requirements detailed in the RFP document.

1. FACILITIES DESCRIPTIONS

The Wayland Wastewater Management District Commission (WWMDC) is nearly complete with the construction of a new membrane bioreactor wastewater treatment plant (WWTP). The new facility utilizes flat plate membrane treatment technology for tertiary treatment of a permitted flow rate of 52,000 gpd. Major unit operations at the new facility include: influent screening, flow equalization, biological nutrient removal using the extended aeration process, phosphorous removal using chemical precipitation, and UV disinfection of treated effluent. The facility also has an aerated sludge storage tank for the short-term storage of waste activated sludge and an odor control system to contain fugitive odors.

The facility serves roughly 35 existing connections via a low pressure sewer system. A new mixed-use development currently under construction adjacent to the WWTP is expected to come on-line within the next year. At that time, existing low pressure sewers will be redirected to a new duplex submersible pump station that will be owned and maintained by the WWMDC. Both the WWTP and the new pump station are served by local standby generators.

The Town is requesting proposals for full contract operations and maintenance (O&M) of the treatment facilities including sampling, inspection, repair, and reporting/monitoring.

II. FACILITY INSPECTION AND ACCESS TO INFORMATION

Representatives of firms interested in submitting proposals may tour the treatment facilities. Tours of the existing plant may be arranged by contacting Mr. John Moynihan, Public Buildings Director at 508-358-3786 or by email at jmoynihan@wayland.ma.us.

Informational documents and data will be available for review on the day of the tour. These may include, but are not limited to:

1. Design criteria, plans, and specifications

2. Operation and Maintenance manuals

3. Operating data, including actual data for the previous 12 months, such as flow data, and laboratory test results

4. Copies of current permits

5. A copy of the current budget for operation of facilities

6. A description of proposed and on-going capital improvement projects

Failure of any firm to familiarize itself with the facilities and information shall in no way relieve the firm of its obligation with respect to its proposal.

III. SCOPE OF SERVICES

The selected Contractor shall provide full service operation, maintenance, repair, management, and laboratory testing of the facilities in compliance with all legal and regulatory requirements.

Services shall include:

1. Provision of full service operation and maintenance services as required to operate the facilities in compliance with all legal and regulatory requirements.

2. Adequate staffing of the facilities with personnel qualified in technical, laboratory, and administrative/management issues to satisfy regulatory requirements and provide O&M services in a responsible, professional manner.

3. Payment of all salaries and benefits for all personnel employed at the facilities.

4. Provision for all utilities and consumables such as fuels, chemicals, power, supplies, and lubricants required for normal operation and maintenance. (See

Section VI for description of which costs are to be passed through to the WWMDC).

5. Preparation of a complete inventory of spare parts, materials, and chemicals on-site at the time of assuming responsibility for operation and maintenance of the facility; to be submitted within two weeks of the start-up.

6. Routine and normal repairs and maintenance of the wastewater system (treatment plant and collection system), buildings,and grounds.

7. Provision for and implementation of a computerized maintenance management program, suitable for the size and complexity of the Town's facilities.

8. Laboratory sampling, analyses and reporting, as necessary, for operational control and compliance with all state and federal permits and regulations.

9. Provision of technical, management, administrative, and labor relations personnel for back-up and support of regular plant employees.

10. Provision of on-going professional quality training programs for plant personnel in operations and maintenance procedures, management, laboratory and process control, Right-to-know, and related safety issues.

11. Provision of Public Liability and Property Damage Insurance in the amount of $2,000,000.00 naming the WWMDC and the Town of Wayland as additional insureds. Upon award of the contract, the selected Contractor shall furnish insurance certificates reflecting such coverage.

12. Payment of regulatory fines and penalties assessed against the WWMDC and/or the Contractor for non-compliance resulting from the negligent actions, or lack of action, of the Contractor over the term of the contract.

13. A pricing structure that identifies the price of the services for each year of the contract, subject to change due only to revisions in the Scope of Services or changes in the Consumer Price Index.

14. Provisions to the WWMDC of written monthly reports of operations and maintenance (both preventive and corrective), and quarterly cumulative accounting of plant maintenance expenditures.

15. Maintenance of all groundskeeping and landscaping.

IV. PROPOSAL INSTRUCTIONS

The WWMDC's Request for Proposal has been structured to comply with State laws. All respondents to the RFP must insure that two separate submittals are made to the WWMDC. **One** submittal shall discuss **Technical Qualifications and Approach** that the proposer offers. The **second** submittal shall include **Cost** information in the format requested. There shall be no reference to the cost in the Technical Service Package. The Technical Proposal and Cost Proposal must be clearly marked on the outside of each package:

> "Technical Proposal for Contract Operations and Maintenance of the Town of Wayland Wastewater Treatment Facility."
>
> "Cost Proposal for Contract Operations and Maintenance of the Town of Wayland Wastewater Treatment Facility."

Four (4) copies of the Proposals are required and must be received no later than 3:00 p.m., on Thursday, July 26, 2012

> Wayland Wastewater Management District Commission
> C/o John Moynihan, Public Buildings Director
> 41 Cochituate Road, 2nd Floor Facilities Dept.
> Wayland, Massachusetts 01778

Any proposal received after that time and date will not be accepted.

It is the intention of the WWMDC to select the most qualified project team that meets the technical, administrative and financial needs of the WWMDC. The WWMDC's determination of the most qualified team will be final. The decision will not be based solely on price. The contract for operations and maintenance services will be with the Town of Wayland's WWMDC. Contract administration will be handled by the Town of Wayland Facilities Department.

Contractors must demonstrate that they are an Equal Employment Opportunity and Affirmative Action Employer.

The WWMDC understands the nature of this project and the dependence on a qualified and knowledgeable project team. As such, each proposal must include a detailed discussion of the qualifications of the contractor and its specific project team that will be performing the services outlined in the Scope of Services in Section III. The proposal shall include information on project team experience, corporate history, qualifications and capabilities as described in Section V of the REP.

V. TECHNICAL PROPOSAL CONTENT

Information about the proposer's firm and staff should be provided as outlined below.

1. Provide a detailed description of the company including contract operations capabilities as well as in-house engineering support.

2. Provide a list of facilities similar in size and complexity as the WWMDC facilities where the contractor is providing full contract O&M services. For each facility, provide the type and size of the facility, the term of the contract, the number of the contractor's employees working full-time at the facility, and the name and phone number of the client contact person.

3. A description of resources available to support contract operations (e.g., safety and training officers, maintenance and technical, etc.); describe the capabilities of the technical support team that will support this project.

4. A detailed description of any litigation or fines, brought against the contractor by an owner, and any enforcement actions or penalties assessed by any regulatory agency having jurisdiction over permit compliance, worker health and safety, labor laws, and affirmative action, etc. This applies to any action against the contractor or the clients served by the contractor in cases where the action arises out of the contractor's actions or omissions.

5. A detailed description of the proposer's renewal rate with contract operated facilities over the past ten years. If the proposer has ever been replaced by another contractor, please identify the client and describe the circumstances. Also identify and discuss the circumstances surrounding the projects where the proposer has had a contract that was not renewed or it was not extended.

6. The proposal must list specific individuals who will support this O&M contract, their responsibilities and the percentage of their time that will be committed to this project. The proposal must also identify the hierarchy of the proposer's company and describe the most senior ranking managers that will have significant involvement and authority with this project.

7. The proposal must clearly identify the Principal-in-Charge and the Project Manager, and outline the experience that these individuals have had implementing and managing contract operations projects, wastewater treatment, and facilities similar to the WWMDC's. The proposal should also identify the proposed Plant Manager and his/her experience relevant to this facility. Resumés of these individuals should be included and their positions should be located on a project organizational chart.

8. The proposal must identify the ownership of the proposer's company including the management structure, holding companies, and percentage of foreign ownership.

9. The proposal must contain a project approach, describing the manner in which the contractor proposes to provide the services outlined in this Request for Proposals. Any discussion of the project approach must, at a minimum, cover the following general topics:

a. Staffing

- proposed staffing plan, including shift coverage, hours of operation, job classifications.

b. Transition

- proposed procedure and timetable for assuming operation and maintenance of the facilities. Describe the resources that will be committed to the transition and the associated costs.

c. Management

- proposed administrative positions and their relationships to the WWMDC administration, system users, regulatory agencies and neighbors

d. Risk Allocation

- a statement of those risks to be assumed by the Contractor and those retained by the WWMDC to include insurance and indemnification requirements, and guarantees/warranties

e. Accounting

- a description of accounting methods, quarterly accounting reports to be provided to the WWMDC, and monthly billing procedures

f. Operation and Maintenance

- a plan for operation and maintenance of the facilities, including employee training.
- a proposed procedure for interfacing with the WWMDC regarding day-to-day operations, contingency planning, regulatory agency involvement and emergency maintenance expenditures including for the collection system.
- identification of any subcontractors whose services will be used over the term of the contract and the approximate value of the services.

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VI. COST PROPOSAL CONTENT

The cost proposal shall identify any and all terms, conditions, and limitations associated with the Scope of Services, based on design capabilities of the facilities. The cost proposal shall contain an annual budget, in 2012 dollars, under the following categories.

COSTS INCLUDED IN CONTRACT

a.) Personnel Services - including salaries, wages, overtime, unemployment compensation, sick leave, medical plans, life insurance, retirement contributions, educational assistance, etc. for on-site staff.

b.) Technical & Management Support - including labor and expenses for technical, engineering and management support that is required to implement the Scope of Services outlined in Section III of this REP.

c.) Equipment - office, laboratory, safety and maintenance equipment, tools. mechanical and manually operated equipment, etc,

d.) Supplies - including fuels for small equipment and general maintenance supplies for building and grounds, laboratory and etc.

e.) Minor Preventive and Corrective Maintenance and Repairs - including but not limited to repair/replacement of equipment, facilities and grounds maintenance, service agreements for equipment repair and maintenance, replacement parts, spare parts, maintenance supplies, etc, with a per occurrence cost of less than $250.00

PASS THROUGH COSTS

The WWMDC has historical information for the first three categories of Pass through Costs. Although not required in this proposal, the WWMDC would welcome a suggested list for major maintenance and repairs with projected costs, prioritization and projected timetable. Once the contract is awarded, this list for Major Maintenance and Repairs will be required.

a.) Chemicals - including all chemicals for the treatment process

b.) Outside services - including, but not limited to, sludge removal/disposal, structures and equipment.

c.) Major Maintenance and Repairs - this portion of the budget shall include a dollar amount to be used for major equipment repair/replacement/upgrade, outside the scope of "minor" repair and maintenance.

VII. MINIMUM SUBMISSION REQUIREMENTS

The WWMDC's Minimum Submission Requirements consist of the following:

a.) Contractor must have been in the business of Contract Operations for WastewaterTreatment Facilities for at least (10) ten years.

b.) Contractor must be currently under contract to provide operation and maintenance services to wastewater systems in the State of Massachusetts. Contract management agreements and investor owned utilities do not qualify.

c.) Contractor must be currently operating at least three wastewater treatment systems of similar size and treatment technologies as those listed in this RFP.

d.) Contractor shall have engineering and operations support personnel located within one hour of the WWMDC's treatment facilities. Contractor shall have staff and backup staff with the appropriate grade of wastewater treatment plant operator.

e.) Contractor must demonstrate adequate financial capabilifty to performn the work outlined in Section I I I of this RFP.

VIII. EVALUATION CRITERIA

The WWMDC's proposal review process will consist of the following:

a.) All proposals will be reviewed to determine if Minimum Submission Requirements criteria has been complied with. Proposals that do not meet the Minimum Submission Requirements criteria will be disregarded.

b.) All proposals meeting the Minimum Submission Requirements will be evaluated based on specific information presented in the RFP, (Section V, 1. through 9 f. and Section VII, a. through e.).

c.) All cost proposals will be opened. Costs will be evaluated in conjunction with the rating system noted above and interviews discussed below. Cost will be an important factor in the overall review of the proposals, but it will not be the sole factor. A contract will be awarded to the most advantageous firm offering a cost and technical approach that is in the best interest of the WWMDC.

d.) The WWMDC reserves the right to hold interviews with any or all firms.

IX. EVALUATION PROCESS AND SCHEDULE

Notification of interview will be issued within five (5) days of the receipt of the proposals. Notification of award will be issued within ten (10) days of the completion of

Sep

interviews. The Town of Wayland/WWMDC reserves the right to cancel the Request for Proposals, or to reject any or all proposals.

The Town anticipates the following schedule:

Date	Item
July 26, 2012 at 3:00 p.m.	Proposal due
Within 5 days of proposal due date	Interviews Scheduled
Within 10 days of last interview	Contractor selection
Within 21 days of Contractor Selection	Negotiation of the contract

WHITEWATER INC.
A SUBSIDIARY OF RH WHITE COMPANIES, INC.

253B Worcester Road
Charlton, Massachusetts 01507
TEL 1-888-377-7678
FAX 508-248-2895

July 26, 2012

Wayland Wastewater Management District Commission
C/O John Moynihan, Public Buildings Director
41 Cochituate Road, 2nd Floor Facilities Dept.
Wayland, MA 01778

Re: RFP – Contract Operation and Maintenance of Wastewater Facilities
Route 20 System, Town of Wayland

Dear Commission:

In accordance with Town of Wayland's request for proposal and our technical presentation for operation and maintenance of the Town of Wayland's WWTF, WhiteWater, Inc. is pleased to submit the accompanying price proposal bid sheet. Our proposal reflects our thorough review of the best available data and our desire to accomplish the work in the most cost-effective manner possible.

Thank you very much for the opportunity to quote on your requirements. We look forward to continuing the working relationship with the Town. If you have any questions concerning this proposal or our qualifications, please don't hesitate to contact us at 888-377-7678.

Very truly yours,
WHITEWATER, INC.

Stephen B. Donovan
General Manager

Cc David P. Boucher, NE Regional Manager, Wastewater Operations

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WhiteWater, Inc.
253B Worcester Road
Charlton, MA 01507
Tel: 888-377-7678
Fax: 508-248-2895

START UP

Technical & Management Support - including labor and expenses for technical, engineering and management support that is required for the 2-week start up of the new Ovivo MBR. WWI is prepared to be on site 8 hr/day.

$4,000 one time cost

COSTS INCLUDED IN O & M CONTRACT

1.) Personnel Services - including salaries, wages, overtime, unemployment compensation, sick leave, medical plans, life insurance, retirement contributions, educational assistance, etc. for on-site staff.

$33,905.29 per Annum

2.) Technical & Management Support - including labor and expenses for technical, engineering and management support that is required to implement the Scope of Services outlined in Section II of this REP.

Included in the above #1

3.) Equipment - office, laboratory, safety and maintenance equipment, tools. mechanical and manually operated equipment, etc,

Laboratory Analysis = $12,319.21

Balance included in the above #1

4.) Supplies - including fuels for small equipment and general maintenance supplies for building and grounds, laboratory and etc.

$550.00 per Annum

5.) Minor Preventive and Corrective Maintenance and Repairs - including but not limited to repair/replacement of equipment, facilities and grounds maintenance, service agreements for equipment repair and maintenance, replacement parts, spare parts, maintenance supplies, etc, with a per occurrence cost of less than $250.00

$1,000.00 per Annum

Total *$47,774.50 per Annum*

$3,981.21 per Month

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PASS THROUGH COSTS

a.) Chemicals - including all chemicals for the treatment process

b.) Utilities - including electricity, water, heating fuels, etc.

c.) Outside services - including, but not limited to, sludge removal/disposal, structures and equipment.

d.) Major Maintenance and Repairs - this portion of the budget shall include a dollar amount to be used for major equipment repair/replacement/upgrade, outside the scope of "minor" repair and maintenance.

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Fax: 508-248-2895

Scope of Services

WWI will provide full service operation, maintenance, repair, management and laboratory testing of the facilities in compliance with all current legal and regulatory requirements.

Our Scope will include, but not be limited to the following:

- WWI will provide labor necessary to operate and maintain the wastewater treatment facility equipment and infrastructure, including pump stations, Monday through Friday (excluding holidays).
- WWI will inspect system components and record permit required information during the daily inspections as required. WWI will also record and track equipment run times.
- WWI will run Quality Control and Quality Assurance checks on system influent and effluent to ensure permit compliance. Adjustments to the system will be made as needed to maintain permit compliance.
- WWI will perform compliance monitoring of the influent, effluent and groundwater monitoring wells under the terms of NPDES MA0039853.
- WWI will submit monthly Discharge Monitoring Reports for the wastewater treatment facility to the MA Department of Environmental Protection.
- WWI will maintain a neat and orderly facility with proper recordkeeping and housekeeping. Copies of all plant operations, sampling, maintenance and compliance data will be properly stored on site for a period of at least three (3) years. All compliance data will be readily available in Excel format.
- WWI will order and maintain sufficient amounts of chemicals to properly operate the facility. Chemical costs associated with the operation of the wastewater plant will be the responsibility of WWMDC.
- WWI will maintain sludge levels to ensure proper plant operation. Disposal will be scheduled by WWI based on suspended solids concentration. Disposal costs will be the responsibility of WWMDC.
- WWI will maintain sufficient operational supplies (consumables; such as reagents, buffers, PPE, air filters, oils and greases, etc.) for operating the system safely and properly. Supply costs will be the responsibility of WWI.
- WWI will perform basic preventative maintenance on the wastewater system components with a per occurrence cost of less than $250.00. The preventative maintenance program will be created specifically for this site and will be scheduled through software specifically designed for WWTP maintenance. Basic preventative maintenance includes, greasing motors, replacing blower filters, equipment PM and changing blower oil per manufacturer specifications.

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WhiteWater, Inc.
253B Worcester Road
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The Town of Wayland Wastewater Treatment Facility will be provided with the appropriate licensed operators. Our Regional Manager, David Boucher, will be the designated **Principal-in-Charge**. Mr. Boucher holds a Grade 6C Wastewater license and Grades 2T and 2D Water licenses from the Commonwealth of Massachusetts and has been operating and managing wastewater systems for over 23 years. He has extensive experience operating, managing and maintaining Ovivo membrane systems. He currently manages the operations and maintenance of 6 Ovivo membrane systems and in the past has operated and managed no less than 2 other membrane systems not on our project list. Mr. Boucher has managed the startup of 7 Ovivo membrane systems including just recently the Town of Hopkinton's 0.1MGD facility. Mr. Boucher has spoken at Enviroquip/Ovivo technical conferences at the request of Ovivo. There are no companies in MA that have any personnel that can match that experience.

Our Division Manager, Mr. Jeremiah Murphy, will be the **Project Manager**. Mr. Murphy holds a Grade 6C Wastewater license, has over 25 years experience and currently manages the MA Service Area with six (6) Enviroquip membrane systems. Mr. Boucher's and Mr. Murphy's multi-disciplinary capabilities make them uniquely qualified to head up this project.

Other appropriately licensed operators may be assigned to this facility as needed. All operators will work under the guidance of Mr. Boucher and Mr. Murphy.

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Staffing

The WWMDC Wastewater Treatment Facility will be provided with the appropriate licensed operators Monday through Friday (excluding holidays).

Our Regional Manager, David Boucher will serve as the **Principal-in-Charge** for the facility. Mr. Boucher holds a Grade 6C wastewater license and Grades 2T and 2D water license from the Commonwealth of Massachusetts and has been operating and managing wastewater systems for over 20 years.

Jeremiah Murphy, Division Manager, Wastewater Operations will be assigned as **Project Manager**. Mr. Murphy has been operating wastewater treatment facilities for over 28 years and holds a Grade 6C wastewater license along with Grades 2T and 2D water license.

Other appropriately licensed operators may be assigned to this facility as needed to cover vacations, sick days, etc. All operators will work under the guidance of Mr. Boucher and Mr. Murphy.

WhiteWater, Inc is a Massachusetts based Utility Management, Operation and Maintenance Service Provider. Along with our parent company, R. H. White Companies, we offer a vast array of services unparalleled in New England. We employ a diverse group of wastewater operators, equipment operators, technicians and mechanics that can accomplish any task in the wastewater and water industry.

Transition Plan

WWI recognizes that the transition of responsibility from one contractor to another must be accomplished with minimal disruption of ongoing project activities. With WWI currently in place as the contract operator there would be no disruption.

WWI will work closely with the WWMDC to effect the transition from the current facilites that we operate to the new plant utilizing the Ovivo MBR. The transition team will be headed by our Principal-in Charge, David Boucher whom has extensive experience in the start up requirements of the Ovivo MBR technology. This transition encompasses a number of areas: facility operations, facility maintenance, laboratory testing, computerized management, engineering support and training.

Procedures will be implemented to ensure proper documentation of operation and maintenance for the wastewater facilities. Inventory data, focusing on critical spare parts, will be collected and input into computer software installed by WWI. All treatment plant process control and lab data will be entered into Excel spreadsheets for tracking and troubleshooting. All data will be maintained through the life of the contract and backed-up onto discs on a weekly basis.

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Management Structure

Our objective is to support our team with engineering, repair, maintenance and management expertise.

The management structure is flexible enough to respond to the Town of Wayland's requirements and support emergency situations without sacrificing essential system operations. Our people are our most important resource and we want to be sure that they return home in the same, or better, condition than when they arrived at the job site. As a result, the management structure is built on safety and quality of work.

Safety Program

WWI will conduct a safety audit of all the facilities and protocols to identify existing or potential hazards to protect the public, employees, equipment, buildings and grounds. A safe work environment is not only required by law, but is required by WWI to protect our most valuable asset, our employees. We will review and modify as required our site-specific program for our employees to ensure that all mandatory safety programs are implemented and maintained. The objectives of this safety program are to:

- Provide a safe work environment for all personnel;
- Enhance employee skills and capabilities;
- **Have "ZERO" lost time accidents;**
- Reduce Worker's Compensation cases and rates;
- Improve employee morale;
- Ensure public safety; and
- Maintain compliance with applicable rules and regulations.

We firmly believe that in order to develop and maintain a safe working environment, safety must be a key part of all our operations, maintenance and administrative work practices. Our safety program not only complies with all current federal, state, and local regulations, it also ensures that safety is a responsibility that is shared by all of our employees.

During safety audits, our safety specialists examine the facilities' general physical conditions and structures, electrical and mechanical installations, safety equipment, personal protective equipment, lockout/tag out procedures, confined space situations, fire protection systems, injury and illness prevention programs, medical services and first aid systems, hazard communication program, chemical containment, material safety data sheets, spill response procedures and record keeping systems.

Our Corporate Safety Manager, Mr. Richard Denham, will be responsible for the implementation and enforcement of this program. .

A manual is issued to inform our employees about the management policies that are the basis for our occupational safety program, and to establish uniform safety procedures for the tasks that are performed in more than one WWI division.

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A copy of the complete WWI manual is available upon request.

Risk Allocation

A Certificate of Insurance naming the Town of Wayland as additional insured is at the end of this section.

WWI will make payment of regulatory fines and penalties assessed for non-compliance resulting from the negligent actions, or lack of action, of WWI over the term of the contract.

WWI will perform basic preventative maintenance on the wastewater system components in accordance with Manufacturer's specifications to comply with warranties/guarantees. The maintenance will be scheduled through the Allmax Antero Maintenance Software specifically designed for WWTP maintenance. Basic maintenance includes, greasing motors, maintaining testing equipment, replacing blower filters and changing blower oil per manufacturer specifications.

Accounting Practices

WWI will utilize its accounting department personnel and computer system to track project costs, produce monthly invoices, handle payroll and banking, and provide real-time cost accounting data to the project and corporate managers. This data will be available to the Town upon request.

Our policy is to share all operational information with our clients. All technical, budgetary and financial information related to the operation will be available. We will submit monthly reports to the Town detailing notable events that occurred, financial status of the project, including tracking the use of maintenance and capital accounts, maintenance job tasks, and all reports generated for regulatory agencies.

In-house software will track projects by task. This system has components for job cost, payroll, purchasing, accounts payable, general ledger, and invoicing. All work activities will be tracked for budgets, commitments, expenditures, forecast and completion, and variances.

The structure for the project cost accounting system provides for the totaling of data on all project elements and sub-tasks at the major task and job levels. This feature enables upper-level managers to view the whole project with an overview of data relevant to each segment of the work, while job and task managers can view very detailed data on their specific responsibilities. Additionally, this software enables the Project Manager to track costs compared to budgets for specific time periods, and to track costs compared to the total budget. The integrity of the accounting system is maintained by a strong emphasis on internal accounting controls.

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Operation and Maintenance

WWI believes in and is committed to the proper training and education of its personnel. We provide formalized education, safety and training programs for all staff. We also provide in-house training including, but not limited to such topics as proper operational techniques, process control, equipment maintenance, safety and training for increased certification. In addition, personnel attend training courses and seminars sponsored by state and federal agencies and industrial organizations. WWI also offers a tuition assistance program for the purpose of encouraging continuing education and career advancement for its employees.

WWI will provide written monthly reports to the Town detailing operations and maintenance activities (both corrective and preventative) and quarterly accumulative accounting of plant maintenance expenditures. Mr. Boucher and Mr. Murphy will be available to meet with Town official to discuss operations at the request of the Town.

Normal Operating Hours

The facilities will be staffed as required by this RFP and approved by the MADEP. WWI will provide the labor necessary to operate and maintain the wastewater treatment facility, Monday through Friday (excluding holidays). The facility will be operated and maintained in accordance with 314CMR 12.04 and 257CMR 2.00. Anticipated time-on-site is 2 hours per day.

Off-Site Support Plan

WWI, through its affiliates, has at its fingertips more than 400 employees trained in some aspect of the utility profession and is fully equipped to meet any challenge that may arise in the management of this project. Because of our extensive resources, we are able to provide the Town of Wayland with a loyal and extremely talented support staff. Our unique range of corporate support personnel available for this project includes, but is not limited to, the following areas:

- specialized maintenance and repair;
- engineering;
- "hands-on" training;
- laboratory quality assurance;
- computer systems;
- safety;
- human resources; and
- accounting and financial management.

The collective expertise of our support personnel is what makes us different from our competitors. Our ability to provide the full range of services required by this project reduces our dependence on costly outside contractors. In the event a specialty contractor is required we make every effort to support the local economy and hire

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locally. This in-house capability allows us to provide the desired scope of services far more efficiently.

On-Call Service

WWI will be available 24 hours per day, 365 days per year, for emergencies associated with the facilities. The Town of Wayland will be provided with a complete list of phone numbers to be used in the event of an emergency during our non-working hours. Initial response to emergencies will be within 1 hour.

Appendix D
Calculations

Pipe Slope and Headloss Calculation

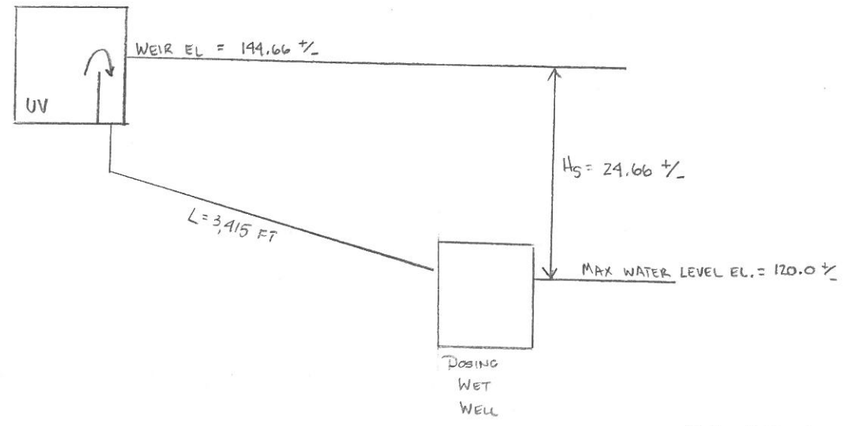
Job No.: W-1396-9 Client: Wayland Waste Management District Commission
Prepared by: KLK Date: 8/28/2013
Checked by: Date:

System Conditions

Flow = 94 gpm = 0.2094 ft^3/sec
Density of Fluid, ρ = 62.37 lbm/ft^3
Viscosity of Fluid, μ = 6.72E-04 lbm/ft*s
Ambient Temperature: 55 °F
Abosolute Pressure of Fluid (Barimetric Pressure for Open Tank) = 33.9 ft
Vapor Pressure of the Fluid = 0.59 ft

Sewer Slope

From	To	Pipe Length Distance (ft)	Perferred Slope (ft/ft)	Pipe Elevation Initial (ft)	Pipe Elevation Preferred (ft)	Ground Surface Elevation at MH (ft)	Chosen Pipe Elevation (ft)	Pipe Depth Below Surface (ft)	Actual Slope (ft/ft)	Pipe Diameter(in)	Pipe ID (ft)	Absolute Roughness, e (ft)	Relative Roughness (unitless)	Minor Segment Losses, ΣK (ft)	Discharge Pipe Velocity, V (ft/sec)	R_n	Flow Type	Friction Factor, *f*	Pipe Segment Losses (ft)	Total System Headloss (ft)	Peso. Elev. of WWater (ft)
WWTP	CLMH1	209.0	0.005	141.00	139.96	131.9	128.5	3.4	0.060	4.0	0.333333333	0.00015	4.5000E-04	8.23	2.4000926	7.43E+04	Turbulent	0.0211	1.918	1.91755	139.08
CLMH1	CLMH2	166.0	0.005	128.50	127.67	134.3	127.65	6.65	0.005	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	1.078	2.99542	138.00
CLMH2	CLMH3	400.0	0.005	127.65	125.65	125.5	121.5	4	0.015	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	2.401	5.395998	135.60
CLMH3	CLMH4	400.0	0.005	121.50	119.50	129.3	125.3	4	-0.009	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	2.401	7.796577	133.20
CLMH4	CLMH5	400.0	0.005	125.30	123.30	123	119	4	0.016	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	2.401	10.19716	130.80
CLMH5	CLMH6	400.0	0.005	119.00	117.00	126.6	122	4.6	-0.008	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	2.401	12.59773	128.40
CLMH6	CLMH7	132.0	0.005	122.00	121.34	126.3	121.8	4.5	0.002	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	0.886	13.48342	127.52
CLMH7	CLMH8	396.0	0.005	121.80	119.82	126	121.6	4.4	0.001	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	2.378	15.86138	125.14
CLMH8	CLMH9	105.0	0.005	121.60	121.08	123.3	119.3	4	0.022	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	0.733	16.59445	124.41
CLMH9	CLMH10	270.0	0.005	119.30	117.95	121.9	117.9	4	0.005	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	1.666	18.26019	122.74
CLMH10	CLMH11	134.0	0.005	117.90	117.23	121.7	117.7	4	0.001	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	0.897	19.15717	121.84
CLMH11	CLMH12	173.0	0.005	117.70	116.84	122	117.5	4.5	0.001	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	1.117	20.27461	120.73
CLMH12	CLMH13	225.0	0.005	117.50	116.38	126.4	122.4	4	-0.022	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	1.411	21.68599	119.31
CLMH13	GWD PS	5.0	0.005	122.40	122.38	126.5	122	4.5	0.080	4.0	0.333333333	0.00015	4.5000E-04	1.56	2.4000926	7.43E+04	Turbulent	0.0211	0.168	21.85379	119.15
TOTAL LENGTH OF SYSTEM PIPING =		**3415.0**	**ft**													**TOTAL SYSTEM HEADLOSS =**			**21.854**	**ft**	



Leachfield Dosing Calculations
Leachfield System A

Trench ID	Lateral Length (ft)	Lateral Length From Manifold (ft)	Perforation Spacing (ft)	Number of Perforations (per lateral)	Perforation Size (in)	Perforation Discharge Rate (gpm)	Lateral Discharge Rate (gpm)	Trench Discharge Rate (gpm)	Flow In Manifold Section (gpm)	Friction Factor, Fi	ΣF_i	Required Manifold Diameter (in)	Design Manifold Diameter (in)
A1	100	98	5	20	0.25	1.2	23.3	23.3	23.3	0.33182	0.33182	1.81	4
A2	100	98	5	20	0.25	1.2	23.3	23.3	46.6	1.19622	1.52804	2.49	4
A3	100	98	5	20	0.25	1.2	23.3	23.3	69.9	2.53267	4.06071	3.06	4
A4	100	98	5	20	0.25	1.2	23.3	23.3	93.2	4.31237	8.37308	3.56	4
A5	100	98	5	20	0.25	1.2	23.3	23.3	116.5	6.51627	14.88935	4.01	6
A6	100	98	5	20	0.25	1.2	23.3	23.3	139.8	9.13029	24.01964	4.21	6
A7	100	98	5	20	0.25	1.2	23.3	23.3	163.1	12.14328	36.16292	4.49	6
A8	100	98	5	20	0.25	1.2	23.3	23.3	186.4	15.54609	51.70900	4.74	6
A9	100	98	5	20	0.25	1.2	23.3	23.3	163.1	12.14328	36.16292	4.40	6
A10	100	98	5	20	0.25	1.2	23.3	23.3	139.8	9.13029	24.01964	4.04	6
A11	100	98	5	20	0.25	1.2	23.3	23.3	116.5	6.51627	14.88935	3.65	6
A12	100	98	5	20	0.25	1.2	23.3	23.3	93.2	4.31237	8.37308	3.24	6
A13	100	98	5	20	0.25	1.2	23.3	23.3	69.9	2.53267	4.06071	2.78	4
A14	100	98	5	20	0.25	1.2	23.3	23.3	46.6	1.19622	1.52804	2.26	4
A15	100	98	5	20	0.25	1.2	23.3	23.3	23.3	0.33182	0.33182	1.64	4
						Total:	**349.5**	**349.5**					

	Length (ft)	Area (ft^2)	Volume (ft^3)	Volume (gal)
2 " Lateral	1500	0.0218	32.72	244.78
4" Manifold	56	0.0873	4.89	36.55
6" Manifold	64	0.1963	12.57	94.00
6" Forcemain	430	0.1963	84.43	631.54
			Total:	**1006.87**

Friction Loss:	4.57	ft
L_d:	430	ft
D_d:	6	in
Q_m:	349.5	gpm
C_h:	130	coeff.
h_d:	2.5	ft
Network Losses:	3.275	ft
Minor Losses:	1	ft
Static Head:	12.9	ft
TDH:	**21.75**	**ft**

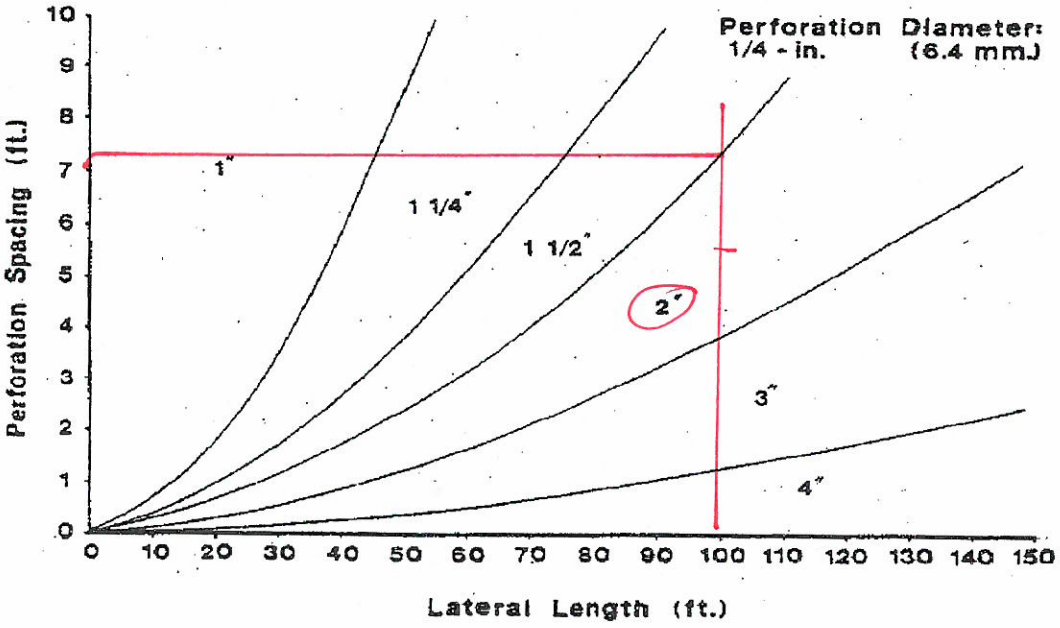
Leachfield Dosing Calculations
Leachfield System B

Trench ID	Lateral Length (ft)	Lateral Length From Manifold (ft)	Perforation Spacing (ft)	Number of Perforations (per lateral)	Perforation Size (in)	Perforation Discharge Rate (gpm)	Lateral Discharge Rate (gpm)	Trench Discharge Rate (gpm)	Flow In Manifold Section (gpm)	Friction Factor, Fi	ΣF_i	Required Manifold Diameter (in)	Design Manifold Diameter (in)
A1	100	98	5	20	0.25	1.2	23.3	23.3	23.3	0.33182	0.33182	1.68	4
A2	100	98	5	20	0.25	1.2	23.3	23.3	46.6	1.19622	1.52804	2.31	4
A3	100	98	5	20	0.25	1.2	23.3	23.3	69.9	2.53267	4.06071	2.84	4
A4	100	98	5	20	0.25	1.2	23.3	23.3	93.2	4.31237	8.37308	3.30	4
A5	100	98	5	20	0.25	1.2	23.3	23.3	116.5	6.51627	14.88935	3.72	4
A6	100	98	5	20	0.25	1.2	23.3	23.3	139.8	9.13029	24.01964	4.12	6
A7	100	98	5	20	0.25	1.2	23.3	23.3	163.1	12.14328	36.16292	4.40	6
A8	100	98	5	20	0.25	1.2	23.3	23.3	163.1	12.14328	36.16292	4.40	6
A9	100	98	5	20	0.25	1.2	23.3	23.3	139.8	9.13029	24.01964	4.12	6
A10	100	98	5	20	0.25	1.2	23.3	23.3	116.5	6.51627	14.88935	3.72	4
A11	100	98	5	20	0.25	1.2	23.3	23.3	93.2	4.31237	8.37308	3.30	4
A12	100	98	5	20	0.25	1.2	23.3	23.3	69.9	2.53267	4.06071	2.84	4
A13	100	98	5	20	0.25	1.2	23.3	23.3	46.6	1.19622	1.52804	2.31	4
A14	100	98	5	20	0.25	1.2	23.3	23.3	23.3	0.33182	0.33182	2.72	4
						Total:	**326.2**	**326.2**					

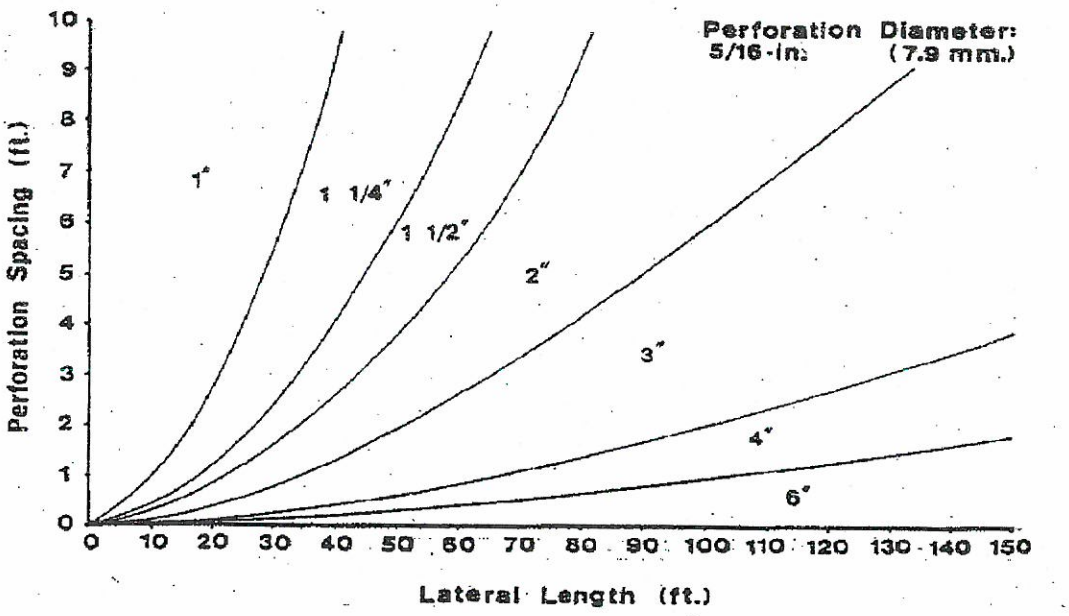
	Length (ft)	Area (ft^2)	Volume (ft^3)	Volume (gal)
2 " Lateral	1500	0.0218	32.72	244.78
4" Manifold	80	0.0873	6.98	52.22
6" Manifold	32	0.1963	6.28	47.00
6" Forcemain	430	0.1963	84.43	631.54
			Total:	**975.54**

Friction Loss:	4.02	ft
L_d:	430	ft
D_d:	6	in
Q_m:	326.2	gpm
C_h:	130	coeff.
h_d:	2.5	ft
Network Losses:	3.275	ft
Minor Losses:	1	ft
Static Head:	12.9	ft
TDH:	**21.20**	**ft**

APPENDIX B



Minimum Lateral Diameter for Plastic Pipe (C_h = 150) Versus Perforation Spacing and Lateral Length for 1/4 in. Diameter Perforations (Otis, 1981)

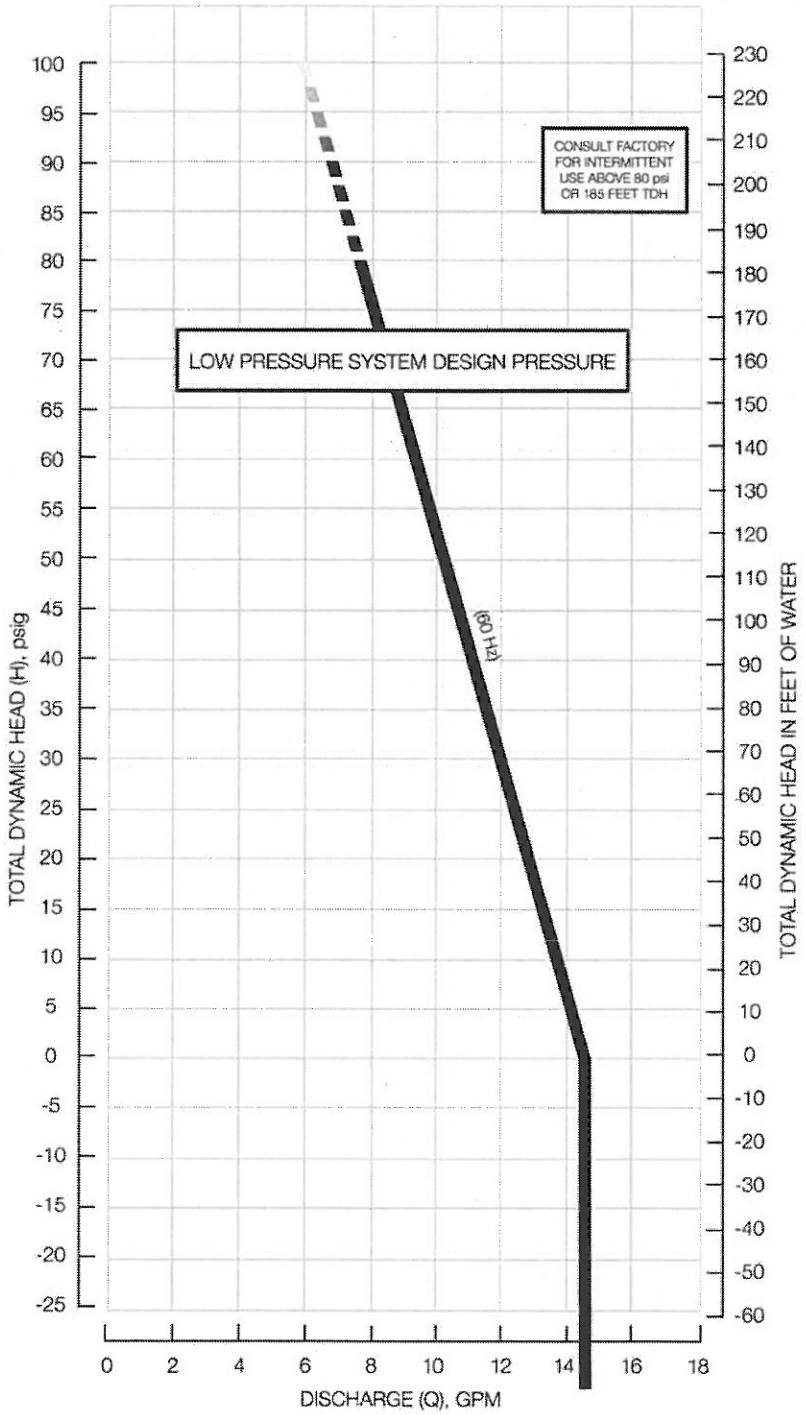


Minimum Lateral Diameter for Plastic Pipe (C_h = 150) Versus Perforation Spacing and Lateral Length for 5/16 in. Diameter Perforations (Otis, 1981)

FIGURE 8a & 8b: Minimum Lateral Diameter vs. Perforation Spacing & Lateral Length. (Figure 8a can be used for 1/8 inch diameter perforations).

Figure 1

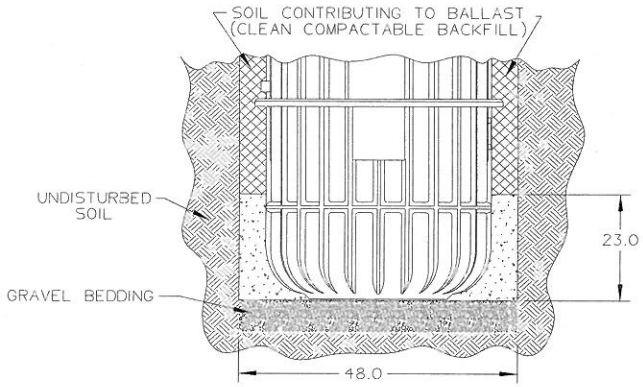
Grinder Pump Performance Characteristics



BALLAST WORKSHEET DH152

Model	Pump Volume (ft^3) *	Pump Height (ft)	Pump Dia. (ft)	Submerged Volume (ft^3)	Buoyant Force (lbs.)	Pump Weight (lbs.) *	Net Buoyant Force (lbs.)	Ballast Height (in.)	Ballast Diameter (in)	Area of Ballast (ft^2)	Volume of Ballast (ft^3)	Volume of Ballast (yd^3)	Weight (in water) of Concrete (lb)	Weight (in air) of Concrete (lb)	Volume of Saturated Soil (ft^3)	Weight of Saturated Soil (lb)	Volume of Dry Soil (ft^3)	Weight of Dry Soil (lb)	Total Ballast Weight (lb)	Final Condition Weight (lb)
DH152-93	49.6	7.48	3.07	49.60	3095	570	2525	23	48	5.16	9.9	0.4	867.0	1485	27.3	1911.7	0.0	0.0	2778.7	253.7
DH152-129	61.0	10.77	3.07	61.00	3806	609	3197	23	48	5.16	9.9	0.4	867.0	1485	44.3	3100.9	0.0	0.0	3968.0	770.6
DH152-160	71.0	13.39	3.07	71.00	4430	639	3791	23	48	5.16	9.9	0.4	867.0	1485	57.8	4048.0	0.0	0.0	4915.1	1123.7
DH152-200	82.9	16.54	3.07	82.90	5173	675	4498	23	48	5.16	9.9	0.4	867.0	1485	74.1	5186.7	0.0	0.0	6053.8	1555.8

*Heights above 200" will have speccial ballast requirements

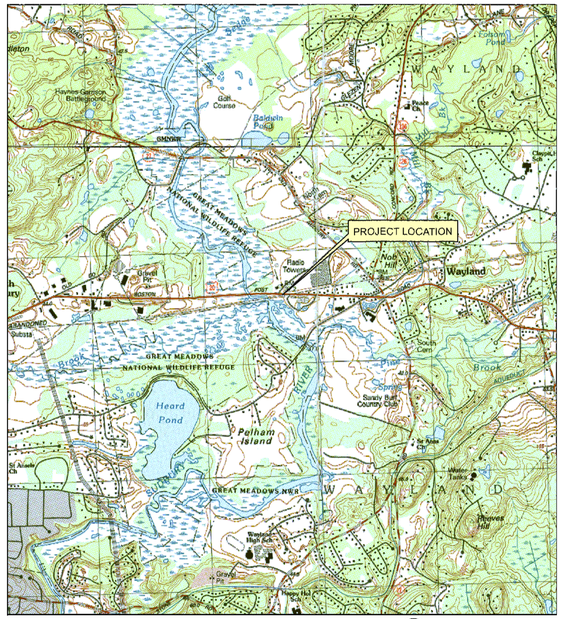


Appendix E
Conceptual Design Drawings

GROUNDWATER DISCHARGE SYSTEM
CONCEPTUAL DESIGN
OLD SUDBURY ROAD AND COCHITUATE ROAD
WAYLAND, MASSACHUSETTS

August 2013

SHEET	TITLE
	COVER SHEET
1	WWTF LAYOUT PLAN
2	FORCE MAIN LAYOUT PLAN
3	GROUNDWATER DISCHARGE SYSTEM LAYOUT PLAN
4	E-ONE PUMP SYSTEM AND DETAIL SHEET
5	GROUNDWATER DISCHARGE SYSTEM AND DETAILS SHEET
6	WWTP LOWER LEVEL MECHANICAL FLOOR PLAN
7	EFFLUENT CLEARWELL AND VALVE CHAMBER



WAYLAND WASTEWATER MANAGEMENT DISTRICT COMMISSION

41 COCHITUATE ROAD
WAYLAND, MA 01778

Tighe&Bond
Consulting Engineers
177 Corporate Drive
Portsmouth, NH 03801
100 YEARS STRONG
1911-2011

COMPLETE SET 7 SHEETS

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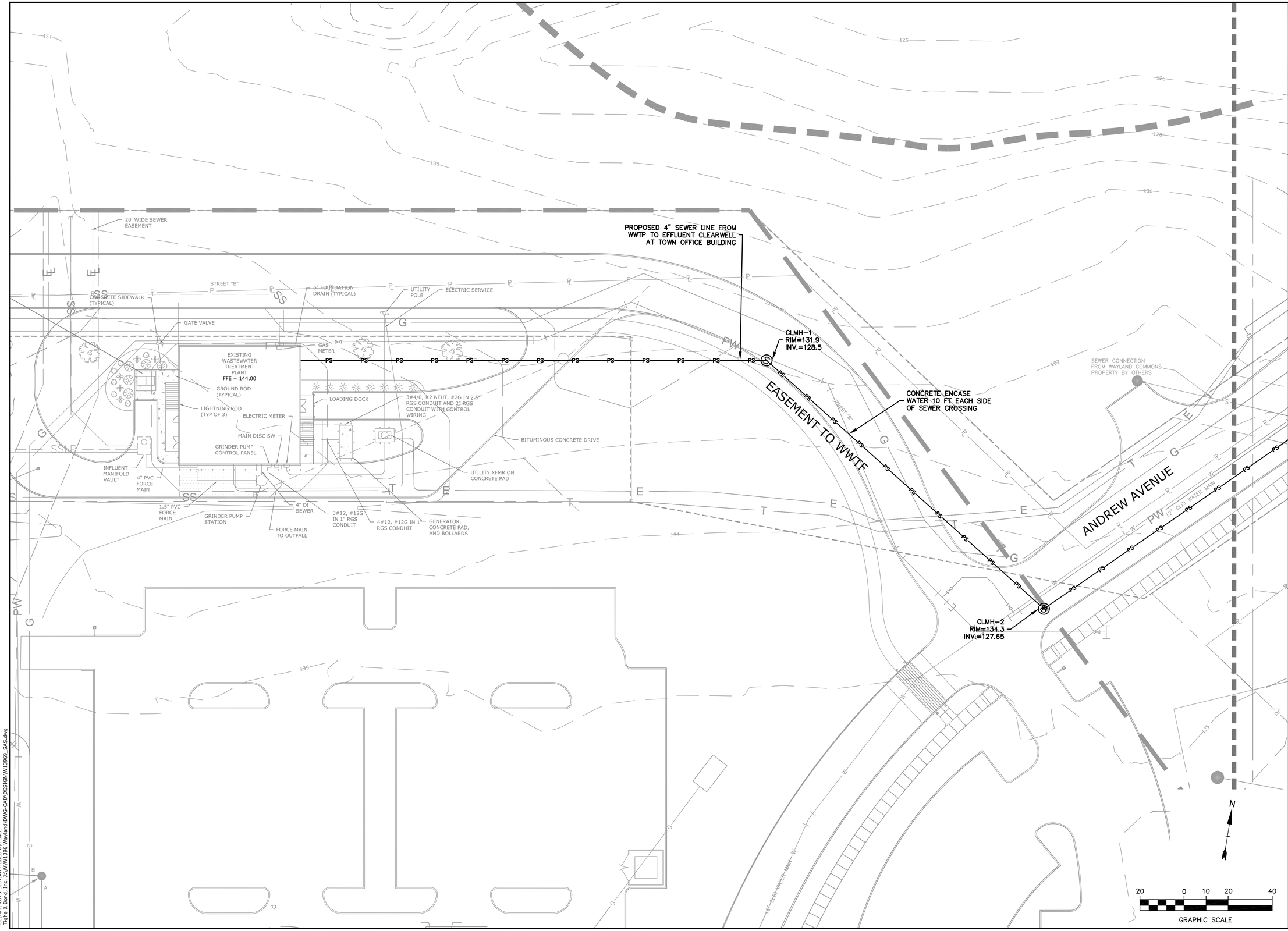

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Old Sudbury Road and Cochituate Road

Town of Wayland
WWTF
Groundwater
Discharge Project

Wayland,
Massachusetts

VERIFY SCALE
BAR IS 1 INCH ON ORIGINAL DRAWING
0 — 1 INCH
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Mark	Date	Description
A	08/13	GROUNDWATER DISCHARGE PERMIT

PROJECT NO:	W13969
FILE:	W13969_SAS.dwg
DRAWN BY:	SLK1
CHECKED:	KLK
APPROVED BY:	IBC

WWTF LAYOUT PLAN

SCALE: AS SHOWN

SHEET 1

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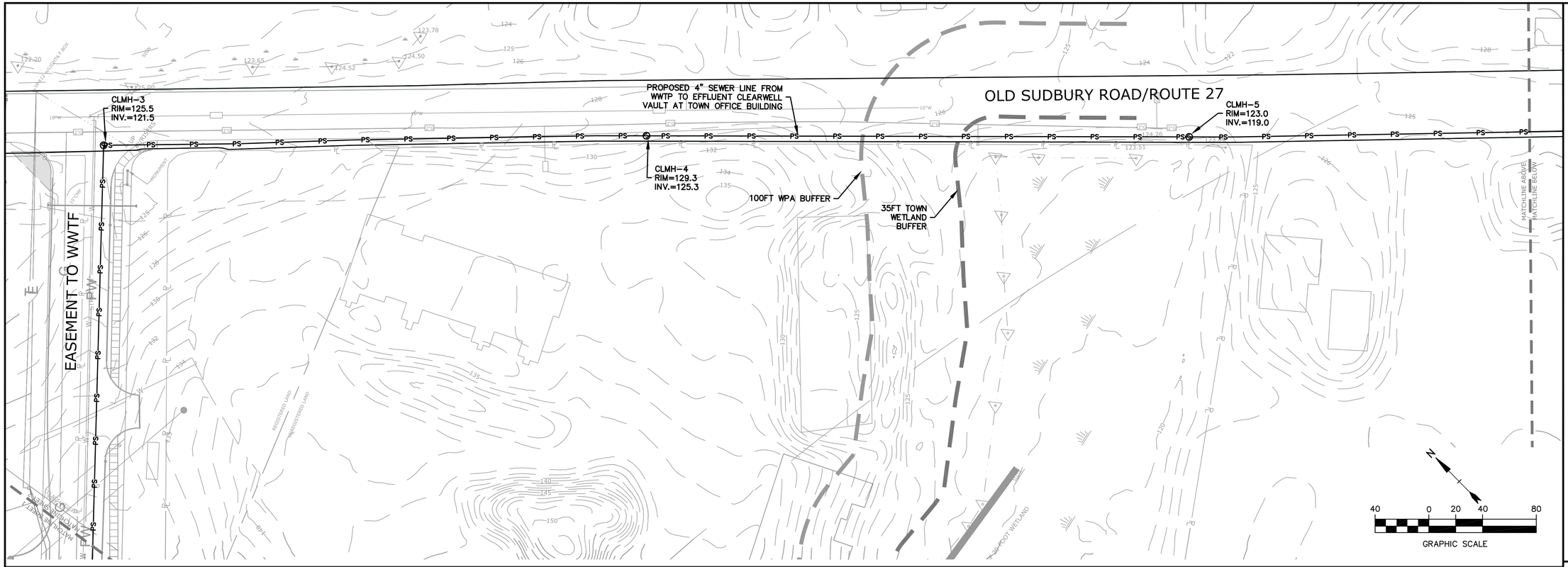

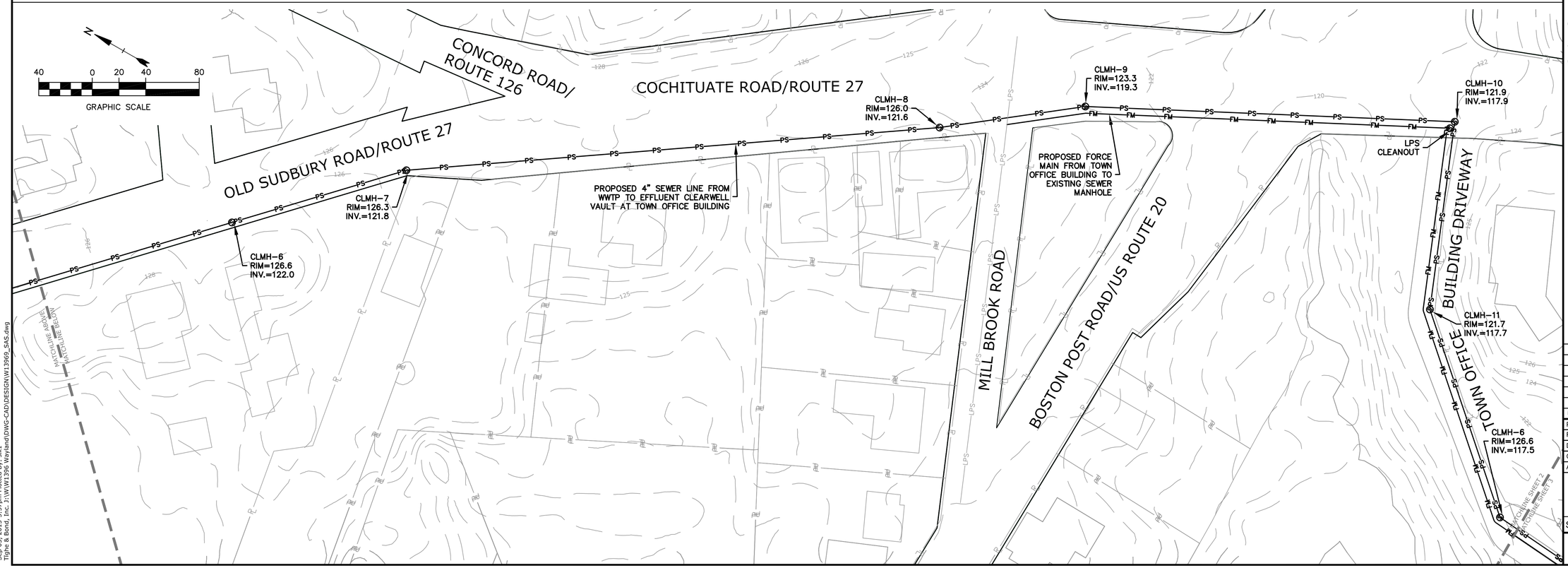

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Old Sudbury Road and Cochituate Road

Town of Wayland
WWTF
Groundwater
Discharge Project

Wayland,
Massachusetts

VERIFY SCALE
BAR IS 1 INCH ON ORIGINAL DRAWING
0 ■■■■■■■■ 1 INCH
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Mark	Date	Description
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PROJECT NO:	W13969
FILE:	W13969_SAS.dwg
DRAWN BY:	SLK1
CHECKED:	KLK
APPROVED BY:	IBC

FORCE MAIN LAYOUT PLAN

SCALE: AS SHOWN

SHEET 2

Sep 05, 2013-3:57pm Plotted By: slk1
Tighe & Bond, Inc. J:\WW1396 Wayland\DWG-CAD\DESIGN\W13969_SAS.dwg

MATCHLINE SHEET 2
MATCHLINE SHEET 3

TOWN OFFICE BUILDING DRIVEWAY

PROPOSED ELECTRIC SUPPLY FOR PUMP STATION FROM TOWN OFFICE BUILDING

CLMH-13
RIM=126.4
INV.=102.4

PROPOSED EFFLUENT CLEARWELL (EC-1) VAULT

PROPOSED VALVE CHAMBER (VC-1)

CONNECT E-ONE PUMP TO EXISTING SEPTIC SYSTEM INFLUENT PIPING FROM TOWN OFFICE BUILDING

EXISTING SEPTIC TANK TO BE DEMOLISHED

PROPOSED E-ONE GRINDER PUMP FOR TOWN OFFICE BUILDING FLOW

PROPOSED ELECTRIC SUPPLY FOR E-ONE SYSTEM FROM TOWN OFFICE BUILDING

PROPOSED 6" FORCE MAIN TO SYSTEM 'A'

PROPOSED 6" FORCE MAIN TO SYSTEM 'B'

PROPOSED 1¼" E-ONE DISCHARGE TO LOW PRESSURE SEWER ON COCHITUATE ROAD (SEE SHEET 2)

BENCHMARK
RIM BOLT
HYDRANT
ELEV. 125.95'

PROPOSED 1¼" FORCE MAIN FROM TOWN OFFICE BUILDING TO EXISTING SEWER MANHOLE

EXISTING SEPTIC SYSTEM PIPING TO BE ABANDONED

FINISH GRADE = 133.0

FINISH GRADE = 133.0

EXISTING LEACHFIELD TO BE DEMOLISHED

PROPOSED LEACHFIELD AND RESERVE AREA
22,600 SF
17,000 GPD FLOW

FINISH GRADE = 133.0

FINISH GRADE = 133.0

COCHITUATE ROAD

GRAPHIC SCALE
40 0 20 40 80

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Old Sudbury Road and Cochituate Road

Town of Wayland
WWTF
Groundwater
Discharge Project

Wayland,
Massachusetts

VERIFY SCALE
BAR IS 1 INCH ON ORIGINAL DRAWING
0 1 INCH
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Mark	Date	Description
A	08/13	GROUNDWATER DISCHARGE PERMIT

PROJECT NO:	W13969
FILE:	W13969_SAS.dwg
DRAWN BY:	SLK1
CHECKED:	KLK
APPROVED BY:	IBC

GROUNDWATER DISCHARGE SYSTEM LAYOUT PLAN

SCALE: AS SHOWN

SHEET 3

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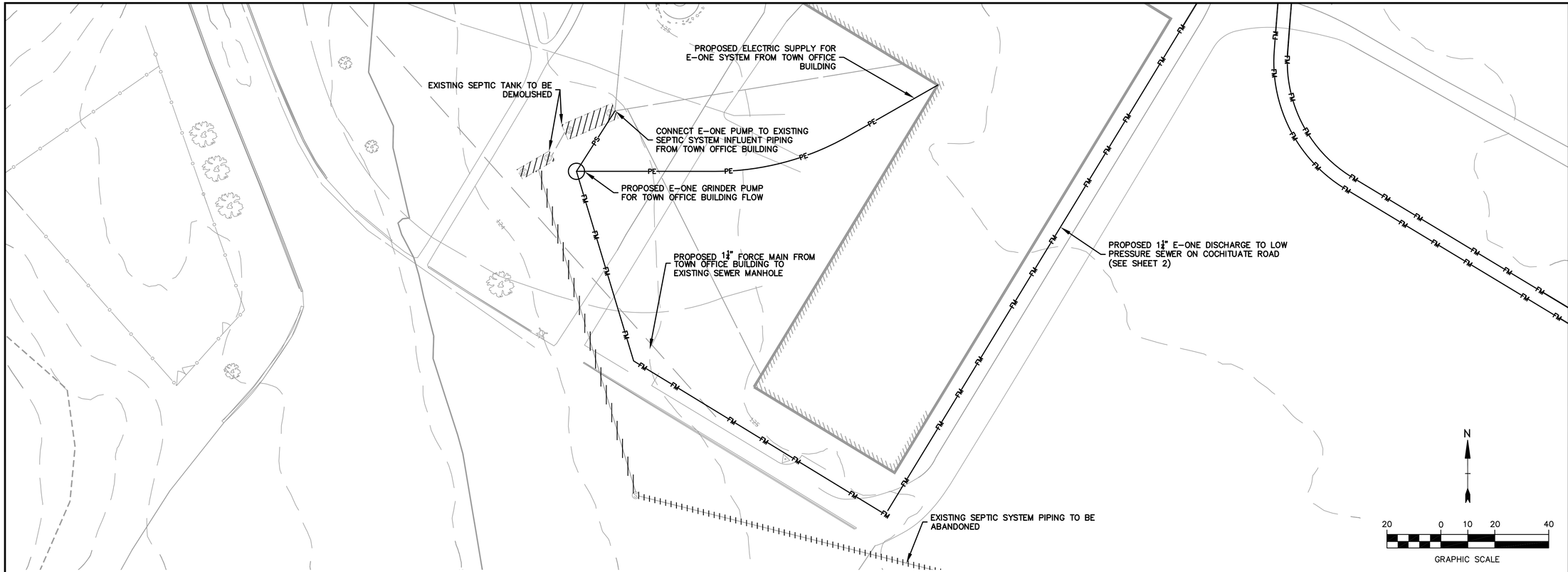
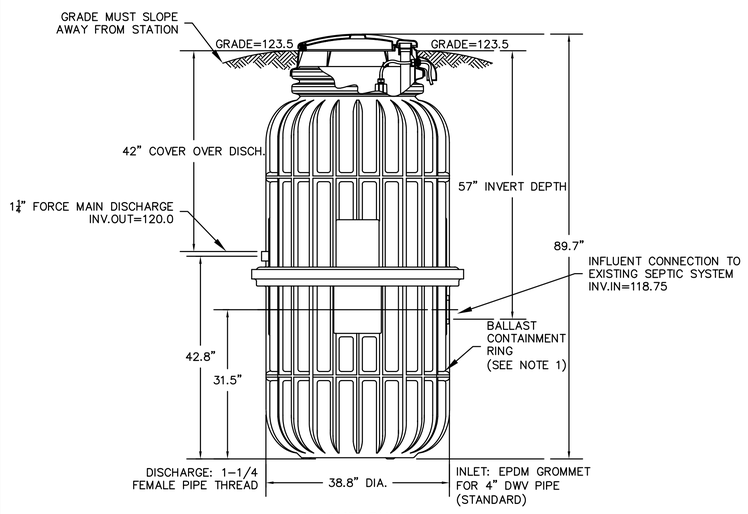
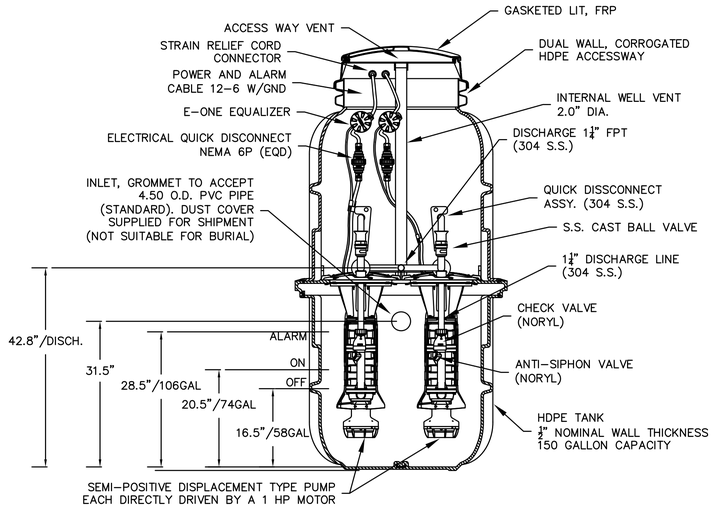




E-ONE PUMP
MODEL DH152-93/DR152-93
NO SCALE



E-ONE PUMP
MODEL DH152/DR152
NO SCALE

NOTES:

1.) PROVIDE 0.4 CY CONCRETE AROUND BASE OF E-ONE STATION AS BALLAST TO PREVENT FLOTATION. SEE APPENDIX D-CALCULATIONS IN ENGINEERING DESIGN REPORT FOR BALLAST CALCULATIONS.

2.) FLOW DATA:
AVERAGE DAILY FLOW = 1,104 GPD (SEE NOTE 3)
MAXIMUM DAILY FLOW = 3,000 GPD (SEE NOTE 4)

3.) AVERAGE DAILY FLOW IS BASED ON 2005 EXISTING WATER USAGE RECORDS OBTAINED FROM TABLE 2-1 OF THE DRAFT WWTP ASSESSMENT STUDY DATED SEPTEMBER 21,2007 AND PREPARED BY METCALF & EDDY.

4.) MAXIMUM DAILY FLOW REFLECTS TITLE 5 VALUES AND FUTURE FLOW COMMITMENTS ALLOCATED BY THE WAYLAND WASTEWATER MANAGEMENT DISTRICT COMMISSION AND WERE OBTAINED FROM THE DRAFT WWTP ASSESSMENT STUDY DATED SEPTEMBER 21, 2007 AND PREPARED BY METCALF & EDDY.

5.) PUMP STATION INVERTS:
INVERT IN = 118.75
INVERT OUT = 120.00

6.) COORDINATE PUMP CONTROL PANEL LOCATION WITH OWNER.

7.) PROVIDE E-ONE MODEL DH152-93 DUPLEX PUMP STATION WITH CONTROL PANEL.

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1911-2011

PERMIT SET

Old Sudbury Road and Cochituate Road

Town of Wayland
WWTF
Groundwater
Discharge Project

Wayland,
Massachusetts

VERIFY SCALE
BAR IS 1 INCH ON ORIGINAL DRAWING
0 1 INCH
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

Mark	Date	Description
A	08/13	GROUNDWATER DISCHARGE PERMIT

PROJECT NO:	W13969
FILE:	W13969_SAS.dwg
DRAWN BY:	SLK1
CHECKED:	KLK
APPROVED BY:	IBC

E-ONE PUMP SYSTEM AND DETAILS SHEET

SCALE: AS SHOWN

SHEET 4

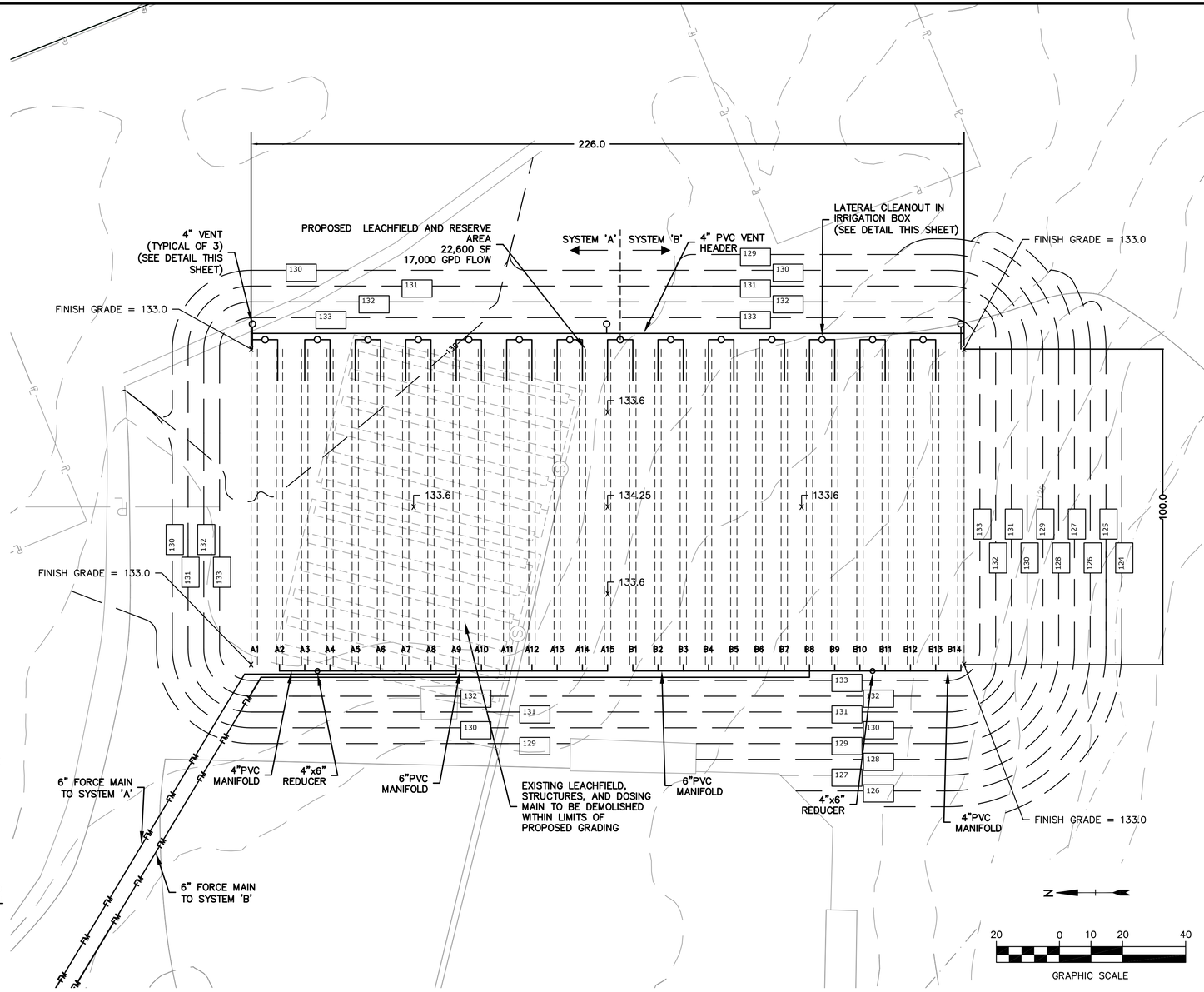
GENERAL LEACHFIELD NOTES

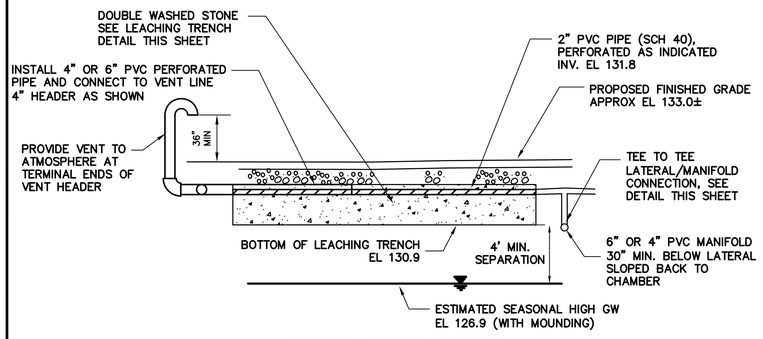
1. LEACHING RESERVE AREAS ARE LOCATED BETWEEN ACTIVE TRENCHES.
2. THE CONTRACTOR SHALL REMOVE THE A AND B HORIZONS OF THE SOIL COLUMN UNDER THE PROPOSED LEACHING AND RESERVE AREAS PRIOR TO THE START OF SYSTEM CONSTRUCTION.
3. ALL FILL MATERIAL SHALL CONSIST OF SELECT ON-SITE OR IMPORTED SOIL MATERIAL. FILL SHALL BE COMPRISED OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES. ALL FILL SHALL CONFORM TO THE SOIL GRADATION REQUIREMENTS OF 310 CMR 15.255.
4. THE EXCAVATION OF UNSUITABLE MATERIAL SHALL EXTEND 10 FEET LATERALLY IN ALL DIRECTIONS BEYOND THE OUTER PERIMETER OF THE SOIL ABSORPTION SYSTEM, TO THE DEPTH OF NATURALLY OCCURING PERVIOUS MATERIAL.
5. ALL LEACHFIELD PIPING SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE NOTED. LEACHFIELD PIPING UNDER DRIVEWAYS OR ROADS SHALL BE SCHEDULE 80 PVC.
6. THE CONTRACTOR SHALL COORDINATE TESTING OF THE SOIL ABSORPTION SYSTEM WITH THE WAYLAND BOH, DEP, AND THE ENGINEER PRIOR TO SYSTEM BACKFILLING AND COMPLETION.
7. EFFLUENT DOSING MAINS MUST DRAIN BACK TO LEACHFIELD DOSING CHAMBER.
8. THE CONTRACTOR SHALL CONSULT THE SITE DESIGN PLANS FOR DEMOLITION AND DISPOSAL OF THE EXISTING STRUCTURES.
9. THE CONTRACTOR SHALL LIMIT HEAVY EQUIPMENT TRAFFIC OVER THE LEACHFIELD DURING AND AFTER LEACHFIELD CONSTRUCTION.
10. THE CONSTRACTOR SHALL PURGE ALL LATERALS OF GRIT, BURRS AND OTHER DEBRIS WITH WATER PRIOR TO THE INSTALLATION OF LATERAL END CAPS AND CLEANOUTS.

ZONE A TRENCH SUMMARY		
TRENCH NUMBER	TRENCH LENGTH (FT)	BOTTOM OF TRENCH ELEVATION (FT)
A1 THRU A15	100	130.9

ZONE B TRENCH SUMMARY		
TRENCH NUMBER	TRENCH LENGTH (FT)	BOTTOM OF TRENCH ELEVATION (FT)
B1 THRU B14	100	130.9

LEACHING TRENCH SCHEDULES
NO SCALE





TYPICAL TRENCH SECTION
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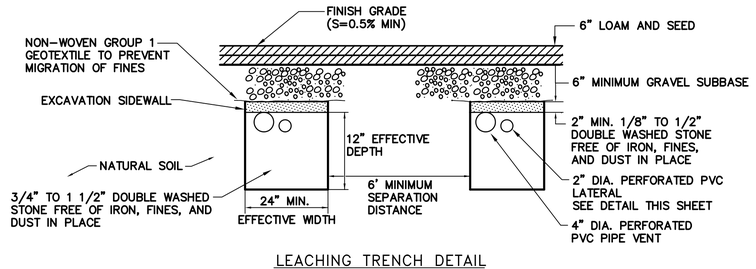
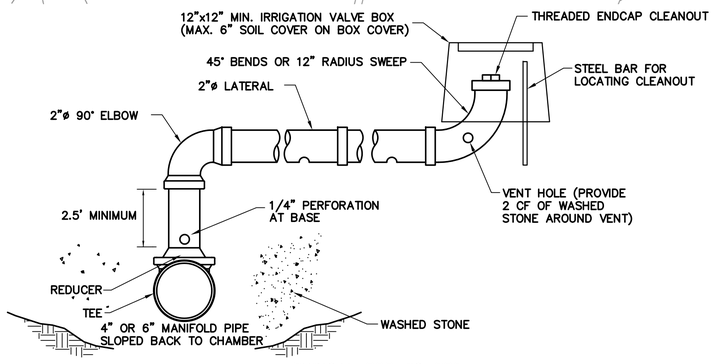
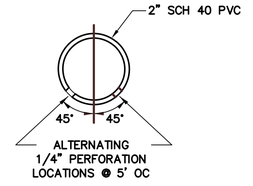


LEACHING TRENCH DETAIL
NO SCALE



TYPICAL TEE TO TEE LATERAL/MANIFOLD CONSTRUCTION
NO SCALE



LATERAL DETAIL
NO SCALE

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100 YEARS STRONG
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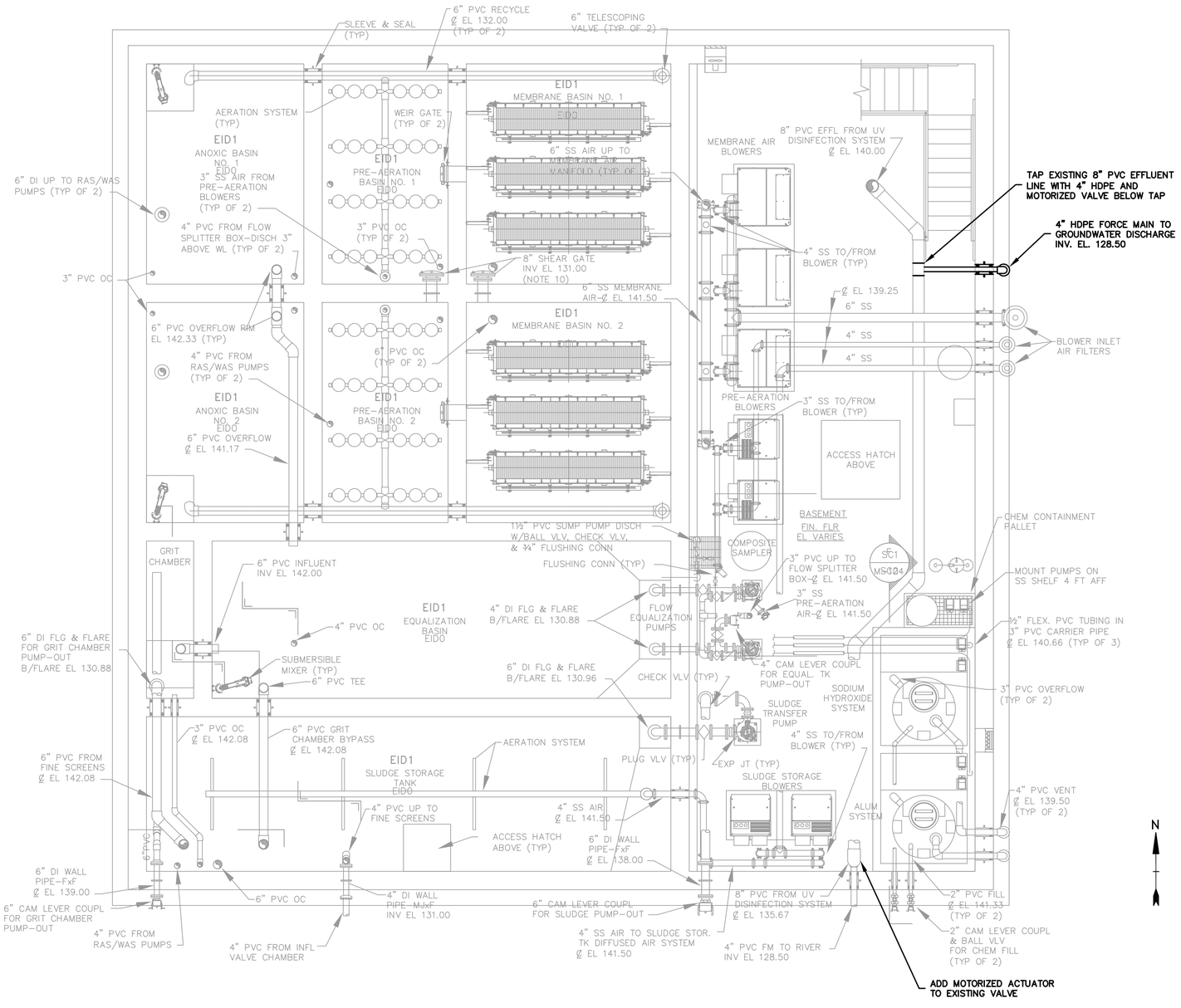
GROUNDWATER DISCHARGE SYSTEM AND DETAILS SHEET

SCALE: AS SHOWN

SHEET 5



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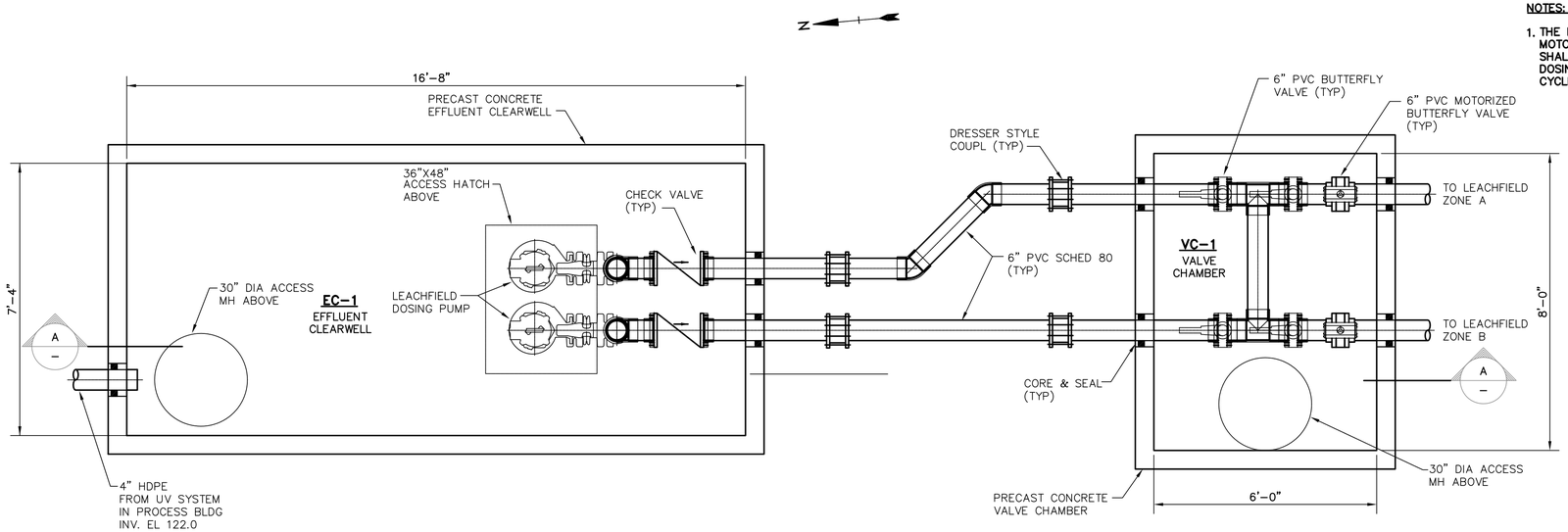
WWTP LOWER LEVEL MECHANICAL FLOOR PLAN

SCALE: 1/4"=1'-0"

SHEET 6

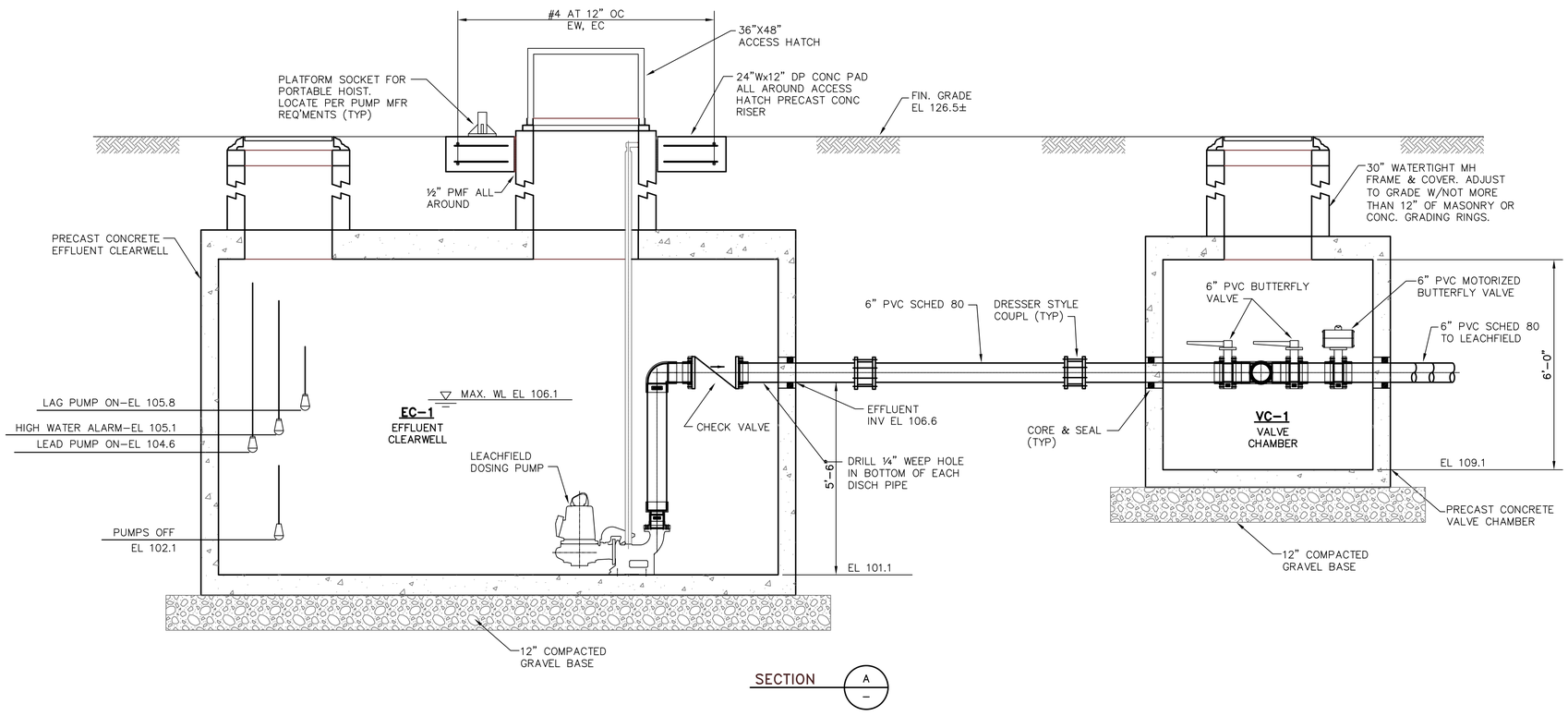
Sep 05, 2013-7:58am Plotted By: slk1
Tighe & Bond, Inc. J:\WW1396 Wayland\DWG-CAD\DESIGN\W13969_SAS.dwg



PLAN
EFFLUENT CLEARWELL & VALVE CHAMBER

NOTES:

1. THE LEACHFIELD DOSING VALVE CHAMBER SHALL CONTAIN 1 "FAIL–OPEN" MOTORIZED VALVE. WHEN AN EFFLUENT PUMP IS ACTIVATED, ONE VALVE SHALL CLOSE AUTOMATICALLY LEAVING ONE VALVE OPEN FOR LEACHFIELD DOSING. THE VALVE REMAINING OPEN SHALL ALTERNATE WITH EACH DOSING CYCLE.



SECTION A

NOTES:

1. PRECAST CONCRETE CLEARWELL & VALVE CHAMBER SHALL BE CAPABLE OF WITHSTANDING H–20 LOADS.
2. THE CONTRACTOR SHALL SEAL ALL INTERIOR JOINTS OF THE PRECAST CONCRETE TANKS WITH AN ADHERED HYPALON SHEET.
3. CONTRACTOR SHALL VERIFY EQUIPMENT DIMENSIONS BEFORE ORDERING PRECAST CONCRETE TANKS AND ACCESS HATCHES. COORDINATE EQUIPMENT SIZES WITH ACCESS HATCH CLEAR OPENING DIMENSIONS.
4. POWER AND CONTROL WIRING OMITTED FOR CLARITY.

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EFFLUENT CLEARWELL
AND VALVE CHAMBER

SCALE: 1/2"=1'-0"

SHEET 7

Appendix F
Certification Statement

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Groundwater Discharge and Reclaimed Water Permits

Transmittal Number #

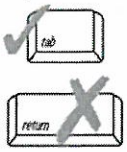
Facility ID/Permit # (if known)

Certification Statement

For BRP WP 11, 68, 79, 80, 81, 84, 85, 86, 87, 88, 89, and 90

A. Engineer Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Ian B. Catlow, P.E.
Engineer Name

Tighe & Bond, Inc.
Company

446 Main Street
Street Address

Worcester
City

MA
State

01608
Zip Code

508-471-9605
Telephone

ibcatlow@tighebond.com
Email Address

B. Certification

I, Ian B. Catlow
Name

attest under the pains and penalties of perjury:

(i) that I am a registered professional engineer in the State of Massachusetts, with a concentration in sanitary, civil, or environmental engineering, and am employed by Tighe & Bond, Inc.
Name of Company/Firm

(ii) that [x] the Engineering Report [ ] the Plans and Specifications for Wayland WWTF and SAS
Name of Facility

have been prepared in accordance with modern sanitary engineering practice and all applicable federal, state, and local laws, regulations, and standards, except where otherwise approved by the Department, including, but not limited to the current editions of TR-16 (Guides For The Design Of Wastewater Treatment Works), the Massachusetts Guidelines for the Design, Construction, Operation and Maintenance of Small Wastewater Treatment Facilities with Land Disposal, and the Massachusetts State Building Code; and

that the facility, as designed, is capable of meeting the required effluent standards described in the Engineering Report included as part of this permit application.

(iii) [x] that the Hydrogeological Evaluation prepared for this project and approved by MassDEP on October 26, 2012
Date

for Wayland Town Offices Playing Fields
Name of Facility

is consistent with the site conditions and design parameters for this facility, including, but not limited to: design flow, site design, hydraulic loading rate, and location of public and private potable water supply wells, and potential impacts of the proposed facility to nearby sensitive receptors and/or property.

I am aware that there are significant penalties including, but not limited to possible fines and imprisonment for willfully submitting false, inaccurate, misleading or incomplete information. I am also aware that submitting false, inaccurate misleading or incomplete information could lead to modification, suspension or revocation of any permit granted pursuant to this application.

Signature

46112
Massachusetts PE Number

Project Manager
Title

8/30/13
Date