



Office of Adjudications

IN THE MATTER OF : ***APPLICATION NO. 201502206***
JOHN F. CARR, JR. : ***MARCH 16, 2017***

PROPOSED FINAL DECISION

***I
SUMMARY***

John F. Carr, Jr. (Applicant) has applied for a permit from the Department of Energy and Environmental Protection (DEEP or the Department) to discharge into the waters of the state. General Statutes § 22a-430; Regs., Conn. State Agencies §§ 22a-430-3 and 22a-430-4. Specifically, the Applicant has applied for a permit to construct and operate a subsurface system to treat discharges of domestic wastewater from a proposed housing development in Bridgewater.

The Department published a Notice of Tentative Determination (NTD) to approve this application and issued a Draft Permit that would authorize the discharge (Appendix A). A petition for hearing was subsequently filed and a hearing process was initiated. §§ 22a-430(c) and 22a-430-4(j). The parties to this proceeding are the Applicant and staff from the DEEP Water Permitting and Enforcement Division, Bureau of Materials Management & Compliance Assurance (Staff).

A hearing to receive public comment was held in Bridgewater on December 13, 2016.¹ An evidentiary hearing was held at DEEP in Hartford on December 19, 2016. On February 7, 2017, the parties submitted joint proposed findings of fact and conclusions of law. I have adopted and incorporated these proposed factual findings and conclusions of law in my decision.

¹ The Applicant and Staff have provided written responses to representative comments (Appendix B).

I have reviewed the record, the Connecticut Water Quality Standards (WQS), and the relevant statutory and regulatory criteria. The proposed discharge will be consistent with the WQS and will comply with § 22a-430 and applicable provisions of §§ 22a-430-3 and 22a-430-4. The sufficient evidence in the record shows that if built and operated as proposed, the treatment system will adequately treat the discharge to protect the waters of the state from pollution. I therefore recommend issuance of the Draft Permit if the Applicant's plans and specifications for the proposed waste treatment system are approved by the Commissioner and if the treatment system is constructed in full compliance with this approval.

II
DECISION

A
FINDINGS OF FACT

I
Procedural History

1. On March 24, 2015, DEEP received an application from John F. Carr, Jr. for a permit to discharge treated domestic sewage to the groundwaters of the Housatonic River Watershed. (Exs. APP-A², DEEP-4.)
2. On August 18, 2016, DEEP issued a Notice of Tentative Determination (NTD) to approve the application and a Draft Permit with proposed terms and conditions. No comments were received during the 30-day public comment period following publication of the NTD and the Draft Permit. On September 19, 2016, the Department received a petition for hearing from Bridgewater First Selectman Curtis S. Read that had been signed by more than twenty-five persons, initiating the hearing process.³ (Exs. DEEP-1, 3.)
3. A site visit was conducted on November 29, 2016. The hearing officer, the Applicant, and DEEP Staff were the only attendees. No evidence or testimony was received. The general characteristics and topography of the site were viewed and testing sites and planned locations of certain components of the treatment system were identified.
4. The public hearing was held on December 13, 2016 in Bridgewater. The Applicant provided an overview of the proposed housing development and the treatment system for the discharge of domestic wastewater from that development. DEEP Staff summarized its review of the application and outlined the conditions of the proposed Draft Permit, which had been revised to correctly identify the receiving watershed. Public comments were preceded by remarks

² The Applicant submitted *Joshua Heights Executive Summary, May 2016*, a report describing the Project and providing a detailed engineering analysis for the waste treatment system. I have labeled this as Ex. APP-A. The application was included with this submittal.

³ The petition for hearing and other documents pertaining to the hearing process that were not admitted as exhibits are in the administrative record on file with the Office of Adjudications.

from the petitioner First Selectman Reed, Donna Culbert of the Newtown Health District, and Russell Direnzo, Bridgewater Wetlands Enforcement Officer. Comments made at the hearing and written comments received before, during and after the hearing are part of the administrative record. (Ex. DEEP- 2.)

2

Expert Witnesses

5. The evidentiary hearing was held at DEEP Headquarters in Hartford on December 19, 2016. The Applicant described the testing of the soils and the nature of the soils in, around and downgradient of the area of the leaching system. He also outlined the design of the proposed subsurface treatment and explained the planned engineered leaching system. He discussed the pollutant renovation that would occur in the leaching system and the downgradient receiving soils. The Applicant also clarified stormwater handling at the Site and expressed his ability and intent to fully comply with the terms and conditions of the permit. Michael Mandt, the President/Owner of Fluidyne, also testified for the Applicant. He described the Fluidyne ISAM™ sequencing batch reactor treatment systems that would be utilized for the four onsite subsurface treatment plants. He explained each component, its function and role in treating the wastewater, and the necessary operation and maintenance for the treatment systems. He also discussed the adverse impacts that may affect system functioning and methods to remedy them. (Exs. APP-A, 1,⁴ S-1 through S-11, DEEP-2; test. 12/19/16, J. Carr, M. Mandt.)⁵

6. Antoanela Daha, a sanitary engineer with the DEEP Bureau of Materials Management and Compliance Assurance, testified about the Department's tentative determination based on the technical review of the application, DEEP's design criteria, and the regulatory requirements for the treatment system. She noted advantages of treatment by a sequencing batch reactor in a case like this where there is a lower flow discharge. She also provided further details on the design and function of the lateral sand filters or beds that are part of the leaching system. Ms. Daha described the administrative process for permit issuance and the permit requirements for operation, maintenance, monitoring and reporting. Michael Hart, a supervising sanitary engineer with the Bureau, clarified the suitability of the soils for the proposed subsurface treatment and discharge to groundwater and noted that the design of the system will maintain the discharge as one to groundwater. (Exs. DEEP-2, 3, 5, 5a, 5b,⁶ 10, 12; test. 12/19/16, M. Hart, A. Daha.)

⁴ I have labeled the Applicant's pre-hearing information as APP-1. This was submitted for the record on November 7, 2016, lists proposed exhibits, identifies the Applicant as a planned witness, and includes his credentials.

⁵ The hearings in this matter were recorded and no written transcript has been prepared. The speaker and the date of testimony are noted. The recording is the official record of the proceeding.

⁶ The DEEP list of witnesses and their credentials were admitted into the record, but were not labelled as exhibits. Accordingly, I have identified the list of witnesses as DEEP-5a and their statements of credentials as DEEP-5b.

3

The Project

7. The proposed housing development (the Project), to be called Joshua Heights, will have four independent buildings and a club house. The Project will incorporate 282 bedrooms into a mix of homes ranging from one bedroom flats to four bedroom townhouses. A percentage of homes will be set aside for families with incomes up to eighty percent of the state median wage. Ten percent of the homes will be handicap adaptable. (Ex. APP-A.)

4

The Site

8. The Project will be situated on a twenty-four acre parcel on Main Street in Bridgewater (the Site). The Site is in the Housatonic River Watershed and partially in the Shepaug River Watershed, which is a tributary to the Housatonic River Watershed. The discharge will be to the Housatonic River Watershed because the Project, which is the source of the discharge, is located entirely in that Watershed. The Site and the areas adjacent to it are served by onsite wells. The Site's surface water quality is classified as Class A under the state's Water Quality Standards and the groundwater classification is GA. The point of environmental concern on the Site is a downgradient wetland encountered 200-300 feet from the end of the treatment system and before the property line is reached. (Exs. APP-A, DEEP-5, 6; test. 12/19/16, A. Daha.)

5

Renovation and Removal of Pollutants of Concern

9. The pollutants most likely to be present in domestic sewage are bacteria, viruses, phosphorus, and nitrogen. The discharge be disbursed by the Site without surface breakout and treated to at least drinking water standards for these pollutants at the point of environmental concern. (Exs. APP-A, DEEP-5, 6; test. 12/19/16, J. Carr, A. Daha.)
10. For bacteria removal and virus inactivation, the discharge must travel through soils for at least twenty-one days prior to encountering a point of environmental concern. Six months of phosphorus production must be absorbed by unsaturated soils in order to renovate that pollutant. The concentration of nitrogen in the discharge must be diluted to the drinking water standard of 10 mg/l (milligrams per liter) prior to reaching the point of environmental concern. If nitrogen dilution cannot be accomplished by using a septic system⁷ on a site, a biological treatment system may be used to treat nitrogen. (Exs. DEEP-3, 5, 6; test. 12/19/16, J. Carr, A. Daha.)

⁷ In a conventional septic system, twenty percent of the nitrogen in a discharge is removed in a septic tank, another twenty percent is diluted in a leaching field, and the remaining nitrogen in the soil is diluted by precipitation infiltration. (Ex. DEEP-5.)

Site Investigation

11. In order to assess the Site's ability to renovate and remove pollutants, the Applicant performed a Site investigation to determine soil hydraulic capacity, depth to groundwater, groundwater flow direction and gradient and site constraints. This testing included test pits, hydraulic conductivity sampling, and a hydraulic load test. The investigation revealed that the Site has a limited hydraulic capacity to provide pollutant renovation. Testing demonstrated that groundwater is not present above ledge throughout the Site, making it impossible to determine the hydraulic gradient that is used to calculate a groundwater mound or rise under the treatment system and the time of travel for pathogen renovation. In addition, the amount of precipitation contributing to nitrogen dilution could not be determined. During Site investigation, groundwater was found in the natural receiving soils that are downgradient of the system. (Exs. APP-A, S-3, S-6, S-7, S-10, S-11, DEEP-5, 12; test. 12/19/16, J. Carr, A. Daha, M. Mandt.)

The Treatment System

12. To overcome the Site's limited hydraulic capacity, a treatment system consisting of biological treatment and engineered lateral sand filters (leaching beds) has been proposed to treat and disburse (i. e., dispose of) the wastewater. (Ex. APP-A; test. 12/19/16, J. Carr.)
13. Biological treatment will be provided by four identical subsurface systems that have each been designed to treat 10,800 gallons per day (gpd), for a total conservative design flow⁸ of 43,200 gpd. The design flow for each system was calculated assuming a discharge of 150 gpd per bedroom and 900 gpd from the club house. The bedroom discharge calculation incorporates a fifty percent safety factor and assumes two persons per bedroom. Three of the systems are designed for a flow generated by seventy-two bedrooms per building and the fourth system is designed for a flow generated by a building with sixty-six bedrooms and the flow from the club house. The discharge from the treatment system is expected to occur in batches of 2,000 gpd. (Exs. APP-A, DEEP-5; test. 12/19/16, J. Carr.)
14. The engineered leaching system is sized based on a conservative Long Term Acceptance Rate (LTAR)⁹ at the soil interface. For pre-treated effluent, the DEEP accepts a maximum LTAR of 1.2 gpd per square foot, based on a soil hydraulic capacity of a minimum 28 feet per day. The design for the leaching beds will allow for the maximum LTAR to be used to size the beds. The beds are designed to process 10,800 gpd of the discharge, plus rainfall, before discharging to the native onsite soil. The washed stone underdrain structures can handle 11,260 to 14,075 gpd, more than the actual daily discharge. (Exs. APP-A, S-3 to 6, S-10, DEEP-5; test. 12/19/16, A. Daha.)

⁸ A conservative design flow means that the system has been designed to accommodate more gallons per day than what will actually be discharged. (Test. 12/19/16, J. Carr.)

⁹ LTAR is the infiltrative loading rate at which a subsurface wastewater absorption system continuously accepts effluent for a long period of time and is a function of wastewater and soil characteristics. (Ex. DEEP-5.)

a

Biological Treatment: Sequencing Batch Reactor – Fluidyne ISAM System

15. The discharge will flow underground from the residential buildings and the club house to onsite subsurface wastewater treatment plants. These plants will utilize a Sequencing Batch Reactor – Fluidyne ISAM System (SBR System).¹⁰ Designed to treat up to 15,000 gpd of residential wastewater, the SBR System is a biological treatment process that includes aerobic and anoxic zones in a three-compartment tank for the removal of nitrogen, BOD¹¹ and total suspended solids. This System is designed to treat wastewater to meet drinking water standards of 10 mg/l total nitrogen. Phosphorus removal is also achieved through biological treatment and if necessary, active methods for phosphorus removal can be added to the SBR Systems. (Exs. APP-A, DEEP-5; test. 12/19/16, J. Carr, M. Mandt, A. Daha.)

b

Engineered Leaching System: Lateral Sand Filters

16. After treatment in the SBR Systems, the discharge will continue to travel underground to a leaching system that will also provide pollutant renovation. The system is comprised of engineered lateral sand filters (leaching beds), which will allow pre-treated effluent to percolate and seep through placed soils to provide the necessary treatment. (Exs. APP-A, DEEP-5; test. 12/19/16, J. Carr, A. Daha.)
17. To prevent groundwater mounding or rise, there is also an underlying three-inch layer of one-inch washed stone covered with filter fabric beneath the beds. For conservative design, two mounding calculations were performed using the lowest value of the hydraulic conductivity. This will further maintain unsaturated flow throughout the leaching system. (Exs. APP-A, DEEP-5; test. 12/19/16, J. Carr, A. Daha.)
18. The leaching beds are sized to allow the effluent to move through the placed soils in the beds for at least twenty-one days. This will remove bacteria and inactivate viruses prior to the discharge being disbursed to the natural soils and comingling with groundwater. There is more than two feet of separating distance between the bottom of the beds and the stone underdrain to maintain an unsaturated flow under them. (Exs. APP-A, S-7, S-11, DEEP-5, 12; test. 12/19/17, J. Carr, A. Daha.)
19. The unsaturated soils beneath the beds have the capacity to absorb six months of phosphorus production, based on reasonable assumed phosphorus absorption capacity of soils. Phosphorus may also be removed by absorption in the downgradient natural soils. (Ex. DEEP-5; test. 12/19/16, A. Daha.)

¹⁰ The system is manufactured by the Fluidyne Corporation, which has supplied wastewater process equipment and technology for more than thirty years. Systems have been installed in many locations, including North America and Canada. The system has proved to be reliable and efficient. It is designed with few mechanical components, minimizing operational problems. (Ex. APP-A; test. 12/19/16, M. Mandt.)

¹¹ Biochemical oxygen demand, a component of wastewater chemistry. (Ex. APP-A.)

20. Although the SBR System was designed to treat the wastewater to meet the drinking water standards of 10 mg/l total nitrogen, further treatment will occur in the leaching beds and in the downgradient soils prior to reaching the point of environmental concern. (Exs. APP-A, DEEP-5; test. 12/19/16, J. Carr.)
21. At the end of the treatment system, the discharges from the beds will be dispersed through natural soils and comingle with groundwater, becoming part of the groundwater system. (Exs. APP-A, DEEP-5; test. 12/19/16, J. Carr, A. Daha.)

8

The Draft Permit

22. The Draft Permit has specific conditions that address limits and controls for the operation and maintenance of the treatment system. There are effluent limitations and required monitoring and reporting to DEEP according to a schedule for compliance. Groundwater monitoring and reporting is part of this regular practice and, like other requirements, can be more frequent if necessary. The Permit prohibits oils, greases, industrial or commercial wastes, toxic chemicals or other substances that could adversely affect the operation of the treatment system from being discharged into the system. Finally, the system must be operated and maintained as installed in accordance with approved plans and specifications. (Ex. DEEP-3.)
23. The compliance schedule set out in the Draft Permit includes the following specific requirements. Soon after operations begin, the Permittee must verify in writing to the DEEP that the treatment technology is operating in accordance with the approved plans and specifications. Every two years, the Permittee shall submit the results of a detailed permit compliance audit to DEEP that shall assess the proceeding two-year period. The audit shall review all pertinent records and documents¹² as necessary, and shall include a description of all records and documents used in the audit, a summary of compliance with permit terms and conditions, and detailed descriptions of all remedial actions taken or proposed to address any violation or deficiency. A copy of each audit shall also be submitted to the local Health Department. (Ex. DEEP-3.)

¹² These may include discharge monitoring reports, laboratory reports, operations and maintenance plans, performance logs/records, equipment specifications, maintenance schedules, engineering drawings and spare parts inventory. (Ex. DEEP-3.)

B
CONCLUSIONS OF LAW
I
PROTECTION OF THE WATERS OF THE STATE
CONNECTICUT GENERAL STATUTES §22a-430

The Department regulates discharges to groundwater in areas classified as GA under the Water Quality Standards in order to prevent degradation of ground water quality. The Commissioner may not issue a permit for any discharge of water, substance, or material unless the Commissioner determines that a “proposed system to treat such discharge will protect the waters of the state from pollution.” General Statutes § 22a-430(b). The DEEP has established design standards based on its expertise and knowledge of statutory and regulatory criteria that must be met to demonstrate that a proposed treatment system will treat a discharge to a level to prevent pollution and maintain a high water quality consistent with drinking water standards. Regs., Conn. State Agencies § 22a-430-3. See also § 19-13- B102 (e)(2) (Standards for Quality and Adequacy of Public Drinking Water), .

Ultimately, the Applicant has the burden of proof in an application case before the Department. Regs., Conn. State Agencies § 22a-3a-6(f). As the sufficient evidence in the record shows and as confirmed by the testimony of expert witnesses, the Applicant has successfully demonstrated that the proposed treatment system will comply with DEEP design requirements and will overcome the Site’s limited hydraulic capacity to treat the wastewater and prevent pollution by successfully treating the pollutants of concern to at least drinking water standards before the discharge leaves the treatment system and reaches the downgradient point of environmental concern. The only expert testimony on this subject was offered by Department Staff and the Applicant. Their unrefuted expert testimony constitutes substantial evidence upon which I may base my conclusions. “An administrative agency is not required to believe any of the witnesses, including expert witnesses... but it must not disregard the only expert evidence available on the issue” *Bain v. Inland Wetlands Commission*, 78 Conn. App. 808, 817 (2003). I find the testimony of the Applicant and Staff to be credible and reliable as to the question of compliance with the statutory and regulatory criteria.

The biological treatment provided by the SBR Systems will dilute the concentration of nitrogen in the discharge to the acceptable level of 10 mg/l total nitrogen. Some phosphorus removal will also be achieved through the SBR system, which can be enhanced if necessary. The engineered leaching system is sized to allow the effluent to move through the leaching beds for at least twenty-one days. This will remove bacteria and inactivate viruses prior to the discharge being disbursed to the natural soils at the end of the system and co-mingled with groundwater. The unsaturated soils beneath the leaching beds can absorb up to six months of phosphorus production and treat any phosphorous not removed in the biological treatment. The beds and the soils underneath also have the capacity to dilute nitrogen.

The treatment system, which is designed in accord with accepted engineering principles and sized appropriately based on a conservative design flow, will ensure full pathogen renovation before the discharge is disbursed to groundwater. The proposed system to treat the discharge will protect the waters of the state from pollution.

2

PERMIT CONDITIONS

REGS., CONN. STATE AGENCIES §§ 22a-430-3 and 22a-430-4

Section 22a-430-3 provides certain general conditions for water discharge permits. Section 22a-430-3(b)(1)(C) provides that a permit must incorporate all applicable regulatory provisions, either expressly or by reference, including that section and § 22a-430-4. A review of the Draft Permit indicates compliance with this requirement. Section 22a-430-3(e) provides that once the permit is issued, an applicant (permittee) is under a duty to comply with its terms and conditions to ensure that the treatment system will function as designed and permitted to protect the waters of the state from pollution. The Applicant has indicated he is able and intends to comply.

Of note, the Draft Permit has conditions to ensure proper operation and maintenance of all treatment systems. § 22a-430-3(f). The Permit sets effluent limitations and conditions, § 22a-430-4(l), provides for monitoring, record-keeping and reporting, § 22a-430-3(j), and provides for a compliance audit every two years, § 22a-430-3(j). The Draft Permit requires the employment of a certified operator who will be responsible for treatment plant operations to ensure that the treatment system operates within the limits of the permit. § 22a-430-3(f). As provided by § 22a-430-3(c), DEEP may enter the property to conduct an inspection or to review records.

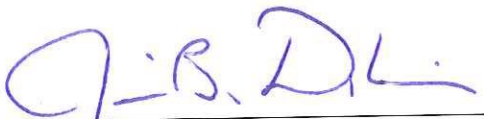
Section 22a-430-4(k) requires the Applicant to submit final construction plans and specifications and any other information requested to demonstrate that the proposed system will treat the discharge will protect the waters of the state from pollution and that the Applicant is, or upon permit issuance will be, in compliance with all applicable requirements of §§ 22a-430-3 and 22a-430-4. The DEEP will review and approve the plans and specifications for the proposed system and verify that it is constructed in accordance with these plans and specifications before the discharge permit will be issued.

III CONCLUSION

The preponderance of the evidence shows that the Applicant has met his burden of proving that this application complies with the standards and requirements of General Statutes § 22a-430 and its implementing regulations, Regs., Conn. State Agencies §§ 22a-430-3 and 22a-430-4. If operated in accordance with the Draft Permit, the proposed treatment system will treat the wastewater to a level to prevent pollution of groundwater and maintain a high water quality as required by the Water Quality Standards. The proposed system will protect the waters of the state from pollution. § 22a-430(b).

IV
RECOMMENDATION

I recommend that the Commissioner authorize the Applicant to submit construction plans and specifications of the proposed treatment system for approval to the DEEP Bureau of Materials Management and Compliance Assurance, Water Permitting and Enforcement Division. Once the DEEP has verified that the system has been built in conformance with the approved plans and specifications, the Draft Permit should be finalized and issued to the Applicant.



Janice B. Deshais
Hearing Officer

SERVICE LIST

John F. Carr, Jr. (Joshua Heights, Bridgewater)
App. # 201502206

Party

Representative(s)

Applicant

John F. Carr, Jr.
27 Laurel Hill Road
Bridgewater, CT 06752
carrhomes@charter.net

DEEP

Materials Management and Compliance Assurance
Water Permitting & Enforcement Division
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Hartford, CT 06106

Antoanela Daha
Antoanela.Daha@ct.gov

Petitioner

Curtis Read
First Selectman
Town of Bridgewater
44 Main Street South
Bridgewater, CT 06752
cread@bridgewater townhall.org



UIC PERMIT

issued to

John F. Carr, Jr.
27 Laurel Hill Rd.
Bridgewater, CT 06752

Location Address:
Joshua Heights
Main Street North
Bridgewater, CT 06752

Permit ID: UI0000514

Permit Expires:

Watershed: Housatonic River Watershed

Basin Code: 6000

SECTION 1: GENERAL PROVISIONS

- (A) This permit is issued in accordance with section 1421 of the Federal Safe Drinking Water Act 42 USC 300h et. seq., section 22a-430 of Chapter 446k, Connecticut General Statutes ("CGS"), and Regulations of Connecticut State Agencies ("RCSA") adopted thereunder, as amended.
- (B) John F. Carr, Jr., ("Permittee"), shall comply with all conditions of this permit including the following sections of the RCSA which have been adopted pursuant to section 22a-430 of the CGS and are hereby incorporated into this permit. Your attention is especially drawn to the notification requirements of subsection (i)(2), (i)(3), (j)(1), (j)(6), (j)(8), (j)(9)(C), (j)(11)(C), (D), (E) and (F), (k)(3) and (4), and (l)(2) of section 22a-430-3.

Section 22a-430-3 General Conditions

- (a) Definitions
- (b) General
- (c) Inspection and Entry
- (d) Effect of a Permit
- (e) Duty to Comply
- (f) Proper Operation and Maintenance
- (g) Sludge Disposal
- (h) Duty to Mitigate
- (i) Facility Modifications; Notification
- (j) Monitoring, Records and Reporting Requirements
- (k) Bypass
- (l) Conditions Applicable to POTWs
- (m) Effluent Limitation Violations (Upsets)
- (n) Enforcement
- (o) Resource Conservation
- (p) Spill Prevention and Control
- (q) Instrumentation, Alarms, Flow Recorders
- (r) Equalization

Section 22a-430-4 Procedures and Criteria

- (a) Duty to Apply
 - (b) Duty to Reapply
 - (c) Application Requirements
 - (d) Preliminary Review
 - (e) Tentative Determination
 - (f) Draft Permits, Fact Sheets
 - (g) Public Notice, Notice of Hearing
 - (h) Public Comments
 - (i) Final Determination
 - (j) Public Hearings
 - (k) Submission of Plans and Specifications. Approval.
 - (l) Establishing Effluent Limitations and Conditions
 - (m) Case by Case Determinations
 - (n) Permit issuance or renewal
 - (o) Permit Transfer
 - (p) Permit revocation, denial or modification
 - (q) Variances
 - (r) Secondary Treatment Requirements
 - (s) Treatment Requirements for Metals and Cyanide
 - (t) Discharges to POTWs - Prohibitions
- (C) Violations of any of the terms, conditions, or limitations contained in this permit may subject the Permittee to enforcement action, including but not limited to, seeking penalties, injunctions and/or forfeitures pursuant to applicable sections of the CGS and RCSA.
- (D) Any false statement in any information submitted pursuant to this permit may be punishable as a criminal offense under section 22a-438 or 22a-131a of the CGS or in accordance with section 22a-6, under section 53a-157 of the CGS.
- (E) The Permittee shall comply with Section 22a-416-1 through Section 22a-416-10 of the RCSA concerning operator certification.
- (F) No provision of this permit and no action or inaction by the Commissioner of Energy & Environmental Protection ("Commissioner") shall be construed to constitute an assurance by the Commissioner that the actions taken by the Permittee pursuant to this permit will result in compliance or prevent or abate pollution.
- (G) The authorization to discharge under this permit may not be transferred without prior written approval of the Commissioner. To request such approval, the Permittee and proposed transferee shall register such proposed transfer with the Commissioner at least 30 days prior to the transferee becoming legally responsible for creating or maintaining any discharge which is the subject of the permit transfer. Failure, by the transferee, to obtain the Commissioner's approval prior to commencing such discharge may subject the transferee to enforcement action for discharging without a permit pursuant to applicable sections of the CGS and RCSA.
- (H) Nothing in this permit shall relieve the Permittee of other obligations under applicable federal, state and local law.
- (I) An annual fee shall be paid for each year this permit is in effect as set forth in section 22a-430-7 of the RCSA.

SECTION 2: DEFINITIONS

- (A) The definitions of the terms used in this permit shall be the same as the definitions contained in section 22a-423 of the CGS and sections 22a-430-3(a) and 22a-430-6 of the RCSA.
- (B) In addition to the above, the following definitions shall apply to this permit:
- “Annual”, in the context of a sampling frequency, shall mean the sample must be taken in the month of March.
- “Quarterly”, in the context of a sampling frequency, shall mean sampling is required during each calendar quarter ending on the last day of March, June, September and December.
- “3 times per year”, in the context of a maintenance frequency, shall mean the maintenance must be performed at least 3 times during the period of May to November.
- “Twice per month”, when used as a sample frequency, shall mean two samples per calendar month collected no less than 12 days apart.
- “Twelve Month Rolling Average”, in the context of this permit, is defined as the average of the current month’s samples averaged with the average from the previous eleven months.

SECTION 3: COMMISSIONER’S DECISION

- (A) The Commissioner has made a final determination and found that the system installed for the treatment of the discharge will protect the waters of the state from pollution. The Commissioner's decision is based on **Application No. 201502206** for permit issuance received on March 24, 2015 and the administrative record established in the processing of that application.
- (B) The Commissioner hereby authorizes the Permittee to discharge a maximum flow of 43,200 gallons per day of domestic sewage in accordance with the provisions of this permit, the above referenced application, and all approvals issued by the Commissioner or the Commissioner’s authorized agent for the discharges and/or activities authorized by, or associated with, this permit.
- (C) The Commissioner reserves the right to make appropriate revisions to the permit in order to establish any appropriate effluent limitations, schedules of compliance, or other provisions that may be authorized under the Federal Safe Drinking Water Act or the Connecticut General Statutes or regulations adopted thereunder, as amended. The permit as modified or renewed under this paragraph may also contain any other requirements of the Federal Safe Drinking Water Act or Connecticut General Statutes or regulations adopted thereunder, which are then applicable.

SECTION 4: EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- (A) The use of any sewage system additive as defined in section 22a-460(g) of the CGS is prohibited unless such additive complies with section 122a-461 of the CGS. The Commissioner in no way certifies the safety or effectiveness of any sewage system additive. The Permittee shall include in the public offering statement, condominium instruments, rules and regulations adopted pursuant thereto, and any management agreement for the facility, the requirement that no sewage system additive shall be used in the subject treatment system unless such additive complies with section 22a-461 of the CGS.
- (B) Oils, greases, industrial or commercial wastes, toxic chemicals, or other substances that will adversely affect the operation of the subsurface sewage treatment and disposal system, or, which may pollute ground or surface water, shall not be discharged to the subsurface sewage treatment and disposal system. The

Permittee shall include in the public offering statement, condominium instruments, rules and regulations adopted pursuant thereto, and any management agreement for the facility, the requirement that no oils, greases, industrial or commercial wastes, toxic chemicals, or other liquids that will adversely affect the operation of the subsurface sewage treatment and disposal system or that may pollute ground or surface water shall be discharged to the subsurface sewage treatment and disposal system.

- (C) The Permittee shall assure that groundwater affected by the subject discharge shall conform to the Connecticut Water Quality Standards.
- (D) This permit becomes effective on the date of signature.
- (E) The Permittee shall operate and maintain all processes as installed in accordance with the approved plans and specifications. This includes but is not limited to all recycle pumping systems, aeration equipment, aeration tank, mixing equipment, denitrification unit, chemical feed systems, settling tank, or any other process equipment necessary for the optimal removal of pollutants. The Permittee shall not bypass or fail to operate any of the approved equipment or processes without the written approval of the Commissioner.
- (F) The discharges shall not exceed and shall otherwise conform to specific terms and conditions listed in this permit. The discharges are restricted by, and shall be monitored in accordance with the Tables A through H, which are incorporated into this permit as Attachment 1.
- (G) The pH of the discharge shall not be less than 6.0 nor greater than 9.0 Standard Units at any time and shall be monitored on a weekly basis. The Permittee shall report pH values, specifically maximum and minimum, for each day of sample collection and the pH range for each month. The pH range for each month is defined as the highest and lowest single pH reading during all operating days of the month including periods when sampling is not performed.
- (H) The Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report on the discharge monitoring report the total flow and number of hours of discharge for the day of sample collection and the average daily flow for each sampling month.
- (I) All samples shall be comprised of only those wastewaters described in this schedule; therefore, samples shall be taken prior to combination with wastewaters of any other type and after all approved treatment units, if applicable. All samples taken shall be representative of the discharge during standard operating conditions.
- (J) In cases where limits and sample type are specified but sampling is not required, the limits specified shall apply to all samples which may be collected and analyzed by the Department of Energy and Environmental Protection personnel, the Permittee, or other parties.
- (K) The Permittee shall ensure that the wastewater treatment facility is operated by a person with a valid and effective certification in the State of Connecticut, at a minimum, as a facility Class II operator pursuant to C.G.S. 22a-416(d) and the regulations adopted thereunder. The Permittee shall ensure that the wastewater treatment facility is operated by such an operator with such qualifications throughout the entire life of the wastewater treatment facility.
- (L) The Permittee shall monitor, inspect and maintain the treatment facilities in accordance with Tables I through L, which are incorporated into this permit as Attachment 2.
- (M) The Permittee shall perform ground water monitoring in accordance with Table M, which is incorporated into this permit as Attachment 3.
- (N) The monitoring and sampling required within this permit is a minimum for reporting purposes only. More

frequent monitoring and sampling of the treatment system may be required to operate the facility to obtain acceptable results for the parameters being monitored as required by the Operation and Maintenance Manual approved by the Commissioner.

SECTION 5: SAMPLE COLLECTION AND HANDLING, ANALYTICAL TECHNIQUES, AND REPORTING REQUIREMENTS

- (A) Chemical analyses to determine compliance with effluent limits and conditions established in this permit shall be performed using the methods approved by the Environmental Protection Agency pursuant to 40 CFR 136 unless an alternative method has been approved in writing in accordance with 40 CFR 136.4 or as provided in section 22a-430-3(j)(7) of the RCSA. Chemicals which do not have methods of analysis defined in 40 CFR 136 shall be analyzed in accordance with methods specified in this permit. All metals analyses identified in this permit shall refer to analyses for Total Recoverable Metal as defined in 40 CFR 136 unless otherwise specified.
- (B) If any sample analysis indicates that an effluent limitation specified in Section 4 of this permit has been exceeded, a second sample of the effluent shall be collected and analyzed for the parameter(s) in question and the results shall be reported to the Commissioner within 30 days of the exceedance. Resampling for a permit violation is in addition to routine required sampling.
- (C) The Permittee shall enter the results of chemical analysis and treatment facilities monitoring and maintenance required by Section 4 on a Discharge Monitoring Report (DMR) provided by this office and shall submit such DMR to the Bureau of Materials Management and Compliance Assurance at the address below. Except for continuous monitoring, any monitoring required more frequently than monthly shall be reported on an attachment to the DMR, and any additional monitoring conducted in accordance with 40 CFR 136 or other methods approved by the Commissioner shall also be included on the DMR, or as an attachment, if necessary. The report shall also include a detailed explanation of each violation of the limitations specified, the corrective actions performed, and a schedule for completing any necessary remaining corrective action. The DMR shall be received at this address by the last day of the month following the month in which the samples are taken.
- Attn: DMR Processing**
Connecticut Department of Energy and Environmental Protection
Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division
79 Elm Street
Hartford, CT 06106-5127
- (D) If this permit requires monitoring of a discharge on a calendar basis (e.g. Monthly, quarterly, etc.) but a discharge has not occurred within the frequency of sampling specified in the permit, the Permittee must submit the DMR as scheduled, indicating "NO DISCHARGE". For those permittees whose required monitoring is discharge dependent (e.g. per batch), the minimum reporting frequency is monthly. Therefore, if there is no discharge during a calendar month for a batch discharge, a DMR must be submitted indicating such by the end of the following month.
- (E) NetDMR Reporting Requirements
- (1) Prior to one-hundred and eighty (180) days after the issuance of this permit, the Permittee may report all chemical analysis, monitoring and maintenance data, and other reports to the Department in hard copy form or electronically using NetDMR, a web-based tool that allows Permittees to electronically submit discharge monitoring reports (DMRs) and other required reports through a secure internet connection. Unless otherwise approved in writing by the Commissioner, no later than one-hundred and eighty (180) days after the issuance of this permit the Permittee shall begin reporting electronically using NetDMR. Specific requirements regarding subscription to NetDMR and submittal of data and reports in hard copy form and

for submittal using NetDMR are described below:

(a) Submittal of *NetDMR Subscriber Agreement*

On or before thirty (30) days after the issuance of this permit, the Permittee and/or the person authorized to sign the Permittee's discharge monitoring reports ("Signatory Authority") as described in RCSA Section 22a-430-3(b)(2) shall contact the Department at deep.netdmr@ct.gov and initiate the NetDMR subscription process for electronic submission of Discharge Monitoring Report (DMR) information. Information on NetDMR is available on the Department's website at www.ct.gov/deep/netdmr. On or before ninety (90) days after issuance of this permit the Permittee shall submit a signed copy of the *Connecticut DEEP NetDMR Subscriber Agreement* to the Department.

(b) Submittal of Reports Using NetDMR

Unless otherwise approved by the Commissioner, on or before one-hundred and eighty (180) days after issuance of this permit, the Permittee and/or the Signatory Authority shall electronically submit DMRs and reports required under this permit to the Department using NetDMR in satisfaction of the DMR submission requirement in paragraph (C) of this Section of this permit. DMRs shall be submitted electronically to the Department no later than the last day of the month following the completed reporting period. All reports required under the permit, including any monitoring conducted more frequently than monthly or any additional monitoring conducted in accordance with 40 CFR 136, shall be submitted to the Department as an electronic attachment to the DMR in NetDMR. Once a Permittee begins submitting reports using NetDMR, it will no longer be required to submit hard copies of DMRs or other reports to the Department. The Permittee shall also electronically file any written report of non-compliance described in paragraph (B) of this Section and in the following Section of this Permit as an attachment in NetDMR. NetDMR is accessed from:
<https://netdmr.epa.gov/netdmr/public/home.htm>.

(c) Submittal of NetDMR Opt-Out Requests

If the Permittee is able to demonstrate a reasonable basis, such as technical or administrative infeasibility, that precludes the use of NetDMR for electronically submitting DMRs and reports, the Commissioner may approve the submission of DMRs and other required reports in hard copy form ("opt-out request"). Opt-out requests must be submitted in writing to the Department for written approval on or before fifteen (15) days prior to the date a Permittee would be required under this permit to begin filing DMRs and other reports using NetDMR. This demonstration shall be valid for twelve (12) months from the date of the Department's approval and shall thereupon expire. At such time, DMRs and reports shall be submitted electronically to the Department using NetDMR unless the Permittee submits a renewed opt-out request and such request is approved by the Department. All opt-out requests and requests for the NetDMR subscriber form should be sent to the following address or by email at deep.netdmr@ct.gov:

Attn: NetDMR Coordinator
Connecticut Department of Energy and Environmental Protection
Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division
79 Elm Street
Hartford, CT 06106-5127

(d) Non-Electronic or Hard-Copy Submission

The results of chemical analysis and treatment facilities monitoring that are not required to be submitted electronically under Section 5 shall be submitted in hard-copy form on a DMR provided by

this office. Such DMRs and other reports not required to be submitted electronically shall be reported to the Bureau of Materials Management and Compliance Assurance at the following address.

Attn: DMR Processing
Connecticut Department of Energy & Environmental Protection
Bureau of Materials Management and Compliance Assurance
Water Permitting and Enforcement Division
79 Elm Street
Hartford, CT 06106-5127

- (e) Copies of all hard-copy DMRs shall be submitted concurrently to the local Health Department.

SECTION 6: COMPLIANCE SCHEDULE

- (A) On or before three (3) months after issuance of this permit, the Permittee shall verify in writing to the Commissioner that the alternative treatment technology is operating in accordance with the approved plans and specifications and is achieving compliance with all permit limits and conditions. The Permittee shall obtain written concurrence from the design engineer, the technology provider, and the wastewater treatment facility operator who will be responsible for the operation of the wastewater treatment facility.
- (B) On or before seven (7) days after issuance of this permit, the Permittee shall record on the land records of the Town of Bridgewater a document indicating the location of the zone of influence created by the subject discharge, as reflected in the application and approved plans and specifications for this permit. On or before one (1) month after issuance of this permit, the Permittee shall submit written verification to the Commissioner that the approved document indicating the location of the zone of influence created by the subject discharge as reflected in the application for this permit has been recorded on the land records in the Town of Bridgewater.
- (C) On or before seven (7) days after issuance of this permit, the Permittee shall record a copy thereof on the land records in the Town of Bridgewater. On or before one (1) month after issuance of this permit, the Permittee shall submit written verification to the Commissioner that this permit has been recorded in the land records in the Town of Bridgewater.
- (D) Every two years, on or before the anniversary date of the issuance of this permit, the Permittee shall submit the results of a detailed permit compliance audit to the Commissioner. Such audits shall be performed within sixty (60) days prior to the anniversary date. The compliance audits shall be performed by a qualified professional engineer licensed to practice in Connecticut with the appropriate education, experience and training that is relevant to the work required.

Each audit shall evaluate compliance with all permit terms and conditions for the preceding two-year period. The evaluation shall review all pertinent records and documents as necessary, including Discharge Monitoring Reports (DMRs), laboratory reports, operations and maintenance plans, performance logs/records, equipment specifications, maintenance schedules, engineering drawings, and spare parts inventory.

Each audit report shall include a description of all records and documents used in the evaluation, a summary of compliance with permit terms and conditions, and detailed descriptions of all remedial actions taken or proposed to address each violation or deficiency discovery.

- (E) A copy of each audit shall be submitted concurrently to the local Health Department.

This permit is hereby issued on

Michael Sullivan
Deputy Commissioner
Department of Energy and Environmental Protection

cc: Local Health Dept.
DMR

DRAFT

ATTACHMENT 1

| TABLE A | | | |
|---|--------------------------|--|------------------|
| Discharge Serial No. 301-2 | | Monitoring Location: G | |
| Wastewater Description: Domestic Sewage Influent | | | |
| Monitoring Location Description: Influent to the SBR – Fluidyne ISAM Unit | | | |
| Average Daily Flow: 7,200 gallons per day | | Maximum Daily Flow: 10,800 gallons per day | |
| PARAMETER | INSTANTANEOUS MONITORING | | |
| | Units | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | Grab | Twice per month |
| Total Suspended Solids | mg/l | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | Grab | Twice per month |
| Total Phosphorus | mg/l | Grab | Twice per month |
| pH | SU | Grab | Twice per month |
| Oils & Grease | mg/l | Grab | Twice per month |

| TABLE B | | | |
|---|--------------------------|--|------------------|
| Discharge Serial No. 302-2 | | Monitoring Location: G | |
| Wastewater Description: Domestic Sewage Influent | | | |
| Monitoring Location Description: Influent to the SBR – Fluidyne ISAM Unit | | | |
| Average Daily Flow: 7,200 gallons per day | | Maximum Daily Flow: 10,800 gallons per day | |
| PARAMETER | INSTANTANEOUS MONITORING | | |
| | Units | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | Grab | Twice per month |
| Total Suspended Solids | mg/l | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | Grab | Twice per month |
| Total Phosphorus | mg/l | Grab | Twice per month |
| pH | SU | Grab | Twice per month |
| Oils & Grease | mg/l | Grab | Twice per month |

| TABLE C | | | |
|---|---------------------------------|--|------------------|
| Discharge Serial No. 303-2 | | Monitoring Location: G | |
| Wastewater Description: Domestic Sewage Influent | | | |
| Monitoring Location Description: Influent to the SBR – Fluidyne ISAM Unit | | | |
| Average Daily Flow: 7,200 gallons per day | | Maximum Daily Flow: 10,800 gallons per day | |
| PARAMETER | INSTANTANEOUS MONITORING | | |
| | Units | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | Grab | Twice per month |
| Total Suspended Solids | mg/l | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | Grab | Twice per month |
| Total Phosphorus | mg/l | Grab | Twice per month |
| pH | SU | Grab | Twice per month |
| Oils & Grease | mg/l | Grab | Twice per month |

| TABLE D | | | |
|---|---------------------------------|--|------------------|
| Discharge Serial No. 304-2 | | Monitoring Location: G | |
| Wastewater Description: Domestic Sewage Influent | | | |
| Monitoring Location Description: Influent to the SBR – Fluidyne ISAM Unit | | | |
| Average Daily Flow: 7,200 gallons per day | | Maximum Daily Flow: 10,800 gallons per day | |
| PARAMETER | INSTANTANEOUS MONITORING | | |
| | Units | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | Grab | Twice per month |
| Total Suspended Solids | mg/l | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | Grab | Twice per month |
| Total Phosphorus | mg/l | Grab | Twice per month |
| pH | SU | Grab | Twice per month |
| Oils & Grease | mg/l | Grab | Twice per month |

| TABLE E | | | | | |
|--|----------------------------|--------------------------|--|-------------|------------------|
| Discharge Serial No. 301-2 | | | Monitoring Location: 1 | | |
| Wastewater Description: Domestic Sewage Effluent | | | | | |
| Monitoring Location Description: Final effluent From SBR Fluidyne ISAM Unit | | | | | |
| Average Daily Flow: 7,200 gallons per day | | | Maximum Daily Flow: 10,800 gallons per day | | |
| PARAMETER | FLOW/TIME BASED MONITORING | | | | |
| | Units | Average Daily Flow Limit | Maximum Daily Flow Limit | Sample Type | Sample Frequency |
| Flow Rate (Average daily) ¹ | gpd | 7,200 | 10,800 | Daily Flow | Continuous |
| PARAMETER | INSTANTANEOUS MONITORING | | | | |
| | Units | Average Monthly Limit | Maximum Concentration | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | 20 | 30 | Grab | Twice per month |
| Total Suspended Solids | mg/l | 20 | 30 | Grab | Twice per month |
| Total Nitrogen | mg/l | 10 ² | --- | Grab | Twice per month |
| Ammonia | mg/l | --- | --- | Grab | Twice per month |
| Nitrate Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Nitrite Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Orthophosphate | mg/l | --- | --- | Grab | Twice per month |
| Total Phosphorus | mg/l | --- | --- | Grab | Twice per month |
| pH | SU | --- | --- | Grab | Twice per month |
| Alkalinity | mg/l | --- | --- | Grab | Twice per month |
| FOOTNOTES: | | | | | |
| 1. For this parameter, the Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report on the DMR the Average Daily Flow and the Maximum Daily Flow for each month. | | | | | |
| 2. Limit is based on a twelve month rolling average. | | | | | |
| ADDITIONAL NOTES: | | | | | |
| 1. “---” in the limits column on this monitoring table means a limit is not specified, but monitoring is required and a value must be reported on the DMR. | | | | | |

| TABLE F | | | | | |
|--|----------------------------|--------------------------|--|-------------|------------------|
| Discharge Serial No. 302-2 | | | Monitoring Location: 1 | | |
| Wastewater Description: Domestic Sewage Effluent | | | | | |
| Monitoring Location Description: Final effluent From SBR Fluidyne ISAM Unit | | | | | |
| Average Daily Flow: 7,200 gallons per day | | | Maximum Daily Flow: 10,800 gallons per day | | |
| PARAMETER | FLOW/TIME BASED MONITORING | | | | |
| | Units | Average Daily Flow Limit | Maximum Daily Flow Limit | Sample Type | Sample Frequency |
| Flow Rate (Average daily) ¹ | gpd | 7,200 | 10,800 | Daily Flow | Continuous |
| PARAMETER | INSTANTANEOUS MONITORING | | | | |
| | Units | Average Monthly Limit | Maximum Concentration | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | 20 | 30 | Grab | Twice per month |
| Total Suspended Solids | mg/l | 20 | 30 | Grab | Twice per month |
| Total Nitrogen | mg/l | 10 ² | --- | Grab | Twice per month |
| Ammonia | mg/l | --- | --- | Grab | Twice per month |
| Nitrate Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Nitrite Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Orthophosphate | mg/l | --- | --- | Grab | Twice per month |
| Total Phosphorus | mg/l | --- | --- | Grab | Twice per month |
| pH | SU | --- | --- | Grab | Twice per month |
| Alkalinity | mg/l | --- | --- | Grab | Twice per month |
| FOOTNOTES: | | | | | |
| 1. For this parameter, the Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report on the DMR the Average Daily Flow and the Maximum Daily Flow for each month. | | | | | |
| 2. Limit is based on a twelve month rolling average. | | | | | |
| ADDITIONAL NOTES: | | | | | |
| 1. "----" in the limits column on this monitoring table means a limit is not specified, but monitoring is required and a value must be reported on the DMR. | | | | | |

| TABLE G | | | | | |
|--|----------------------------|--------------------------|--|-------------|------------------|
| Discharge Serial No. 303-2 | | | Monitoring Location: 1 | | |
| Wastewater Description: Domestic Sewage Effluent | | | | | |
| Monitoring Location Description: Final effluent from SBR Fluidyne ISAM Unit | | | | | |
| Average Daily Flow: 7,200 gallons per day | | | Maximum Daily Flow: 10,800 gallons per day | | |
| PARAMETER | FLOW/TIME BASED MONITORING | | | | |
| | Units | Average Daily Flow Limit | Maximum Daily Flow Limit | Sample Type | Sample Frequency |
| Flow Rate (Average daily) ¹ | gpd | 7,200 | 10,800 | Daily Flow | Continuous |
| PARAMETER | INSTANTANEOUS MONITORING | | | | |
| | Units | Average Monthly Limit | Maximum Concentration | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | 20 | 30 | Grab | Twice per month |
| Total Suspended Solids | mg/l | 20 | 30 | Grab | Twice per month |
| Total Nitrogen | mg/l | 10 ² | --- | Grab | Twice per month |
| Ammonia | mg/l | --- | --- | Grab | Twice per month |
| Nitrate Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Nitrite Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Orthophosphate | mg/l | --- | --- | Grab | Twice per month |
| Total Phosphorus | mg/l | --- | --- | Grab | Twice per month |
| pH | SU | --- | --- | Grab | Twice per month |
| Alkalinity | mg/l | --- | --- | Grab | Twice per month |
| FOOTNOTES: | | | | | |
| 1. For this parameter, the Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report on the DMR the Average Daily Flow and the Maximum Daily Flow for each month. | | | | | |
| 2. Limit is based on a twelve month rolling average. | | | | | |
| ADDITIONAL NOTES: | | | | | |
| 1. "—" in the limits column on this monitoring table means a limit is not specified, but monitoring is required and a value must be reported on the DMR. | | | | | |

| TABLE H | | | | | |
|--|----------------------------|--------------------------|--|-------------|------------------|
| Discharge Serial No. 304-2 | | | Monitoring Location: 1 | | |
| Wastewater Description: Domestic Sewage Effluent | | | | | |
| Monitoring Location Description: Final effluent From SBR Fluidyne ISAM Unit | | | | | |
| Average Daily Flow: 7,200 gallons per day | | | Maximum Daily Flow: 10,800 gallons per day | | |
| PARAMETER | FLOW/TIME BASED MONITORING | | | | |
| | Units | Average Daily Flow Limit | Maximum Daily Flow Limit | Sample Type | Sample Frequency |
| Flow Rate (Average daily) ¹ | gpd | 7,200 | 10,800 | Daily Flow | Continuous |
| PARAMETER | INSTANTANEOUS MONITORING | | | | |
| | Units | Average Monthly Limit | Maximum Concentration | Sample Type | Sample Frequency |
| Biochemical Oxygen Demand | mg/l | 20 | 30 | Grab | Twice per month |
| Total Suspended Solids | mg/l | 20 | 30 | Grab | Twice per month |
| Total Nitrogen | mg/l | 10 ² | --- | Grab | Twice per month |
| Ammonia | mg/l | --- | --- | Grab | Twice per month |
| Nitrate Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Nitrite Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Total Kjeldahl Nitrogen | mg/l | --- | --- | Grab | Twice per month |
| Orthophosphate | mg/l | --- | --- | Grab | Twice per month |
| Total Phosphorus | mg/l | --- | --- | Grab | Twice per month |
| pH | SU | --- | --- | Grab | Twice per month |
| Alkalinity | mg/l | --- | --- | Grab | Twice per month |
| FOOTNOTES: | | | | | |
| 1. For this parameter, the Permittee shall maintain at the facility a record of the total flow for each day of discharge and shall report on the DMR the Average Daily Flow and the Maximum Daily Flow for each month. | | | | | |
| 2. Limit is based on a twelve month rolling average. | | | | | |
| ADDITIONAL NOTES: | | | | | |
| 1. "—" in the limits column on this monitoring table means a limit is not specified, but monitoring is required and a value must be reported on the DMR. | | | | | |

ATTACHMENT 2

| TABLE I | |
|--|--|
| INSPECTION, MONITORING AND MAINTENANCE REQUIREMENTS | |
| Discharge Serial No.: 301-2 | Monitoring Location: S |
| Wastewater Description: Domestic Sewage | |
| Average Daily Flow: 7,200 gallons per day | Maximum Daily Flow: 10,800 gallons per day |
| <u>INSPECTION, MONITORING, or MAINTENANCE</u> | <u>MINIMUM FREQUENCY</u> |
| Water meter readings of water usage | Weekly |
| Visual inspection of Fluidyne ISAM Unit | Monthly |
| Visual inspection of anoxic chamber | Monthly |
| Visual inspection of final settling tank | Monthly |
| Mechanical inspection of alarms | Monthly |
| Mechanical inspection of blowers | Monthly |
| Mechanical inspection of carbon feed system | Monthly |
| Mechanical inspection of alkalinity feed system | Monthly |
| Pump out sludge from the settling chamber | Annually |
| Visual inspection of distribution chambers | Quarterly |
| Visual inspection of surface condition of leaching beds | Quarterly |
| Mow grass over leaching field bed | 3 times per year |
| ADDITIONAL NOTES: | |
| <ol style="list-style-type: none"> 1. All inspection, monitoring, and maintenance required in this table shall be reported annually by the end of each January as an attachment to the December DMR. 2. The Newtown Health District Sanitarian shall be notified at least one week prior to pumping of septic tanks and grease traps. Verification of all pump outs shall be attached to the monitoring report and a copy of the report shall be sent to the Newtown Health District Director of Health. | |

| TABLE J | |
|--|--|
| INSPECTION, MONITORING AND MAINTENANCE REQUIREMENTS | |
| Discharge Serial No.: 302-2 | Monitoring Location: S |
| Wastewater Description: Domestic Sewage | |
| Average Daily Flow: 7,200 gallons per day | Maximum Daily Flow: 10,800 gallons per day |
| INSPECTION, MONITORING, or MAINTENANCE | MINIMUM FREQUENCY |
| Water meter readings of water usage | Weekly |
| Visual inspection of Fluidyne ISAM Unit | Monthly |
| Visual inspection of anoxic chamber | Monthly |
| Visual inspection of final settling tank | Monthly |
| Mechanical inspection of alarms | Monthly |
| Mechanical inspection of blowers | Monthly |
| Mechanical inspection of carbon feed system | Monthly |
| Mechanical inspection of alkalinity feed system | Monthly |
| Pump out sludge from the settling chamber | Annually |
| Visual inspection of distribution chambers | Quarterly |
| Visual inspection of surface condition of leaching beds | Quarterly |
| Mow grass over leaching field bed | 3 times per year |
| ADDITIONAL NOTES: | |
| <ol style="list-style-type: none"> 1. All inspection, monitoring, and maintenance required in this table shall be reported annually by the end of each January as an attachment to the December DMR. 2. The Newtown Health District Sanitarian shall be notified at least one week prior to pumping of septic tanks and grease traps. Verification of all pump outs shall be attached to the monitoring report and a copy of the report shall be sent to the Newtown Health District Director of Health. | |

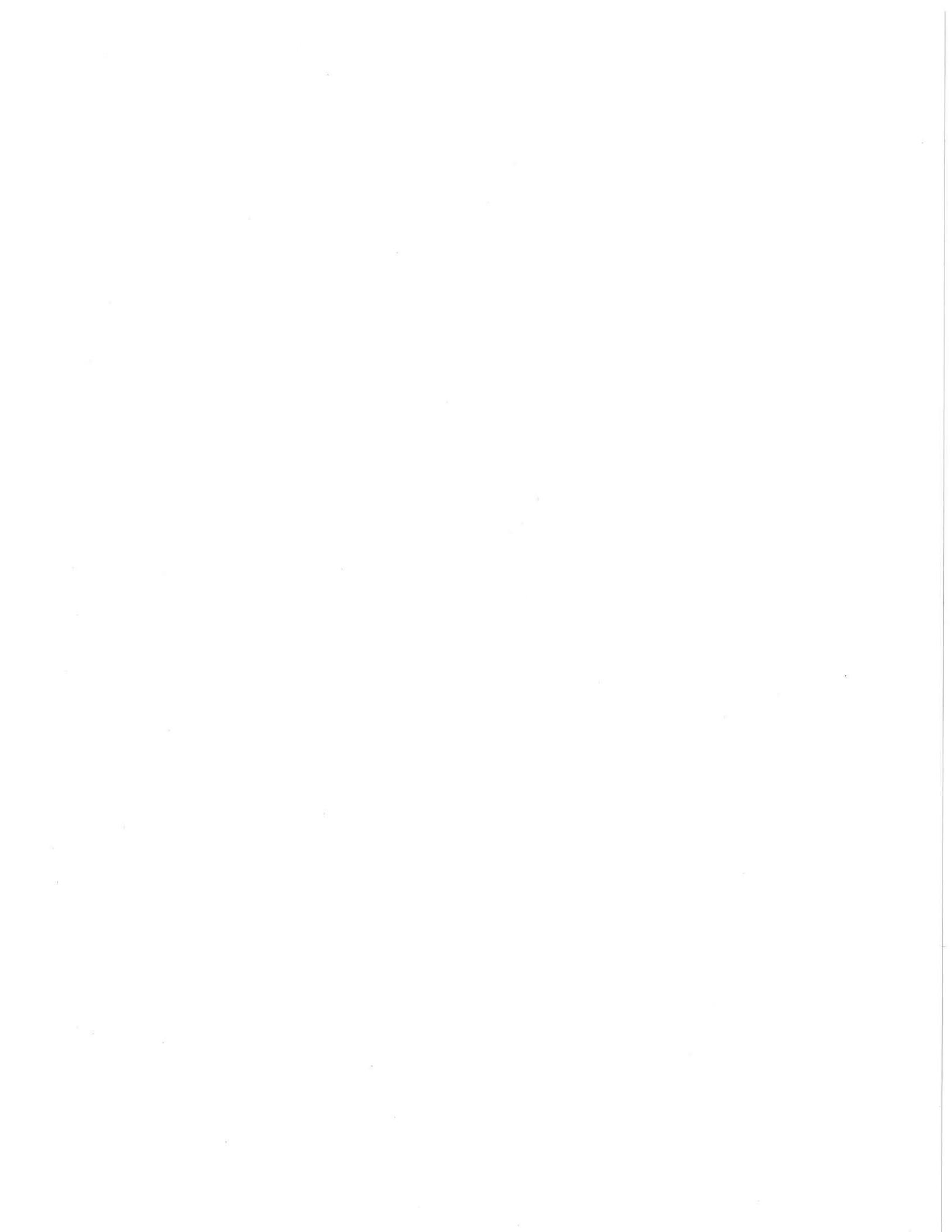
| TABLE K | |
|--|--|
| INSPECTION, MONITORING AND MAINTENANCE REQUIREMENTS | |
| Discharge Serial No.: 303-2 | Monitoring Location: S |
| Wastewater Description: Domestic Sewage | |
| Average Daily Flow: 7,200 gallons per day | Maximum Daily Flow: 10,800 gallons per day |
| INSPECTION, MONITORING, or MAINTENANCE | MINIMUM FREQUENCY |
| Water meter readings of water usage | Weekly |
| Visual inspection of Fluidyne ISAM Unit | Monthly |
| Visual inspection of anoxic chamber | Monthly |
| Visual inspection of final settling tank | Monthly |
| Mechanical inspection of alarms | Monthly |
| Mechanical inspection of blowers | Monthly |
| Mechanical inspection of carbon feed system | Monthly |
| Mechanical inspection of alkalinity feed system | Monthly |
| Pump out sludge from the settling chamber | Annually |
| Visual inspection of distribution chambers | Quarterly |
| Visual inspection of surface condition of leaching beds | Quarterly |
| Mow grass over leaching field bed | 3 times per year |
| ADDITIONAL NOTES: | |
| <ol style="list-style-type: none"> 1. All inspection, monitoring, and maintenance required in this table shall be reported annually by the end of each January as an attachment to the December DMR. 2. The Newtown Health District Sanitarian shall be notified at least one week prior to pumping of septic tanks and grease traps. Verification of all pump outs shall be attached to the monitoring report and a copy of the report shall be sent to the Newtown Health District Director of Health. | |

**TABLE L
INSPECTION, MONITORING AND MAINTENANCE REQUIREMENTS**

| | |
|--|--|
| Discharge Serial No.: 304-2 | Monitoring Location: S |
| Wastewater Description: Domestic Sewage | |
| Average Daily Flow: 7,200 gallons per day | Maximum Daily Flow: 10,800 gallons per day |
| <u>INSPECTION, MONITORING, or MAINTENANCE</u> | <u>MINIMUM FREQUENCY</u> |
| Water meter readings of water usage | Weekly |
| Visual inspection of Fluidyne ISAM Unit | Monthly |
| Visual inspection of anoxic chamber | Monthly |
| Visual inspection of final settling tank | Monthly |
| Mechanical inspection of alarms | Monthly |
| Mechanical inspection of blowers | Monthly |
| Mechanical inspection of carbon feed system | Monthly |
| Mechanical inspection of alkalinity feed system | Monthly |
| Pump out sludge from the settling chamber | Annually |
| Visual inspection of distribution chambers | Quarterly |
| Visual inspection of surface condition of leaching beds | Quarterly |
| Mow grass over leaching field bed | 3 times per year |
| ADDITIONAL NOTES: | |
| <ol style="list-style-type: none"> 1. All inspection, monitoring, and maintenance required in this table shall be reported annually by the end of each January as an attachment to the December DMR. 2. The Newtown Health District Sanitarian shall be notified at least one week prior to pumping of septic tanks and grease traps. Verification of all pump outs shall be attached to the monitoring report and a copy of the report shall be sent to the Newtown Health District Director of Health. | |

ATTACHMENT 3

| TABLE M GROUNDWATER MONITORING | | | |
|---|-----------|--|----------------|
| DISCHARGE SERIAL NO. 301 A, 302 A, 303 A, 304 A | | MONITORING LOCATION: <i>W-downgradient;</i> | |
| GROUND WATER MONITORING WELL NO: <i>as named on AS BUILT</i> | | DESCRIPTION: <i>downgradient monitoring wells</i> | |
| PARAMETER | UNITS | MINIMUM FREQUENCY OF SAMPLING | SAMPLE TYPE |
| Fecal Coliform | col/100ml | Quarterly | Grab |
| Groundwater Depth (Standard depth below grade) | Ft | Quarterly | Instantaneous |
| Ammonia Nitrogen | mg/l | Quarterly | Grab |
| Nitrate Nitrogen | mg/l | Quarterly | Grab |
| Nitrite Nitrogen | mg/l | Quarterly | Grab |
| Total Kjeldahl Nitrogen | mg/l | Quarterly | Grab |
| Total Nitrogen | mg/l | Quarterly | Grab |
| pH | S.U. | Quarterly | Grab |
| Total Dissolved Phosphorous | mg/l | Quarterly | Grab |



APPENDIX B

RESPONSES TO COMMENTS

The following is a compilation of responses prepared by the Applicant and DEEP Staff to representative public comments made at the December 13, 2016 public hearing in Bridgewater and written comments received before, at and after that hearing. Minor edits have been made to clarify or compress responses, but the context of responses has not been significantly changed.

**APPLICANT RESPONSES TO PUBLIC
COMMENTS / QUESTIONS**

1. *Who is responsible if the system fails (both for fixing and for liability-cost)?*

Response: The onsite wastewater treatment system at Joshua Heights will be owned by the condominium association for the development, as required by CGS title 47. The Association will be responsible for maintenance and repairs and will be liable for proper operation and maintenance.

2. *What happens if there is a loss of power, for either a short or long period?*

Response: DEEP regulations and the permit to operate the plant require an onsite emergency generator to provide all power required in order to maintain full operation of the plant during a power failure.

A good additional question would be, "What happens if there is mechanical failure in the system?"

Response: The Fluidyne SBR is built with 100% redundancy of its aeration unit. The aeration unit functions as both pump and aerator. This unit is the only mechanical component in the system. For the aeration unit, see item 9, page 29 of 'Project Description & Engineering Analysis' report that was submitted as part of the application for this project.

3. *Questions received at the hearing Dec 13, 2016:*

A. *Has a "yield test" been done on the wells?*

Response: Yes—in 2000 and again in 2014. The 2014 yield tests produced about 30% more water than did the ones done in 2000.

B. *Were the 3 wells drilled simultaneously or in a series?*

Response: The wells were drilled one after the other over a 10-day period.

In 2000 they were yield 'tested' simultaneously by R. J. Black and in 2014 they were each tested individually. In 2000 CT DPH did not require simultaneous testing as the wells were determined by DPH to be NOT interconnected.

Exhibit: Excerpt from Phase 1-B approval of water system – August 2000 (partial page 1 and partial page 2) to show determination wells are not interconnected.



STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC UTILITY CONTROL

August 18, 2000
In reply, please refer to:
Docket No. 97-02-00:WA:WHO

John F. Carr, Jr. P.E.
Carr Homes
27 Laurel Hill Road
Bridgewater, CT 06752

Re: Docket No. 97-02-00, Application of John Carr for a Certificate of Public Convenience and Necessity for Joshua Heights, Bridgewater, CT - Phase I-B

Dear Mr. Carr:

The Department of Public Utility Control (DPUC) and the Department of Public Health (DPH, together Departments) have completed their review of your Phase I-B application, dated March 22, 2000 (Application) for a Certificate of Public Convenience and Necessity (CPCN). The Application was submitted by Ron W. Black, President of Judea Water Company (Judea), on your behalf as Applicant, in accordance with §§16-262m et al of the Regulations of Connecticut State Agencies (Conn. Agencies Regs.). The Departments issued a Phase I-A approval for the above cited project on August 27, 1999.

(Page 1 excerpt above and page 2 excerpt below)

In response to inquiries from owners of private wells in the area and the Bridgewater Health Department, DPH requested a report from the Applicant addressing potential interference of the proposed wells, in its letter dated March 20, 2000. R. J. Black & Son provided documentation of its observations from its January, 2000 well drilling operation, in a report to DPH, dated March 29, 2000. Based on this information, the Departments believe that any potential for interference is extremely remote or non-existent, and that this is no longer an issue.

In 2000 simultaneous yield tests were run to minimize costs of testing.

The individual testing in 2014 confirmed that the three wells are not interconnected.

The court order applying to this project requires that the Zoning Permit include the requirement to monitor neighboring wells during a simultaneous well draw down on this site.

C. Are the required certifications for the wells in place?

Response: The question is not specific and the word 'certification' is not used by DPH. So a 'specific' response' is not possible, as the question is worded. If the question relates to DPH permits and permitting processes for Joshua Heights, then the following are responses to this question.

In 2000, Phase 1-A and Phase 1- B 'permits' for the water supply system on

this site were issued by the CT DPH. DPH Phase 1-A and Phase 1-B 'permits' are site plan specific. The court order mandated that the 'site plan' be modified.

In July 2015, applications for a phase 1-A and phase 1-B DPH re-permitting of the water system for the current modified site plan were submitted to DPH. Water yield and quality testing for the three existing wells were repeated in July 2014. Updated results were submitted to DPH in July 2015 and are currently under review by the CT DPH.

4. Was a soils evaluation performed?

Response: Soils hydrology analysis is a critical analysis component of the DEEP permit process for this project.

This site has had extensive, independent soils testing and analysis performed by a variety of professionals over 30 years. Local Health Department officials and staff personnel from both DPH and DEEP have been onsite to witness soil testing many times. DEEP took soil samples from several test holes down gradient from the sand infiltration beds in addition to numerous soil samples taken in these same test holes by a licensed testing laboratory. Over 60 test pits have been dug on this site and approximately 100 soil permeability test samples taken and analyzed.

Relevant test data and results are included in the application. From the application: see pages 11-15 of the report, "*Project Description & Engineering Analysis*" and drawings S-7

– *System Engineering* and S-11 *Deep Holes*.

Soils testing and soil hydrology in situ measurements and calculations of the soils under and down gradient from the sand infiltration / travel time beds have demonstrated that these soils have more than enough hydraulic capacity to receive and transmit the wastewater treatment system design discharge volume.

5. Curtis Read written comments.

Responses:

A. Topic - On Site Soils:

In his written and verbal sworn testimony Mr. Read incorrectly stated that the soil types on the Joshua Heights site are USDA-NCRS 76E and 76F. They are not.

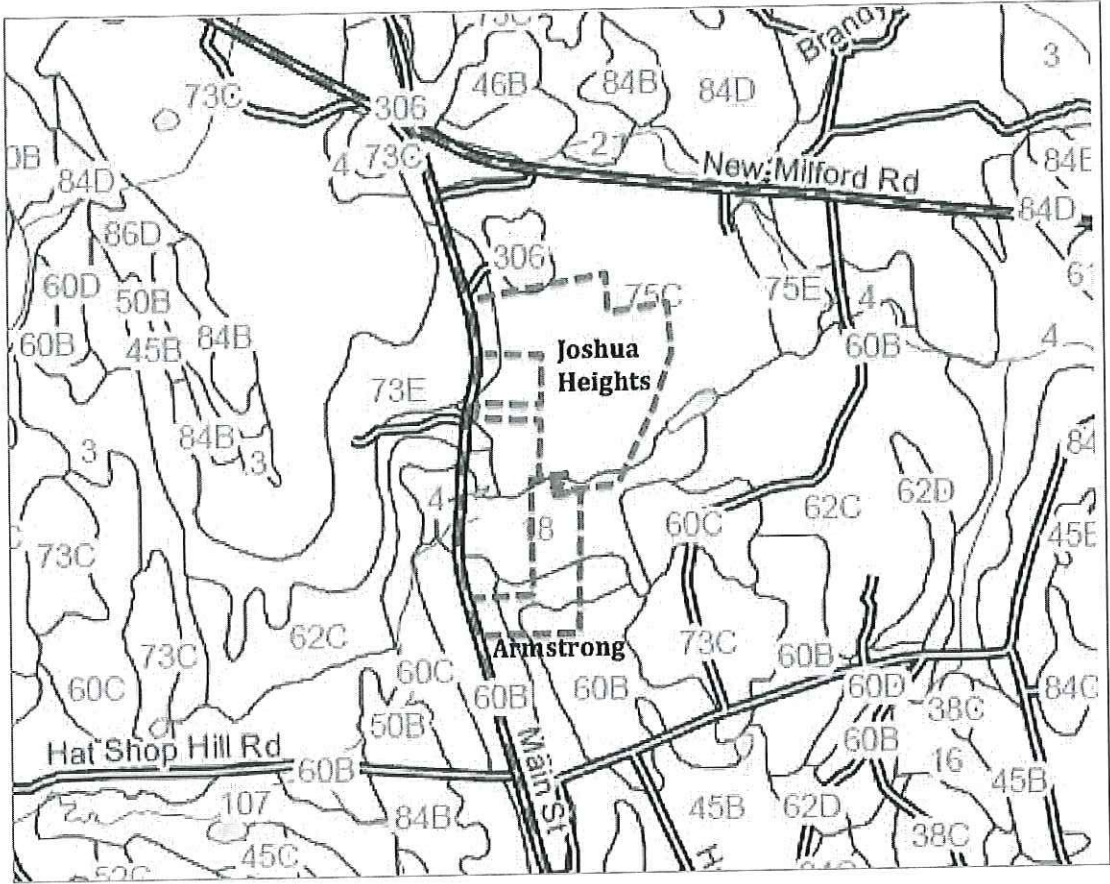
The correct soil type for the Joshua Heights site is shown as 75C on the map entitled

'CT DEP & USDA National Conservation Resources Service 2009 Soils Map of Bridgewater CT'.

The soil on the Joshua Heights site are shown on that map and is designated as soil symbol 75C is 'Hollis-Chatfield-Rock Outcrop Complex' with 3 to 15 percent slopes.

Drawing 1 Site Plan in DEEP Application – 201502206 also identifies the site soil type as Hollis and provides site-specific engineering soils data. All engineering and site testing to date has confirmed this conclusion.

This map shows the localized portion of the Bridgewater in the 'Soil Survey of the State of Connecticut'. It is published by the United States Department of Agriculture (USDA) and by the Natural Resources Conservation Service (NRCS). This document is available at this website: <http://cteco.uconn.edu///docs/usda/connecticut.pdf>



Property boundary outlines have been added in dashed blue for Joshua Heights and in dashed red for the Armstrong property to demonstrate their relative positions. The same source document provides the following descriptions of soils on the Joshua Heights site.

Major Component properties and Qualities for USDA Soil Type 75C (from page 187 of

'Soil Survey of the State of Connecticut', a USDA-NRCS document)

Major Component Properties and Qualities

Hollis and similar soils

Depth to bedrock: shallow to moderately deep

Drainage class: somewhat excessively drained

Parent material: loamy melt-out till derived from granite and/or schist and/or gneiss

Permeability: moderate or moderately rapid

Available water capacity: very low

Reaction: very strongly acid to moderately acid

Depth to restrictive feature: 10 to 20 inches to bedrock (lithic)

Depth to seasonal water table: greater than 6 feet

Flooding: none

Chatfield and similar soils

Depth to bedrock: moderately deep to deep

Drainage class: well drained

Parent material: coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Permeability: moderate or moderately rapid

Available water capacity: moderate

Reaction: very strongly acid to moderately acid

Depth to restrictive feature: 20 to 40 inches to bedrock (lithic)

Depth to seasonal water table: greater than 6 feet

Flooding: none

Below is a chart that Mr. Read identified on page nine of his submission as being from the USDA website. This chart lists two soil types in the most left column and in the most right column lists 'Septic Potential'.

Based on identifying the wrong soil type, Mr. Read incorrectly concludes, "This is an unfortunate native soil the intended application of 1,800 gallons of wastewater each hour."

The proper conclusion is the one reached by the DEEP. This is that the Joshua Heights site is well suited for the proposed wastewater treatment system.

Surface Discharge Concerns

Mr. Read said that his research suggests that surface waters would receive effluent. It is understood that the effluent water will meet Drinking Water Standards, but our concern is that effluent water will find its way to surface waters while still containing high nutrient levels.

Mr Read has not presented any evidence or research to support the above. His sworn comments at the public hearing on Dec 13, 2016 and sworn written testimony about soils involved in the Joshua Heights wastewater treatment system are incorrect and his statements that there are surface water discharges are incorrect. Joshua Heights is a subsurface discharge to ground water.

B. Mr. Read's chart that site has "no potential" for septic

The following chart was submitted by Mr. Read as part of his written, sworn testimony. It appears to show that the Joshua Heights property has "no potential" for septic. In addition to selecting incorrect soil types (described above), the *content* of the chart itself is problematic.

| Soil Symbol | Soil Name | Soil Texture Class | Development Rating | Average Depth to Water Table | Average Depth to Restrictive Layer | Erosion Potential | Average Water Storage Capacity | Hydrologic Soil Group | Parent Material and Depth | CT Wetland Soil Category | Septic Potential (USDA-NRCS) |
|-------------|--|--------------------|--------------------|------------------------------|------------------------------------|-------------------|--------------------------------|-----------------------|--------------------------------|--------------------------|------------------------------|
| 76E | Rock outcrop-tollis complex, B to 45 percent slopes | Fine Sandy Loam | C | 80+ inches | 15 inches (d) | High | Low (1.8 inches) | D | Shallow to Bedrock (15 inches) | Upland Soil | No Potential |
| 76F | Rock outcrop-tollis complex, 45 to 60 percent slopes | Fine Sandy Loam | C | 80+ inches | 15 inches (d) | High | Low (1.8 inches) | D | Shallow to Bedrock (15 inches) | Upland Soil | No Potential |

(D) = Bedrock

C = Soil Property limitations are extreme, requiring extensive planning, design and construction consideration as well as increased maintenance.

From: USDA Web Soil Data accessed on 12-12-2016

No one contacted at the USDA federal- or state-level offices was able to locate this specific chart on either the federal or the state-level websites, when provided with a camera picture of the chart.

We also note the incorrect spelling of USDA (written as UDSA) in the upper right hand cell and wondered if this chart might have been extracted from USDA data.

However, USDA staff pointed out that the rating "No Potential" shown on Mr. Read's chart is not a rating used for any of the USDA soil types when evaluated for their septic potential. *This is a puzzle.*

The septic potential ratings used by the USDA are: 'extremely low', 'very low', 'low', 'medium', or 'not rated'.

This can be confirmed by viewing an official USDA document that describes all soil ratings and their corresponding septic potential, which is available at this website: https://prod.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_010899.pdf.

This website link was provided to us directly from USDA soil scientist, Jacob Isleib. His contact information is: CPSS Soil Scientist USDA-Natural Resources Conservation Service 344 Merrow Road, Suite A Tolland, CT 06084 Phone (direct line): 860-871-4037.

When viewing a camera picture of Mr. Read's chart, Jacob Isleib from the Connecticut branch of the USDA-NRCS stated that:

"The USDA soil type maps are inventory-level scale maps that are usually determined through aerial surveys or very sporadic drilling. These cannot compete with the level of data from on-site drilling. This is particularly true of soil types like 75C where the subsurface morphology can be very tumbled and discontinuous. In all cases, on-site data should supersede the use of USDA soil type maps. If people have any questions about this they can feel free to call me."

(Mr. Isleib provided permission to quote this statement.)

In conclusion, Joshua Heights has had extensive site testing over 30 years in dozens of site inspections (included in the information provided to the DEEP) and hundreds of tests confirm that the site soils are *well suited* to receive the discharge from this system.

C. The Woodridge Lake Development, Goshen, Connecticut Wastewater treatment system.

On the bottom of page one of his *written* testimony, Mr. Read incorrectly described the Woodridge Lake, Goshen, CT wastewater treatment system as being similar in design to the system proposed for Joshua Heights:

“A similar infiltration bed system was approved by the CT DEEP at Woodridge Lake in Goshen. This system has failed and has been under orders for over 20 years.”

Additionally his *verbal* testimony incorrectly implied that the Woodridge Lake sewer treatment plant was an SBR unit.

The truth is:

The wastewater treatment system at Woodridge Lake has an ‘Activated Sludge’ plant with a ‘Ridge and Furrow’ infiltration system. The Joshua Heights wastewater treatment system uses a ‘Sequential Batch Reactor’ and ‘Sand Filter infiltration’ beds.

The Woodridge Lake system and its components are *not in any manner similar* to the system proposed for Joshua Heights.

The following email from Charlie Ekstrom, Superintendent of the Woodridge Lake wastewater treatment system (860-491-3474), describes their treatment system.

It is interesting to note that rather than being a failed system as Mr. Read stated, field-testing of many ground water monitoring wells down gradient from the Woodridge Lake infiltration beds over a five-year period demonstrates that the entire system is functioning properly with no impact on the environment.

Screen Shot: Email from Charlie Ekstrom

From: "Charlie Ekstrom" <Charlie.Ekstrom@wlsd-goshen.org>
Subject: woodridge lake
Date: December 16, 2016 at 11:06:46 AM EST
To: <carrhomes@charter.net>
Reply-To: Charlie.Ekstrom@wlsd-goshen.org

Hope this is of use to you, I tried not to get political. If asked my background is 40+ years in the wastewater field most with the Town of Glastonbury CT and the last 7 years with Woodridge lake. I have a CT DEEP certification class IV Charlie



letter to Carr
housing.docx

Below please find the Mr. Ekstrom's Word document from within this email.

Exhibit: Document from Mr. Ekstrom's December 16, 2016 email (underlining added):

Woodridge Lake Sewer District
113 Brush Hill Road
Goshen, CT 06756

December 15, 2016

To Whom it may concern:

This statement is to clarify some of the misconceptions about this treatment facility and the on-going work to bring our situation into compliance with the State of CT DEEP.

The treatment plant was designed and constructed in the mid-1970s as variant of a conventional activated sludge treatment plant with the main difference being the disposal of the treated plant effluent: it flows into a ridge and furrow system to allow for sub-surface discharge rather than a surface discharge into a stream or river. To visualize this system, picture 100 acres of rice paddies, with the water is alternately moved from one to another and allowed to soak into the ground and into the water table. Originally designed for a flow of 200,000 gal/day, this proved too much and the limit was dropped to 100,000 gal/day. The reason for this was disinfection. Groundwater had to be no closer than 3 feet below the bed surface and the estimated time before the water came back to the surface was 21 days. During construction of the beds, the contractor utilized whatever fill was available, including rocky soil, sand, silt, fractured stone. Underlying this is glacial till, the result were beds with variable performances. Most work well but others don't drain, while some drain too quickly with the water appearing on the surface downslope. This was dealt with by operational changes and avoidance of the poor performing beds, but did limit our flow to 100,000 gal/day. With 680 current connections and a good I/I

program this limit is not a problem (average daily flow over the last 18 months is 87,000). According to DEEP the beds are the facilities Achilles heel. DEEP has refused to accept testing done on loading and percolation rates done at anything but maximum groundwater levels coupled with extreme historical rainfall. Plans to upgrade the plant to a membrane bio-reactor providing drinking water quality effluent coupled with ultraviolet disinfection and large in-ground sand filters have been rejected. DEEP will only accept a regional solution with the plant being decommissioned and replaced with a pipeline to Torrington.

It should be noted that our activated sludge process produces a good quality effluent, with the average BOD and SS (14 mg/l and 4 mg/l respectively – 90+% reduction) over the 7 years I have been Superintendent. In 2009 I instituted water quality testing of the Bantam River above, adjacent, and below the WLSD facility to determine what, if any, impact our subsurface discharge had on this AA Class stream – 7 years of monthly testing says NONE (this includes nutrients).

Charles J Ekstrom III

WLSD Superintendent

D. Locations of Fluidyne SBR installations:

Fluidyne has over 500 SBR systems in year-round residential project use throughout North America. Further, the report '*Project Description & Engineering Analysis*' has over 100 pages (pages 44-150) of extended use performance data from five Fluidyne SBR installations across North America.

There is a Fluidyne SBR system installed for residential purpose in Connecticut, which continues to perform within permitted requirements.

E. Water well questions:

The CT DPH has jurisdiction for the water supply system and has previously issued a Phase 1-B approval for a water system on this site.

This approval is shown on *Drawing S-9 Water Supply System* along with water yield test results from 2000 and 2014.

Also, see the attached Connecticut Court Order (*Evidentiary Hearing Documents and Written Testimony: 1*) for issuance of a Zoning Permit for this site, which includes water related issues.

F. "Based on my (Mr. Read's) experience..."

In his written testimony Mr. Read states:

"Based upon my experience with many aspects of water supply and quality, I think the scale of this project is too large for the local environment."

Mr. Read fails to offer the adjudicator any: (i) evidence of his experience with other projects similar to Joshua Heights, (ii) evidence of experience as a developer of comparable projects, (iii) evidence large-scale real estate projects evaluation, or (iv) expertise in large-scale development engineering site-analysis. Mr. Read did not present evidence of being a licensed professional within his field or of being a hydro geologist or of being a licensed environmental engineer.

What he does offer in support of 'expert' testimony is experience from managing a small water-testing laboratory in New Milford, CT (Hydro Technologies) and of being on a wetlands commission for a long time.

That experience does not substantiate this statement as expert opinion.

6. Ms. Culbert – discussed the role of her office, and seemed to be concerned about water supply, noted idea of "natural water" v. drinking water, and was worried about chemicals to treat the water being in the drinking water that would result.

Response:

A. Water Supply: Joshua Heights site has had substantive well testing and analysis, in 2000 and 2014.

CT DPH in 2000 approved the three existing wells as a public drinking water source with a safe yield sufficient to support 183 bedrooms. Additional well sites were approved to provide additional water if necessary.

The Court Ordered modified site plan submitted to the DEEP has a design flow of 43,200 gpd. The existing three wells can provide from 30-35,000 gpd depending upon several DPH review factors.

Based upon 2000 and 2014 yield results from the existing three wells and from neighboring wells drilled by the applicant in the same type of rock structure, it is

expected that one additional well will provide a yield in excess of that required to support the bedrooms quantity included in this DEEP discharge permit application.

As Joshua Heights will be a phased construction development, the addition of infrastructure including additional water wells would also be phased in construction.

Water quality has never been an issue. The testing in both 2000 and 2014 show that water as drawn from the ground is a high quality source for a public water supply.

B. Natural Water versus Drinking Water: As an applicant I am required to demonstrate that the discharge from the system will meet Connecticut State drinking water standards. I am unaware of any “natural water” standards or requirements.

The application demonstrates that the discharge of the wastewater treatment system will meet State drinking water standards.

C. Chemicals: The wastewater treatment system uses natural processes to achieve the desired results. *There are no chemicals or other additives used in the Fluidyne process.*

7. Dizenzo – Levels of radium in groundwater

Response: The State Department of Health Drinking Water regulations require appropriate treatment for any radio-nucleoids in a drinking water supply. This applies to the Joshua Heights water system. There are two common radio-nucleoids that occur in bedrock ground water in this area of Connecticut: radon and radium isotopes. These are frequently found in bedrock local wells.

Treatment for Radon, which is a gas, is by aeration of the well water. To wit, spray it through the air or bubble air through it. The water system for Joshua Heights has this built into the current design.

Treatment for radium isotopes is with a water softening system similar to those used in personal residences.

These solutions are DPH approved.

8. Emily Armstrong

A. Statement: “Our soils are similar to Joshua Heights and run dry in droughts and are not absorbent.”

Response:

Ms. Armstrong is incorrect in stating that the soil types on her property are similar to the soil type on the Joshua Heights site.

The soils map on page 5 of this document shows outline of both the Joshua Heights site and Ms. Armstrong’s property. One can observe that the soil type on Ms. Armstrong’s property is ‘18—Catden and Freetown’ soils. In contrast the soil type on Joshua Heights property is ‘75C Hollis – Chatfield – Rock complex -3-15 percent’.

The *following two Exhibits* can be compared to provide more information on the significant differences between the soil types’ qualities on these two properties.

Exhibit: *Major Component Properties and Qualities for USDA Soil Type 75C (from website https://soilseries.sc.egov.usda.gov/OSD_Docs/H/HOLLIS.html)*

Joshua Heights: 75C Hollis – Chatfield – Rock complex -3-15 percent

HOLLIS SERIES

The Hollis series consists of *well drained and somewhat excessively drained soils* formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland soils on bedrock-controlled hills and ridges. Slope ranges from 0 through 60 percent. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm.

CHATFIELD SERIES

The Chatfield series consists of *well drained soils* formed in loamy melt-out till. They are moderately deep to bedrock. They are nearly level to very steep soils on bedrock-controlled hills and ridges. Slope ranges from 0 to 70 percent. Crystalline bedrock is at depths of 50 to 100 cm. Saturated hydraulic conductivity is moderately high or high in the mineral soil. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm.

Exhibit: Major Component Properties and Qualities for USDA Soil Type 18-Catden and Freetown (from website https://soilseries.sc.egov.usda.gov/OSD_Docs/C/CATDEN.html)

Armstrong property soil: 18—Catden and Freetown soils

CATDEN SERIES

The Catden series consists of very deep, very poorly drained soils formed in highly decomposed woody and herbaceous organic materials in depressions on till plains, lake plains, outwash plains, and flood plains. Saturated hydraulic conductivity is moderately high or high. Slope ranges from 0 to 2 percent. The mean annual temperature is about 13 degrees C and the mean annual precipitation is about 1258 mm.

FREETOWN SERIES

The Freetown series consists of very deep, very poorly drained organic soils formed in more than 130 centimeters of highly decomposed organic material. They are commonly in depressions or on level uplands and alluvial plains. Slope ranges from 0 to 2 percent. Saturated hydraulic conductivity is moderately high or high. The mean annual temperature is about 9 degrees Celsius and mean annual precipitation is about 1205 millimeters.

Therefore the soils on these two properties are not similar. The Armstrong property 18–Catden soils are “*very deep, very poorly drained soils*”. In contrast, the Joshua Heights 75C Hollis – Chatfield – Rock complex -3-15 percent soils are “*well-drained soils*”.

B. Statement: ‘Geology is inappropriate to handle the drainage of water into fragile wetlands’.

Response: In previous site plan approvals for this development, storm water discharges to the wetlands were been reviewed and approved. The wetlands on the southern edge of the Joshua Heights site is a marsh.

This particular marsh is also very robust. Over the 30 years I have owned a portion of it water levels have remained unchanged year to year and season-to-season. Hurricane or drought. Vegetation has been vibrant. Wildlife has flourished. It is hardly fragile.

Drawing 8 –Storm Water Drainage of the application shows that distributed storm water design used for this project. There are no storm water discharges to a wetland or wetland buffer area.

C. Statement: 'I'm disturbed by reports that similar systems failed in other towns in Connecticut.'

Response: Ms. Armstrong seems to refer to Mr. Read's incorrect statements about the one wastewater treatment system at Woodridge Lake. (See the response about the Woodridge Lake wastewater treatment system on page eight of this document.)

9. Armstrong Letter – Storm Water Management

Response: Emily Gannon refers to a site plan that is not the plan before DEEP. Plans for this site were revised several times in response to professional inputs including information from the King's Mark Environmental Review in 1996.

In 2003 the Connecticut Superior Court mandated substantive modifications to the site plan to require that the project be reviewed and permitted by the CT DEEP.

The current site development plan does not collect storm water to any significant extent. It permits rain to infiltrate the ground close to where it falls. The Hollis – Chatfield – Rock complex soils on this site are "*well drained and somewhat excessively drained*" (see NCRS soil descriptions above) and are well suited for a localized storm water application system.

Building footing drains will be to air or to dry wells depending upon the particular situation for each building.

Roof gutter drains for the most part will be to surface grade or to drywells.

Road catch basins, where necessary, will discharge to adjacent soils either through surface discharge or into drywells with appropriate BMP designs. To the maximum extent curb-less roads will be constructed to allow for sheet runoff.

There are no surface runoff features on this site. There are no streams or brooks. The site is very well drained and rainfall infiltrates the ground where it falls. Storm water from RT 133 does discharge onto a very small portion of the west side of the site. No development activities are proposed in this area.

10. Rebekah White – Friends of the Lakes, concern re effluent destination

Friends of the Lakes is very concerned that additional point source nutrient loading into the watershed would harm Lake Lillinonah.

I have reviewed the information provided by Rebekah White and note that all her issues are surface water related. As Joshua Heights is a subsurface discharge to ground water this concern about surface waters seems misdirected.

**11. Margaret Miner – Letter published in the Voicenews.com Dec 31, 2016.
(Full letter in DEEP comment response document.)**

We observe that Ms. Miner wrote this letter in her capacity as Executive Director of the Rivers Alliance of Connecticut. We note that many of her comments appear to be based on a 2011 Rivers Alliance report entitled 'On-site Wastewater Management in Connecticut: the Role of Advanced Treatment Systems (ATS).' For that reason, some portions of this document include comments on that report.

Conclusions:

Ms. Miner's letter and the Rivers Alliance report are not relevant to the application before the adjudicator as Ms. Miner's letter:

- **Offers no facts or evidence relevant to the application and does not reference any portion of it.**
- **Fails to include information about any SBR technology, performance or installations.**

Commentary:

In this response to Ms. Miner's letter, each of the following items are individually covered:

- A. Ms. Miner's letter does not address the application before the adjudicator.
- B. Ms. Miner's letter does not include any content concerning Sequencing Batch Reactors (SBR).
- C. Ms. Miner's letter includes numerous factual errors.
- D. The 2011 Rivers Alliance report entitled 'On-site Wastewater Management in Connecticut: the Role of Advanced Treatment Systems (ATS)' has serious methodology flaws.
- E. Ms. Miner's letter is in error regarding wastewater treatment system licensed operators and operating manuals.
- F. Contrary to Ms. Miner's written statements, Sequencing Batch Reactors are a proven and preferred wastewater treatment process with a substantiated record of performance and reliability

Responses to Items A--F

A. Ms. Miner's letter does not address the application before the adjudicator

At no point in her letter does Ms. Miner address the content of the application or offer any facts or evidence relevant to the application.

B. Ms. Miner's letter does not include any content concerning Sequencing Batch Reactors (SBR)

Ms. Miner includes no information or facts addressing Sequencing Batch Reactors (SBR). SBRs are a key technical component of the application before the adjudicator.

C. Ms. Miner's letter includes numerous factual errors

a) Miner comments about the DEEP review process

Miner wrote: *"The dual hearings illuminated several of the many flaws in the state's process for gathering general and expert opinion on proposed permits."*

Response:

1. No facts or evidence are offered to support this statement.
2. The DEEP is required to follow regulations established to comply with the laws found below that have been bolded. These are also stated in the draft permit.

Permit ID: UI0000514 Permit Expires:

Watershed: Shepaug River Watershed Basin Code: 6700

SECTION 1: GENERAL PROVISIONS

- (t) **This permit is issued in accordance with section 1421 of the Federal Safe Drinking Water Act 42 USC 300h et. Seq., section 22a--430 of Chapter 446k, Connecticut General Statutes ("CGS"), and Regulations of Connecticut State Agencies ("RCSA") adopted thereunder, as amended.**

3. The DEEP has rigorous standards and sets forth specific requirements for subsurface wastewater treatment systems. These apply to both the DEEP review engineers and to the applicant as stated in paragraph B of the draft permit letter issued in August 2016, as follows:

(B) John F. Carr, Jr., ("Permittee"), shall comply with all conditions of this permit including the following sections of the RCSA, which have been adopted pursuant to section 22a--430 of the CGS and are hereby incorporated into this permit. Your attention is especially drawn to the notification requirements of subsection (j)(2), (i)(3), (j)(1), (j)(6), (j)(8), (j)(9)(C), (j)(11)(C), (D), (E) and (F), (k)(3) and (4), and (l)(2) of section 22a--430--3.

Section 22a--430--3 General Conditions

- a) Definitions
- b) General
- c) Inspection and Entry
- d) Effect of a Permit
- e) Duty to Comply
- f) Proper Operation and Maintenance
- g) Sludge Disposal
- h) Duty to Mitigate
- i) Facility Modifications; Notification
- j) Monitoring, Records and Reporting Requirements
- k) Bypass
- l) Conditions Applicable to POTWs
- m) Effluent Limitation Violations (Upsets)
- n) Enforcement
- o) Resource Conservation
- p) Spill Prevention and Control
- q) Instrumentation, Alarms, Flow Recorders
- r) Equalization

Section 22a--430--4 Procedures and Criteria

- a) Duty to Apply
- b) Duty to Reapply
- c) Application Requirements
- d) Preliminary Review
- e) Tentative Determination
- f) Draft Permits, Fact Sheets
- g) Public Notice, Notice of Hearing
- h) Public Comments
- i) Final Determination
- j) Public Hearings
- k) Submission of Plans and Specifications. Approval.
- l) Establishing Effluent Limitations and Conditions
- m) Case by Case Determinations
- n) Permit issuance or renewal
- o) Permit Transfer
- p) Permit revocation, denial or modification
- q) Variances

- r) Secondary Treatment Requirements
- s) Treatment Requirements for Metals and Cyanide
- t) Discharges to POTWs – Prohibitions

Conclusions regarding letter statements about DEEP review process:

1. The review and permitting process is exhaustive, thorough and complete.
2. The applicant has followed and fulfilled all of the required regulatory specified steps.

b) Miner comments about AT systems

Miner wrote: *“This particular hearing involved what is called an AT (Advanced Technology) system. AT systems resemble mini--municipal systems, with the digestive action of bacteria occurring one or more closed containers. They are difficult and expensive to manage successfully compared to traditional septic. Their performance record in Connecticut is poor. Therefore, they are not permitted in drinking water recharge areas.”*

1. **Miner excerpt:** *“They are difficult and expensive to manage successfully compared to traditional septic.”*

Response:

AT systems are utilized for wastewater treatment systems where residential style ‘septic systems’ are unsuitable and advanced treatment is required. In the case of a large real estate development, a traditional septic system is rarely an option.

2. **Miner excerpt:** *“Their performance record in Connecticut is poor.”*

Response:

Ms. Miner offers no information on wastewater treatment system performance in CT.

However, she appears to base her comments on information contained in a seriously flawed 2011 Rivers Alliance report, developed while she was Executive Director of the Rivers Alliance.

This report is entitled '*On-site Wastewater Management in Connecticut: the Role of Advanced Treatment Systems (ATS)*'.

The Rivers Alliance report does NOT include any information regarding SBR systems, which is the proposed system in this application before the adjudicator.

3. **Milner excerpt:** *Therefore, they are not permitted in drinking water recharge areas.*

Response:

This is apparently a misunderstanding of the Connecticut's Aquifer Protection Area Program published by the CT DEEP in 2011. Page 9 of the manual in *Figure 6: Inventory of Potentially Regulated Facilities in Aquifer Protection Areas, Source CT DEEP 2002* offers guidance to local communities on areas of potential concern to evaluate in creating local regulations. This chart does not include wastewater treatment systems as being of concern in aquifer areas. Rather on Page 139 of this manual states:

11.1.1 | Wastewater Discharge Permit Program

The Wastewater Discharge Permit Program, administered by the Bureau of Waste Management and Compliance Assurance Permitting Division, regulates discharges to waters of the state, including all surface waters, ground waters and Publicly Owned Treatment Works (POTW) (i.e., sewage treatment plants).

PERMITTING AND ENFORCEMENT DIVISION
BUREAU OF MATERIALS MANAGEMENT AND COMPLIANCE
ASSURANCE
DEPARTMENT OF ENERGY AND ENVIRONMENTAL
PROTECTION
79 ELM STREET
HARTFORD, CT 06106--5127
860--424--3018
www.ct.gov/deep/permits&licenses

D. The 2011 Rivers Alliance report entitled 'On-site Wastewater Management in Connecticut: the Role of Advanced Treatment Systems (ATS)' has methodology flaws

a) The report uses flawed analytic methodology.

1. It artificially creates a performance measure of 'pass / fail' that has no technical basis or meaning.
2. The methodology presumes that grading a monthly wastewater system performance on a single sample analysis is a valid measure of performance that can be extrapolated over time.
3. The report methodology averages monthly 'pass / fail' results and presumes this is a valid measure of annual wastewater treatment system performance. This is not a measure of performance under any regulatory standard

DEEP REGULATORY PROCESS METHODOLOGY:

The CT DEEP permitting methodology seeks to assure that wastewater discharges over time achieve specified results.

Wastewater treatment systems are designed for a maximum flow with specified performance measures for: BOD, TSS, TN, and TP effluent concentrations. These effluent measures are time averaged given the general variation in flows, influent loading, weather conditions, etc. Many wastewater treatment systems in CT have environmental loading permits, which specify the total annual amount of a pollutant the system can discharge.

The monthly BOD, TSS, TN, and TP concentration measurements are used to estimate the system performance *over time*. A specific concentration may be 'above' limit one month and 'below' limit the next month. The intention is that the *annual averages comply* with the design specifications.

b) The report fails to analyze casual factors.

Applicant's Observations: Professional caliber research and reporting does not allow a broad conclusion to rest upon on a single event or inconclusive data. That is what this report has done. In the entire report it does not appear that the writer investigated causal events related to system performance.

The applicant has firsthand knowledge of casual impacts related to the wastewater treatment system at the Gunnery school in Washington, CT, which is referenced in the Rivers Alliance report.

Ten years ago the applicant visited the Gunnery school and inspected their wastewater treatment system when initially investigating AT systems for the Joshua Heights property. The applicant had the opportunity to discuss the Gunnery system *in detail* with the licensed operator. The operator stated that *under normal conditions*, at that time, the treatment system performed at or better than the design performance standards when measured by monthly sampling tests.

The system did occasionally have operational problems due to high influent flow volumes, which occurred during significant rain events. *The influent problem was not related to the AT system performance. Increased influent flows during rains events were caused by leaks in the old sewer collection system.* During some rain events flow into the treatment plant was higher than design flows. After a rain event ended, inflow returned to levels below the design flow and the system returned to normal operation within design parameters.

The Rivers Alliance report fails to look beyond the reports to investigate the systems chosen for review to determine what actually happened during the reporting period for the systems. This leads to inaccurate conclusions about AT system performance.

c) The report includes inaccurate numbers

The Rivers Alliance report (2011) states that there were 54 AT systems in Connecticut. However, the EPA lists 225 wastewater treatment systems in Connecticut. Following is a web link to the EPA listing:

https://www3.epa.gov/region1/npdes/permits_listing_ct.html

E. Miner letter is in error regarding wastewater treatment system licensed operators and operating manuals

Miner wrote: *"or evidence as to the management agreements among the designers, installers, and operators."*

Response:

DEEP permits for subsurface wastewater disposal systems have specific requirements for operating manuals, reporting requirements, and the need for licensed operators.

Conclusion: Ms. Miner is incorrect in her statements concerning operations, manuals, and operator licensing.

F. Contrary to Ms. Miner's comments concerning AT systems, assuming her comments have any merit, Sequencing Batch Reactors are a proven and preferred wastewater treatment process with a substantiated record of performance and reliability

Miner wrote:

"This particular hearing involved what is called an AT (Advanced Technology) system. AT systems resemble mini--municipal systems, with the digestive action of bacteria occurring one or more closed containers. They are difficult and expensive to manage successfully compared to traditional septic. Their performance record in Connecticut is poor."

Response:

a) Connecticut SBR systems:

There are two SBR systems in Connecticut, one of which is a Fluidyne installation.

According to DEEP staff, the Fluidyne installation is functioning within permit limits.

b) Massachusetts SBR systems:

John Murphy, Mass DEP, has provided the following information on twenty SBR systems installed in Mass In his experience, the SBR systems in Mass were performing as required.

Following is an email from John Murphy to John Carr (the applicant), received on January 4, 2017. It is reproduced here in its entirety.

Good afternoon,

Please find attached a list of SBR Facilities in Massachusetts that are discharging to groundwater.

*Also here is a link to a 2005 SBR Design Manual:
http://neiwpc.org/neiwpc_docs/sbr_manual.pdf*

Best,

John Murphy, Mass DEP

*John Murphy
Mass DEP
Wastewater Operator Certification and Training
Bureau of Water Resources
Boston, MA 617--292--5867*

Town Facility Name

*SUDBURY RAYTHEON
MASHPEE MASHPEE COMMONS
SUDBURY LINCOLN--SUDBURY HIGH
DUXBURY DUXBURY SCHOOL COMPLEX
MASHPEE MASHPEE JR/SR HIGH
ACTON TOWN OF ACTON WWTF
SHIRLEY DEVENS WWTF
OAK BLUFFS TOWN OF OAK BLUFFS
HOPKINTON EMC CORPORATION
PLYMOUTH TOWN OF PLYMOUTH WWTF
PLYMOUTH PINEHILLS LLC WWTF
PROVINCETOWN PROVINCETOWN WWTF
PLYMOUTH PLYMOUTH AIRPORT
BOXBOROUGH HARVARD RIDGE CONDO. TRUST
TISBURY TISBURY WWTF
FALMOUTH NEW SILVER BEACH WWTF
FRANKLIN OAKHILL SENIOR LIVING
SUTTON SUTTON WWTF
HINGHAM LINDEN PONDS AT HINGHAM
FOXBORO FORMER FOXBORO STATE HOSPITAL*

Mr. Murphy commented that he was unaware of any performance problems in any of these installations. He noted that SBR systems have become the system of choice in many situations.

c) Fluidyne SBR Installations:

During the evidentiary hearing 12/19/2016 Mike Mandt, President of Fluidyne Corporation stated that Fluidyne had over 200 SBR installations worldwide and

noted he was unaware of any operational problems in any of these systems.

The Engineering Analysis for the Joshua Heights project (submitted as part of the application for this project) includes over 100 pages of performance data for installed Fluidyne systems provided by plant operators for five Fluidyne SBR installations from Key West, FL to Barrie, Ontario Canada. The data supports the conclusion that the Fluidyne systems perform within design specifications over a broad range on installation conditions.

d) Substantive investigations of performance of SBR systems:

The applicant and DEEP engineers have made substantive independent investigations to confirm the superior performance of SBR technology, in particular of the Fluidyne systems.

Many *publically available* documents support the applicant's and the DEEP's conclusions concerning SBR technology.

1. SBR technology is a preferred wastewater treatment technology. See the following report presented at Rensselaer Polytechnic Institute:
<https://www.rpi.edu/dept/chem--eng/Biotech--Environ/Environmental/Steps/EnvSysSBR.html>
2. In New England SBR solutions have become an important design option for wastewater treatment systems. SBR technology has a nearly 100--year history of use. Please see the design manual prepared by the New England Interstate Water Pollution Control Counsel:
http://www.neiwpc.org/neiwpc_docs/sbr_manual.pdf
3. SBR Systems have been reviewed by the EPA (1999) and noted for superior performance. Please see page 6 of the following EPA report which includes the following:

"SBR manufacturers will typically provide a process guarantee to produce an effluent of less than: C 10 mg/L BOD C 10 mg/L TSS C 5 -- 8 mg/L TN C 1 -- 2 mg/L TP."
https://www3.epa.gov/npdes/pubs/sbr_new.pdf

Conclusions about SBR system

1. SBR systems have demonstrated reliable performance in a variety of climates and flow situations.
2. SBR systems are an important design option in New England
3. SBR systems are widely installed and have a nearly 100--year history of successful use.

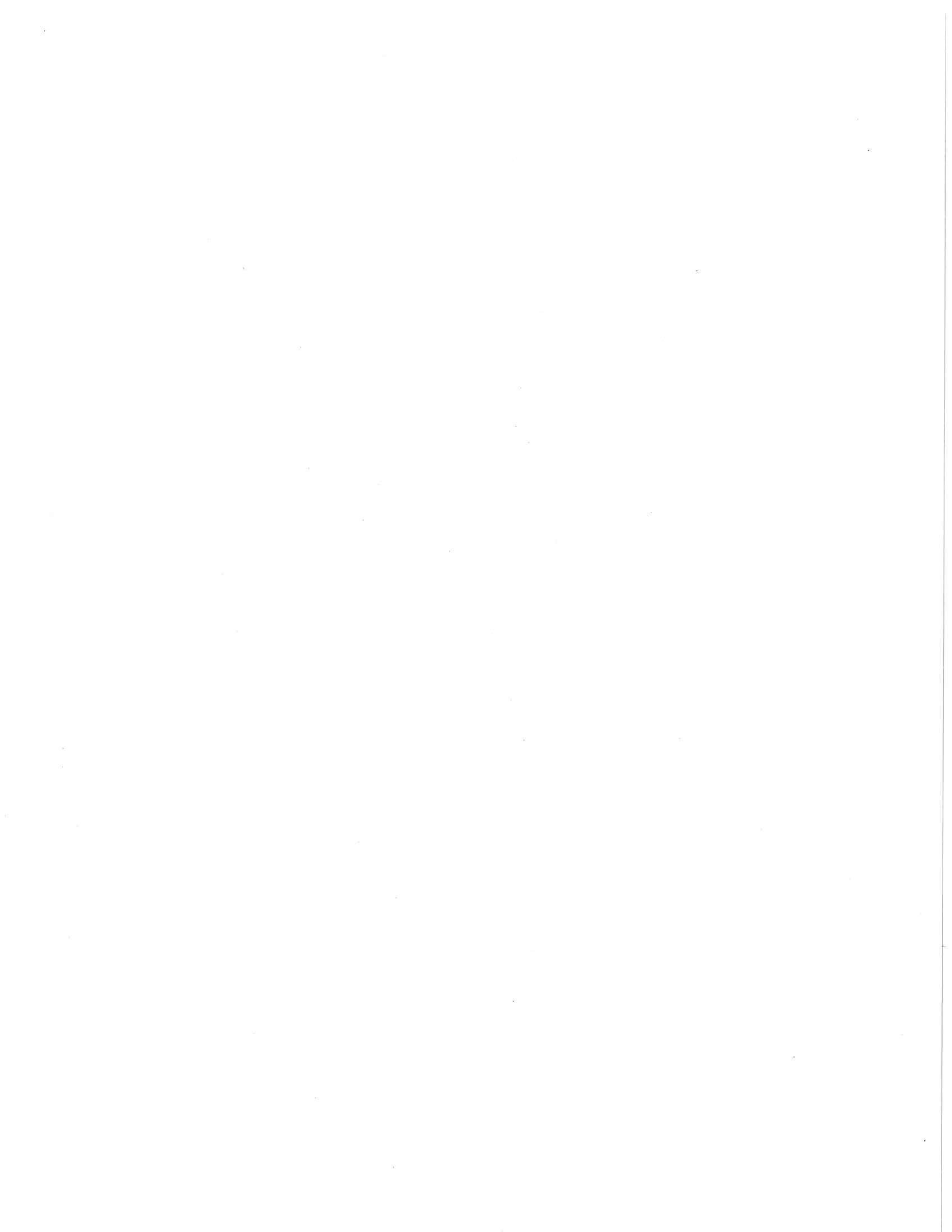
OVERALL CONCLUSIONS:

The Miner letter is irrelevant to the application before the adjudicator as it fails to provide factual information addressing the application.

The River Alliance report is irrelevant to the application before the adjudicator, as it does not address SBR technology in any manner. Further, it uses flawed analytical methodology, and uses misleading, self--created measures to inaccurately describe the performance of AT wastewater treatment systems.

Ms. Miner's letter and the Rivers Alliance report are not relevant to the application before the adjudicator because this letter offers no:

- Facts or evidence relevant to the application
- Reference to any portion of the application
- Information concerning SBR technology
- Information concerning SBR performance
- Information concerning SBR installations



DEEP STAFF RESPONSE TO COMMENTS

All answers to comments received during the hearing proceedings for this application can be found in the beginning of Attachment 1. The comments, in their original format received during the hearing proceedings are inserted at the end of this document.

1. Comments Submitted by Bridgewater First Selectman, Curtis Read, on November 29, 2016

These comments were handed to the parties at the November 29, 2016 Pre-hearing Conference and the DEEP has provided verbal responses to the comments on December 13, 2016 during the night hearing. For clarity, the questions are enumerated below in normal text and are immediately followed by the DEEP staff response in italicized text:

- Will there be trace levels of pharmaceuticals post treatment in discharge water?
A properly designed residential septic system with discharge to the subsurface soils will treat the discharge to appropriate levels for all pollutants typically found in residential sewage. The Department has no evidence that residential use of medicinal drugs will cause interference with an onsite subsurface treatment and disposal system or create adverse impact on groundwater quality.
- Will DEEP require downgradient monitoring wells? What tests and frequency?
The permittee will be required to perform groundwater monitoring for nitrogen, phosphorus and bacteria in accordance with Table M, which is incorporated as Attachment 3 in the draft permit.
- Will the DEEP require downgradient pre and post development pond and stream monitoring?
The discharge will be fully renovated in groundwater before groundwater leaves the site or reaches a wetland or a watercourse. The discharge will be fully renovated to meet the Water Quality Standards, which means suitable for drinking and other domestic uses without treatment, prior to reaching the wetland.
- Is a licensed treatment plant operator specified? What level of certification?
Section 4. (K) of the draft permit requires that the wastewater treatment facility be operated by a Connecticut certified Class II licensed operator.
- What will be the short and long term maintenance requirements for the sand/soil filter beds?
The leaching beds will receive and disperse pretreated effluent and will require no maintenance. However, the leaching beds will have observation ports to monitor potential ponding.
- How did the DEEP determine that the discharge was going to the Shepaug Watershed?
Based on the initial review of the site location, it appeared that the discharge would occur in the groundwaters of the Shepaug River Watershed, which is a tributary to the Housatonic River Watershed.

Upon a closer analysis, the site is located entirely in the Housatonic River Watershed and only partially within the Shepaug River Watershed and it is more accurate to reference the Housatonic River Watershed. This point was raised by the Town of Bridgewater during Status Conference and the DEEP staff has acknowledged the point and has made the necessary administrative correction to the draft discharge permit. No other term or condition of the proposed draft discharge permit will require change.

- *Will the discharge impact a local stream in Bridgewater and what is the classification? The discharge will have no impact on any local streams in Bridgewater. This is a groundwater discharge to a GA designated groundwater. The discharge will be fully renovated to meet the Water Quality Standards and will comingle with groundwater prior to leaving the site or encountering a point of environmental discharge such as the downgradient wetland.*

- *The tentative permit states that the discharge of the treatment plant is to groundwater. Have the neighboring wells been tested for potential hydraulic connectivity? Have the local bedrock fractures been studied by a geologist to determine if potential for local well impacts exist on both groundwater quantity and quality? There is no hydraulic connection between the proposed leaching system and the neighboring wells because the beds are lined by an impervious barrier and will transmit flow and renovate the effluent to meet the Water Quality Standards prior to being dispersed through the natural soils and comingling with groundwater.*

- *Can DEEP guarantee that the applicant has a 30gpm water supply? Even under drought? Evaluation of the potable water supply is outside the regulatory scope of the DEEP's review of this application, which is limited to the proposed wastewater treatment systems and discharge. Consequently, adequacy of the water supply is not an issue in this proceeding.*

- *Why would the CT DEEP approve a wastewater treatment design that is designed for flow from 282 bedrooms when the applicant has no proven well yields from on-site wells? The reason is that the CT DEEP's regulatory role in reviewing the proposed application is limited to evaluating the wastewater treatment system and proposed discharge. Questions pertaining to the proposed water supply should be directed to the CT DPH Drinking Water Section, which provides the relevant regulatory oversight.*

2. Written Comments Submitted by Bridgewater First Selectman, Curtis Read, on December 13, 2016

These comments were read into the record and were handed to the parties at the Hearing night on December 13, 2016. The DEEP responses are listed below in italicized text immediately preceding Mr. Read's comments:

On August 18, 2016 the Commissioner of the DEEP gave notice of a tentative decision to "issue a permit for this discharge to the groundwaters in the Shepaug River Watershed." This does not build confidence that the technical review was thorough. Discharge will go to the Housatonic Watershed and will be a combination of surface and ground waters.

This issue was addressed during the Status Conference and again during the public hearing on December 13, 2016 in Bridgewater. DEEP concurs that the discharge occurs to the groundwaters of Housatonic River Watershed and has made the appropriate administrative change to the draft discharge permit to reflect this.

Mr. Carr states in his submissions for Joshua Heights that the receiving soils will be from the Hollis complex. Please see the attached chart from the USDA. Hollis soils are "Shallow to Bedrock", "Fine Sandy Loam" with an average depth to a restrictive layer of 15 inches. Its "Septic Potential (USDA-NRCS)" is "No Potential". Clearly, this is an unfortunate native soil for the intended application of 1,800 gallons of wastewater each hour. Some will infiltrate into the bedrock fractures and water table locally (Classification GA groundwater) while another significant portion will erode the Hollis soils and flow downgradient to the wetlands/pond and headwaters of Clapboard Oak Brook, a Classification A Surface Water stream. Please see the attached definition.

The NRCS classification of soils is only useful as general information before going in the field and performing actual site investigation, which is necessary to characterize actual soil conditions onsite. According to the NRCS Web Soil Survey, the soils onsite are Hollis-Chatfield-Rock outcrop complex, and the NRCS historic survey report designates soils at this site as a combination of Charlton-Paxton-Hollis Association soils. The Hollis-Chatfield-Rock outcrop complex is a soil complex with an intricate pattern of soils that cannot be separated on maps. It contains 35 percent of well drained and somewhat excessively drained Hollis and similar soils, 30 percent of moderately deep, well drained and somewhat excessively drained Chatfield and similar soils, 15 percent Rock outcrop and 20 percent of other minor components. Charlton-Paxton-Hollis Association soils are 35 percent Charlton soils, which are gently sloping to steep, well-drained, deep soils that are formed in glacial till, 25 percent Paxton soils, which are well-drained fine sandy loams that formed in glacial till and 25 percent Hollis soils formed in till which are shallow to bedrock and commonly covered in stone and boulders and rock outcrops. These descriptions are generally consistent with the results from the specific site investigation performed at this site and indicate that the onsite soils have sufficient depth and hydraulic capacity for the proposed systems (Applicant exhibit S-11).

Through site specific soil investigation and testing, the applicant has demonstrated that the soils downgradient of the lateral sand filters can accept and transmit the effluent without surface breakout. The treated effluent will not infiltrate into bedrock because the leaching beds will be lined by an impervious barrier to capture and transmit flow enabling renovation of the effluent to meet the Water Quality Standards prior to being dispersed through the natural soils and comingling with groundwater.

Thus, the discharge will be fully renovated in groundwater before encountering any downgradient wetland, pond or watercourse.

"The proposed permit, if issued by the Commissioner, will require periodic monitoring to demonstrate that the discharge will not cause pollution." What monitoring? Wells, frequency, parameters measured? This should all be stringent and site specific. There should be pre and post development monitoring of wells within a significant radius including the PWS at Bridgewater Commons. The surface water also needs monitoring and contingencies for remediation, if degraded over time.

The Permittee will be required to perform groundwater monitoring for nitrogen, phosphorus and bacteria in accordance with Table M, which is incorporated as Attachment 3 in the draft permit.

The discharge will be fully renovated in groundwater before groundwater leaves the site or reach a wetland or a watercourse. The discharge will be fully renovated to meet the Water Quality Standards, which means suitable for drinking and other domestic uses without treatment, prior to reaching the wetland and have no impact on any local streams in Bridgewater.

Has the DEEP contacted the references noted in the permit application. The similar Fluidyne ISAM systems cited are trailer parks, a seasonal camp and locations far away from Connecticut. Has the DEEP permitted this design recently? A similar infiltration bed system was approved by the CT DEEP at Woodridge Lake in Goshen. This system has failed and been under orders for over 20 years. The currently proposed fix is to build a pipeline from Goshen to the Torrington sewage treatment plant

across two watershed basins, and public water supply lines for a cost estimated to be 7-9 million dollars.

Fluidyne ISAM is a proprietary system which employs an SBR technology. This has been reliably in use for many years. The information provided in the application contains supporting documentation demonstrating that this technology has been successfully employed to treat discharges in any climates. The Goshen site referenced by First Selectman Read in his testimony employs a different technology, does not have nitrogen removal components and employs totally different leaching fields. In contrast, the other facility using Fluidyne treatment technology in Connecticut provides effective treatment and downgradient monitoring wells consistently meet the drinking water standards.

The permits from the CT Dep't of Health Services for the water supply with a continuous sustainable yield of 30 gallons per minute do not appear to be in place. The applicant should submit these approvals or supporting data for the well locations (2 more needed), the simultaneous 72 hr pump tests, the drawdown analysis on neighboring wells during yield tests. Given that there are serious water supply issues around the proposed Joshua Heights project, these approvals should be in place prior to permitting such a large wastewater treatment system.

This comment is irrelevant to these proceedings, as authorization of the water supply is not within the regulatory purview of the DEEP for purposes of this permit application.

Summary: Based on my experience with many aspects of water supply and quality, I think the scale of this project is too large for the local environment. It will most probably deplete and degrade groundwater, and tend to pollute what is now a pristine stream with native trout habitat. The wastewater generated will contain some amount of nitrogen and phosphorus compounds as well as emerging unregulated contaminants such as commonly used pharmaceuticals. Bridgewater takes pride in its environment and wants it to be protected, not threatened or compromised. It is the job of the CT DEEP to do the same, and we look to you to exercise your wisdom and discretion on this project.

This paragraph restates in summary form Mr. Read's comments, which are already addressed above, and introduces a new comment regarding potential water quality impacts from pharmaceuticals. Mr. Read's attachment regarding prescription drugs and other newly emerging contaminants in sewage refers to municipal sewage treatment plants with discharge to surface waters and does not present information relevant to this proposed discharge. A properly designed residential septic system with discharge to subsurface soils will treat the discharge to appropriate levels for all pollutants typically found in residential sewage. The Department has no evidence that residential use of medicinal drugs will cause interference with an onsite sewage treatment and subsurface disposal system or create adverse impact on groundwater quality.

3. Comments Received During Public Hearing on December 13, 2016

The following set of questions and comments were summarized by the hearing officer after the hearing on December 13, 2016 and represent comments from the public that did not submit written comments. The questions are written in normal text and the DEEP staff response is written in italicized text:

CARR – PUBLIC COMMENTS/QUESTIONS

Who is responsible if the system fails (both for fixing and for liability- cost)?

The permittee will be responsible for system repairs and it is likely that the permit would be transferred to a future owner or an association representing the property. Since this development does not include a community sewerage system, the developer is not obligated under Connecticut General Statutes Section 7-246f to enter into a funding agreement with the town that addresses future operation and maintenance. In the past, some municipalities have developed local ordinances to address similar developments and require facilities employing Alternative Technologies to establish a fund for future repairs and equipment replacement.

What happens if there is a loss of power, for either a short or long period of time?

DEEP will require that a generator be provided in the event there is a loss of power to ensure proper functioning of the system. This component is usually proposed in the construction phase and it is specified on the plans and specifications prepared for approval to construct.

Has a “yield test” been done on the wells?

Yield testing of a water supply well is not relevant to the proposed wastewater treatment system and discharge and is therefore, not relevant to these proceedings. However, Mr. Carr provided his response to this question during his testimony on December 19, 2016.

Were the 3 wells drilled simultaneously or in a series?

This question is not relevant to these proceedings. However, Mr. Carr provided his response during his testimony on December 19, 2016.

Are the required certifications for the wells in place?

This point is not relevant to these proceedings. However, Mr. Carr provided a response during his testimony on December 19, 2016.

Was there was a soils evaluation?

There was extensive soil investigation performed on this site. The site testing was performed in 1986, 1997, 2000, and 2005. The local health department was present for some of these investigations and a DEEP representative was present for others. Because there was extensive information from this site testing and there was no alteration to the site, it was not necessary to perform additional site testing. A load test was performed more recently, which offered more information about the hydraulic conductivity of the receiving soils. Applicant’s exhibit S-11 contains the information regarding the site investigation performed on site.

Many questions reflected a misunderstanding of the treatment technology and many concerns applied to surface water and not groundwater issues. This system is designed to discharge to groundwater and not surface water.

Ms. Culbert, Newtown Health District, Executive Director expressed a concern with the adequacy of the water supply on this property. Ms. Culbert also discussed the role of her office, and seemed to be concerned about water supply, noted idea of “natural water” v. drinking water, and was worried about chemicals to treat the water being in the drinking water that would result.

Water supply concerns need to be directed to the Department of Public Health. Mr. Carr provided his response to this during his testimony from December 19, 2016.

DEEP staff addressed the chemical addition concern during testimony offered on December 19, 2016. The proposed wastewater treatment process is a biological process. The chemical addition is limited to carbon source (methanol, ethanol, sugar, or micro-C, etc) to enhance denitrification and an alkaline solution (sodium hydroxide, lime, sodium carbonate or sodium bicarbonate, etc) to enhance the nitrification process. Both these chemicals are biodegradable and will be consumed during treatment.

Mr. Direnzo – concerns re levels of radium in groundwater.

DPH will evaluate all relevant issues pertaining to the potable water supply.

4. Comments Received via Email from Emily Armstrong

Dear Ms. Deshais, Ms. Daha and Mr. Read,

I attended Tuesday's hearing in Bridgewater on the Joshua Heights project and am submitting some documents to you and I also have some questions.

Myself and my husband Thomas P. Gannon have owned our home at 79 Main Street North, Bridgewater CT since 1981 and my husband and his parents, Tom and Peg Gannon lived in Bridgewater since the late 50's. Our ten acres of property, much of which is wetlands, abuts the Joshua Heights property.

As I presented at the meeting, in April 1997 we were alerted that plans for an extensive housing project had been submitted to Bridgewater Town Hall and that there was an easement on the plans that allowed for the storm-water runoff to be dumped into the wetlands that are owned by myself and my husband. I remember a figure of 40,000 gallons of water a day, but I would have to confirm that on the original plans. "Storm water run-off" was described to us as the water that would run downhill from the development after rains, lawn watering, etc. and would contain oil, antifreeze, fertilizer, garden chemicals and other pollutants.

We knew nothing about such an easement and in order to protect our property we were forced to become citizen interveners in the case and hire an environmental attorney, Max Case of Jacobi, Kappel and Case. After months of title searches, testimony and hearing it was agreed that there was no such easement and there had never been an easement for this proposed drainage system. In response, the Joshua Heights project proposed a plan B, an untested series of bio-filters. We were then forced to hire scientists and other experts to inspect our property and submit evidence that the bio-filter proposal would not work. Over three years my family spent tens of thousands of dollars on legal fees, consultant fees, and title searches. We lost time attending many meetings and were subject to much worry and stress about potential damage to our investment, our home.

During the meeting you kept saying DEEP was only there about the water. My question to you is, what about the storm water run-off? It was a huge issue in the first Joshua Heights project and if the run-off does not go into the sewage system, where does it go? When I inquired of Ms. Daha after the meeting she said it just "went into the ground". Back in 1997 there was no question that there had to be a solution to where the storm water runoff would go and how it would be cleaned of pollutants before it hit the wetlands. I don't understand why, in 2016, it is not addressed.

If storm water run-off regulation is not under the purview of DEEP, can you tell me what agency in the State is responsible for it?

I am attaching five documents in three files. One set is the letters between the various attorneys concerning the illegal easement, the second is the document that claims John Carr purchased the easement (proven false), and the third is a map describing that the part of our property which is wetlands is directly downhill from the sewage plant

Our property is similar to the Joshua Heights property: rock ledge, not a lot of soil, with wells that run dry in droughts. One does not have to be a scientist to see that that geology is inappropriate to contain a sewage system and handle the daily drainage of water Mr. Carr describes into fragile wetlands. Sitting on rock ledge, the land and soil is just not that absorbent I was also struck by reports that similar sewage systems in other towns in Connecticut had failed and that the repair expenses became the Town's responsibility.

In my opinion the Joshua Heights project is a good idea in a very, very bad location. If such a development was situated on a high, flat piece of property, it could be great for the town. But all I see is a tremendous potential for failure of a plan whose approval is based solely on mathematical calculations. And because of my family's past experience with the Joshua Heights project, I doubt the veracity and truthfulness of any plan Mr. Carr submits to the State of Connecticut.

I appreciate your attention to this matter. My husband and I wish to continue to be citizen interveners in this project. Is it necessary for us to attend the meeting in Hartford in order to do that?

Yours truly,
Emily Armstrong

Ms. Armstrong's comments regarding the handling of stormwater drainage and the existence of a potential stormwater easement on her property are not relevant to this proceeding. However, during the evidentiary hearing on December 19, 2016, Mr. Carr testified that the development proposal Ms. Armstrong cites is no longer being considered. Mr. Michael Hart, Supervisor Sanitary Engineer explained that a stormwater plan is required before an approval to construct is issued. If the total disturbance from the proposed construction activity is under 5 acres, the review and approval for such plan is done at the local level. If however, the anticipated construction disturbance exceeds 5 acres, the Applicant is required to obtain permit approval from DEEP under its Stormwater and Dewatering Wastewaters from Construction Activities.

While Ms. Armstrong objects to the proposed development, she did not present any evidence to support her claim that the discharge of domestic sewage from such development proposal is inappropriate for this location.

Ms. Armstrong mentioned that she was aware of reports of other towns in Connecticut where the town became liable for a failed system, but did not present any evidence to support her claim. The Permittee has primary responsibility for remediating system failures. Since this development does not include a community sewerage system, the developer is not obligated under Connecticut General Statutes Section 7-246f to enter a funding agreement with the town to fund potential future operation and maintenance costs. In the past, other municipalities have developed ordinances to address developments like this and require all facilities employing Alternative Technologies to establish a fund for repairs and equipment replacement. Bridgewater, to date, has not enacted such an ordinance, but may pursue enacting one in the future.

5. Comments Received Via Email from Edward Galligan and Barbara McElwaine

Dear Ms. Deshais,

Thank you for coming to Bridgewater on Tuesday night so that DEEP could hear our concerns about the 100 home development that John Carr proposes to build on 24 acres on North Main Street. We would like to add a few comments to the record for consideration:

We would like to reinforce the concept that siting this septic system for 100 homes just 200 feet from the wetlands is ludicrous. What does it say about the suitability of the entire 24 acre site for a wastewater management system that the only spot to place it is the most nonsensical: close to a valuable wetland and the headwaters of a pristine brook?

We were disturbed by the relationship between Mr. Carr and DEEP. They used the same computer for their presentations, and Ms. Daha, the DEEP engineer, repeatedly referred to Mr. Carr as John which seemed both unprofessional and inappropriate given the fact that the agency is tasked with remaining impartial in this process and protecting our town's environment. This behavior suggests a relationship that could lead to bias in favor of the developer.

This proposed 100 home development has the potential to increase the population of our small town of 1600 by 20-30%. How could this kind of sudden exponential growth not impact the environment in so many ways: wastewater management, runoff from paved surfaces, chemical and pesticide residue from new roads and lawns, increased use of natural resources, pollution from cars and machinery, erosion? The impact on the town's resources is unquantifiable because never has a development of this magnitude been built here. How can you permit a project of this size to someone who has no proven track record? It's like entrusting a handyman to build a skyscraper.

Sincerely

Edward Galligan and Barbara McElwaine
Bridgewater, CT

Mr. Edward Galligan and Ms. Barbara McElwaine's main concern was the proximity of the sewage treatment and disposal systems serving a community of 100 residences to the wetlands. The Applicant has demonstrated that the wastewater will be treated and renovated to meet the Water Quality Standards prior to being discharged to the soils and groundwater downgradient of the engineered leaching field. The highly treated effluent from all four systems, comingles with groundwater, becoming fully renovated and part of the groundwater system before it reaches the wetland.

The other concerns expressed by Mr. Edward Galligan and Ms. Barbara McElwaine are related to the increase in population for the town of Bridgewater and impact of such growth of the environment and Mr. Carr's qualifications to propose such development. The wastewater treatment and disposal systems were evaluated as part of this permit application and were found by DEEP to be adequate to treat the discharge to meet Drinking Water Standards at the closest point of environmental concern. The management of stormwater is not the subject of these proceedings and will be evaluated during the construction phase when the stormwater plan is developed and analyzed prior to construction approval. The comment pertaining to stormwater discharges was addressed in more detail, by the DEEP staff in response to Ms. Armstrong's comments above.

Mr. Carr is a professional engineer, licensed in Connecticut, which qualifies him to design such systems.

6. Comments Read into the Records on December 13, 2016 by Mr. Joe Buchheit

Mr. Buchheit expressed the following four concerns:

1. Water availability for the neighborhood,
2. Water run-off from the development,
3. Fiscal/environmental impact to town and responsibility for water supply,
4. Wastewater quality.

Regulation of the water supply on the property and for the neighborhood as well as surface water run-off and fiscal impact to town are not subject of this proceeding, which is limited to a permit application for wastewater discharge generated by the proposed development. In analyzing the proposed wastewater discharge, DEEP found no environmental impact. The treated effluent quality will meet the drinking water standards in the groundwater prior to reaching the wetlands, which are located downgradient of the engineered leaching fields on the applicant's property. The wastewater treatment system will discharge to GA groundwaters and not to Class A surface waters. The proposed discharge is allowed in groundwater classified as GA under CT Water Quality Standards. The permittee will be responsible for complying with inspection, maintenance, monitoring and reporting requirements prescribed in the draft permit.

7. Comments Read into the Record on December 13, 2016 and Received Via Email from Ms. Rebekah White, Executive Board, Friends of the Lake

Ms. White requested answers to the following:

Provide clarity on the proposed destination for the effluent.

The discharge will occur to the groundwater of the Housatonic River Watershed, The biologically pretreated effluent will discharge through the leaching beds, which are lined by an impervious barrier, then seep into the natural soils where they come in contact with the groundwater becoming part of the groundwater system.

Determine and make public the proposed level of phosphorus in the effluent.

Any phosphorus present in the effluent is expected to be renovated to background levels in groundwater prior to the groundwater reaching a point of concern. The Department requires that applicants demonstrate that phosphorus is removed in the unsaturated soils under the leaching bed. Phosphorus is initially sorbed onto active soil particles, and will combine with Fe, Al or Ca present in the soils forming insoluble precipitates. The Applicant has demonstrated that the unsaturated soils beneath the leaching beds are adequate to provide sufficient sorption based on reasonable assumed phosphorus adsorption capacity of soils. Further phosphorus removal can also occur in the natural soils downgradient of the engineered leaching systems, and some phosphorus removal will be achieved through biological pretreatment.

Provide further information on steps being taken to prevent effluent discharge into the surface waters of the watershed in the event of an overflow, mechanical issue, or any design oversight.

The Applicant has demonstrated that the pretreated effluent will be fully discharged to the subsurface soils that have sufficient hydraulic capacity to disperse and transmit the treated effluent to groundwater. The applicant will also be required under the proposed permit to properly operate and maintain the system and prevent leaks and spills.

Provide further research to determine what effect the proposed effluent will have on nutrient levels of the marsh, Clapboard Oak Brook, Lake Lillinonah and any other surface water that may be impacted.

The applicant has demonstrated that that the soils beneath and downgradient of the leaching fields have sufficient hydraulic capacity to fully disperse and transmit the effluent to groundwater without surface break-out. Therefore, the proposed discharge will be fully renovated in groundwater, will be suitable for drinking or other domestic use without treatment prior to leaving the applicant's property and will not impact surface waters.

8. Comments Received from Ms. Margaret Miner, River Alliance of Connecticut (note: these comments were received after the hearing record was closed)

From Voicesnews.com, an online newspaper.

To the Editor:

Many thanks for the detailed reporting by Loumarie I. Rodriquez on the Department of Energy and Environmental Protection (DEEP) hearing on the draft permit for a wastewater management system proposed for a large residential subdivision (282 bedrooms) in Bridgewater.

The well-attended hearing for the public, on December 13, was followed on Monday, December 19, by the legally more weighty evidentiary hearing, attended only by the applicant, John Carr, and his wife; the two DEEP employees who were responsible for the draft permit; the hearing officer; and one member of the public (this writer) for part of the time.

As one should expect, the hearing was anything but contentious. The dual hearings illuminated several of the many flaws in the state's process for gathering general and expert opinion on proposed permits.

This particular hearing involved what is called an AT (Advanced Technology) system. AT systems resemble mini-municipal systems, with the digestive action of bacteria occurring one or more closed containers. They are difficult and expensive to manage successfully compared to traditional septic. Their performance record in Connecticut is poor. Therefore, they are not permitted in drinking water recharge areas.

But what seems to matter to the state is that the application look passable on paper. There is little effort to elicit evidence as to whether a particular technology has worked successfully under similar conditions; or evidence as to whether the presumed owners and operators have ever run such systems successfully; or evidence as to the management agreements among the designers, installers, and operators.

Nor do permits effectively incorporate requirements for performance bonds, money-back guarantees, ongoing review and oversight, or reliable penalties for non-compliance.

The technology often or at least sometimes can be made to perform as promised. But there is not enough attention as to whether it will perform as promised.

Margaret Miner, Rivers Alliance of Connecticut
Roxbury

From <http://www.primepublishers.com/voicesnews/opinion/letters_to_editor/thank-you-for-the-excellent-report/article_b5cde4c2-cec8-11e6-a00d-7732e1b1a04f.html>

In her letter to the editor Ms. Miner expresses her opinion that alternative wastewater treatment systems ("AT") are difficult to manage, that the DEEP has not evaluated whether the proposed technology has worked successfully, and the permit lacks financial guarantees to ensure future operation. DEEP's experience in regulating AT systems across the state is that such systems, including the leaching systems and downgradient soils onsite, can be effectively managed by properly certified wastewater treatment, which is a requirement of the proposed permit. In reviewing the application and proposed AT system, DEEP considered the discharge monitoring data from similar facilities utilizing Fluidyne technology installed throughout North America. DEEP staff also reviewed the performance of a facility using Fluidyne treatment technology in Connecticut. The data reveals that Fluidyne treatment technology provides effective treatment and downgradient monitoring wells consistently meet the drinking water standards.

Lastly, a financial guarantee for future operation of an AT system is typically a local requirement at the discretion of the municipality. The Permittee has primary responsibility for operating the system and remediating system failures. Since this development does not include a community sewerage system, the developer is not obligated under Connecticut General Statutes Section 7-246f to enter a funding agreement with the town to fund potential future operation and maintenance costs. In the past, other municipalities have developed ordinances to address developments like this and require all facilities employing Alternative Technologies to establish a fund for repairs and equipment replacement.