

UNITED STATES ENVIRONMENTAL PROTECTION
AGENCY
NEW ENGLAND REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114 2023

Request for General Permit Authorization to Discharge
Wastewater
(Notice of Intent to be covered by the General Permit
(NOI))

Potable Water Treatment Facility (PWTF)
NPDES General Permit No. MAG640000 and
NHG640000

A. Facility Information

1. *Indicate applicable General Permit for discharge* ✓ MAG640000
NHG640000
2. *Facility Data*
Facility Name Phillips Road Pumping Station #3 (Greensand Filter Facility)
Street/PO Box 83 Phillips Road City Lynnfield
State Massachusetts Zip Code 01940
Latitude 42.545833 Longitude -71.050278
SIC Code(s) 4941
Type of Business Water Supply
3. *Facility Mailing Address (if different from Location Address, above)*
Facility Name _____
Street/PO Box _____ City _____
State _____ Zip Code _____

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B. Discharge Information (Attach additional sheets as needed):

1. Name of receiving water into which discharge will occur: Beaverdam Brook

Check Appropriate Box: ☒ Freshwater ☐ Marine Water

State Water Quality Classification Class B

Type of Receiving Water Body (e.g., stream, river, lake, reservoir, estuary, etc.) Brook

2. Indicate the frequency of the discharge:

Emergency Only ☐ Infrequent (Once/Twice a Year) ☐ ☒ Intermittent*** ☐ Continuous

Other***

***If Intermittent (i.e., occurs sometimes but not regularly as in batch discharge), provide # of days per year the discharge occurs ~140 days of the year

***If Other, explain _____

3. Describe the discharge activities for which the owner/applicant is seeking coverage, including process discharges not specifically authorized in the PWTF GP which need to be authorized for discharge (and which attain the effluent limits and other conditions of the general permit.)

(This description should include all treatment methods used on the wastewater prior to discharge including lagoons, baffles, filter presses, etc. If lagoons are used at the facility, please include the number and size of lagoons; the size and elevation of the entry pipe; the time of travel from the entry point of the discharge into the lagoon to the entry point to the receiving waters; and the length of backwash cycle for any combination of filters.)

Please see Attachment #1

4. Attach a line drawing or flow schematic showing water flow through the facility including sources of intake water, operations contributing to flow, treatment units, outfalls, and receiving water(s).

Please see Figure 2

5. Identify the source of the water being discharged:

Surface water ☐ Groundwater ☐ Other (describe) ☐

6. Number of Outfalls 1 Latitude and Longitude to the nearest second for each Outfall. Attach additional pages if necessary.

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Outfall #	Latitude <u>71°3'1"W</u>	Longitude <u>41°32'45"N</u>
Outfall #	Latitude _____	Longitude _____
Outfall #	Latitude _____	Longitude _____

7. For each outfall, indicate the proposed sampling location(s) for both effluent and ambient water (when applicable) and proposed consistent times of the month for collecting samples:

Outfall # 1

Monthly samples (Per MassDEP Letter included as Attachment 2) will be taken from the downstream end of lagoon discharge pipe.

Outfall #

Outfall #

C. Effluent Characteristics

1. List here and attach additional information (on separate sheet) on any water additives used at the facility. This includes chemicals (including aluminum, iron, or phosphorus-containing chemicals) for pH adjustment, dechlorination, control of biological growth, and control of corrosion and scale in water pipes.

Please see Attachment #3.

2. Report any known remediation activities or water quality issues in the vicinity of the discharge

As shown in Figure 3, there are no tier classified ongoing remediation activities within the vicinity of the facility. However, there is one open site currently listed as Remedy Operation Status within a half mile radius of the facility. This site is a gas station that was tier classified in 1997. The potential release occurred in 1987.

3. Are aluminum compounds or polymers used as coagulants at this facility?*

Yes_ No ☒

*If answer is "Yes" and the facility was *not* covered under the PWTF GP that expired on

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10/2/14, additional monitoring data and information is required. **Please complete Item III.C.12.**

4. Does the facility use any alum-based products for algae control?*

Yes_ No ☒

*If answer is "Yes" and the facility was *not* covered under the PWTF GP that expired on 10/2/14, additional monitoring data and information is required. **Please complete Item III.C.12.**

5. Are iron-containing coagulants used at this facility? Yes_ No ☒

6. Does the facility's discharge contain residual chlorine? ☒ Yes No

[If Yes, EPA will calculate a Total Residual Chlorine effluent limit for your facility]

7. Does the facility provide treatment to remove arsenic from the raw water source? Yes No ☒

8. a. Are phosphorus-containing chemicals added to the treated water at this facility? Yes No ☒

- b. If answer to 8.a. is Yes, does the facility discharge to Phosphorus-Impaired waters? Yes No

- c. If answer to 8.b. is Yes, provide name of P-Impaired waterbody: _____

9. Does the facility remove radium or other radioactive substances from raw water sources to comply with drinking water standards? Yes ☒ No

10. Provide the reported or calculated seven day- ten year low flow (7Q10) of the receiving water
7Q10: 0.0566 cfs Please see **Attachment 4** for the 7Q10 calculation and discussion regarding total residual chlorine and pH results

NOTE: For facilities that discharge in New Hampshire, the state permitting authority **must** be contacted at the address listed in Appendix VI of the PWTF GP to determine and/or confirm the 7Q10 and/or dilution factor. For facilities that discharge in Massachusetts, it is highly recommended to contact the relevant state authority (MassDEP) to determine and/or confirm the 7Q10 and/or dilution factor.
Attach any calculation sheets used to support the stream flow and dilution factors. See Appendix VII for equations and additional information.

11. For *each* outfall, provide the following discharge information:

Outfall # 1

- a) *Design Flow of Facility (in million gallons per day, MGD)* 0.610 MGD

This value will determine the facility's daily maximum flow limit, up to a maximum of 1.0 MGD.

- b) *Discharge Flow (in gallons per day, GPD):*

Maximum Daily Flow 12,000 GPD Average Monthly Flow 2,700 GPD

- c) *TSS (mg/l):* Number of samples: 10 (Minimum of 10 samples)

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Maximum Daily 10 mg/l

Average Monthly 2.0 mg/l

d) *pH (s.u.)* : Number of samples: 10 (Minimum of 10 samples)

Minimum 6.5* s.u.

Maximum 7.7 s.u.

e) *Total Residual Chlorine (ug/l)*: Number of samples: 10 (Minimum of 10 samples)

Maximum Daily 181* ug/l

NOTE: TRC is only required for discharges which have been previously chlorinated or contain residual chlorine

*Please see **Attachment 4** for a discussion regarding total residual chlorine results and pH results.

12. The following section must be completed for any facility that answered “Yes” to Question III.C.3 or III.C.4 (e.g. adds an aluminum-containing chemical to the water being treated and/or discharged) **AND** was not covered under the previous PWTF GP (which expired on 10/2/14).

a) Collect, analyze and submit **12 effluent samples and 10 ambient surface water samples** from a location upstream of and not affected by the discharge. For facilities in New Hampshire and Massachusetts, each sample should be analyzed for total recoverable Al in micrograms per liter.

All laboratory results shall be submitted on a separate sheet.

- a. The samples shall be composite samples consisting of four grab samples taken at approximately equal intervals on a flow weighted basis during the time at which the discharge is entering the receiving water after the start of the backwash cycle.
- b. For each sampling event, the effluent and surface water samples shall be collected on the same day and during a representative discharge event. The samples shall be no more frequent than weekly and, if time allows in completing the NOI, at monthly intervals and at different flow conditions. If taking the ambient water quality sample from lakes/reservoirs, the 10 samples should be composited vertically.
- c. Discharge flow at the time of effluent sampling should be recorded. Flow conditions at the time of ambient water sampling should be recorded (or estimated from nearest gaging station).
- d. Do not include dilution when recording the results.
- e. See Section 2.1.2.3 and Footnote 12 of Section 2.1.1 for MA facilities (or Section 3.1.2.3 and Footnote 10 of 3.1.1 for NH facilities) for key information on minimum level for analysis and sufficiently sensitive test procedures.
- f. Sampling data that was collected within one year of the effective date of this general permit **AND** that adheres to all of the requirements above may be submitted in lieu of new samples. This must be denoted with the submitted data.

b) Provide a description of control measures, chemical substitutions, waste handling methods, and operational changes evaluated and/or used by the facility to minimize the discharge of aluminum to surface waters. (Include additional sheet(s), if necessary)

D. Endangered Species Act Eligibility Information

Using the instructions in Appendix III of the PWTF GP, which of the following criteria apply to your facility?

U.S. Fish and Wildlife Service (USFWS) Criteria: A B C

1. If you selected USFWS criteria B, has consultation with the U.S. Fish and Wildlife Service been completed?

Yes No

2. If consultation with US Fish & Wildlife Service was completed, was a written concurrence finding that the discharge is “not likely to adversely affect” listed species or critical habitat received?

Yes No

3. Attach documentation of ESA eligibility for USFWS as required at Part 1.4 and Appendix III of the General Permit. **Documentation attached?** See Attachment 5

4. For facilities seeking coverage under the Potable Water Treatment Facility General Permit for the *first* time, respond to the following questions to assist in ESA eligibility for NMFS:

a) Indicate if the facility discharges into any of the stretches of the following rivers which can support or provide habitat to either Shortnose or Atlantic Sturgeon:

<i>Merrimack River</i> (from Essex Dam in Lawrence, Downstream (including Haverhill) to mouth of River)	Yes	No
---	-----	----

<i>Connecticut River</i> (from Turner’s Falls, downstream through Holyoke (including Holyoke Dam region)	Yes	No
--	-----	----

<i>Taunton River</i>	Yes	No
----------------------	-----	----

<i>Piscataqua River (in NH)</i>	Yes	No
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b) Has the facility had any previous formal or informal consultation with NMFS?

Yes No

If yes, attach the results of the consultation(s). **Documentation attached?** _____

E. National Historic Properties Act Eligibility

1. Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility site or in proximity to the discharge? Yes No ☒

2. Have any State or Tribal Historic Preservation Officers been consulted in this determination?

Yes

No ☒

If yes, attach the results of the consultation(s).

Documentation attached? no

3. Which of the three National Historic Preservation Act scenarios listed in Appendix II, Section III have you met?

1 ☒

2

3

F. Supplemental Information

Please provide any supplemental information, including antidegradation review information applicable to new or increased discharges. Attach any analytical data used to support the application. Attach any certification(s) required by the General Permit.

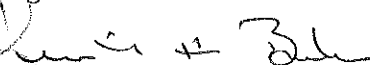
G. Signature Requirements

The NOI must be signed by the operator in accordance with the signatory requirements of 40 CFR § 122.22 (see below) including the following certification:

I certify under penalty of law that (1) the discharge for which I am seeking coverage under the general permit consists solely of a surface water discharge from a potable water treatment facility; (2) any chemicals used to treat the discharge have been identified in this NOI; and (3) where applicable, the facility has complied with the requirements of this permit specific to the Endangered Species Act and National Historic Preservation Act.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature



Date 5-31-2017

Printed Name and Title

Kenneth A. Buziak Superintendent L.C.W.D

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Federal regulations require this application to be signed as follows:

1. For a corporation, by a responsible corporate party;
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively, or,
3. For a municipality, State, Federal or other public facility, by either a principal executive officer or ranking elected official.

Note: Permits No. MAG640000 and NHG640000 may be found at <http://www3.epa.gov/region1/npdes/pwtfgp.html>

H. “Opt-Out Request” from NetDMR Requirement

1. Check the box if you **are** applying for an “opt-out request.” ☐
2. Provide a detailed explanation of the technical or administrative factors that support your request to “opt-out” from the requirement to submit DMRs and reports electronically. (Add additional lines, if necessary.)

List of Attachments

Figures

Figure 1: Project Location Map

Figure 2: Source Water Supply and Treatment Schematic

Figure 3: MassDEP Chapter 21E Sites

Attachments

Attachment 1: Phillips Road Pumping Station No. 3: Treatment Processes

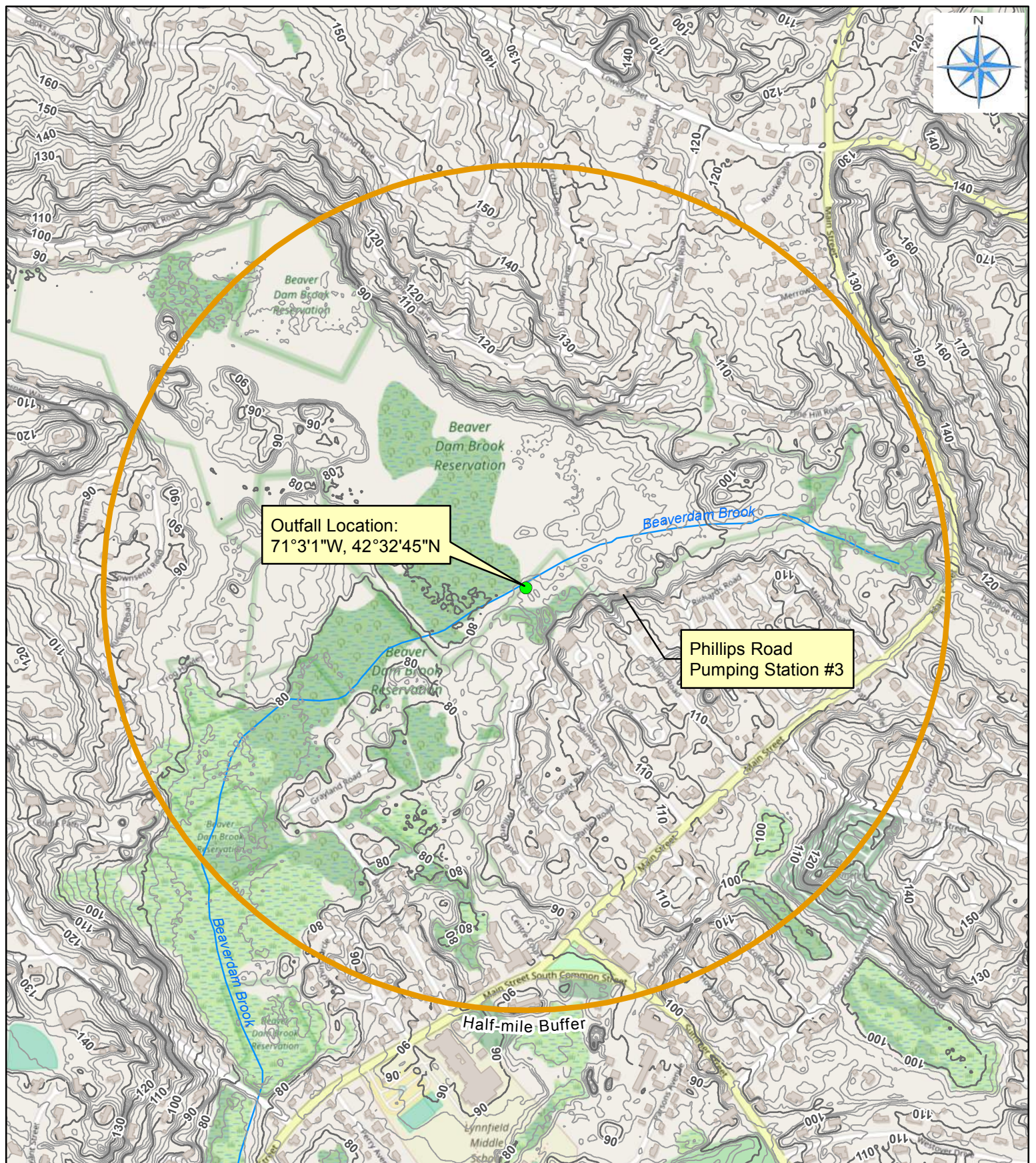
Attachment 2: Letter from MassDEP to District / Reduced Sampling Frequency

Attachment 3: Chemical Additives

Attachment 4: 7Q10 Calculation & Discussion on Total Residual Chlorine and pH Results

Attachment 5: Endangered Species Act Eligibility Information

Figure 1
Project Location Map



NELiDAR Contours (2011) - 2 ft. Interval

- Index Contour (10 ft.)
- Intermediate Contour (2 ft.)

**Outfall for Phillips Road
Pumping Station #3
Lynnfield, MA**

0 400 800
Feet

1" = 800'
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Basemap: © OpenStreetMap (and) contributors, CC-BY-SA
Source: ESRI ArcGIS Online, OpenStreetMap, MassGIS
Coord. System: NAD83 Mass. State Plane Mainland FIPS 2001 (feet)

billingsmc F:\Projects\Project_data\LCWD\NPDES_permit\MXD\NPDES_permit_topo.mxd 5/4/2017

**Figure 1
Project Location Map**
Phillips Road Pumping Station #3
Lynnfield, Massachusetts

**CDM
Smith**

Figure 2
Source Water Supply and Treatment Schematic

Water Treatment Plant

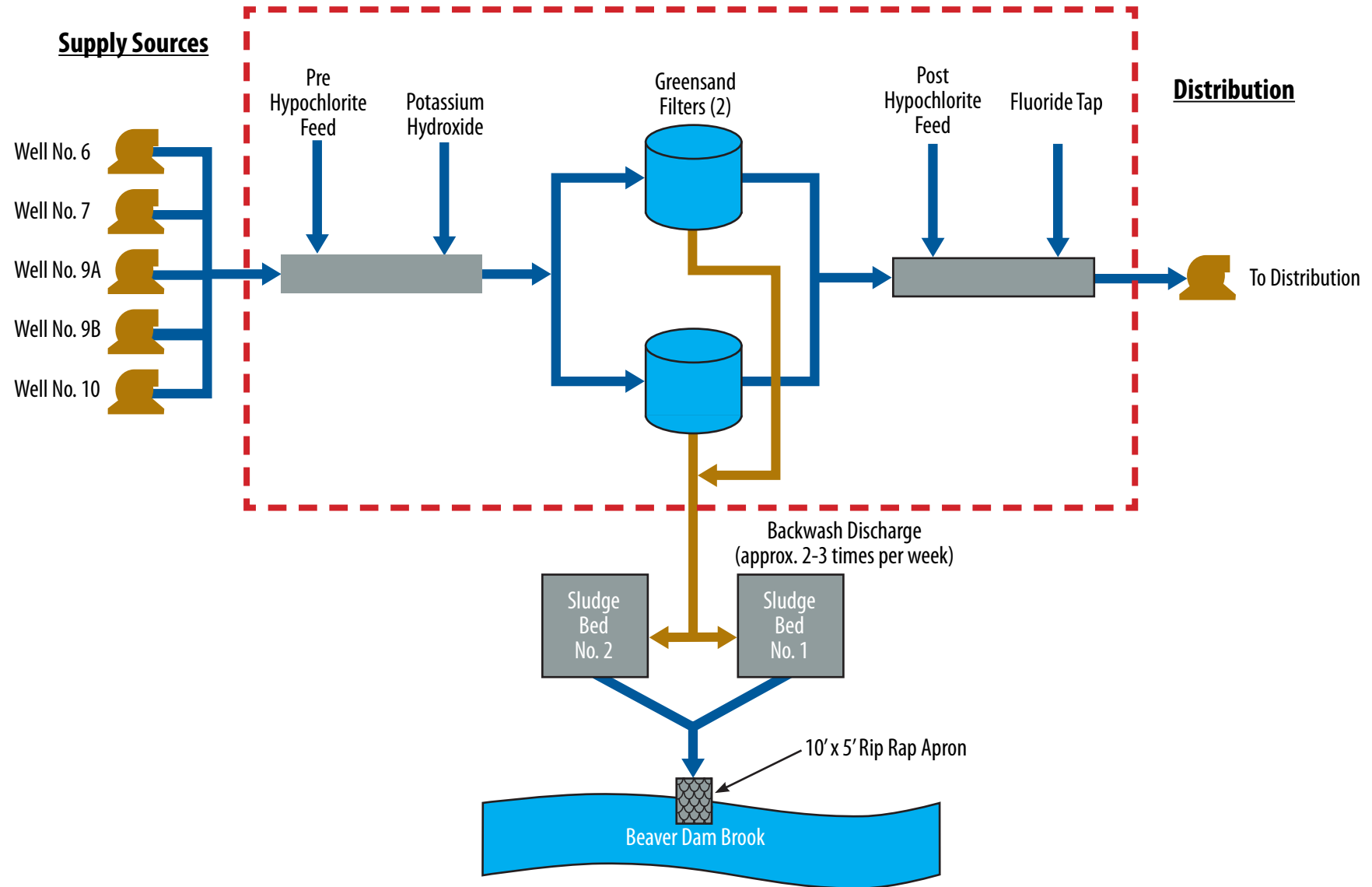
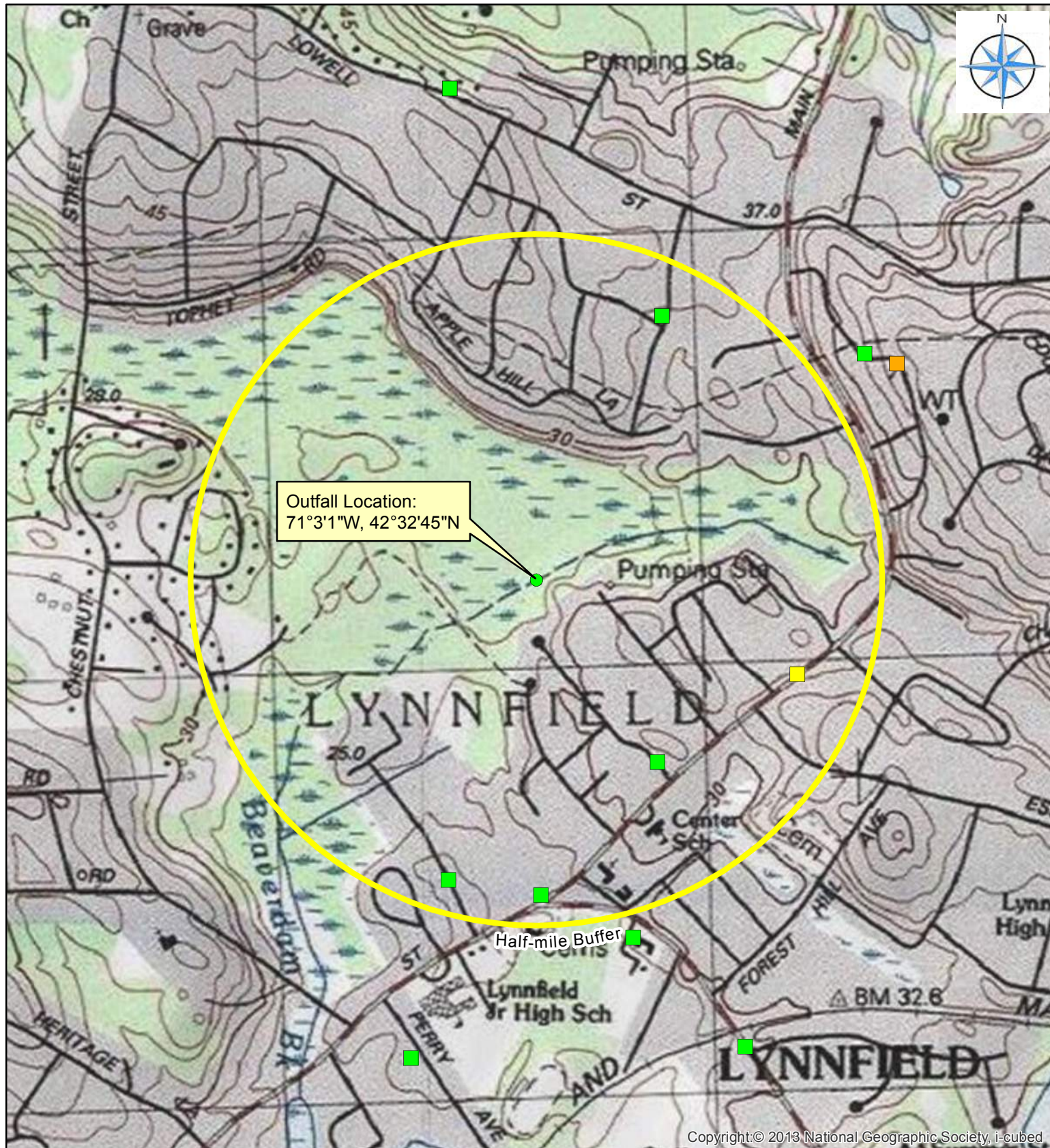


Figure 3
MassDEP Chapter 21E Sites



MassDEP Oil and/or Hazardous Material Sites (MGL c. 21E)

Tier Classified Sites - as
of April 2017

Regulated Status

- ◆ TIER I
- ◆ TIER II
- ◆ TIER1D

Non-Tier Classified Sites

Current Status

- PENNFA
- RAO
- REMOPS

Outfall for Phillips Road
Pumping Station #3
Lynnfield, MA

0 500 1,000
Feet
1" = 1,000'

Figure 3
MassDEP Chapter 21E Sites

Attachment 1

Phillips Road Pumping Station No. 3:

Treatment Processes

Phillips Road Pumping Station No. 3: Treatment Processes

The Phillips Road Pumping Station No. 3 (Phillips Road Well Water Treatment Plant) treatment system consists of conventional water treatment processes including: chemical addition, filtration, and disinfection.

Discharge of Flow from Greensand Filter Backwash Sludge Drying Lagoon

The Phillips Road Pumping Station No. 3 contains two 10' diameter greensand filters; both filters are used for water treatment. The greensand filters require backwashing based on the following conditions:

1. Pressure differential
2. Iron breakthrough
3. Filter run hours

One filter is backwashed at a time. The greensand filters treat water from Well Nos. 6, 7, 9A, 9B and 10.

The backwashing operations produce a waste stream, which is directed to the District's two sludge drying beds (lagoons); discharge water is split between the two lagoons. Each lagoon is approximately 50,000 gallons in volume. The bottom is constructed of bituminous concrete with 12-inch deep layers each of gravel and sand along the entire bottom. Underdrain flow is collected in two 6-inch perforated underdrain pipes running along the bottom. The perforated pipes discharge into a collector box, where they are combined in a 12-inch diameter reinforced concrete pipe, which then discharges across a 10'x5' rip rap apron and into Beaverdam Brook. The invert elevation of the discharge pipe at Beaverdam Brook is 81.17; the upstream pipe elevation at the collection box is 81.40 (USGS Mean Sea Level Datum). The average volume of water per backwash cycle is 7,000 gallons, and the estimated backwash duration is approximately 5.5 minutes long per filter. The time of travel from the entry point of the discharge into the lagoon to the entry point to the receiving waters is approximately 4 hours. The discharges for which this permit is sought, consist solely of effluent discharges from the Phillips Road Pumping Station #3.

Attachment 2

**Letter from MassDEP to District / Reduced Sampling
Frequency**



Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

DEVAL L. PATRICK
Governor

RICHARD K. SULLIVAN JR.
Secretary

TIMOTHY P. MURRAY
Lieutenant Governor

KENNETH L. KIMMELL
Commissioner

April 25, 2013

Shauna Little US EPA – Region 1
5 Post Office Square, Suite 100 (OEP06-1)
Boston, MA 02109-3912

Re: **NPDES General Permit Renewal - MAG640017**
Phillips Road Pumping Station #3 in Lynnfield, MA

Dear Ms. Little:

The Department of Environmental Protection, Wastewater Management Program has reviewed the Notice of Intent for this facility to discharge wastewater from drinking water treatment processes. The Department concurs that this facility should be authorized to discharge to Beaverdam Brook, a Class B fresh waterbody in the Charles River Watershed (MA93-30). The Department understands that the EPA has modified the reporting frequency for the facility from once per week to once per month. This is because the facility has reported that the discharges occur with limited frequency and duration.

Number of outfalls: 1
Maximum daily flow: 0.012 million gallons per day
Toxicity test: Not required at this time
Aluminum: Not required at this time
Proposed total residual chlorine limits are:

	Discharge Volume gpd	Dilution Factor	TRC Criteria ug/l	TRC Limit ug/l
Max. Daily	12,000	3.5	19	66.5
Ave. Monthly	Report	3.5	11	38.5

Please contact me at 617-556-1029 or Marybeth.Chubb@state.ma.us if you have any questions.

Very truly yours,

Marybeth Chubb

Environmental Analyst, Wastewater Management Program

Cc: Robin Murphy, DEP/CRO

Summary of specific numeric effluent limitations and monitoring requirements: NPDES General Permit for Potable Water Treatment Facility – No. MAG640017 for Phillips Road Pumping Station #3 in Lynnfield, MA

This summary is provided as a convenience based on the submitted NOI information and it does not replace the effluent limitations and monitoring requirements, and other conditions set forth in the PWTFGP.

During the period beginning on the effective date and lasting through expiration, the Permittee is authorized to discharge potable water treatment facility wastewater through Outfall 001. The discharge shall be limited and monitored as summarized below.

Effluent Characteristics		Discharge Limitations		Monitoring Requirements	
Parameter	Units	Avg. Monthly	Max Daily	Monitoring Frequency	Sample Type
Flow	MGD	Report	0.012	1/Month	Estimate or Totalizer
TSS	mg/l	30	50	1/Month	Composite
pH (Class A and B)	std units	6.5-8.3 range		1/Month	Grab
Total Residual Chlorine ¹	µg/l	38.5	66.5	1/Month	Grab
LC ₅₀ & NOEC	%	See Part 1.2.4 of the PWTFGP			Composite

¹ The facility's dilution factor for Total Residual Chlorine is 3.5.

Attachment 3

Chemical Additives

The following are water additives used at the facility:

Caustic (**potassium hydroxide**) addition to raise alkalinity and pH for corrosion control

Sodium hypochlorite injection into the raw water as an oxidizer and filter effluent for primary disinfection and residual chlorine

Fluoride addition into the filter effluent for dental health benefits

Attachment 4
7Q10 Calculation
Discussion on Total Residual Chlorine and pH Results

7 Day 10 Year Low Flow (7Q10) Calculation for Phillips Road Pumping Station #3 (Greensand Filter Facility), Lynnfield, MA

The USGS StreamStats report was used to determine the 7Q10 at the discharge point of Phillips Road Pumping Station (Greensand Filter Facility) to the Beaver Dam Brook (<https://streamstats.cr.usgs.gov/streamstats/>). Using the interactive USGS map, the drainage area at the point of discharge was selected, as shown in the figure below.

StreamStats Report

Region ID:

MA

Workspace ID:

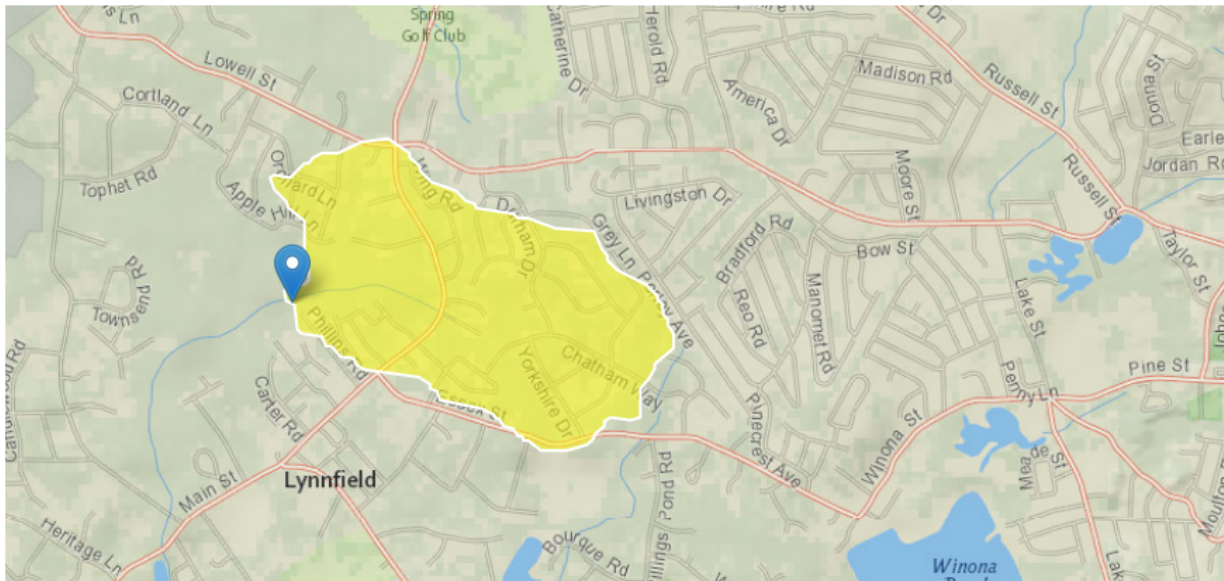
MA20170510130752240000

Clicked Point (Latitude, Longitude):

42.54633, -71.04918

Time:

2017-05-10 15:08:20 -0400



<https://streamstats.cr.usgs.gov/streamstats/>

USGS StreamStats defined the **7Q10** as **0.0566 ft³/second**.

Discussion on total residual chlorine results for Phillips Road Pumping Station #3 (Greensand Filter Facility), Lynnfield, MA

Using the 7Q10 value of 0.0566 cfs, the acute value for daily maximum total chlorine residual and the chronic value for average monthly use is calculated as follows:

Daily Max Flow			Avg Monthly Flow ⁽¹⁾		
QR	0.0566	cfs	QR	0.0566	cfs
QP	0.0120	mgd	QP	0.0027	mgd
DF	4.01		DF	14.5	
Daily Max Chlorine			Avg Monthly Chlorine		
Acute	19	ug/L	Chronic	11	ug/L
w/DF	76.8	ug/L	w/DF	159.8	ug/L

- (1) The average monthly flow is based on the average flow used for backwashing per month. For example, in the month of March 2016, the District backwashed on 14 of the 31 days in the month. The total volume discharged in the month of March was 101,191 gal. Over 31 days, this averages to 3,264 gpd. Over the past ten months, the monthly average, calculated in this manner, is 2,700 gpd or 0.0027 mgd.

The Total Residual Chlorine maximum daily use value reported on the NOI (181 ug/l) was the highest result within the past 10 months, with the exception of an outlier value of 1,980 recorded in October 2016. Between July 2013 and June 2016, out of 35 months' worth of data, 26 months reported ND for total residual chlorine. Between June 2016 and October 2016, the District was running their treatment plant 24 hours a day to keep up with high water demands during the drought conditions. Filter run times were extremely high compared to normal operating conditions. Once the summer months tapered off, the District's total residual chlorine returned to 'normal' results, mostly ND and 20 ug/l. The recent drought caused the District to operate their system under stressed conditions and high filter run times. Moving forward, the District does not anticipate having to operate their system under these conditions.

The following table provides data from the past 10 months (July 2016 – April 2017), and excludes the outlier as described above:

Average Chlorine, Total (ug/l)	41
Max Chlorine, Total (ug/l)	181
Min Chlorine, Total (ug/l)	<20

Discussion on pH results for Phillips Road Pumping Station #3 (Greensand Filter Facility), Lynnfield, MA

The minimum value for pH reported on the NOI (6.5 s.u.) was the minimum result within the past 10 months, with the exception of an outlier value of 6.4 s.u. recorded in November 2016. Upon review of backwash water quality data from July 2013 through April 2017, it is evident that this value of 6.4 s.u. is an outlier. Since November 2016, the pH values have been within the required pH range of 6.5-8.3 (per General Permit Section 2.1.1).

The following table provides data from the past 10 months (July 2016 – April 2017), and excludes the outlier as described above:

Average pH	7.3
Max pH	7.7
Min pH	6.5

Attachment 5

Endangered Species Act Eligibility Information

Endangered Species Act Eligibility Information

The USFWS Information, Planning and Conservation (IPaC) online system was used to develop a preliminary determination of federally listed species within the discharge area. It was determined that the Northern Long-Eared Bat is a threatened species within the discharge area. Using the best scientific data and commercial data available, the effect of the discharge and related activities on listed species and critical habitat have been evaluated. Based on these evaluations, a determination has been made that the discharge and related activities will have no effect on the Northern Long-Eared Bat.

The proposed activities do not include:

- 1) tree removal (i.e. cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by northern long-eared bats), and
- 2) do not take place within Northern Long-Eared Bat (NLEB) hibernacula,

and are therefore not prohibited under the U.S. Fish & Wildlife's (USFWS) Northern Long-Eared Bat 4(d) Rule. The final 4(d) Rule was published in the Federal Register on January 14, 2016. The 4(d) Rule "tailors protections to areas affected by white-nose syndrome during the bat's most sensitive life stages. The rule is designed to protect the bat while minimizing regulatory requirements for landowners, land managers, government agencies and others within the species' range." A permit from the USFWS is not necessary. Per the 4 (d) rule, the applicant may proceed with the activity, and does not need to contact the USFWS.