Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Office of Adjudications

IN THE MATTER OF	**:**	***APPLICATION #201503113***
LOVE'S TRAVEL STOP AND COUNTRY STORE	**:**	***OCTOBER 5, 2018***

PROPOSED FINAL DECISION

The Applicant Love's Travel Stop and Country Store has applied to the Department of Energy and Environmental Protection (DEEP or Department) for a permit to discharge pretreated wastewaters from a proposed Alternative Sewage Treatment System and Subsurface Disposal System to the waters of the State pursuant to General Statutes §22-430 and the Regulations of State Agencies, §§22a-430-1 through 8. The Applicant plans to build and operate a full service highway travel station at 3 Polster Road in Willington and seeks this permit to discharge up to nine thousand (9,000) gallons per day of pretreated domestic wastewaters to groundwaters on-site via the disposal system.

Following review by the Permitting and Enforcement Division of the Department's Bureau of Materials Management and Compliance Assistance, the Department issued a Notice of Tentative Determination to approve this water discharge permit on December 8, 2017. Thereafter, a petition for hearing was filed, and this hearing process was initiated. The parties in this matter are the Applicant and the Department; no petitions to intervene were filed.

An evening hearing was held at the Willington Library on April 24, 2018, at which the parties presented information and the public made comments for the record.[1] Written comments were received before, during, and after the hearing until May 4, 2018. The evidentiary hearing was held on April 26, 2018, at which the parties presented evidence and testimony.[2]

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[1] Sworn statements were made by the Petitioner Ralph Tulis, Kathleen Demers, the Vice Chair of the Willington Conservation Commission, and Chad Wilde, a Willington resident who circulated an online petition regarding protection of the watershed and native brook trout. Other members of the public also made or submitted comments.

[2] The sworn speakers attended the evidentiary hearing where they were able to supplement their comments and answered questions from the parties regarding their statements.

The parties have submitted for my consideration the attached Joint Proposed Decision (JPD), which includes proposed findings of fact and conclusions of law. The Draft Permit (Exhibit, DEEP-9), is also attached as part of the JPD.

I have considered the entire administrative record, including the documentary evidence and testimony. I have also reviewed public comments and information shared throughout this process by the Petitioner, other sworn witnesses, and by members of the public who include persons with environmental interests and affiliations.

Based on my evaluation of the record, I find that the Applicant, through the presentation of substantial evidence, has met its burden of proof by demonstrating that this proposed activity (i.e., the wastewater discharge by way of the proposed treatment and disposal system), if conducted in accordance with the provisions of the Draft Permit, complies with the relevant statutory requirements of General Statutes §22a-430 and its implementing regulations, Regs., Conn. State Agencies §§22a-430-1 through 8.

The substantial evidence in the record supports the proposed findings of fact and conclusions of law set out in the JPD and I incorporate it into this decision. The proposed discharge will protect the waters of the state from pollution. General Statutes §22a-430.

I respect and understand the sincere concerns expressed by the citizens who participated in this process. However, in making my decision, I must apply the facts in the evidentiary record to the statutory and regulatory criteria referenced above. No information or substantial evidence in the record, including any expert testimony on relevant issues, supports the denial of the Application.

The parties have also considered this public input and have responded to these concerns and questions. The JPD includes the parties' responses to letters from sworn speakers and a DEEP biologist[3] (attached Appendices 1 – 6) and to questions and concerns raised during the hearing

[3] Mr. Tulis, Ms. Demers, Mr. Wilde and Brian D. Murphy, DEEP fisheries biologist.

process, such as thermal impacts to the groundwater, loss of tree cover, proximity to wetlands, and overall management of the treatment and disposal system. (JPD, pp. 20-24.). The JPD also incorporates the parties' agreement to additional requirements regarding stormwater management during construction, a concern specifically expressed by the Petitioner. Provisions of the agreement include additional requirements related to registration for the general permit that will be necessary during construction[4], oversight of construction activities, and the involvement of the Town of Willington Planning and Zoning Commission. (JPD, pp. 25-26.)

If a Final Decision is made to approve the Application, I recommend that the Applicant be directed to submit to the DEEP construction plans and specifications for the system and any other information the Commissioner deems necessary for approval. Once the Department has verified that the proposed treatment and disposal system has been built in conformance with approved plans and specifications, the Draft Permit should be finalized and issued to the Applicant.

Janice B. Deshais, Hearing Officer

[4] General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities.

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

IN THE MATTER OF	:	**APPLICATION NO. 201503113**
	:	**FOR WASTEWATER DISCHARGES**
LOVE'S TRAVEL STOP & COUNTRY	:	**FROM SUBSURFACE SEWAGE**
STORE	:	**TREATMENT AND DISPOSAL**
3 POLSTER ROAD	:	**SYSTEMS**
TOWN OF WILLINGTON	:	

JOINT PROPOSED DECISION

PROPOSED FINDING OF FACTS

A. Project Overview

Section 22a-430 of the Connecticut General Statutes requires that any person or municipality that creates, initiates, originates or maintains a discharge to the waters of the state submit an application for a permit for such discharge, and for discharges of domestic sewage from an Alternative Sewage Treatment System, a state discharge permit issued by the Commissioner of the Department of Energy and Environmental Protection ("DEEP") is required. [exhibit DEEP-1; L. Jones Testimony, April 27, 2018]

On May 1, 2015, Love's Travel Stop & Country Store (hereinafter, "Love's" or "Applicant") submitted an application (Application No. 201503113) for a permit to discharge from a proposed Alternative Sewage Treatment System and Subsurface Disposal System to the waters of the state pursuant to Connecticut General Statutes ("CGS") Chapter 446k, Section 22a-430 and the Regulations of Connecticut State Agencies ("RCSA") Sections 22a-430-1 through 8. The proposed activity is a full service highway travel stop to be constructed and operated at 3 Polster Road in Willington, Connecticut (hereinafter, "Site") that will discharge up to nine thousand (9,000) gallons per day of pretreated domestic sewage wastewaters to groundwaters on-site via a subsurface disposal system. [exhibits DEEP-1, DEEP-13, and DEEP-14; and L. Jones Testimony, April 27, 2018]

B. Site Characteristics

1. Subsurface Investigations

The soils in the northeast corner of the Site were tested for suitability to support a subsurface disposal system. Suitable soils for a subsurface disposal system are soils that are well-drained, with sufficient hydraulic capacity determined by measuring the saturated hydraulic conductivity ("permeability") of the soil. [exhibit APP-7-1 (Section 1.2.1); M. Jermine Testimony, April 26, 2018]

Soils from two locations within the northeast corner of the property were evaluated: Area A and Area B. Figure 2 of exhibit APP-7-11 shows the locations of the two areas. On July 28, 2009, seven preliminary test pits (test pits A-01 through A-07) were conducted in Area A. On July 27, 2010, eight more test pits were conducted in Area A (test pits B-01 through B-08) and six test pits were conducted in Area B (test pits B-09 and B-11 through B-15). [M. Jermine Testimony, April 26, 2018]

The majority of the samples from Area A were found to have a permeability of less than 10 feet per day (feet/day). With such low permeability, the soils in Area A do not have enough hydraulic capacity to accept and disperse the wastewater effluent to groundwater. Area B has a hydraulic permeability rate between 30 and 50 feet/day, which can hydraulically support a subsurface disposal system. [exhibits APP-7-5, APP-7-12B, APP-7-12C, and APP-8 (drawing XC-103); M. Jermine Testimony, April 26, 2018]

2. Wetland Delineations & Evaluations

On June 3 and 4, 2009, Joshua Wilson, P.W.S. of Fuss & O'Neill, the Project Ecologist Task Manager, and a certified professional wetland scientist, performed a wetland and watercourse investigation of the Site, which included flagging the wetlands and watercourses and identification of potential environmental points of concern on the Site. The flagged wetlands and watercourses are depicted on Figure 2 of exhibit APP-2 and Drawing XC-101 of exhibit APP-8. The wetlands nearest the proposed subsurface disposal system, Wetlands H, I, and J, were preliminarily identified as the environmental point of concern. [exhibits APP-2 (Section 2.1) and APP-8 (Drawings XC-101 and CU-103); J. Wilson Testimony April 26, 2018]

i. Wetland H is located in the northwestern portion of the Site, west of the subsurface disposal system (wetland flags H800 to H848). This wetland complex is formed by an intermittent stream and groundwater seeps, which discharges off-site to Roaring Brook. Portions of this intermittent stream/seep contain standing water and, at points, flowing water. The source of recharge to Wetland H is attributed to groundwater discharge off the steep hill located to the east. [exhibits APP-2 (Section 2.2.6) and APP-7-8 (Section 8.10.3); J. Wilson Testimony, April 26, 2018]

ii. Wetland I is located downgradient and north of the subsurface disposal system (wetland flags I900 to I911). Groundwater seasonally and intermittently discharges from the steep hill located to the east and flows a short distance overland where it then infiltrates back into the ground. Hand auger refusal (e.g., glacial till and erratics) was encountered four inches below grade within Wetland I. [exhibits APP-2 (Section 2.2.7) and APP-7-8 (Section 8.10.1); J. Wilson Testimony, April 26, 2018]

iii. Wetland J is located in the west-central portion of the Site and north and adjacent to/up gradient of the subsurface disposal system (wetland flags J1000 to J1031). Wetland J receives local, shallow groundwater discharge off the steep hill located to the east as well a periodic stormwater discharge from Polster Road. Surface water flows to the west through an intermittent stream or infiltrates into groundwater. Hand auger refusal was encountered at sixteen inches. The soils in this Wetland J created a perched water table. [exhibits APP-2 (Section 2.2.6) and APP-7-8 (Section 8.10.2); and J. Wilson Testimony, April 26, 2018]

3. Assessment of Groundwater Flow and Hydrology

Standpipes were installed in specific test pits to monitor the groundwater depth over time. Standpipes installed in Area B have always been observed to be dry because the groundwater depth is deeper than the depth of the standpipes. A pre-application meeting with Ramona Goode of the DEEP was held on August 7, 2012, in which additional long term groundwater data was determined to be needed in the area of the proposed subsurface disposal system footprint. Six additional groundwater monitoring wells labeled C-01 through C-06 were installed in Area B on March 13, 2013 using a Geoprobe. The depth to bedrock was determined during the monitoring well installations to be 16 to 21 feet below grade. [exhibits APP-7-12I, APP-7-12N, and APP-8 (drawing CU-105B); M. Jermine Testimony, April 26, 2018]

The groundwater depths from these six wells were recorded twice a week from March 13, 2013 to April 8, 2013 during which the seasonal high groundwater depth was determined. In addition, groundwater measurements from USGS groundwater stations (State Stations CT-MS 44, CT-MS 74, and CT-EL 140) in the vicinity of the Site were used to approximate the local high groundwater season. The highest groundwater elevations from the measured data and the approximate date for each monitoring well and standpipe were used to design the subsurface disposal system. [exhibits APP-7-6 (Section 6.3), APP-8 (drawing CU-105B), APP-7-12E, APP-7-12F, and DEEP-17 (Section VIII.D); M. Jermine Testimony, April 26, 2018]

The seasonal high groundwater data collected during three different sampling events were compiled into a single groundwater contour map to illustrate the direction of groundwater flow. While groundwater elevations can change over time, the direction of groundwater flow is less variable. Determination of the local direction of groundwater flow is plotted from data collected during a single round of groundwater readings from wells in that area at the same time. Each sampling event displayed is representative of a group of local monitoring wells and/or standpipes. The groundwater contours created for the three areas have been displayed together to show the compilation of groundwater flow arrows rather than displaying multiple contour maps on separate sheets. [exhibits APP-7-8 (Section 8.10) and APP-8 (drawing XC-104); M. Jermine Testimony, April 26, 2018]

The analysis of the groundwater data collected during the seasonal high groundwater period indicated a potential bedrock fracture located between the proposed subsurface disposal system and Wetland H. Therefore, the nearest point of environmental concern to the proposed subsurface disposal system is conservatively considered to be the potential bedrock fracture and not Roaring Brook or Wetland H, which are down-gradient. Thus, the subsurface disposal system was designed to fully meet discharge limits at the potential bedrock fracture. A hydraulic barrier (impermeable liner) is proposed to be constructed immediately beneath the subsurface disposal system soils to prevent pre-treated wastewater from entering any bedrock fractures prior to meeting the required travel time to complete pathogen renovation. [exhibits APP-8 (drawings XC-104 and CU-105B) and DEEP-17 (Section X.F.2); M. Jermine Testimony, April 26, 2018]

The proposed development is located in the Roaring Brook watershed. The Applicant performed a hydrogeological site investigation to determine the saturated hydraulic conductivity ("permeability") of the soils, the depth of groundwater, direction of groundwater flow and groundwater gradient. The groundwater classification for the Site is GA and the groundwater was determined to flow through the Site from east to west. [exhibits APP-19-1 and DEEP-1; M. Jermine Testimony April 26, 2018; L. Jones Testimony, April 27, 2018]

C. Description of Proposed Alternative Sewage Treatment System and Subsurface Disposal System

1. Assessment of Wastewater Flow

In order to size the subsurface disposal system, the Site wastewater flows had to be determined. The proposed Site includes the following amenities: a fast food counter service restaurant, a sit-down service restaurant, truck and automobile fueling islands,

a convenience shopping area, restrooms, showers, and laundry. Published wastewater flow information from the Connecticut Public Health Code *Technical Standards for Subsurface Sewage Disposal Systems*, dated January 2008, and wastewater flow data for comfort stations from the New Jersey Department of Environmental Protection's *Technical Guidance for Inspections of On-site Wastewater Treatment and Disposal Systems*, dated July 2003 were utilized. [exhibits APP-7-8 (Section 8.3), APP-7-12O, DEEP-15 (Section IV.B, Table 4), and DEEP-17 (Section III.I.1); M. Jermine Testimony, April 26, 2018]

Projections developed by the Love's Travel Stop & Country Store staff based on operations at other locations support an average daily flow of up to six thousand (6,000) gallons per day average daily flow. Applying a 1.5 factor of safety yielded a maximum design flow that was calculated to be nine thousand (9,000) gallons per day. [exhibits APP-7-8 (Section 8.3) and APP-7-12O]

2. Assessment of Wastewater Characteristics

The next step in the design of the Alternative Sewage Treatment System was to determine the wastewater composition for the following pollutant parameters: five day biological oxygen demand (hereinafter referred to as "BOD_5"), total suspended solids (hereinafter referred to as "TSS"), total nitrogen, and total phosphorus. [exhibit DEEP-17 (Sections X.C.1 and X.G); M. Jermine Testimony, April 26, 2018]

Wastewater pollutant concentrations were estimated based on data from similar facilities. Published raw sewage characteristics for two travel centers in Connecticut (reference numbers TC/TT-1 and TC/TT-3b) were utilized, which are included in Table 4 of exhibit DEEP-17, Section IV. Data from facility reference number TC/TT-1 was used in estimating site wastewater characteristics because of its higher concentrations in BOD_5, TSS, total nitrogen, and total phosphorus. [exhibit DEEP-17 (Section IV.D); M. Jermine Testimony, April 26, 2018]

Averages of the Discharge Monitoring Report ("DMR") influent data for the year 2012 from the Travel Center of America (hereinafter referred to as "Willington TA Center") in Willington, Connecticut were utilized. The concentrations of BOD_5, TSS, total nitrogen, and total phosphorus are all higher at the Willington TA Center than the DEEP literature for a travel center in Connecticut. These higher concentrations may be attributed to the Willington TA Center recreational vehicle dump station, which generally results in extremely high BOD_5 and TSS concentrations. The proposed Love's Travel Stop does not include a recreational vehicle dump station. [exhibits APP-7-9 (Section 9.1) and APP-7-12L; and M. Jermine Testimony, April 26, 2018]

The wastewater discharge application dated November 2012 for I-95 Southbound Service Plaza (hereinafter referred to as "Madison Southbound Service Plaza") in Madison, Connecticut includes influent wastewater total nitrogen values (this application was later approved by the DEEP). The Madison Southbound Service Plaza has approximately half the truck parking spaces and nearly twice as many car parking spaces than the proposed Love's Travel Stop with an estimated average daily flow of 10,400 gallons per day. The total nitrogen concentration is higher than that of both the DEEP literature for travel centers in Connecticut and the Willington TA Center. [exhibits APP-7-9 (Section 9.1) and APP-7-12K; M. Jermine Testimony, April 26, 2018]

The highest concentrations of BOD_5, TSS, total nitrogen, and total phosphorus collected from these three sources were rounded up for an additional factor of safety and used as the wastewater characteristic design values. Rounding up the wastewater characteristics and selecting the worst case values for BOD_5, TSS, total nitrogen, and total phosphorus adds conservatism to the overall Alternative Sewage Treatment System design. [exhibit APP-7-9 (Section 9.1); M. Jermine Testimony, April 26, 2018]

3. Detailed Description of Proposed Subsurface Disposal System

The first calculation made for determining the size of the subsurface disposal system was the Long Term Acceptance Rate (hereinafter referred to as "LTAR"). The LTAR is defined in exhibit DEEP-17 (Section X.C.1) as "...the infiltrative surface loading rate at which a subsurface disposal system will continuously accept effluent for a long period of time...". The LTAR calculation takes into account the soil hydraulic conductivity and the levels of BOD_5 and TSS in the pretreatment system effluent. The calculated LTAR value was determined to be 1.51 (gpd/sf) gallons per day per square foot using a hydraulic conductivity of thirty (30) feet/day. The maximum allowable LTAR value for pretreated wastewater allowed by the DEEP is 1.20 gpd/sf. If the subsurface disposal system were sized using an LTAR of 1.20 gpd/sf, the height of the discharge mound would be higher which would result in a greater depth of fill. The footprint of the subsurface disposal system was increased to spread the discharge mound and utilize a lower LTAR value of 1.06 gpd/sf. [exhibits APP-7-12H (Section 3) and DEEP-17 (Section X.C.1); M. Jermine Testimony, April 26, 2018]

DEEP recommends that pretreated wastewaters be discharged to the subsurface disposal system through a low pressure distribution system. The proposed subsurface disposal system would be constructed of Infiltrator Quick 4 Standard plastic chambers with pressure distribution laterals. The chambers would be placed side by side with twelve (12) inches of approved aggregate placed along the outside edges of the bed system, plus more approved aggregate placed in the spaces between adjacent chambers. The plastic chambers within the subsurface disposal system will be set up as five

independent zones, each with a central manifold and four pressure distributing laterals that would drain into the chambers between doses. The five zones would be individually pressure dosed with treated effluent by using solenoid valves housed in the control building that would open and close sequentially based on timed effluent dosing cycles. The subsurface disposal system would be dosed approximately ten times per day with each zone dosed two times a day. Leaching chamber pressure distribution will ensure distribution of the wastewater effluent across the length of the subsurface disposal system by applying it uniformly adding to the conservatism of the design. [exhibits APP-7-8 (Section 8.2) and DEEP-17 (Sections X.M.2 and X.I.4); M. Jermine Testimony, April 26, 2018]

The effective leaching surface area (hereinafter referred to as "ELA") of a subsurface disposal system is the interface area between the soil and the subsurface disposal system. The ELA was calculated to be 4.25 (sf/ft) square feet per linear foot using an LTAR of 1.06 gpd/sq ft. Based on the ELA, the required total trench length is one thousand nine hundred ninety eight (1,998) feet. The subsurface disposal system design provides two thousand (2,000) feet of plastic chambers through twenty rows each one hundred (100) feet long. The required width of the subsurface disposal system perpendicular to the local hydraulic gradient was determined using DEEP equations. The one hundred (100) foot width of the subsurface disposal system perpendicular to the local hydraulic gradient greatly exceeds the calculated minimum requirement of twenty three (23) feet adding to the conservatism of the design. [exhibits APP-7-12H (Sections 4 and 5), and DEEP-17 (Sections X.D.1 and X.E.2)]

The area below the subsurface disposal system will be excavated, lined with an impermeable liner, and filled with an engineered septic fill. The impermeable liner will act as a hydraulic barrier preventing treated wastewater effluent from discharging into the groundwater prior to full renovation. A groundwater drainage system will be constructed beneath the impermeable liner to redirect groundwater around the subsurface disposal system and to relieve any potential hydraulic pressure on the impermeable liner. The groundwater drainage system will allow the groundwater to flow in its natural path towards Wetland H. Groundwater will initially be lowered through a four (4) foot wide gravel trench extending from one (1) foot beneath the ground surface to the bottom elevation adjacent to the impermeable liner. Perforated piping located at the bottom of the gravel trench will intercept the groundwater and redirect it around the subsurface disposal system via gravity. Underdrains consisting of perforated piping placed in gravel will also be located beneath the impermeable liner to maintain the lowered groundwater table. [exhibits APP-7-8 (Section 8.10.6) and APP-8 (drawings CU-103 and CU-105B)]

The limiting factor of the subsurface disposal system design for the mounding analysis was the shallowest depth to the impermeable liner directly below the subsurface disposal system. The impermeable liner was designed to have a slope of 0.316 feet per foot directly below the subsurface disposal system and 0.0285 feet per foot prior to the groundwater table. [exhibit APP-7-8 (Section 8.8); M. Jermine Testimony, April 26, 2018]

The height of the mounded pretreated wastewater over the impermeable liner was calculated to be 1.3 feet using DEEP equations. At least three (3) feet of unsaturated soil between the bottom of the leaching chambers and the top of the groundwater mound was provided to meet DEEP requirements and provide further wastewater renovation in the receiving soil. [exhibits APP-7-12H (Section 5) and DEEP-17 (Section X.E.2); M. Jermine Testimony, April 26, 2018]

4. Detailed Description of the Amphidrome Wastewater Treatment System

Fats, oils, and grease (hereinafter referred to as "FOG") are typically found in wastewaters discharged from facilities serving food. Additionally, the BOD_5, TSS, and total nitrogen are anticipated to be up to five times more concentrated than typical residential wastewater. These wastewater characteristics qualify as high strength and require pretreatment to minimize the size of the subsurface disposal system and prevent clogging of the infiltrative surface at the soil. [exhibits APP-7-9 and DEEP-17 (Sections XI.A and IX.C); M. Jermine Testimony, April 26, 2018]

The Alternative Sewage Treatment System technology that has been selected and designed for the Site is an Amphidrome Wastewater Treatment System (hereinafter, "Amphidrome System"). The Amphidrome System is a submerged attached growth biological reactor that uses a specific manufactured silica-sand media to filter TSS from the wastewater and provide surface area for biodegradation of BOD_5 and total nitrogen. The Amphidrome System is listed in exhibit DEEP-17 (Section XI.C.1) as a pretreatment system that has been utilized in approved applications. The Amphidrome System was sized to reduce the estimated wastewater concentrations of BOD_5, TSS, and total nitrogen to meet regulatory wastewater constituent limits prior to discharging to the subsurface disposal system. [exhibits APP-7-8 (Table 8-2) and APP-7-9 (Table 9-3); M. Jermine Testimony, April 26, 2018]

The entire pretreatment system consists of: two grease interceptors, two septic tanks that act as anoxic tanks, a pump vault, the Amphidrome main reactor tank, a backwash mud well, a main clear well, a polishing reactor tank (referred to as the "Plus" reactor by the manufacturer), and a clear well dosing chamber that pumps the pretreated effluent to the subsurface disposal system. A plan-view schematic of the Alternative Sewage Treatment System is shown in exhibit APP-8 (drawings CU-106 and CU-107);

and a profile-view schematic is shown in exhibit APP-8 (drawings CD-506 and CD-507). A flow diagram of the pretreatment system is provided in exhibit APP-8 (drawing CD-506). The pretreatment system will undergo periodic backwashing cycles where the wastewater would be recirculated from the main clear well through the main reactor tank, into the mud well, and pumped to the first anoxic (septic) tank. Similarly there would be a backwash cycle from the dosing clear well through the polishing reactor tank, into the mud well, and also pumped to the first anoxic tank. [exhibits APP-7-9 and APP-8 (drawing CD-506); M. Jermine Testimony, April 26, 2018]

Two grease interceptors, arranged in series, will provide the required minimum of twenty-four (24) hours of liquid detention time at the peak rate of discharge and an additional thirty three percent (33%) volume for storage of the FOG that floats on the wastewater and any solids that may collect at the bottom of the interceptors. [exhibits DEEP-15 (Section V.C.) and DEEP-17 (Section IX.C); M. Jermine Testimony, April 26, 2018]

Two septic tanks, arranged in series, are required to provide a minimum twenty-four (24) hours of liquid detention time at the peak rate of discharge into the septic tanks in the amount of nine thousand (9,000) gallons. In connection with the Amphidrome System, the septic tanks act as anoxic chambers and are designed to provide flow equalization. The Amphidrome vendor recommends a capacity of ten thousand (10,000) gallons for the anoxic chamber. To ensure adequate capacity, there would be two septic tanks with a total combined capacity of twelve thousand (12,000) gallons. [exhibits APP-7-9 (Section 9.3), APP-7-12J, DEEP-15 (Section V.B.2), and DEEP-17 (Section IX.B); M. Jermine Testimony, April 26, 2018]

Flow equalization regulates loading to the pretreatment processes as well as the subsurface disposal system during peak daily flow. Based on the inlet and outlet pipe configuration in the second anoxic (septic) tank coupled with the proceeding pump vault, an additional four thousand and thirty (4,030) gallons of equalization volume has been provided. [exhibits APP-8 (drawing CD-506) and APP-17 (Section IX.F); M. Jermine Testimony, April 26, 2018]

Chemical solutions used for cleaning floors and sanitizing food processing and serving areas can have an adverse toxic effects on the biological activities in the grease interceptors, anoxic tanks, Amphidrome System, and subsurface disposal system. The floor drainage systems will discharge to a dedicated two thousand (2,000) gallon holding tank, provided with a high-level alarm system, that will be pumped out for off-site disposal when full. Best operating practices would be instituted at the Site to prevent the disposal of high strength commercial cleaners and sanitizers into the Alternative Sewage Treatment System. [exhibits APP-7-9 (Section 9.10), APP-7-12Q,

APP-8 (drawing CU-106), and DEEP-17 (Section IX.D); M. Jermine Testimony, April 26, 2018]

5. Nutrients and Pathogen Renovation

Nitrogen: The Alternative Sewage Treatment System will treat the total nitrogen to ten (10) milligrams per liter to meet the drinking water standards prior to discharging to the subsurface disposal system. The subsurface disposal system will further renovate the total nitrogen to 7.78 milligrams per liter prior to discharging to the groundwater. [exhibits APP-7-8 (Section 8.12), APP-7-12H (Section 14), and DEEP-17 (Section X.G.4); M. Jermine Testimony, April 26, 2018].

Phosphorous: The capacity of the unsaturated soil beneath the subsurface disposal system is required to hold a minimum of six months-worth of phosphorus. The Site was calculated to provide nineteen months capacity for the estimated concentration of phosphorus in the pretreated wastewater. [exhibits APP-7-8 (Section 8.13), APP-7-12H (Sections 15), and DEEP-17 (Section X.G.4 and Appendix F); M. Jermine Testimony, April 26, 2018].

In the event that the groundwater monitoring results indicate that the phosphorous sorption capacity of soils become exhausted, the Alternative Sewage Treatment System has the capability of removing phosphorous through the addition of chemicals into the Alternative Sewage Treatment System. [A. McBrearty Testimony, April 26, 2018]

Pathogens: The DEEP requires a minimum twenty-one days of travel time from the bottom of the subsurface sewage disposal system to the environmental point of concern and is based on the receiving soil permeability rate (in this case, 50 ft/day in septic fill soils). This travel time is required for the die-off of bacteria and inactivation of viruses. The vertical travel through unsaturated soil was calculated to take 7.4 days and the horizontal travel in saturated soils to the end of the impermeable liner was calculated to take 15.8 days. This combined travel time is equal to 23.2 days, which exceeds the twenty-one day requirement. The travel time calculation adds conservatism to the design because the septic fill soil (as a whole) will have a homogenous permeability rate between 30 ft/day and 50 ft/day. [exhibits APP-7-12H (Section 6) and DEEP-17 (Section X.B.4)]

D. Department Application Review Process

Discharges to the waters of the state must be consistent with Connecticut Water Quality Standard Regulations ("WQS"), more specifically, Sections 22a-426-1 through 22a-426-9 of the RCSA. The WQS sets objectives for existing and future water quality and establishes a program to implement these objectives. Groundwater classified as GA is designated to be used for existing private and potential public or private supplies of water suitable for

drinking without treatment, and for base flow for hydraulically connected surface water bodies. Permits to discharge wastewaters in a class GA area may be issued for: treated domestic sewage as defined in RCSA Section 22a-430-1; wastes generated by certain agricultural practices; certain water treatment waste waters from public water supply treatment systems; certain minor cooling waters or clean water; and other wastes that are predominately human, plant, or animal in origin, so long as any such wastes are of natural origin, easily biodegradable and, if properly managed, pose no threat of pollution to groundwater. [exhibits DEEP-1 and DEEP-12; L. Jones Testimony, April 27, 2018]

The proposed development is located in the Roaring Brook watershed. The Applicant has performed a hydrogeological site investigation to determine the saturated hydraulic conductivity ("permeability") of the soils, the depth of groundwater, direction of groundwater flow and groundwater gradient. The groundwater classification for the Site is GA and the groundwater was determined to flow through the Site from east to west. [exhibits APP-19-1 and DEEP-1; M. Jermine Testimony April 26, 2018; L. Jones Testimony, April 27, 2018]

1. Sufficiency Review of Application

   The Department performed a sufficiency review of the Application. On May 21, 2015, the Department issued a Notice of Insufficiency. Love's submitted the required information and the Department issued a Notice of Sufficiency on June 10, 2015. [exhibits DEEP-1, DEEP-3, and DEEP-4; and L. Jones Testimony, April 27, 2018]

2. Technical Review of Application

   Following the Sufficiency Review, the Department performed a technical review of the Application. Maximum design flow for the proposed development was determined by the Applicant and Department to be nine thousand (9,000) gallons per day (six thousand (6,000) GPD average daily flow). The Site will include a full service highway travel stop consisting of a fast food counter service restaurant, a sit-down service restaurant, truck and automobile fueling islands, a convenience shopping area, restrooms, showers and laundry. [exhibit DEEP-1; L. Jones Testimony, April 27, 2018]

   To reduce the high-strength wastewater anticipated from the proposed food services and low flow bathroom fixtures, the Applicant has proposed an Alternative Sewage Treatment System ("ATS") that includes biological wastewater pretreatment and a subsurface disposal system. The ATS includes an Amphidrome Wastewater Treatment System, which is a submerged attached growth biological reactor that uses a specific manufactured silica sand media that provides a surface area for the growth of microorganisms to biochemically reduce organics (i.e. BOD_5), total nitrogen, and to filter suspended solids from the wastewaters. [exhibit DEEP-1; L. Jones Testimony, April 27, 2018]

The ATS also includes a subsurface disposal system, which was sized based on a conservative effluent loading rate, also known as Long Term Acceptance Rate ("LTAR") at the soil interface with the base of the leaching system. LTAR is the infiltrative loading rate at which a subsurface disposal system continuously accepts effluent for an extended period of time, and is a function of wastewater and soil characteristics. For soils having a minimum permeability of twenty-eight feet per day (28 feet/day), the maximum LTAR allowed by the Department for effluent pretreated by an ATS is 1.2 gallons per day per square foot of effective leaching area. The Applicant proposes to use engineered septic fill having a soil permeability of thirty-feet per day (30 feet/day) and has sized the engineered subsurface leaching system based on a conservative LTAR of 1.06 gallons per day per square foot. [exhibit DEEP-1; L. Jones Testimony, April 27, 2018]

The subsurface disposal system will consist of twenty (20) rows of Infiltrator Quick 4 Standard plastic chambers with pressure distribution laterals that will be placed in thirteen (13) to twenty-four (24) feet deep engineered septic system fill placed over an impermeable liner. The chambers will be separated into five zones that will be individually pressure dosed. The Applicant demonstrated that the subsurface disposal system will further renovate the effluent from the Alternative Sewage Treatment System as follows:

iv. Bacteria and Virus Inactivation

The Applicant is required to demonstrate that the subsurface disposal system will provide a minimum of two (2) feet of vertical separation between the bottom of the leaching structure and mounded groundwater, and that there is sufficient horizontal distance for the effluent to continue to travel through saturated soils for at least twenty-one (21) days prior to encountering a down-gradient watercourse, wetlands or the property line.

The subsurface disposal system will be constructed in engineered septic fill over an impermeable liner designed to provide three (3) feet of vertical separation between the bottom of the leaching structure and saturated soils.

The Applicant has demonstrated that the effluent will then flow through saturated soils for at least twenty one (21) days prior to flowing through native soils and discharging to groundwater. This demonstration was based on a conservative engineering calculation that uses the highest permeability value for the proposed engineered septic system fill. The subsurface disposal system is designed to provide horizontal saturated flow over the impermeable liner and will ensure full renovation

of the effluent prior to entering the groundwater and prior to reaching the point of environmental concern, which is Wetland H.

v. Nitrogen

The Applicant is required to demonstrate that the Department of Public Health Drinking Water Standard (exhibit DEEP-15) of ten (10) mg/l for nitrate can be met prior to reaching the environmental point of concern down gradient of the subsurface disposal system. For a conventional leaching system it is assumed that twenty percent (20%) of the nitrogen is removed in the septic tank and another twenty percent (20%) is removed in the leaching system. The remaining nitrogen is then nitrified as it travels horizontally through the soils and is diluted by infiltrated precipitation.

The Applicant proposed an ATS that utilizes biological treatment to reduce the total nitrogen to ten (10) mg/l prior to discharging the effluent to the subsurface disposal system. Further renovation is expected to occur as the effluent travels through the subsurface disposal system and in the native soils prior to reaching any point of environmental concern. The Applicant will perform groundwater monitoring at the point of environmental concern to ensure that the total nitrogen does not exceed seven (7) mg/l based on a twelve-month rolling average.

vi. Phosphorous

The Applicant is required to demonstrate that six (6) months of phosphorous production can be adsorbed by the unsaturated soils under the subsurface disposal system.

The Applicant has demonstrated that the proposed engineered septic fill beneath the leaching structures has sufficient capacity to provide nineteen (19) months of phosphorus adsorption. Additional phosphorous removal is expected to occur as the effluent travels through the downgradient native soils. [exhibits APP-19-1 and DEEP-1; M. Jermine Testimony April 26, 2018; L. Jones Testimony, April 27, 2018]

Due to the variability of the permeability within the native soils and shallow groundwater depths, the entire length of the subsurface disposal system will be provided with an impermeable liner. The length of the subsurface disposal system is based on a conservative engineering calculation that ensures twenty-one (21) days of horizontal travel time through saturated soils will occur within the subsurface sewage disposal system to provide proper bacterial removal and viral inactivation prior to the effluent discharging into native soils and groundwater. [exhibits APP-19-1 and DEEP-1; M. Jermine Testimony, April 26, 2018; L. Jones Testimony, April 27, 2018]

A groundwater drainage system consisting of: (1) an up-gradient French drain, (2) an underdrain system located beneath the impermeable liner along the length of the subsurface disposal system, and (3) a receiving subsurface gravel trench ("dispersion trench") to re-infiltrate at the end of the subsurface disposal system, will control the depth of seasonally high groundwater. The groundwater underneath the subsurface disposal system will be lowered approximately two to five feet beneath the impermeable liner to prevent upward hydraulic pressure from groundwater. The proposed groundwater controls will have no negative hydraulic impact on the surrounding wetlands. The dispersion trench at the end of the subsurface disposal system will allow the mixing of the intercepted groundwater and the renovated effluent before discharging into the groundwater. The flow transition from the engineered septic fill to the natural soil will be even due to the similar permeability rate (30 feet/day) of both materials. [exhibits APP-19-1 and DEEP-1; M. Jermine Testimony, April 26, 2018; L. Jones Testimony, April 27, 2018]

On December 8, 2017 the Department issued a Notice of Tentative Decision with the intent of issuing a permit for this application. The notice was published in the Hartford Courant and solicited comments from the public within thirty (30) days of the date of publication. During the comment period, a petition requesting the Department to hold a public hearing that contained comments was received in a timely manner, however, the Department did not receive any other comments from the public. [exhibits DEEP-1 and DEEP-8; L. Jones Testimony, April 27, 2018]

The Department published a Notice of Public Hearing in the *Hartford Courant* on March 7, 2018. [exhibit DEEP-11; L. Jones Testimony, April 27, 2018]

E. Hearing Process

On January 11, 2018 a Notice of Status Conference was issued by the Hearing Officer Janice Deshais and the parties were informed of the Office of Adjudication Email Filing and Service Documents Policy. A Status Conference was held on February 21, 2018 during which the parties were named (i.e., Love's Travel Stop & Country Store and the Department), dates for a Site visit, pre-hearing conference and hearing were scheduled, and procedural directives for the parties were issued.

A Pre-hearing Conference was held on April 3, 2018. At this conference the Hearing Officer, together with the parties and the Petitioners' representative, reviewed the issues presented for adjudication, considered the parties' proposed witnesses and exhibits, confirmed dates for the hearing, and discussed outstanding matters in preparation for the hearing. Kathleen Demers, Vice Chair of the Willington Conservation Commission submitted a document presenting questions and concerns regarding the Applicant's proposal.

Hearing Officer Janice Deshais conducted a Site visit on April 23, 2018. Both parties were present at the Site, in addition to members of the public. During the Site visit, the characteristics and features of the Site were viewed, including Wetlands H, I and J, Roaring Brook, and the locations of all important components of the proposed wastewater treatment and subsurface disposal system were identified.

The Public Hearing began on April 24, 2018 with an evening session in Willington. The purpose of the evening hearing was to describe the Applicant's proposal and provide an opportunity for public comment. The Hearing Officer made brief opening remarks regarding the agenda and the procedures for public comment. The Applicant's design engineer, Matthew Jermine, P.E. of Fuss & O'Neill, presented an overview of the Applicant's proposal that is the subject of the permit application. Lauren Jones of the Connecticut Department of Energy and Environmental Protection, Bureau of Materials Management and Compliance Assurance, presented a summary of the proposed permit, the permit application review, and administrative process. Following these presentations, the remainder of the evening hearing was used to receive public comments. Comments were provided by Ralph Tulis, P.E., the Petitioner, who repeated some of his concerns expressed in the petition and added a few more comments. He was followed by Kathleen Demers, Vice Chair of the Willington Conservation Commission, and Chad Wilde a resident of Willington. Several people from the audience spoke and provided written comments, which are part of the hearing record.

The proceeding continued on April 26, 2018 with the evidentiary portion of the hearing, which began with Applicant's testimony:

The design engineer, Matthew Jermine, P.E. of Fuss & O'Neill, testified in support of the Notice of Tentative Determination and proposed permit. Mr. Jermine gave an overview of the Alternative Sewage Treatment System and subsurface disposal system, the basis for the proposed design, and the conservatism that was incorporated into the design. Mr. Jermine also clarified the following public concerns:

1. The proposed retaining walls located adjacent to Wetlands I and J would not affect the natural flow of groundwater. The proposed retaining walls are to be modular concrete block retaining walls that contain cracks between the modular blocks that would allow for the passage of groundwater, therefore not disrupting the natural flow of groundwater. [exhibit APP-8 (drawing CD-503); M. Jermine Testimony, April 26, 2018]

2. The ability of the soils to allow the infiltration of water is based on the soil's permeability. Under a heavy rain event or snow melt conditions, any excess water that cannot infiltrate into the soils will runoff. The design of the subsurface disposal system

accounts for the infiltration of water from precipitation. Although there will be berm material that is a lower permeability soil (less than 10 ft/day) above the subsurface disposal system, these soils match the permeability of the existing soils located upgradient of the subsurface disposal system. [exhibits APP-7-12H (Section 11) and APP-8 (drawings XC-103 and CU-105B); M. Jermine Testimony, April 26, 2018]

Rick Shuffield, the Vice President of Real Estate & Development at Love's Travel Stop & Country Stores was the second witness for the Applicant to provide testimony on April 26, 2018. Mr. Shuffield discussed the capacity of the proposed Alternative Sewage Treatment System and subsurface disposal system:

1. The design flow for the Alternative Sewage Treatment System and subsurface disposal system was determined based on Site constraints consisting of the number of: parking spaces, restaurant seats, washing machines, and the availability of showers. A major source of wastewater flow at the facility will be from the showers that are available only to truck drivers. The number of truck drivers on-site is limited by the number of truck parking spaces. Based on operations of other Love's Travel Stops, it is typical for all the truck spaces to be full by 4:00 pm each day, thus limiting the number of truck drivers on-site to use the showers. [exhibits APP-7-12O; R. Shuffield Testimony, April 26, 2018]

2. The Site does not have available land area for future expansion of the facility. [R. Shuffield Testimony, April 26, 2018]

Andrew McBrearty, P.E. of F. R. Mahoney & Associates was the third witness to provide testimony on April, 26, 2018. Mr. McBrearty is the Director of Engineering and represents the Amphidrome System. Mr. McBrearty is involved in all phases of the Amphidrome process including the design, startup, operator training, and process troubleshooting. Mr. McBrearty provided testimony on the operation and equipment of the Amphidrome System:

1. The only mechanical components of the pretreatment system are a pair of blowers and a few pumps. The pumps have redundancy in the event that a pump was to fail. [A. McBrearty Testimony, April 26, 2018]

2. The pretreatment system will be provided with a backup generator in the event of a temporary power outage. If the generator did not work, no power to the Site would mean no power to the well pumps; therefore potable water could not be supplied to the Site. With no potable water provided to the Site, no wastewater would be produced. The wastewater in the pretreatment system prior to power failure would be stored, since there would be no power to pump the wastewater to the subsurface

disposal system. If the system were to remain idle, the system would recover quickly once it is operational again. There are Amphidrome systems throughout Cape Cod that are only used seasonally and mainly on the weekends that perform well. [A. McBrearty Testimony, April 26, 2018]

3. The blowers are typically the noisiest piece of equipment; however the Manufacturer of the specific blowers selected are known for producing quiet blowers. A conversation can be held in the same room as the blowers. Furthermore, the blowers will also be housed inside a control building. [A. McBrearty Testimony, April 26, 2018]

Joshua Wilson, P.W.S. of Fuss & O'Neill was the fourth and final person to provide testimony on April 26, 2018. Mr. Wilson is the Project Ecologist Task Manager and a certified professional wetland scientist. Mr. Wilson provided clarifications and a recommendation concerning potential disturbances to wetlands:

1. Wetland H is a stream surrounded by wetland soils and the brook trout take refuge within the stream itself, not the soils. Mr. Wilson also discussed how construction is the only time sedimentation could become an issue in the area of the subsurface disposal system. A sedimentation and erosion control plan would be followed closely during construction. [J. Wilson Testimony, April 26, 2018]

2. There would be no direct disturbances to wetlands and the proposed activity would take place in the upland review area only. [J. Wilson Testimony, April 26, 2018]

3. It is recommended that a dense barrier cover of shrubs be planted in place of lost tree cover bordering Wetlands H, I, and J from construction of the subsurface disposal system. Shrubs provide a denser curtain of shade than trees and also create a quicker network of roots for long-term slope stability. [J. Wilson Testimony, April 26, 2018]

The proceeding continued on April 27, 2018 with the testimony of Lauren Jones, Sanitary Engineer with the DEEP Bureau of Materials Management and Compliance Assurance. Ms. Jones testified in support of the Notice of Tentative Determination and proposed permit based on the technical review of the permit application, DEEP design criteria and regulatory requirements. [L. Jones Testimony, April 27, 2018]

1. Ms. Jones described the administrative process for permit issuance and the requirements for operation, maintenance, monitoring and reporting included in the draft permit. [L. Jones Testimony, April 27, 2018]

2. She further offered response to some of the comments received during the public hearing on April 24, 2018 and she introduced a new exhibit DEEP-19 the Department's presentation on April 24, 2018. [L. Jones Testimony, April 27, 2018]

3. The Department's staff response to the comments that were included in the petition for a hearing are included in exhibit DEEP-1. [DEEP-1, and L. Jones Testimony, April 27, 2018]

Michael Hart, Supervisor Sanitary Engineer with the DEEP Bureau of Materials Management and Compliance Assurance provided testimony and offered clarifications on the following:

1. The use of a groundwater control system under the subsurface disposal system does not make the system more "complex" as indicated by public comments. DEEP's regulatory definition of a subsurface sewage disposal system includes the use of groundwater controls to ensure that the system properly operates. Groundwater controls are a common feature used with subsurface disposal systems to lower groundwater levels. [M. Hart Testimony, April 27, 2018]

2. Clarification that any Alternative Sewage Treatment System is within the Department's jurisdiction regardless of the design flow. [M. Hart Testimony, April 27, 2018]

3. Discharges from the proposed Alternative Sewage Treatment System will have no thermal impact on the receiving groundwater. As stated in the DEEP's guidance [exhibit DEEP-17 (Section IX.C, Page 3)], soils at depths four (4) to five (5) ft below grade are forty-eight (48) to fifty-two (52) degrees Fahrenheit. It is estimated that it will take approximately twenty-eight (28) to thirty (30) days for the wastewater to travel through the grease traps, septic tanks, Amphidrome Treatment System, and subsurface disposal system during which it will equilibrate to ambient soil temperature before it is discharged to the groundwater. [M. Hart Testimony, April 27, 2018]

4. Mr. Hart also indicated that the Permittee and the licensed wastewater treatment operator will be responsible for proper operation, monitoring and maintenance of the system, and compliance audits will be required under the proposed permit to demonstrate proper system performance. [M. Hart Testimony, April 27, 2018]

5. In addition, the Permittee is required to obtain a separate permit for stormwater discharges prior to initiating construction. [M. Hart Testimony, April 27, 2018]

F. Construction Planning

1. The Applicant has been granted the following permit/certification approvals:
   i. Town of Willington Inland Wetlands & Watercourses Commission Permit
      – Approved with conditions on May 8, 2012
   ii. Town of Willington Planning & Zoning Zone Change and Special Permit
      – Approved with conditions on September 17, 2013
   iii. CT DPH Non-Transient Non-Community Certificate for Public Convenience and Necessity Phase I-A Well Site Suitability Certification
      – Approved on June 15, 2015

2. The Applicant still needs to obtain the following permits/certifications:
   i. Town of Willington Inland Wetlands & Watercourses Commission Permit Modifications
      – Responses to the Inland Wetlands & Watercourses Commission conditions will be submitted approximately two months after approval of the application
   ii. Town of Willington Planning & Zoning Zone Change and Special Permit Modifications
      – Responses to the Inland Wetlands & Watercourses Commission conditions will be submitted approximately two months after approval of the application
   iii. Connecticut Department of Transportation Encroachment Permit
      – Application to be submitted approximately two months after the approval of the application
   iv. Connecticut Department of Public Health Non-Transient Non-Community Certificate for Public Convenience and Necessity Phase I-B and Phase II
      – Applications to be submitted approximately six months after the approval of the application
   v. Connecticut Department of Energy and Environmental Protection General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities
      – Application to be submitted prior to construction

G. Public Comments

The Department received comments from Mr. Ralph Tulis, Mr. Chad Wilde, Ms. Kathleen Demers, and Mr. Brian D. Murphy. The parties' response to these comments are included in the post hearing record as the following Appendices:

Appendix 1 – Response to Kathleen Demers of the Willington Conservation Commission letter dated April 24, 2018

Appendix 2 – Response to Chad Wilde letter dated April 24, 2018

Appendix 3 – Response to Kathleen Demers of the Willington Conservation Commission letter dated April 18, 2018
Appendix 4 – Response to Ralph Tulis letter dated April 26, 2018
Appendix 5 – Response to Ralph Tulis letter dated April 24, 2018
Appendix 6 – Response to Brian D. Murphy letters dated April 19, 2018 and May 4, 2018

In addition, the Department received numerous comments from the public during the proceedings which are enumerated below in normal text and immediately proceeded by the parties response in *italics*.

1. "...The proposed leaching field is too close in proximity to the wetlands outlined by Brian Murphy, senior fisheries biologist with the CT Department of Environmental. Specifically, the development of the leaching field will result in siltation, increased water temperature, and decrease of riparian habitat around wetlands (outlined as "wetland H" in Murphy's assessment document provided to the Willington PZC on 6/28/13) that harbor native brook trout and provide them spawning and nursery grounds."

   The alternative sewage treatment system will have no thermal impact on the groundwater. As stated in the DEEP's guidance, soils at depths four to five feet below grade are forty-eight to fifty-two degrees Fahrenheit. It is estimated that it will take approximately twenty-eight to thirty days for the sewage to travel through the grease traps, septic tanks, Amphidrome System, subsurface disposal system before it is discharged to the groundwater. During this time it will acclimate to the temperature of the surrounding soils. The ground will act as a natural cooling system. To verify that the Alternative Treatment System does not cause a thermal impact to Wetland H, the permit will require that the temperature of the groundwater be taken at the time of groundwater monitoring in both the upgradient and downgradient monitoring wells.

   In addition, the subsurface disposal system is located outside the one hundred feet riparian corridor established by the CT DEEP Inland Fisheries Divisions and the one hundred fifty foot protective undisturbed riparian corridor along Roaring Brook established by the Town of Willington Planning & Zoning and Inland Wetland Commission. The down gradient slope of the subsurface disposal system will be vegetated with suitable types of native plants to increase the buffer zone to Wetland H.

2. "Additionally, I am concerned that storm water runoff and overall construction will negatively impact additional wetlands (outlined as "wetland F/G" in Murphy's assessment)."

The Applicant will be required to apply for and obtain a stormwater permit for construction activities for the entire site. Wetland F/G is not located in the vicinity of the proposed subsurface disposal system, and will not be impacted by the proposed system.

3. Will the loss of tree cover from construction result in surface water temperature increasing in the surrounding wetlands?

A dense barrier of shrubs will be planted in proximity to the wetlands to replace any tree cover lost during construction. Shrubs will provide a denser curtain of shade.

4. How was the design flow for the subsurface disposal system calculated? Do the calculations account for seasonal variations? How many people per day are anticipated to use the facility? What if the facility wants to expand?

The design flow for the subsurface disposal system was determined based on Site constraints, including the number of parking spaces, restaurant seats, washing machines, and the availability of showers. Published wastewater flow information from the Connecticut Public Health Code Technical Standards for Subsurface Sewage Disposal Systems, dated January 2018, and wastewater flow data for comfort stations from the New Jersey Department of Environmental Protection's Technical Guidance for Inspections of On-site Wastewater Treatment and Disposal Systems, dated July 2003 were utilized. The values used to determine the design flow are conservative values and account for factors that may increase flow, such as seasonal variations. The Site does not have available land area for expansion.

5. What is the acceptable level of effluent to stream flow volume (considering the proximity of the leaching field to Wetland H and Roaring Brook)? How large will the facility's summer discharge volume be relative to the low flow volume of Roaring Brook?

The proposed permit is for subsurface discharge to groundwater. There will be no surface water discharges from the Alternative Sewage Treatment System.

6. What is the life expectancy of the impermeable liner? How will it be repaired or replaced?

The impermeable liner to be used will be of commercial grade with indefinite life expectancy. If the impermeable liner needs to be repaired or replaced it will be done with the best available technology at that time. In addition, any such repair or replacement of the liner will require the Department's approval.

7. The proposed system is energy dependent. What will happen in the event of a power outage?

The facility is required to have emergency generators located on-site in the event of a temporary power loss. In addition, the structures within the Alternative Sewage Treatment System are sized to provide a storage volume equivalent to the amount of wastewater that would be generated during a twenty-four hour period of time, which is 9,000 gallons. In the event of a long term loss of power the site will need to be closed until power has been restored.

As testified by Andrew McBrearty: The pretreatment system will be provided with a backup generator in the event of a temporary power outage. If the generator did not work, no power to the Site would mean no power to the well pumps; therefore potable water could not be supplied to the Site. With no potable water provided to the Site, no wastewater would be produced. The wastewater in the pretreatment system prior to power failure would be stored, since there would be no power to pump the wastewater to the leaching field. If the system were to remain idle, the system would recover quickly once it is operational again. There are Amphidrome systems throughout Cape Cod that are only used seasonally and mainly on the weekends that perform well.

8. The draft permit contains a monthly reporting requirement. What is the time frame for reviewing the reports? What happens if a permitted limit is exceeded?

The Department relies on self-monitoring and electronic reporting (i.e., Discharge Monitoring Report or DMR) via NetDMR by permittees to demonstrate permit compliance. Each permittee with an alternative sewage treatment system and subsurface disposal system ("AT System") is required to employ a Wastewater Treatment Facility Operator ("Certified Operator"), certified through the Department to operate, maintain and monitor such a system. Certified Operators are familiar with and routinely comply with self-monitoring and reporting requirements contained in the Department's discharge permits, which require a written explanation for any violation of a permitted effluent limit and a description of any necessary corrective action. In addition, routine operational monitoring of alternative sewage treatment systems is performed by a Class II Certified Operator who will be working on-site a minimum of two (2) to three (3) hours per day, five (5) days per week.

In practice, a potential operational issue with an alternative sewage treatment system typically becomes apparent prior to the submittal of a monthly DMR. For operational purposes, a Certified Operator will monitor alternative sewage treatment system operation and performance more frequently than the routine

compliance monitoring required under the permit. In this way, the Certified Operator is able to identify and address potential AT System performance issues well in advance of the DMR submittal and any potential environmental impact. The Certified Operator will maintain electronic logs of the operation and maintenance of the AT System. Moreover, permit effluent limits for AT Systems are conservatively applied immediately following biological pretreatment and before the pretreated effluent discharges to the engineered leaching system and down-gradient soils, where further pollutant renovation actively occurs. Overall system performance is ultimately confirmed through down-gradient groundwater monitoring, which rarely indicates any operational problems with on-site treatment and disposal systems.

9. Surrounding properties have water softener systems. How will hard water or the need for a water softener system affect the proposed subsurface sewage disposal system?

Per the Connecticut Public Health Code Technical Standards for Subsurface Sewage Disposal Systems, dated January 2018, wastewater from a water softening system cannot be discharged to the subsurface disposal system. If a water softening system is needed to treat the on-site drinking water, then the wastewater from the backwashing of the filters will be discharged to a holding tank and disposed of off-site.

10. What happens 10/20/30 years down the road after the system has been operating?

The permit is issued for a term of ten years. Prior to the expiration of the permit, the Permittee will be required to submit an application for renewal of the permit. This application will include an assessment of the operation and maintenance of the alternate sewage treatment system and subsurface sewage disposal system, including a review of data submitted to the Department for the most recent three years. The Department will perform a technical review of this information and make a determination on whether the system has been properly operated and maintained and has been functioning as designed.

11. Who takes responsibility for the construction of the system?

It is the Applicant's responsibility to ensure that construction of the system is done in accordance with plans and specifications approved by the Department. As part of the Department's approval, the design engineer will be required to be on-site during the construction of the Alternative sewage Treatment System.

12. What are the plans for monitoring outflows and ensuring compliance with environmental standards? Will there be independent verification? Will there be public disclosure of monitoring results?

The alternative sewage treatment system will be operated and maintained by a licensed wastewater treatment operator to ensure compliance with the permit. The monitoring results submitted pursuant to the permit requirements are available for public review at the Department.

13. What happens if there is an exceedance in the permit requirements? How long would it take for an exceedance to be reported and reviewed? How long would it take for corrective action to be implemented?

The permit requires self-regulation on the part of the permittee. The responsibility of reporting permit limit exceedances would fall on the contracted licensed operator. If a permit limit exceedance were to occur, the permittee would be required to take immediate corrective actions.

14. Why isn't a reserve area provided for the leaching field?

Only subsurface sewage disposal systems regulated under the Department of Public Health are required to identify a separate reserve area onsite for the replacement of the system. Reserve capacity is incorporated into the design of this system and system replacement can occur within the footprint of the existing system.

15. Will the subsurface disposal system produce noticeable odors?

A properly functioning subsurface disposal system will not generate odors.

16. Won't soap and bleach kill the bacteria that are treating the wastewater?

The amount of soap used in comparison to the volume of water it is mixed with will not impact the bacteria treating the wastewater. Best operating practices (BOPs) for disposal of high strength commercial cleaners has been prepared for the Site. These BOPs contain requirements regarding use and storage of the cleaners. Additionally, floor drains will be plumbed to a dedicated holding tank that will be pumped out by a septic hauler for off-site disposal when full.

H. Revisions to Design Report

It was determined that revisions are needed to statements made in the Design Report (Attachment Q of the application and Exhibit APP-7). These revisions are based on responses to public comments and are included as Appendix 7. The parties agree on the revisions to the Application and their incorporation into the Proposed Joint Decision.

I. Revisions to the Draft Permit

It was determined that revisions are needed to the Draft Permit (Exhibit DEEP-9). These revisions are based on responses to public comments and are included as Appendix 8. The parties agree on the revisions to the Draft Permit and their incorporation into the Proposed Joint Decision.

J. Stormwater Management During Construction

The parties agree to the following additional requirements and their incorporation into the Proposed Joint Decision:

1. The Applicant shall submit a registration for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities ("General Permit").

2. Pursuant to Section 3(b)(11) of the General Permit, the Applicant shall submit a written certification by a Qualified Soil Erosion and Sediment Control Professional or Qualified Professional Engineer ("Qualified Professional") for the preparation and review of the Stormwater Pollution Control Plan ("Plan") with the registration for the General Permit to be submitted to the Commissioner. Such Plan shall be prepared in accordance with the requirements of Section 5(b) of the General Permit. A copy of the Plan review certification shall be maintained with such Plan.

3. The Qualified Professional responsible for preparing the Plan in accordance with the requirements of Section 5(b) of the General Permit shall be on-site to ensure the Plan is implemented for each phase of construction in accordance with such Plan and Section 5(b)(4)(A) of the General Permit, and as requested by the Commissioner, the The Clerk of the Works ("CW"), or the District pursuant to paragraph J.5 below.

4. The Qualified Professional responsible for preparing the Plan in accordance with the requirements of Section 5(b) of the General Permit shall be on-site to perform routine inspections and the requirements of Section 5(b)(4)(B) of the General Permit, and as requested by the Commissioner, CW, or the District pursuant to paragraph J.5, below.

5. The Applicant shall contract with the CW as required by the Town of Willington Planning and Zoning Commission approval (included as Appendix 9), to review the Plan and verify compliance with the requirements of Section 5(b)(4)(A) and Section 5(b)(4)(B) of the General Permit including, at a minimum, the following:

    a. Implementation of the Plan including, but not limited to, site oversight for each initial phase of construction;
    b. Evaluate compliance with the requirements of the General Permit, including proper implementation of all control measures designated in the Plan;
    c. Perform routine inspections as required by the General Permit, throughout construction, including a review of compliance with the requirements of the General Permit and the Plan;
    d. Notify the Department and the Town of Willington of any findings or violations of the General Permit and the Plan;

e. Document (both written and photographic) and respond to complaints received by the public and promptly notify the Department and the Town of Willington; and

f. Maintain a field presence necessary to verify the daily reports from the Qualified Professional.

6. If the Applicant is unable to contract with the CW to review the Plan and verify compliance as described in paragraph J.5, above, the Applicant shall retain the appropriate regional Soil and Water Conservation District representative ("District") to review the Plan and verify compliance as described in paragraph J.5, above.

7. The Applicant shall fund all required certifications, Plan review, and compliance verifications by the Qualified Professional, and the CW or the District required pursuant to paragraph J of this Proposed Joint Decision.

CONCLUSION OF LAW

All issues identified for adjudication in the prehearing conference summary have been addressed. The hearing record shows through evidence and testimony that the permit application, including the engineering reports and technical supporting data, has met the requirements of CGS Sections 22a-6, 22a-6g and 22a-430 as well as RCSA Sections 22a0430-1 through 8 and the applicable Department policies.

The hearing record shows through evidence and testimony that the proposed Alternative Sewage Treatment System will protect the waters of the state from pollution as noted in the Department's Notice of Tentative Decision issued on December 8, 2017.

Section 22a-430-3(e) of the RCSA provides that once the permit is issued, the Applicant is under a duty to comply with its terms and conditions. The draft permit requires the permittee to meet the specific terms and conditions, including but not limited to: monitoring of the water use, monitoring the operation and maintenance of the Alternative Sewage Treatment System, and analyze the groundwater quality downgradient of the subsurface disposal system. A summary of the operational, maintenance and monitoring requirements must be submitted to the Department on a quarterly basis.

In accordance with section 22a-430-3(f) of RCSA, the draft permit provides for proper operation and maintenance of all wastewater treatment facilities and requires the employment of a licensed Class II operator who would be responsible for Alternative Sewage Treatment System operations and would ensure compliance with draft permit. Under Regs., Conn. State Agencies § 22a-430-3 (e), the Applicant is under a duty to comply with the terms and conditions of the permit once it is issued. The draft permit requires the permittee to meet the specific terms and conditions, monitor the water use, monitor the operation of the sewage treatment and disposal systems, and analyze the groundwater quality downgradient of the leaching field area. The permittee must submit a summary of the operational, maintenance, and monitoring requirements to the Department and the Eastern Highlands Health District on a quarterly basis.

The petitioners and public representatives offered comments, suggestions and asked questions regarding the development, however, no fact or expert testimony was presented in support of the claim that the proposed discharges have the potential to unreasonably pollute the waters of the state. The Applicant and his expert witness amply testified that the discharge from the proposed wastewater treatment and disposal systems once constructed, operated and maintained as designed, will comply with the proposed permit and will protect the waters of the state from pollution. The petitioners did not produce any evidence or expert testimony to counter the facts and opinions presented by the Applicant and Department staff, it did not offer exhibits for admission in the proceedings, nor offered expert testimony to prove that the proposed discharge would cause

unreasonable pollution or be reasonably likely to cause pollution. The opinions, comments and questions received during the hearing are addressed by staff in the Attachment 1 of this document.

If, after the public hearing, the Commissioner issues a proposed Final Decision to approve the Application, Department staff recommends that the Commissioner authorize the review of the construction plans and specifications for the on-site wastewater renovation system and such information the Commissioner deems necessary to ensure the protection of the waters of the state from pollution. Such plans and specifications shall be submitted to the Department within six months after the date of the issuance of the Commissioner's Final Decision. Should the Applicant fail to submit plans and specifications by such date and in the Commissioner's sole judgment, if the Applicant fails within the same time frame to provide acceptable reasons for such failure, the wastewater discharge permit application may be administratively closed, and submission of a new wastewater discharge permit application would be required pursuant to RCSA Section 22a-430-4(k). Pursuant to RCSA Section 22a-430-4(k)(5), if construction of the approved onsite wastewater renovation system has not been completed within two (2) years of the commissioner's approval of such system, the commissioner may revoke such approval and require that a new application be submitted. If the approved system is constructed and verification is provided to the Department that the system was constructed in conformance with the approved plans and specifications, a discharge permit will be issued. The discharge permit will be issued for a ten-year period after which an application for permit renewal must be submitted to the Department, and the system will again undergo technical review and evaluation.

Date: _____

By: _____
The Applicant
Love's Travel Stop & Country Store
Rick Shuffield, Vice President
Real Estate & Development

Date: September 10, 2018

By: _____
The Connecticut Department of Energy & Environmental Protection
Oswald Inglese, Jr., Director
Bureau of Materials Management & Compliance Assurance

unreasonable pollution or be reasonably likely to cause pollution. The opinions, comments and questions received during the hearing are addressed by staff in the Attachment 1 of this document.

If, after the public hearing, the Commissioner issues a proposed Final Decision to approve the Application, Department staff recommends that the Commissioner authorize the review of the construction plans and specifications for the on-site wastewater renovation system and such information the Commissioner deems necessary to ensure the protection of the waters of the state from pollution. Such plans and specifications shall be submitted to the Department within six months after the date of the issuance of the Commissioner's Final Decision. Should the Applicant fail to submit plans and specifications by such date and in the Commissioner's sole judgment, if the Applicant fails within the same time frame to provide acceptable reasons for such failure, the wastewater discharge permit application may be administratively closed, and submission of a new wastewater discharge permit application would be required pursuant to RCSA Section 22a-430-4(k). Pursuant to RCSA Section 22a-430-4(k)(5), if construction of the approved onsite wastewater renovation system has not been completed within two (2) years of the commissioner's approval of such system, the commissioner may revoke such approval and require that a new application be submitted. If the approved system is constructed and verification is provided to the Department that the system was constructed in conformance with the approved plans and specifications, a discharge permit will be issued. The discharge permit will be issued for a ten-year period after which an application for permit renewal must be submitted to the Department, and the system will again undergo technical review and evaluation.

Date: 9-9-18

By: Rick Shuffield
The Applicant
Love's Travel Stop & Country Store
Rick Shuffield, Vice President
Real Estate & Development

Date: _____

By: _____
The Connecticut Department of Energy &
Environmental Protection
Oswald Inglese, Jr., Director
Bureau of Materials Management &
Compliance Assurance

Appendix 1

Kathleen Demers of the Willington Conservation Committee submitted public comments dated April 24, 2018, during the proceedings which are enumerated below in normal text and immediately proceeded by the parties response in *italics*.

II. Threats to Water Quality based on DEEP Fisheries Assessment - June 2013

A. WCC Comment about Wetland H:
It should be noted that Mr. Murphy's 2013 report, contrary to the applicant's 2011 Wetland Assessment (APP-2, Section 3.4.3, p. 11), finds evidence that Wetland H is capable of and does support fish (WCC-1, Appendix A, p .2).

Mr. Murphy's report stated "Based upon field observations, waters from this wetland are directly conveyed into the mainstream of Roaring Brook. The last segment of this wetland before its confluence with Roaring Brook is comprised of a narrow, well-defined channel. Of interest was the documentation of several juvenile native brook trout (less than 3 inches in length) in this channel indicating that spawning occurred in this channel during the fall of 2012. Brook trout typically spawn in Connecticut during the month of October...Given the presence of native brook trout, a coldwater fish species, it is obvious that this wetland functions to provide clean, cold and unpolluted waters into Roaring Brook." It is the stream channel that supports the native brook trout, not Wetland H.

B. WCC Concern about the SWAS in respect to Mr. Murphy's comments about erosion, sedimentation, loss of forest canopy and riparian buffers:

As currently designed, the construction of the leaching system will cause a significant loss of forest cover from an area starting from the proposed upgradient swale, continuing over the entire area required for the leaching bed, drains, and concrete bunker walls, and further being disturbed by the fill and regrading needed beyond the leaching bed, ending to within 20 feet of Wetland H's southeastern branch and within 50 feet of Wetland H's northeastern branch, thus reducing its riparian buffer. This site disturbance will also extend laterally, directly up to the southern boundary of Wetland I and within 0-20 feet of the northern boundary of Wetland J. This area of forest canopy loss will be as large as 200 feet across and 280 feet in length in some areas of the site (APP-8; Drawings CG-102, CU-102 and CU-103). It is expected that these cleared areas will be planted and maintained as grass for the life of the system. When this large area of trees are lost, it will increase the risk of wind throw of the remaining trees located in and around these wetlands. Construction activity and loss of forest cover will increase the risk of erosion and sedimentation into all these wetlands. Furthermore, Wetland J is a level area that provides temporary retention of sediment from Polster Road. Any increase volume of surface water flow due to heavy rainfalls being redirected into it from the upgradient swale or the regrading on the southwestern side of the leaching bed, could alter its capacity to perform this function. During the site walk we observed that there is surface water flowing on the ground beyond the western end of Wetland J and proposed Drainage Basin #2.

Mr. Murphy's concerns related to erosion and sedimentation expressed in the referenced letter were in regards to stormwater runoff during construction. Mr. Murphy's concern related to clearing of vegetation was increased water temperatures specifically in Wetland F/G, which is not near the proposed subsurface disposal system. There is no evidence in support of the claim that site clearing

will result in an increased risk of wind throw to the remaining trees located in and around Wetlands H, I, and J.

The area of site disturbance is not defined in exhibit APP-8. This will be determined during the development of the plans and specifications for construction.

Wetland J is not a "level area" as stated in Comment II.B. Exhibit APP-8, Sheet CU-103 shows that Wetland J starts at an elevation of approximately 647 feet and extends to an elevation of approximately 611 feet: a difference of 36 feet (12 yards).

As discussed during Joshua Wilson's testimony on April 26, 2018 (see discussion points below), only the area above the impermeable liner must be grass-covered. Supplemental plantings of shrubs are recommended in the graded area between Wetland H and the impermeable liner for shade and long-term slope stability. Vegetative cover will be determined during the development of plans and specifications for construction.

1. *[Joshua Wilson] "There's sort-of short-term impacts and long-term impacts. It's clear that whenever you clear anywhere you're exposing the area to additional sunlight and there will be short-term effects on additional sunlight... The trees that are removed will allow for the understory that's otherwise shaded out to become more vibrant and begin to grow more densely. So the loss of the shade from the trees will result in additional sunlight on the short-term, on the order of a year or two you may have a shorter period where there's additional sunlight and additional concern about warming, but over the longer-term those areas will become essentially, the state will be revegetated either intentionally by planting or naturally become revegetated and filled out with lower growing material until the next generation of trees can grow up and grow in."*
2. *[Michael Hart] "The only real effective way to maintain the integrity of the fill section is to have grassy cover that's routinely mowed."*
3. *[Michael Hart] "At the edge of the liner when the water is leaving, it's fully renovated. So then we wouldn't have to worry so much about the integrity. We're not in that part of fill section where renovation is occurring. It's part of GA groundwater and now what do you have left for cover and is that adequate to support tree growth. Which it should because you're adding fill; you've already cleared and grubbed."*
4. *[Joshua Wilson] "At that time of year the [summer] amount of groundwater that's discharging there is the minimal amount. The groundwater becomes so depressed in that area that in the hottest time of the year, yes you should have shading for it, but there's no groundwater coming out to shade anyway to keep cool. The groundwater is still flowing underground and staying cool as it is. So there's really not as much of an issue. The bigger issue is during the spring. That's actually when shrubs become a better thing, because trees have single stems and they're wide and the shrubs provide a denser curtain to the wetlands. If I would recommend anything, I would recommend a dense essentially barrier cover of shrubs just upgradient of [Wetland] H knowing that on a sunny day they will get the appropriate cover."*
5. *[Matthew Jermine] "Do shrubs help with long-term slope stability?"*
   [Joshua Wilson] "Yes, in fact they more typically create a quicker network of roots."
   [Janice Deshais] "So really it's two things: shade and long-term slope stability."

C. WCC Concern about the SWAS in respect to Mr. Murphy's comments about stormwater issues:

1. Wetland J provides temporary retention of stormwater runoff which contains pollutants and nutrients from Polster Road. Any increase volume of surface water flow due to heavy rainfalls being redirected into it, from the new swale uphill of the leaching bed or the regrading along the south side of the leaching bed, could diminish its capacity to perform these functions. Of further concern, the top of Drainage Basin # 2's northern edge appears to be at elevation 610 feet and is located within 20 feet of the leaching bed which appears to be considerably higher and as much as 12 feet above existing grade (APP-8, Drawings CU-103 and CU-105B). There also appears to be a swale between Drainage Basin #2 and the leaching bed along with a concrete bunker wall and stepped grade changes along the leaching bed's south side (APP-8; Drawing CU-103).

   Comment acknowledged.

2. WCC Questions:
   a. What is the function of the swale between Drainage Basin # 2 and the leaching bed?

      The swale was included in the design as a condition of approval by the local IWWC due to concerns that the subsurface disposal system would prevent any potential surface discharges from Wetland J from reaching Wetland H.

   b. How will stormwater be managed in this confluence between the end of Wetland J, Drainage Basin # 2 and the leaching bed, so that the western portion of Wetland J and its stormwater retention and discharge (to groundwater) functions are not impacted?

      Surface discharge from Wetland J is a natural occurrence, as was observed during the site-walk (which was stated in the last sentence of Comment II.B). Surface discharge from Wetland J occurs when there is more water entering Wetland J than can be infiltrated into the ground. Therefor the occurrence of surface discharge from Wetland J does not reflect a lack of groundwater discharge from this same wetland.

   c. How is Drainage Basin # 2's forebay designed to accept additional runoff from Wetland J and the lateral, graded surface of the leaching bed without overflowing and potentially discharging to the downgradient swale and flowing into Wetland H?

      The swale between the subsurface disposal system and Drainage Basin No. 2 is designed to redirect any potential surface discharge from Wetland J around Drainage Basin No. 2 without any overflow into the basin. Please see the response to Comment II.C.b.

D. WCC Concern in respect to Mr. Murphy's comments about thermal loading:

The creation of the leaching bed will require removal of a significant amount of tree cover, which would normally help shade the ground and water surfaces of Wetlands H, I and J (WCC-1, Appendix B). It also creates the need to replace native soils in this area with less permeable soils (K < 10 feet/day) to "contain" the surface of the berm over the leaching bed and graded areas (APP-7, Section 8.2 and APP-8, Drawing CU-105B). This will likely lead to less rainfall infiltration and more surface run-off these Wetlands as well as Roaring Brook. In the summer, loss of tree cover will also increase the temperature of the ambient air and ground surfaces of the site, which could lead to warmer surface and groundwater in Wetlands, I, J and H, particularly during heavy summer rainstorms.

All these wetlands contribute water recharge to the local aquifer, which is connected hydrologically with Roaring Brook. Additionally, Wetland H conveys surface water directly to Roaring Brook. Therefore, any increases in ground or surface water temperatures in Wetlands H, I, and/or J could potentially increase water temperatures in Roaring Brook, especially during low flow periods during summer droughts.

Please see response to Comment II.B.

E. WCC Questions and Recommendations in respect to Mr. Murphy's comments about the preliminary SWAS design and potential impact on water temperatures:

1. APP-7, Appendix J, Amphidrome Design Summary Rev 08/31/16, Section III, "Influent Characteristics of Raw Wastewater Applied to the Anoxic Tank" lists an assumed minimum temperature of 20 degrees Celsius in the summer and minimum 11 degrees Celsius in the winter, which would correspond to 68 degrees and 51.8 degrees Fahrenheit respectively.

   These numbers vary from system to system and is based on the source of water (be it well or municipal), the water uses, the length of time the water experiences underground flow, and various other conditions. The subsurface disposal system will have no thermal impact on the groundwater as discussed during the proceedings.

   As stated in the DEEP's guidance, soils at depths four to five feet below grade are forty-eight to fifty-two degrees Fahrenheit. It is estimated that it will take approximately twenty-eight to thirty days for the sewage to travel through the grease traps, septic tanks, Amphidrome System, and subsurface disposal system before it is discharged to the groundwater. During this time, the effluent will acclimate to the temperature of the surrounding soils. [exhibit DEEP-17, M. Hart Testimony 4/27/18]

2. What is the average and maximum temperature of the effluent that leaves the pretreatment system and flows to the leaching bed in the summer and in the winter?

   Please see response to Comment II.E.1.

3. Are these temperature warmer than average groundwater temperatures in CT?

   Please see response to Comment II.E.1.

4. Will the temperatures of the engineered fill in the raised leaching bed be any different than current native soils that are at lower ground elevations?

   The temperature of the engineered fill will acclimate to meet the temperature of the surrounding soils.

5. Given that some of the shading effect of the forest canopy will be lost over the ground and wetland areas in the summer and the direct sun will increase the ambient air and surface temperatures of the site, will there be increases in the temperatures of surface runoff and groundwater, especially during summer rain events?

   The subsurface disposal system will not cause an increase in groundwater temperatures.. Please see response to Comment II.B regarding the vegetative cover.

6. Could the additive effect of warm effluent and warmer surface runoff and groundwater increase the water temperatures in Wetland H and Roaring Brook and affect their function as a fishery for native brook trout, which require cold, clean water?

   Please see response to Comment II.E.1.

7. <u>WCC Recommendations:</u>
   a. We recommend that before this SWAS permit is approved, further study should be done to assess its potential to increase water temperatures in Wetland H and Roaring Brook.

      Comment acknowledged. Please see response to Comment II.E.1.

   b. DEEP's required well monitoring, both upgradient and downgradient of the SWAS, should include temperature, since temperature is a characteristic of water quality (per CGS 22a-423) and this SWAS has the potential to raise water temperatures in Wetland H and Roaring Brook.

      As stated in the DEEP's guidance, soils at depths four to five feet below grade are forty-eight to fifty-two degrees Fahrenheit. It is estimated that it will take approximately twenty-eight to thirty days for the sewage to travel through the grease traps, septic tanks, Amphidrome System, and subsurface disposal system before it is discharged to the groundwater. During this time, the effluent will acclimate to the temperature of the surrounding soils. [exhibit DEEP-17, M. Hart Testimony 4/27/18]

   c. DEEP's Fishery Division Staff should be involved in the review of this updated SWAS design, so they may offer comments and recommendations related to potential fisheries impacts.

      Comments from the DEEP Fisheries have been submitted and are under evaluation as part of the administrative record.

F. WCC Comments/Concerns related to IWWC and PZC approvals:

1. It should be noted that the IWWC and PZC applications submitted by Love's contained reports and drawings of the SWAS's preliminary design, but the features of the design have changed significantly and the overall size of the leaching system and associated site disturbance have increased since those applications were approved in 2012 and 2013 (see WCC-1, Appendix E to view Figure 6 of the preliminary design). Given the changes in plan design and site disturbance, it is anticipated that the applicant will have to return to IWWC and PZC to request approval of plan modifications, but this may not include a thorough review of the SWAS design if the DEEP wastewater treatment system permit is approved. Commission members may feel it would be difficult to deny an application on the basis of modification, especially if DEEP has given approval. The concern about a lawsuit could likely play a role in this decision.

   The applicant is in the process of amending the applications to the local IWWC and PZC. These amendments will address the comments provided previously by the Town of Willington.

2. In their permit conditions, IWWC and PZC will require the applicant to monitor water quality [and temperature] of Roaring Brook and submit a complete water quality monitoring plan in accordance with IWWC requirements and recommendations made by Mr. Murphy. The WCC has concerns that this will not adequately protect Wetland H, since no specific recommendations about monitoring its water quality or temperature have yet been designed or suggested.

   The WCC concerns should be directed to the Town's IWWC and PZC.

III. Additional Basis for Conservation Commission's Concern About Applicant's SWAS

A. **Review of "Detailed SWAS Design Report" (APP-7; see Sections below)**

1. (Section 1.3.1) The narrative states, *"The total site area is 39.9 acres. Of that, 9.08 is wetlands. Approximately 9.5 acres of the remaining 30.8 acres will be disturbed."* This exact statement was also used in the IWWC and PZC applications, but the leaching system size and associated site disturbance have increased since those application reviews, so the stated acreage of disturbance should be revised to reflect the increase.

   The area of site disturbance will be determined during the development of plans and specifications for construction. The amounts stated in the design report were initial estimates.

2. (Section 1.3.3) The narrative states that the steep topography and proximity to wetlands requires that material be deposited downslope to create a reasonably flat buildable area. Further stating: "*This would be required of any commercial development on this site.*" We believe this statement is false since other commercial buildings in Town have been built with a much smaller footprint and less impact to nearby wetlands (e.g., Mycoscience on Village Hill Road near the confluence with Roaring Brook and the Willimantic River).

   The quote from Comment III.A.2 does not impact DEEP's analysis or decision on the proposed alternative sewage treatment system.

3. (Section 4.1) The narrative inaccurately states, "*Roots extended to a depth of 3 feet or more in all of the test pits.*" Test pit soil observation data (Appendix A) shows that roots in pits A-03, A-04, A-05 and A-07 extended to depths less than 3 feet.

   The minimum recorded depth of roots was 30 inches (2.5 feet), for which it is reasonable to round to 3 feet. This particular narrative was intended to illustrate a minor detail pertaining to soil profile, which did not impact the system design.

4. (Section 4.1) The narrative states, "*Very distinct mottling was observed in test pit A-06 (shown above)*" but fails to indicate the depth of the mottling either in the narrative, picture or with the soil observations in Appendix A.

   Mottling was observed where groundwater was seeping out of the test pit wall, near the bottom of test pit A-06. On July 28, 2009, groundwater was observed in Test Pit A-06 at 53 inches (4 feet, 5 inches) deep [exhibit DEEP-7-12A]. The photo in the report was cropped; the uncropped version showing the standing water is provided as Photo 1:

Photo 1 – Test Pit A-06 (July 28, 2009)

The mottling observed in Test Pit A-06 was indicative of redoximorphic features, which can sometimes be used to estimate the seasonal high groundwater table [exhibit DEEP-17(Section VIII.A)]. However, "...color criteria are not always a good indicator of seasonal high water

tables..." [exhibit DEEP-17(Section VIII.C)], therefore a standpipe was installed at Test Pit A-06.

The shallowest depth of groundwater recorded from standpipe A-06 was 3 feet, 2 inches taken on April 1, 2010 [exhibit APP-7-12F]; which is shallower than the depth to observed mottling. The shallowest (i.e., depth below grade) groundwater readings were used to design the subsurface disposal system and groundwater drainage system.

5. (Section 4.1) The narrative inaccurately states: ***"All of the test pits were dug to a depth between 7'-10" and 8'-9"."*** According to data in Appendix A, test pits A-02, A-03, A-06, and A-07 were dug shallower than 7'-10" (i.e., 90", 69", 75" and 87" respectively).

   The quote referenced was meant to be a general statement used to summarize the data. Section 4.1 of the Design Report should read "...between 5'-9" and 8'-9"." This minor modification to the text has been included in Appendix 7 of the Proposed Joint Decision and does not impact system design.

6. (Section 5.1) The narrative states that the samples at A-02-22, A-03-18 and A-04-15 ***"are from the gravelly fine sandy loam B soil horizon between 6 to 33 inches deep."*** The soil observation data (Appendix A) shows that sample A-04-15 was from silt loam.

   The purpose of this narrative was to provide a general summary of the relevant soils present. When describing soils, the first word is the modifier and the second word is what the soil is mainly comprised of. Therefore sandy loam and silt loam are both forms of loam. Furthermore, this is a qualitative component to the soils evaluation and is used to identify consistency in soil types and layers between test pits, as well as a general confirmation of the measured hydraulic conductivities. For example, if medium to coarse sands were observed in the field, the expected hydraulic conductivity should indicate well-draining soils. If the hydraulic conductivity was measure to be 5 feet per day in these soils, then the soils in this example would need to be retested for hydraulic conductivity.

   The measured hydraulic conductivities are the quantitative component of the soils evaluation and are used for the design. The hydraulic conductivity of silt loam is lower than sandy loam, which supports the statement in Section 5.2 of the Design Report [exhibit APP-7-5] that the soils located in Area A have hydraulic conductivities that are too low to support a septic system.

7. (Section 5.1) This section's table and Appendix A do not indicate that any soil samples were taken from test pit A-07; however a permeability value (K< 10 ft/day) is shown on Map XC-103 for this pit. Please explain.

   The hydraulic permeability (conductivity) value for Test Pit A-07 was based on the sample taken from a nearby test pit with similar soil types. The soil was therefore classified with a low permeability value, which is shown as less than 10 ft/day.

8. (Section 5.2) Narrative states, *"Samples were not collected from test pits B-05 through B-09"*, but then on Plan Sheet XC-103 (APP-Exhibit 8) the applicant shows permeability values (K < 10 ft/day) for these 4 pits, as well as for B-01 (K = 30 ft/day) without indication of soil sampling or testing in Appendix A or the narrative. Viewing the Map data could lead a reviewer to believe that actual testing had been done on soils from these pits.

   The narrative states, "Samples were not collected from test pits B-05 through B-08 because representative samples were collected at test pits B-04 and B-09 which has comparable soil stratum observations." It is safe to assume soil hydraulic permeability (conductivity) rates will be less than 10 feet per day given consistent soil readings from each test pit. (Please see response to Comment III.A.6.) This area was deemed unsuitable for a subsurface disposal system and therefore the design did not utilize these calculations. Permeability testing of each soil stratum in each test pit is not required. A representative amount of sampling was performed to understand the permeability range of the overall soil layer.

9. (Section 5.2) Narrative states, *"The soil samples from the coarse sand berm of Area B had an estimated permeability range between 30 ft/day and 850 ft/day. The overlying soil horizon, between an approximate depth of 10 to 33 inches, consisted of fine sandy loam with some stone, coarse sand and gravel and stones and cobbles had a permeability range of 70 ft/day or higher."* Soil observation data from Appendix A, shows that those characteristics could exist from a depth starting at 6 inches and be up to 96 inches in test pits B-11 through B-15.

   This is a generality of Area B for a high level summary discussion within the narrative. The actual test pit soil and data [exhibits APP-7-12B and APP-7-12C] was used for the design of the subsurface disposal system.

10. (Section 6.0) Narrative states *"Seasonal high groundwater was continually monitored"*, but does not indicate a time period. Also some monitoring was done in August, which is not during the seasonal high period.

    Groundwater monitoring periods are indicated throughout Section 6 of the Design Report [exhibit APP-7-6], specific sampling dates and results are provided in Appendix F [exhibit APP-7-12F]. The August groundwater monitoring was provided at the request of the DEEP to show the seasonal low groundwater table.

11. (Section 6.0) Narrative states, *"The annual high groundwater season in Connecticut typically occurs between the end of February and the beginning of March. Measurements were taken of ground water depth from February 25, 2010 thru May 3, 2010. This monitoring is a required component of DEEP permitting for large SWAS."*
    a. Is *"...end of February and the beginning of March" a typo?* Should it read, *"end of February to beginning of May"* instead?
    b. No information is given in this sentence as to which standpipes were measured.

    The beginning of the typical season for high groundwater varies between the end of February and the beginning of March and lasts through May, but seasonal high groundwater conditions can occur at other times of the year. All groundwater monitoring data is provided in Appendix F of the Design Report [exhibit APP-7-12F].

12. (Section 6.0) Narrative states, *"Groundwater was not found in the test pits dug in Area B. Standpipes were installed in these test pits in 2010, and have been informally monitored during subsequent site visits, but have always been observed to be dry."* It sounds as if standpipes were placed in all test pits, but APP-7, Appendix A indicates that standpipes were installed in only B-11, B-13 and B-14. Also if, as indicated in Appendix A, a 10 foot (120 inch) pipe was placed in each of these pits to its lowest dug elevation, than the listed "length from grade to Top of Pipe" is confusing. (e.g., B-11 was dug to 62"; total pipe length was 10'-0"and length from grade to top of pipe was listed as 1' 4"). Also, shouldn't any observations be "documented" rather than be noted as "informally read"?

The term "informally" signifies that seasonal high and low readings were spot checked without prior or subsequent readings taken over a period of time. The data is documented in Appendix F of the Design Report [exhibit APP-7-12F].

13. (Section 6.0) The depths of groundwater monitoring wells C-01, C-02 and C-04 through C-06 listed in Table 6-1 do not match the depths recorded in Appendix N "Monitoring Well Construction Logs". Furthermore, the depths for these wells on Drawing CU-105B in APP-8 do not match Table 6-1 or Appendix N in APP-7 (e.g., for well C-01, Drawing CU-105B notes depth as *"20 feet"*, Table 6-1 notes depth as *"17 feet"* and Appendix N notes depth as *"19 feet"*). Appendix N appears to be the correct reference since depths were recorded on a log sheet for each C-well when they were constructed.

The values contained in the monitoring well logs in Appendix N of the Design Report [exhibit APP-7-12N] are the true numbers and were used to determine the design.

When narrative summary Table 6-1 of the Design Report [exhibit APP-7-6] was assembled, the portion of pipe above the ground surface was subtracted from the boring depths with the exception of well C-05. (Please see response to Comment III.A.20.c) Table 6-1 of exhibit APP-7-6 was not used for design purposes and is a minor discrepancy. Adjustments to Table 6-1 are described in Appendix 7 of the Joint Proposed Decision.

Appendix M, drawing CU-105B (should read CU-105A, see response to Comment III.A.14) reflects the calculated depth to groundwater at the point in the cross section based on the groundwater elevation at each well and is not a discrepancy. Groundwater contours do not strictly follow the topography and therefore, the depth to groundwater will vary along each groundwater contour. Drawing CU-105A will be updated accordingly during preparation of the plans and specifications for construction.

14. (Section 6.0) Narrative states, *"Cross sections depicting seasonal high and seasonal low groundwater elevations are provided on sheet CU-105A of Appendix M."* There is no sheet CU -105A provided with Plan Sheets.

There are two drawings labelled CU-105B. The first of the two identically labeled drawings should read CU-105A. Drawing CU-105A will be updated accordingly during preparation of the plans and specifications for construction.

15. (Section 6.1) Narrative states, *"Groundwater depth measurements were recorded twice weekly in the standpipes installed in test pits A-01, A-02, A-04, A-05, A-06 and A-07. The results of the monitoring program may be found in Appendix F and are summarized below in Table 6.2."*
    a. APP-7, Appendix A indicates standpipes were installed in test pits A-01 through A-05 and A-07, but there is no information regarding standpipe installation for A-06.

    A standpipe was installed in Test Pit A-06, as is shown on drawing XC-103 [exhibit APP-8] and was observed during the site walk [exhibit APP-20]. Changes to exhibit APP-7-12A are discussed in Appendix 7 of the Joint Proposed Decision.

    b. Soil observation data in Appendix A indicates A-06 was dug to a total depth of 75", which has a corresponding elevation of 631.80 feet. In Appendix F, Groundwater Elevations for all A-06 dates are inaccurately recorded to be below the elevation of 631.80 feet. Also, on Drawing XC-104, elevation of seasonal high groundwater for A-06 is shown as "631.17'", which is also below the elevation of 631.80' recorded for the bottom of the test pit when dug per Appendix A.

    Groundwater elevations for standpipe A-06 did not have the portion of the pipe above the ground surface subtracted out of the depth to groundwater readings. All other well elevations were calculated correctly. This does not affect the design. Drawings XC-104 and CU-104A have changed minimally and still show the direction of groundwater flow moving from east to west; Drawings CU-105A and CU-105B of exhibit APP-8 already show the correct groundwater elevations; therefore, these drawings do not need to be updated.

    Minor adjustments to exhibits APP-7-12F and APP-8 (drawings XC-104 and CU-104A) are discussed in Appendix 7 of the Joint Proposed Decision.

16. (Section 6.2) Narrative states, *"Standpipes were installed during DEEP witnessed soil testing on July 27, 2010 in test pits B-11, B-13, and B-14 approximately 8-9 feet deep."* But Appendix A shows this would not be possible, since B-11 was only dug to a depth of 62" and B-13 was only dug to a depth of 84".

    The quote referred to in Comment III.A.16 was meant to be a general statement used to summarize the data. The word "approximately" was used to indicate that "8-9 feet" is not an exact range. The data as reflected in Appendix A of the Design Report [Exhibit APP-7-12A] was used for design purposes.

17. (Section 6.3) Narrative states, *"Six groundwater monitoring wells, C-01 through C-06, were installed on March 13, 2013, using a small geoprobe, in the approximate locations shown in Appendix M, drawing XC-103. The groundwater depth from these six wells was recorded twice a week from March 13, 2013 to April 8, 2013."*
    a. Were 4 weeks an adequate testing period to monitor seasonal high groundwater?

    While DEEP states that the seasonal high usually occurs between February and May, this is a general statement and does not require groundwater monitoring to be conducted during

this entire timeframe. Based on the data provided in Appendix E of the Design Report [exhibit APP-7-12E] for the local USGS groundwater depths, the 4-week period monitored occurred during the season-high of 2013.

b. **Groundwater was measured on March 13, the same day as the wells were installed, per Appendix N. Is it appropriate to measure water levels in monitoring wells the same day as they were installed?**

Yes, it is appropriate to measure water levels in monitoring wells the same day as installation, as long as the surrounding soils have adequate hydraulic conductivities to allow the groundwater to equilibrate within the wells quickly. Please see response to Comment III.A.18.a.

18. (Section 6.3) Narrative states, *"This tabulated data provided in Appendix F shows that groundwater elevations at well C-03 have been constantly lower than surrounding wells, C-02 and C-05."* Tabulated data in Appendix F actually shows this is an inaccurate statement when you compare C-03 and C-05 elevation readings in both 2013 and 2016. Only on 3/13/13 was groundwater in C-03 at a lower elevation than C-05. C-03 elevations were higher than C-05 during 10 of the total 11 reading dates in 2013 and 2016.
    a. Could the uncharacteristic elevated 3/13/13 reading of C-05 be an anomaly or related to measuring the well on the same day as installation?

No, because the concern with measuring monitoring wells the day of installation is that they may not have enough time for the groundwater level to equilibrate in the well. This concern exists only when the wells are surrounded by soils with low hydraulic conductivities. The hydraulic conductivities measured in test pits nearby wells C-01 through C-06 are summarized in Table 1:

Table 1: Summary of Relevant Hydraulic Conductivities

Test Pit	Depth of Soil Sample	Corresponding Hydraulic Conductivity	Nearest Well
B-13	72 inches	30 feet/day	C-05
B-14	90 inches	50 feet/day	C-03
B-12	64 inches	30 feet/day	C-02

The soils surrounding well C-05 have a similar hydraulic conductivity to the soils surrounding well C-02. The soils around well C-03 (located between wells C-05 and C-02) have a faster hydraulic conductivity. The faster hydraulic conductivity soils should facilitate filling well C-03 after installation faster than the other two wells, yet there was a dip in the hydraulic gradient at well C-03 on March 13, 2013.

Furthermore, the depth to groundwater readings from March 13, 2013 resulted in a conservative assumption that there is a bedrock fracture is near well C-03. This assumption shortens the distance to the closest point of environmental concern (Wetland H) from 195 feet to 75 feet (to the end of the impermeable liner).

b. Groundwater elevation in C-03 was constantly lower than C-02, but this is not surprising since it C-03 is located downgradient of C-02.

Well C-03 was installed at a ground surface elevation of 1-2 feet higher than well C-02; therefore well C-03 would be considered upgradient of well C-02. If the term "downgradient" used in Comment III.A.18.b was used in reference to the hydraulic gradient, then the WCC is accepting the hydraulic gradient as delineated by Fuss & O'Neill. The quote referenced in Comment III.A.18.b was intended to reinforce the point that there is a potential groundwater sink.

19. (Section 6.4 and Section 6.5) Narrative indicates that readings were taken from standpipes TP-100, TP-101, TP-102 and TP-104 on April 14, 2016 to include in the seasonal high groundwater contour map and on August 5, 2016 to include on a seasonal low groundwater contour map (shown on sheet XC-104). It was not clear why these points were monitored, as they will lie below Drainage Basin #2 (APP-8, Sheet CU-103). Of interest, tabulated data from Appendix F, shows that high groundwater elevations measured on April 14, 2016 for TP-100 (607.33 ft) and TP-101 (605.67 ft) are higher than the *proposed* elevations (after development) which are 606.3 ft and 604.5 ft respectively per Appendix P. This means that seasonal high groundwater could cause pressure from below on the liner proposed in Drainage Basin #2 (Section 8.10.4).

This narrative was intended to provide additional information about the groundwater flow direction. The stormwater detention basins (which are not part of the subsurface disposal system application) were designed prior to the groundwater monitoring data referenced in Comment III.A.19. This data will be taken into account by the design engineers of the stormwater detention basins.

20. (Section 6.5) Narrative states, *"The C-wells were installed to refusal, so a dry reading at well C-05 indicates that groundwater was seeping into the bedrock. This sink in the groundwater table may be caused by a bedrock fracture. Given that the groundwater elevations at well C-03 during the seasonal high period are lower than groundwater elevations at well C-05, it is assumed a potential bedrock fracture would be located in the vicinity of well C-03."*
    a. Groundwater elevations at well C-03 were not lower than well C-05 during the seasonal high period (see WCC point A.19 above).

Please see response to Comment III.A.18.a.

    b. Does "refusal" always indicate bedrock during well installation with a "geoprobe", or could it be due to hitting large rocks or boulders?

In this soil type refusal indicates bedrock. It generally indicates depth to the restrictive later.

*[Matthew Jermine, April 30, 2018] "What happens is the geoprobe pulls in and it sends the steel rods down – it actually pushes the steel rods down – and the operator keeps track of the depth that is sent down. And then he noticed refusal based on – I say pushed, it's much more obnoxious than that, it's this really high pitched *nocking noise* – so it's actually hammering it down and when they get down to refusal the noise sounds differently. In one or*

two locations they actually wanted to confirm bedrock so they actually pulled up the rod and then shifted it over and went down again to make sure they weren't hitting a bolder."

c. **If it is not a bedrock fracture, than what else could have caused C-05 to be dry in August 2016? Could there be a strata of very porous soil made up of sand with cobbles and stones at the bottom of well C-05 that caused the refusal?**

When well C-05 was measured as dry on August 5, 2016, the water level meter reached the bottom of the well at a depth of approximately 10 feet without encountering water. Well C-05 was originally installed at 20 feet deep. Based on well installation field book notes, it was evident that a cave-in occurred at some point after installation of this well. Prior groundwater readings were taken during the seasonal high water table periods; therefore the cave-in had not been recognized until the August 2015 monitoring event. However, it is still reasonable to interpret that the groundwater table was close to bedrock on August 5, 2016 based on the proximity of the groundwater table to bedrock at well C-03 (just upgradient of well C-05). Furthermore, the wetlands were observed to be dry on August 2015, which indicates that the groundwater table was particularly low at that time.

d. **If it is a bedrock fracture, where does groundwater flow from this area?**

Where the groundwater would go is not definitively known and is beyond the scope of this application. The subsurface disposal system was designed to renovate wastewater prior to the bedrock fracture (not beyond).

e. **It is curious that C-05 would be the only C-well that was dry on August 5, 2016, since on March 13, 2013, C-05 had groundwater noted closest to the surface (2' 8 2/5") of all the C-wells (APP-7, Appendix F –Depth Observations).**

Monitoring well C-05 is approximately 50 feet from Wetland H. It is logical that the depth to groundwater at C-05 is shallow when Wetland H is saturated and is dry when Wetland H is dry. As noted on drawing XC-104 [exhibit App-8], Wetland H was dry on August 5, 2016.

21. **(Section 6.5) Narrative states "*Cross sections depicting seasonal high and seasonal low groundwater elevations are provided on sheet CU-105A of Appendix M.*" We do not find CU-105A in APP-7, Appendix M or in APP-8 Plan Set.**

Please see response to Comment III.A.14.

22. **(Section 6.5) Table 6-4 lists *Standpipe Location* of C-01 as having a *10'-11"*depth observed for seasonal low groundwater on August 5, 2016. This is inconsistent with the tabulated data in Appendix F, which shows this value as *10'- 6 ¼"*.**

The hand-written field notes have been evaluated and the correct depth is 10.52 inches (10'-6 ¼"). This does not affect the design of the subsurface disposal system. This minor discrepancy in documented in Appendix 7 of the Joint Proposed Decision.

23. Other general comments about APP-7, Appendix F :
    a. Tabulated data related to *Groundwater Elevations* appears to show inaccurate information related to the "*Depth from Rim*" and "*Bottom Elevations*" for C-01, C-02, C-04, and C-06. This is likely related to the fact that the "depths" of the wells used for these calculations were incorrect, as noted in WCC point A #14 above.

    The WCC appears to be referring to Comment III.A.13 (not Comment III.A.14). Groundwater depths from the ground surface are determined by subtracting the portion of the well above the ground surface ("Grade to Rim") from the "Depth from Rim". This depth to groundwater is then subtracted from the surface ground elevation in order to determine the groundwater elevation. The bottom elevations of the wells are not used to determine the groundwater elevations.

    b. Tabulated data regarding stand up pipes TP-100, TP-101, TP-102, TP-104 shows "*Grade to Rim*" as *62", 55", 72"*, and *64"* respectively. How are measures taken in TP-102 when the stick up of the pipe is 72" (6 feet) above ground?

    Equipment is designed for ease of use in such circumstances and does not present an issue.

24. (Section 8.2) Narrative states, "Topsoil will be stockpiled and later restored."
    a. How will this topsoil be stored to protect the wetlands and Roaring Brook from sedimentation?

    This information will be addressed during preparation of the plans and specifications for construction. Please note that sedimentation and erosion controls during construction is out of scope for this permit application.

25. (Section 8.2) Narrative states, "*Around and below the leaching bed will be about 13-24 feet of an engineered septic system fill (as shown on drawing CU-105B of Appendix M). The engineered fill will have a permeability range of 30-50 ft/day.*"
    a. What is the estimated total cubic yardage of this fill?

    This calculation will be made during the development of plans and specifications for construction.

    b. How many estimated cubic yards of native soil will be removed to add this fill?

    This calculation will be made during the development of plans and specifications for construction.

    c. How is the fill tested in the field to be sure it meets the desired permeability range?

    This information will be included in the development of the plans and specifications for construction.

26. (Section 8.2) Narrative states *"The low permeability soil (less than 10 feet per day) will be used to provide berm containment 5 feet west of the leaching bed."*
    a. Given that native soils in the area of the proposed leaching bed area have a high permeability of between 30 ft/day and 850 ft/day (Section 5.2), where will this low permeability soil be harvested from?

    This information will be included in the development of the plans and specifications for construction. If possible, low permeability soil will be harvested from the existing B-Soil stratum area of work, and then from offsite as necessary.

    b. How far will this berm containment extend over the leaching field, the engineered fill deposited beyond the liner and the native soils at existing grade? (In APP-7, Appendix H, marked-up sheet CU-105B, Section B-B, the berm containment appears to extend as much as 170 feet in a westerly direction, starting 5 feet west of the last leaching bed chamber and coming to within 20 feet of Wetland H.)

    The berm containment was extended in order to provide gentle grading and increase long-term slope stability.

    ii. Will the berm containment continue on the graded side cuts located on the north and south sides of the leaching bed and further downhill (APP-8, CG-102)?

    The berm containment will extend further downhill and will not extend to the graded side cuts located on the north and south sides of the subsurface disposal system.

    iii. What affect will this berm containment have on the infiltration of rainwater over this entire area?

    The berm containment will have no effect on the infiltration of rainwater over the area. The permeability of the berm containment matches that of the existing top soil and B-soil stratum which was identified as sandy loam. Sandy loam is known for having a lower permeability rate when compared to sands and loamy sands.

    iv. What type of grasses will be planted in the topsoil over the berm containment system? Will any fertilizer or herbicide be required when establishing or maintaining the area as grass?

    This information will included in the development of the plans and specifications for construction.

27. (Section 8.2) Narrative states, *"Structural reinforcement has been added to the side slopes as a set of stepped back concrete bunker block retaining walls. The retaining wall will match the same type of system proposed in the site design surrounding the tractor trailer parking spaces."*
There are 3 walls in total (2 north and 1 south of leaching bed) noted on APP-8, CU-102, CU-103, CU-104, but only one wall appears on drawing CG-102.
    a. How long will each wall be? What material is used between the two north walls where grade changes are noted on CU-103?

    The lengths of the three retaining walls from north to south are approximately 105 feet, 140 feet, and 70 feet, respectively [exhibit APP-8, drawing no. CU-103]. The material used between the two north walls will be further defined during preparation of plans and specifications for construction.

    b. How high are the walls above proposed grade? What portion will be below grade?

    The heights of the three retaining walls from north to south are approximately 10 feet, 8 feet, and 5 feet, respectively [exhibit APP-8, drawing no. CU-103]. The portion of the wall below grade will be further defined during preparation of plans and specifications for construction.

    c. The drawing on APP-8, CD-503 shows an example of a *"Modular Concrete Block Retaining Wall"* with a gravel trench and a drain between the wall and hillside. Will a drain be required for the proposed concrete block walls? If yes, where will they drain to?

    Yes, this section is designed to drain to grade.

    d. Will the 2 northern walls and their potential drains cause any hydraulic changes to Wetland I which appear to be approximately 5-15 feet from these walls? (APP-8, CU-104B)

    There will be no hydraulic changes to Wetland I caused by the two northern walls.

    e. Will the southern wall and its potential drain cause any hydraulic changes to Wetland J, which appears to be located approximately 20-40 feet from this wall? (APP-8, CU-104B).

    There will be no hydraulic changes to Wetland J caused by the southern wall.

    f. At what point in the construction process of the leaching system will the walls be installed? How will Wetland I and Wetland J be protected during their construction?

    This will be addressed during the development of the plans and specifications for construction.

28. (Section 8.2) Narrative states, *"The plastic chambers of the leaching bed will be setup as five independent zones. The five central manifolds will drain into the chambers between doses. Each zone will have a common central manifold with five pressure distributing laterals (PDL), each 100 feet in length. Cleanouts will be constructed at both ends of the PDL. Valves will also be installed at the proximal (inlet) end of each PDL to control each lateral's pressure individually. Valves and cleanouts will be accessible through hand-hole risers with removable at-grade covers."*

    a. How often will these cleanouts be done? What equipment is required?

    The valves and cleanouts are standard equipment/structures installed on pressure-based leaching fields. They are used to ensure proper utilization of the leaching field.

    b. How often do valves need to be used to control each lateral's pressure?

    The valves are used to balance under pressure between adjacent laterals in the same closing zone.

    c. How will these cleanouts and valves be accessed in the winter? Will the 10 foot maintenance drive (depicted on APP-8, CG-101 and CG-102) leading down to Drainage Basin #2 and the leaching bed area be continually cleared of snow in the winter?

    It is the Applicant's responsibility to maintain the required roads/access to the system to perform required maintenance.

29. (Section 8.2) Narrative states, *"Two monitoring wells will be constructed upstream of the system to obtain background groundwater samples. Three monitoring wells will be constructed downstream of the system to sample the SWAS discharge in the groundwater. Two of the three downstream wells will be 40 feet from the French drain dispersion trench and the third downstream well will be 20 feet upgradient of Wetland H. The locations of these five proposed groundwater monitoring wells are shown on drawings CU-102, CU-103, and CU-104 of Appendix M."*

    a. How will the depth of these proposed monitoring wells be determined?

    The depth of the proposed monitoring wells is determined based on depth of bedrock. This information will be included in the plans and specifications for construction.

    b. If there is a possible bedrock fracture in the area of well C-03 as contended (APP-7, Section 6.5), will the proposed long-term groundwater monitoring well, located 40 feet from the French drain dispersion trench, adequately intercept the groundwater before it "sinks" into the bedrock fracture? Well C-03 appears to be less than 20 feet downgradient from the French drain dispersion trench (APP-7, drawing CU-105B).

    A long-term groundwater monitoring well will be located to intercept the groundwater before it sinks into the bedrock fracture. The location will be included in the plans and specifications for construction.

c. **Who will be collecting quarterly groundwater samples as required by DEEP?**

The licensed operator will collect the quarterly groundwater samples as required by the draft permit and submit the results to the DEEP.

d. **Will results of quarterly samples be automatically shared with Willington's IWWC and PZC?**

The results from quarterly samples will not be automatically shared with Willington IWWC or PZC. These documents are available for review at the Department.

e. **Because sampling is only required quarterly, the strong concern exists that it could be as long as 3 months or more before any pollutants are detected and corrective actions are taken.**

It is the responsibility of the Applicant and licensed operator to ensure proper operation and maintenance of the system. The reporting requirements included in the draft permit are for determining compliance with the permit limits. The licensed contractor will perform sampling and analysis on a daily, weekly, or monthly basis, as deemed appropriate, to ensure proper operation.

30. (Section 8.5) Narrative states, *"The hydraulic permeability of the soil varies considerably among test pit sampling. The most suitable soil stratum for the SWAS is the coarse sand in Area B with permeability between 30-50 feet/day at a depth of approximately 3 feet."* Based on permeability test result values (APP-7, Appendices B and C) for Area B soils B-09 through B-15 tested at a depth of approximately 3 feet, we get an average permeability rate of 255 feet/day (K values used include 850 ft/day, 100 ft/day, 70 ft/day and 1 ft/day [conservatively used for the K value of <10 ft/day reported for B-09]).

This language was describing the original location of the subsurface disposal system under the concept design that was submitted to PZC and IWWC. The permeability range described is still relevant to the current design and is in reference to samples collected from Test Pits B-14 and B-12 at depths of 90 inches and 64 inches, respectively [exhibits APP-7-12C and APP-8, drawing. XC-103]. The impermeable liner will discharge at a depth of approximately 7 to 11.5 feet below existing grade [exhibit APP-8, drawing CU-105B].

31. (Section 8.5) Narrative states, *"An engineered septic system fill material with a permeability range of 30-50 feet per day was selected to match the permeability range of the native soil that will be replaced within the impermeable liner."* Based on our comments in A.31, the engineered fill material will not match the native soils' variable permeability. The loss of this upper stratum of the native soil that ranges in permeability from 850 feet/day to <10 ft/day may affect the infiltration of rainwater, amount of storm water runoff and the local hydrology of the groundwater that Wetlands H, I and J depend on.

The WCC appears to be referring to Comment III.A.30 (not III.A.31). Please see response to Comment III.A.30. The quote referenced should read as follows: "An engineered septic system

fill material with a permeability range of 30-50 feet per day was selected to match the permeability range of the native soil that the impermeable liner will discharge to." This minor adjustment to the narrative is included in Appendix 7.

If you refer to Appendix A [exhibit APP-7-12A], all of the test pits in Area B have a top soil layer from 3 to 8 inches deep. Soil samples are not collected from the topsoil layer when designing for a subsurface disposal system because the bottom of the system discharges to soils below the topsoil layer at a typical depth of 24-inches or more. Topsoil typically has a lower hydraulic conductivity than the underlying soils because it contains a mix of soil and organic matter.

32. (Section 8.8) First paragraph states the impermeable liner was designed to have a slope of "*0.027 feet per foot emptying into the groundwater table.*" Yet the equation below the paragraph shows the slope to be calculated as "*0.0285 ft/ft.*" In Mr. Jermine's pre-filed testimony, he continues to quote this incorrect value, "0.027 feet per foot emptying into the groundwater table" (APP-19-1, p.8).

The quote referenced should read "0.0285 feet per foot". This does not affect the design overall. This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

33. (Section 8.9) Narrative states "*Based on Darcy's equation shown in Section 11 of Appendix H, a depth flow of 12.5 feet will be required for the 9,000 GPD of design flow from the leaching bed.*" In APP-7, Appendix H, Section 11, the depth of flow was calculated to be "*12.6 feet*".

The quote referenced will be revised to read "...a depth flow of 12.6 feet will be required...". This does not affect the design overall. This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

34. (Section 8.9) Narrative states, "*At the end of the 21-day travel distance and the end of the PVC impermeable liner, the effluent travels down towards the bedrock fracture sink.*" (See comments III. A.21.)

The WCC appears to be referring to Comment III.A.20 (not Comment III.A.21). Please see responses to Comments III.A.20.a-e.

35. (Section 8.9) Narrative states, "*Using Darcy's equation with a slope of 1 foot per foot for vertical saturated flow movement through soil and a factor of safety of 5.0; the total width required to convey the effluent plus groundwater recharge plus rainfall that entered the impermeable liner (from above) is 1.8 feet wide by 120 feet across.*" It is not clear how "*1.8 feet wide*" was calculated. Please explain.

The "1.8 feet" was not updated in the text to read "3.6 feet" after an adjustment in calculations was made. The calculations to support the 4.3 feet are provided in exhibit APP-7-12H, Section 12. The "Total Flow in PVC Liner, Q_L" used in these calculations was determined in Section 11

of APP-7-12H. This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

36. (Section 8.9) Narrative states, "***When this additional flow is introduced to the groundwater table there will be an initial build-up of 3.4 feet. There is a soil hydraulic capacity of 3.6 feet for the discharge to enter the groundwater table. The calculations that support this outcome are provided in Section 12 and Section 13 of Appendix H.***"
    a. In APP-7, Appendix H, Section 12 the value calculated is "*4.3 ft*" not "*3.4 ft*" as stated in the narrative.

    The depth of build-up or mounding was calculated in exhibit APP-7-12H, Section 13 and should read "3.6 feet" in place of "3.4". The reference to Section 12 is related to the previous sentence (quoted in Comment No. III.A.35). This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

37. (Section 8.10) Narrative states, "Seasonal high and seasonal low groundwater contour maps are provided on sheet XC-104 of Appendix M. The seasonal high contour map is a compilation of groundwater contours from three different sampling events to gain a better understanding of the direction of groundwater flow. While groundwater elevations will change over time, the direction of groundwater flow is less variable. All that is needed for determining the local direction of groundwater flow is a single round of groundwater readings from wells in that area at the same time."
    a. We challenge the accuracy of the "*Seasonal High Groundwater*" contour map provided on APP-8, sheet XC-104 because:
        i. The elevation value for standpipe A-06 on April 1, 2010 noted on the map is not accurate, since the value shown on XC-104 is lower than the bottom of the test pit (See comments III.A.16).

        The WCC appears to be referring to Comment III.A.15 (not Comment III.A.16). Please see response to Comment III.A.15.b.

        ii. The validity of readings taken in C-wells on March 13, 2013 and used for the mapping is in question. The readings were taken the same day as the well was constructed and the reading from well C-05 on that day appears to be an anomaly (See comment III. A.19).

        The WCC appears to be referring to Comment II.A.17 (not Comment III.A.19). Please see response to Comment III.A.17.b.

        iii. Although well C-06 had the lowest groundwater elevations of all the C-wells on March 13, 2013, there are no flow arrows pointing toward it.

        Flow arrows are drawn perpendicularly to groundwater contours and are used to graphically depict the general direction of groundwater flow. There is no requirement to provide flow arrows to the level of detail referenced in Comment III.A.37.iii.

iv. There are no groundwater contours showing how Wetland I and Wetland J are recharged.

There are sufficient groundwater contours provided in the Design Report (exhibit APP-8, sheet XC-104) in the area of the subsurface disposal system for design purposes. Wetland I and Wetland J were evaluated and reported on by Josh Wilson who is both a Certified Soil Scientist and a Professional Wetland Scientist. This report was provided as exhibit APP-2 and describes how Wetland I and Wetland J are recharged.

b. We challenge the accuracy of the "*Seasonal Low Groundwater*" contour map on APP-8, sheet XC-104 because the elevations shown on the map for C-01, C-02, C-03, C-04 and C-06 do not agree with the tabulated groundwater elevations reported on APP-7, Appendix F for 08/05/2016.

While the placement of groundwater contours would shift slightly, the overall direction of groundwater flow remains the same. This does not affect the overall design. This minor discrepancy is documented in Appendix 7 of the Joint Proposed Decision.

38. (Section 8.10.1) Narrative states, "*Wetland I is downgradient and north of the SWAS. An impermeable PVC liner is proposed to be installed as a barrier constructed up to 12 feet below existing grade and underneath the SWAS as well. The effluent will not reach Wetland I prior to treatment because the PVC liner creates a wall parallel to the direction of groundwater flow, and a floor beneath the SWAS, above the proposed groundwater table.*"
    a. The depth of the liner below proposed grade along the lateral sides of the SWAS is not clear. We envision that the liner is like a 3-dimensional box, with the bottom end open where the liner ends. How "tall" are the sides of the liner, Do they come close to the surface? How will the upper edges be supported and protected from falling inward when the area is backfilled?

A better description of the impermeable liner is provided in exhibit APP-7-8, Section 8.10.6, fifth paragraph. A plan view of the impermeable liner is provided in exhibit APP-8, drawing CU-103 and section view of the impermeable liner are provided in exhibit APP-8, drawing CU-105B. Additional details of the impermeable liner construction will be provided during preparation of plans and specifications for construction.

b. How will the liner be installed and tested for leaks prior to filling?

Refer to exhibit APP-7-8, Section 8.10.6, fifth paragraph. Additional details of the impermeable liner construction will be provided during preparation of plans and specifications for construction.

39. (Section 8.10.2) Narrative states about Wetland J, "*Hydrology is attributed to local, shallow groundwater discharge off the steep hill located to the east as well as a periodic stormwater discharge from Polster Road. Runoff is enhanced due to the extremely low permeable soils (5 ft/day or less) located north of the wetland. The south side of the wetland ends as the water seeps into the ground into a pocket of coarse sand with high permeability (50 ft/day or more).*"

a. The "south side" should read the "west side" of the wetland ends....

The quote referenced will be updated to read "west side" in place of "south side". This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

b. Where is the data that shows the water seeps into the ground into a pocket of coarse sand with a high permeability (50 ft/day or more)? There are no permeability values shown close to the end of Wetland J on Soil Evaluation map (APP-8, sheet XC-103).

Wetland J was evaluated and reported on by Josh Wilson of Fuss & O'Neill who is both a Certified Soil Scientist and a Professional Wetland Scientist. This report was provided as exhibit APP-2 and describes the hydrology of Wetland J.

The high permeability of soils in Area B (exhibit APP-8, sheet XC-103) indicates a higher capacity for groundwater, which is a potential explanation of the seepage back into the ground at the west side of Wetland J. Another potential explanation is the bedrock fracture near well C-03 is pulling the surface water from Wetland J back into the soil. The reasoning behind what was observed by Josh Wilson does not affect the SWAS design.

40. (Section 8.10.2) Narrative states, *"Wetland J is north and adjacent to/upgradient of the SWAS."* Wetland J is actually south and adjacent to/upgradient of the SWAS.

The quote referenced will be updated to read "south" in place of "north". This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

41. (Section 8.10.3) Narrative states, *"The hillside that the SWAS is constructed on ultimately drains into Wetland H. The newly installed drinking water wells pump water out of the bedrock aquifer which is part of the Wetland H drainage basin. The water is used by the Travel Stop and then discharged into the septic system, pretreatment system, leaching bed, and ultimately back into the same local drainage basin it was pumped out of."*
    a. How much well water is used for landscaping?

    This is beyond the scope of this application.

    b. Will truck drivers be allowed to dispense water into their potable water tanks?

    This is beyond the scope of this application.

    c. On a weekly average, how much water will be used for sanitizing floors and kitchen equipment that will be drained into a separate holding tank and be taken offsite?

    This is beyond the scope of this application.

42. (Section 8.10.4) Narrative states, *"Drainage Basin #2 is approximately 60 feet south of the leaching field."*

a. Using APP-8, drawing CU-103, we calculate that Drainage Basin #2's forebay is closer than 60 feet, measuring approximately 35 feet south of the top of leaching field.

Drainage Basin #2 is approximately 60 feet south of the leaching field, not 35 feet.

b. On APP-8 drawing CU-103, grading proceeds laterally down from the top of the leach field to the top of the forebay. There appears to be a swale located at the same location. Please explain how surface water will be directed here.

Please see response to Comment II.C.2.c.

43. (Section 8.10.5) Narrative states, "There are two newly installed bedrock wells that will provide drinking water to the site. These wells are located in the northeast corner of the parcel and are located hydraulically upgradient of the proposed SWAS. Each well is anticipated to have a pumping rate of less than 10 gallons per minute and was installed 510 feet deep."
    a. Has the pumping rate been determined yet?

This is beyond the scope of this application.

    b. Has any water testing been done yet?

This is beyond the scope of this application.

    c. Is any "water softening" or other treatment anticipated?

This is beyond the scope of this application.

    d. If water treatment will be needed, will it require back-flushing? If back-flushing will be required, how will this effect calculated design flow of wastewater?

This is beyond the scope of this application.

44. (Section 8.10.6) Narrative states, *"The purpose of the French drain is to prevent the seasonal high groundwater from overwhelming the soil absorption system while simultaneously not draining the adjacent wetlands as calculated (with a water drawdown equation for French drains). The depth of the French drain is deep enough to reduce the seasonal high groundwater impact on the septic system without being too deep as to impact the natural hydrogeological conditions that are required for the Wetlands to thrive."* We contend that the calculations for the drain's drawdown effect are not correct (See comments B.2 and B.3)
    a. Additionally, it should be pointed out that the elevation of seasonal low groundwater also appears to be lowered by the drain under the SWAS (APP-7, CU-105B) which could further lead to hydrologic changes for wetlands I and J during low flow periods.

The WCC comment appears to be referring to exhibit APP-8, drawing no. CU-105B. The wetlands are dry during the low flow periods. This occurrence is documented in exhibit

APP-8, on drawing XC-104 under the seasonal low groundwater contour map. This matter was also discussed under Josh Wilson's testimony, April 26, 2018. Please see response to Comment II.B.4.

b. Excavation to install the drains and liner will require digging below the high and low seasonal groundwater table as depicted on APP-7, CU -105B. To control this water during construction, it will have to be pumped out and this will likely cause temporary dewatering of Wetlands H, I and J.

This is beyond the scope of this application. Please see response to Comment III.44.a regarding the comment of "dewatering of Wetlands H, I, and J".

c. What will keep the French drains from clogging with fine sediments?

The French drains will be wrapped with a geotextile fabric wrapped around stone to protect them from clogging.

45. (Section 8.11) The narrative says *"The travel time for the system is calculated to be 21.3 days."*, but in APP-7, Appendix H, Section 6 it is calculated to be *"23.3 days"*.

Exhibit APP-7-12H, Section 6 shows a value of 23.2 days. The quote referenced in Comment III.A.45 should read "23.2 days" in place of "21.3 days". The effect to the design is an increase in conservatism. This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

B. <u>Review of "SWAS Detailed Design Calculations" (APP-7, Appendix H)</u>

1. (Section 5, p. 3) "Unsaturated Soil Depth (D unsat)" is calculated to be "7.4" using a design flow of 9000 gpd, then in Section 6, p. 4, the "Average Unsaturated Soil Depth (D unsat)" that is used is "6.5". How is "Average Unsaturated Soil Depth" calculated? If it is based on average daily flow of 6000 gpd, than one would expect the average depth of unsaturated soil to be larger than when calculated for design flow.

The depth of 6.5 feet is used for design of total travel time to add conservatism to the design.

2. (Section 8, p. 6, Items 1, 2, and 3) The *"slope of the original groundwater table* "used for the calculations for *Drains #1, #2 and #3* appear incorrect. Using APP-8, sheet CU-105B, we calculate the slope for A-06 to B-09 to be 0.35 instead of *"0.275"* since rise over run appears to be 14 ft divided by 40 ft, not *"11 ft divided by 40 ft."* This would also require all *"Effective distance of French drain"* measures to be recalculated for these 3 drains.

If the requested change is made to the calculations [exhibit APP-7-12H, Section 8], the resulting up gradient effect of Drain #1 would be approximately 5 feet shorter and the resulting up gradient effects of Drain #2 and Drain #3 would each be approximately 3 feet shorter. A shorter up gradient effect from Drain #1 means that the effects are further from wetlands. Furthermore, the downgradient effects of each well are calculated in Section 7 of exhibit APP-7-12H and were not utilized for the placement of the drains as a measure of conservatism. The downgradient

effects of Drain #1 (which contributes to the up gradient effect of Drain #2) is 5 feet and the downgradient effect of Drain #2 (which contributes to the up gradient effect of Drain #3) is 3 feet. Therefore, the requested change to the French drain calculations would not affect the design.

3. (Section 8, p.7, Item 4) We believe the slope should be calculated using B-09 to C-01, not *"C-01 to C-04"*, since the upgradient side of drain #4 is between B-09 to C-01, not C-01 to C-04.

   Drain #4 is mainly under the slope between C-01 and C-04, which is more conservative because steeper slopes result in a shorter radius of influence, thus requiring a greater number of underdrains.

4. (Section 9, p.8, Items 1, 2 and 3) The calculated *"slope of original groundwater table"* for Drains #1, #2, and #3 appear to be incorrect. (See comment B.2)

   The requested changes would increase flow within the drains slightly, however, this increase would be more than accounted for by the incorrect flow conversion coefficient. Therefore, the 20-inch diameter pipe provided is adequate. Please see response to Comment III.B.9.

5. (Section 9, p.8, Items 2 and 3) The *"slope of original groundwater table"* for Drains #2 and #3 should be calculated from A-06 to B-09, not from *"A-02 to A-06."* Also the wall heights for Drains #2 and #3 should be listed as 3 ft tall, not *"6.5 ft tall"*.

   The calculations were using the height of 3 feet. The descriptive text will be updated accordingly during preparation of plans and specifications for construction.

6. (Section 9, p.9, Item 4) We believe the "slope of original groundwater table" for Drain #4 should be calculated using B-09 to C-01, not C-01 to C-04. (See comment B.3.)

   Please see responses to Comment Nos. III.B.3 and III.B.4.

7. (Section 9, p.9, Items 5 and 6) The *soil conductivity* values (*KFU*) of "10 ft/day" used for Drains 5 and 6 calculations seems too low since permeability of B-soils in these drain areas was observed to be much higher (e.g., B-11 had a K value of 850 ft/day and B-15 had a K value of 70 ft/day (APP-7, Appendix B).

   The soil permeabilities (hydraulic conductivities) are for samples collected from 24 to 36 inches deep, which is much shallower than the depth of the impermeable liner underdrains. An appropriate hydraulic conductivity would be from 30 to 50 feet per day based on samples collected at test pits B-12 (64 inches deep) and B-14 (90 inches deep). If 50 feet per day was used conservatively to calculate the flow received by Drain #5 and Drain #6, the French Drain System Flow would increase slightly, however, this increase would be more than accounted for by the incorrect flow conversion coefficient. Please see response to Comment III.B.9. The calculated 20-inch pipe diameter is more than sufficient.

8. (Section 9, p.9, Items 4, 5 and 6) The wall heights of "*6.5 ft tall*" listed for Drains #4 - #6 should be corrected to 3ft, 3ft and 2ft respectively.

   The calculations were using appropriate heights. This minor adjustment to the narrative is included in Appendix 7 of the Joint Proposed Decision.

9. (Section 9, pp.8 -9 Items 1 thru 7). For each drain the "*Singular Underdrain Flow, (QF)*" is first calculated in cubic feet per day and then converted to "cubic feet per sec". We believe the values shown as "cubic feet per sec" are actually cubic feet per hour calculations. All these "*QF*" values as well as the "*Total French Drain System Flow, QFT*" value will need to be recalculated based on comments B.4 thru B.9.

   The conversion equation in the spreadsheet table used for cubic feet per day to cubic feet per second in the calculation spreadsheet was incorrect (exhibit APP-7-12H). The correct flows are three orders of magnitude smaller than what is provided in this exhibit, which results in a smaller volume of groundwater required to be conveyed downstream of the SWAS. This adds additional conservatism to the French drain design. The size of the French drain piping is of a larger diameter than what is actually needed.

10. (Section 10, p.10) The "*Minimum French Drain System Piping Diameter*" will need to be recalculated using a corrected value for "*French Drain System Flow (QFT)*" from Section 9.

    Please see response to Comment III.B.9.

11. (Section 11, p.10) For "*Rainfall Infiltration*" should a different "*Hydraulic Soil Group*" and corresponding "*CN*" value be considered? The reason we question this is because most of the leaching system will be capped with a berm containment soil having a permeability of <10 ft/day.

    The Hydraulic Soil Group and Curve Number will be similar to the pre-development values which is why the CN value was used. The topsoil and B-stratum soils will have similar permeability rates pre- and post-construction.

12. (Section 12 and Section 13, p.11) These sections will need to be recalculated using a corrected value for "*French Drain System Flow (QFT)*" from Section 9.

    Please see response to Comment III.B.9.

13. (Section 13, p.13) The narrative for Phosphorus Removal states, "*Unsaturated Soil Depth (Dunsat)*" uses a value of "*10.2 ft*". Should this value actually be 7.4 ft as calculated in APP-7, Appendix H, bottom of Section 5 and shown on APP-8, 2nd sheet for CU-105B?

    This minor change in depth results in a subsurface disposal system phosphorus sorption capacity of 19 months, which still well exceeds the DEEP requirement of 6 months. This minor adjustment to the calculations is included in Appendix 7 of the Joint Proposed Decision.

C. Comments About Other Inconsistencies with Drawings

1. (APP-7, Appendix H, Marked-up Drawing CU-105B) The key at the bottom of the drawing indicates that a dash-dot-dash line (--- - ---) represents "*Extent of Excavation*", but on the drawing, this symbol is actually used to depict the "*Proposed Groundwater Mounding*" line within the leaching system's liner.

   This minor discrepancy in line work will be updated accordingly during preparation of plans and specifications for construction and has been documented in Appendix 7 of the Joint Proposed Decision.

2. (APP-8, Drawing CG-102) This drawing does not show 2 of the 3 Concrete Bunker Walls. Does not show grass swale upgradient of the leaching system.

   This is an old version of the drawing which referenced drawing CU-103 [exhibit APP-8]. Drawing CG-102 will be updated accordingly during preparation of plans and specifications for construction. .

3. (APP-8, Drawings CU-101, CU-102) The truck entrance is in a different location than on drawings CU-104B and CG-102. Please explain.

   Drawing CU-104B [exhibit APP-8] shows the current planned location of the truck entrance, which is what is reflected on drawings CU-101 and CU-102. The entrance to that truck stop does not affect the septic system design. Please see response to Comment III.C.3 in response to drawing CG-102.

4. (APP-8, Drawing CU-105B, first sheet) Test pit B-09 is used and shown as a data point to graph the line of the "*Existing Seasonal High Groundwater Table*". However, there is no evidence in APP-7, Appendix A that a standpipe was placed in this test pit to monitor groundwater levels and there is no recorded surface elevation. We question the validity of using this data point to formulate a graph (slope) for the seasonal high groundwater table.

   A standpipe was installed in Test Pit B-09. All readings of B-09 have been dry and therefore the groundwater was depicted conservatively as reaching the bottom of standpipe B-09. Groundwater in this area is deeper than the bottom of standpipe B-09, but the subsurface disposal system design is based on a shallower groundwater depth.

   Changes to exhibit APP-7-12A are discussed in Appendix 7 of the Joint Proposed Decision.

5. (APP-8,Drawing CU-105B, first sheet) The depths shown for wells C-01, C-02, C-04 and C-06 are not the same as recorded on APP-7, Appendix N.

   Please see response to Comment III.B.13.

6. (APP-7, Appendix H, Marked-up Drawing CU-105B, and APP-8, Drawing CU-105, second sheet) The mounding shown by the addition of the treated effluent to the groundwater being dispersed by the last drain appears to be drawn down by the dispersion drain, when in fact it will not have that effect. This proposed high ground water level will likely remain mounded as it continues to travel downgradient toward the berm material at the end of the slope in the direction of Wetland H, increasing the risk of surface breakout. According to the 2006 CT DEEP SWAS Design Manual (APP-1, Section VI, p. 34 of 40) "*Under constant recharge to an aquifer whose extent is limited by boundary conditions, a ground water mound will continue to grow until some control, potential or lateral provides a limit.*"

   There will be minimal mounding due to the reintroduction of groundwater in the calculations. The groundwater was subtracted and then re-added. Limited boundary conditions are not anticipated over the bedrock fracture. If this bedrock has a limited boundary condition, there would be no groundwater sink.

   Note: Examples of limited boundary conditions are un-fractured bedrock or soils will extremely lower hydraulic conductivity (such as clay) that prevents groundwater from traveling downward (in a vertical direction).

7. No drawings are provided for the French drain or the upgradient swale.

   This information will be included in the plans and specifications for construction.

D. **Concern about Overall Changes to the Hydrology and Impacts to Wetlands H, I and J and Roaring Brook due to the SWAS design.**

   1) The elimination of significant forest cover will lead to increase solar radiation and ambient air and ground temperatures, which will cause warmer stormwater run-off and groundwater temperatures in these wetlands. The addition of warm effluent from the pretreatment system has the potential to raise groundwater temperatures also. Temperature changes in Wetland H can translate into warmer temperatures in Roaring Brook;

      Please see response to Comment II.B.

   2) The placement of a large PVC liner with 3 sides that is 120 ft wide x 140 ft long and up to 12.6 feet deep (APP-8, CU-103) will require significant excavation and filling. Leaks in the liner could allow effluent that is not fully renovated to enter the groundwater;

      The liner will be tested prior to backfilling, as discussed in exhibit APP-7-8, Section 8.10.6, fifth paragraph. This testing will be further defined in the plans and specifications for construction.

   3) Significant quantities of engineered fill will replace native soils which have highly variable permeability. This variability likely plays a role in the natural hydrology of the area and shapes the timing, velocity and volume of groundwater flow to these wetlands and Roaring Brook;

      The groundwater is below the variable material. The timing, velocity, and volume are determined by the upgradient inputs to the system, not the soil. Groundwater will reach the

French drain, travel around the system and be deposited in the same plane within the same timeframe.

4) A containment berm made up of low permeability soils will extend laterally from and downslope up to 170 feet beyond the leaching chambers and within 20 feet of Wetland H. Because soils in this berm layer are less permeable than current soils, the amount of rainwater infiltration could decrease and stormwater runoff to Wetland H could increase. Consequently, the risk of erosion and sedimentation into this wetland will continue to be an ongoing problem;

Please see responses to Comments III.A.26.b.iii, III.A.31, and III.B.11.

5) A series of seven, 120 ft long underground French drains which will intercept both seasonally high and low groundwater levels under and around the liner and fast-forward it downgradient of the liner (APP-8, second sheet CU-105). The groundwater drawdown created by these drains has not been correctly calculated and has the potential to draw groundwater away from Wetlands I and J. Furthermore, the mixing of this groundwater with treated effluent at the end of the liner creates an elevated mound of groundwater that could potentially break out onto the surface if existing seasonally high groundwater levels have been underestimated or system design flow is exceeded;

Please see responses to Comments III.B.2-10 in regards to the drain calculations and the "potential to draw groundwater away from Wetlands I and J". The "mounding" has already been accounted for, the calculations for which are included in exhibit APP-7-12H, Section 13.

6) Three concrete bunker walls, two of which come to within 5-15 feet of the edge of Wetland I. It was very evident on the site walk that if these walls are built with bases below existing ground level, they have the potential to block groundwater flow to Wetland I;

The bunker walls were designed to not block groundwater. Each block is stacked end to end which inherently allows water to pass between them.

7) A long grass swale (4 foot x 120 foot) upgradient of the leaching bed that will intercept storm water runoff and potentially redirect some of it towards Wetlands I and J and away from its current east to west flow path; and

Stormwater runoff will still infiltrate into the ground prior to reaching Wetland I and Wetland J.

8) Extensive excavation, filling and grading to within 20 feet of Wetland H, within 0-20 feet of Wetland J and directly up to the southern boundary of Wetland I will cause problems with erosion and Sedimentation, particularly during construction.

This information will be included in the plans and specifications for construction.

Appendix 2

Chad Wilde submitted public comments dated April 24, 2018, during the proceedings which are enumerated below in normal text and immediately proceeded by the parties responses in *italics*.

1) Overall project – too close to Roaring Brook and Wetland H

The proposed project meets the setback requirements from Wetland H and Roaring Brook.

The CT DEEP Inland Fisheries Division has a policy that riparian corridors should be protected with a 100 foot wide undisturbed riparian buffer zone. A riparian corridor is a land area contiguous with, and parallel to an intermittent or perennial stream.

The Town of Willington Planning & Zoning and Inland Wetland Commission regulations include a special 150 foot wide protective undisturbed riparian corridor zone alongside Roaring Brook. The leaching bed structure discharges into the impermeable liner at approximately 195 feet to the closest finger of Wetland H and approximately 470 feet to the main Roaring Brook stream bank. The effluent slowly flows across the impermeable liner a distance of 75 feet before reaching the closest point of environmental concern (which is the bedrock fracture at the edge of the liner). The effluent discharge at the environmental point of concern is considered to be indistinguishable from Groundwater Class GA waters.

2) Erosion and sedimentation caused by operating machinery in steep pitched build site

The methods of erosion and sedimentation will be developed in accordance with the requirements of the 2002 Connecticut Soil Erosion and Sedimentation Control Guidelines during the development of plans and specifications for construction.

3) Damage to riparian corridor – the "buffer zone" of vegetation and structure around a waterway

The proposed subsurface disposal system does not impact the CT DEEP Inland Fisheries Division's 100 foot wide riparian corridor or the Town of Willington Planning & Zoning and Inland Wetland Commission's more stringent 150 foot wide protective undisturbed riparian corridor zone alongside Roaring Brook. The slope downgradient of the impermeable liner can be vegetated with suitable types of native plants/bushes to further increase the buffer zone to Wetland H.

4) Storm water runoff, water that drains off hot pavement in summer is warm, the concrete area of the truck stop is large, 40 acres, and it will add warm water to the brook

Stormwater runoff has been addressed by Fuss & O'Neill during the local inland wetland application process. The mitigated measure, which include addressing Brian Murphy's concerns,

were deemed acceptable when the Willington Inland Wetland & Watercourse Commission voted to approve the application.

5) A sprawling concrete and neon lit facility right in the middle of what is now a bucolic country road

Comment Acknowledged.

6) I understand that there will be extensive testing in place to ensure Love's Travel Stops maintains stringent guidelines and testing on many of these concerns. I appreciate that. But what if testing comes back as failed, what then? Once a waterway is damaged beyond repair it cannot easily be brought back to health, if it can be brought back to health at all.

The Applicant is required to retain a licensed wastewater treatment operator who will be responsible for the operation and maintenance of the Alternative Treatment System. They will assess the performance of the system on a daily basis by performing with water quality testing of the reactor chambers. The daily test results are nearly instantaneous and are not sent to the lab (pH, temperature, Nitrates, sludge characteristics, etc). They will also perform weekly, monthly, and quarterly testing. Wastewater treatment is a biological process and its performance generally changes slowly over time. The plant operators are trained to investigate potential problems as they first begin to emerge, and are trained to detect abnormalities in the system operation based on changes in visual, scent, and other non-tangible cues; and are proactive with anticipated major flow fluctuations such as preparing the treatment system for a peak travel weekend.

7) I remember the area around exit 71 before the current truck stop and FedEx facilities were there. Many of us have seen the impact they have on route 320 here in town. You'll see as you drive this stretch an unbelievable amount of litter. Showing what man's intrusion does to an area.

On the site walk yesterday, in ten or so minutes, I filled half of a 50 gallon trash bag with refuse. On Polster Road. Where traffic is currently minimal. Now imagine how much refuse, in all its forms, will be generated when the traffic of Polster Road is incremented a hundred fold by this truck stop.

Love's Travel Stop & Country Stores values the aesthetics of a clean site. They have a Litter Control Plan that requires maintenance personnel to walk along the perimeter and pickup any trash that wasn't disposed of in the trash cans, as well as empty the trash cans on a regular basis. The Litter Control Plan also requires regular trash pickup beyond the general perimeter. There will also be chain-link fencing along the retaining walls in the main part of the Site, which will prevent trash from being blow in the direction of the wetlands.

Appendix 3

Kathleen Demers of the Willington Conservation Committee submitted public comments dated April 18, 2018, during the proceedings which are enumerated below in normal text and immediately proceeded by the parties responses in *italics*.

1) **In Slide #12, "The Leaching System" size is shown as being "145 feet" long. In the design report calculations provided with the applicant's permit application, the length of this liner area is noted as 140 feet long (APP-7, Appendix H, Section 11). Perhaps this appears to be an insignificant or picky remark, but we are concerned because during our review of the applicant's documents one of the significant things we noted, as enumerated in our original letter (WCC-1), is that there seems to be inconsistencies with numbers throughout the document. We would expect engineering numbers to be as precise as possible, otherwise they lose credibility.**

   The impermeable liner (as shown in exhibit APP-8, drawing CU-105B) is 144 feet long. It is both reasonable and common practice for this number to be rounded down to 140 feet, or up to 145 feet, dependent on the significant figures preferred or most convenient for illustration. Utilizing 144 feet in the calculations under Appendix H, Section 11 (exhibit APP-7-12H) results in no change to the resulting depth of flow in the impermeable liner.

2) **In slide # 17, "The Lined System", we were wondering if the picture of the liner being laid down is actually for a liner being put down under a leaching system or is it a liner being applied over a landfill or other site? We wonder how the "sides" of the proposed liner for the leaching system will be installed and their integrity maintained during the filling process? We would also like to know if the pipes carrying effluent from the pretreatment system will have to go through the liner or if they will be above the liner? Our concern is if they go through the liner to connect to the leaching chambers, how will leaks be detected once the system is covered?**

   Please see the response to Comment II.A.38.a. of the WWC letter dated April 24, 2018 with respect to the construction of the impermeable liner. The distribution piping to the subsurface disposal system will be installed above the sides of the impermeable liner.

3) **In slide #26, the picture notes that the distance from the leaching chambers to Roaring Brook is "470 feet". How was this distance measured? Was it through actual survey or by approximation using the satellite view (Roaring Brook's channel is not necessarily well defined in that view). Also the connectivity between Wetland H and Roaring Brook are not shown on that picture.**

   The 470 feet was an approximate distance determined through GIS data in order to assist the community in better understanding the distance from the subsurface disposal system to Roaring Brook. This slide was not utilized in any calculations. The distance from the subsurface disposal system to Wetland H is shown on this same slide; this distance is to Wetland H as a whole. The stream that flows within Wetland H to Roaring Brook is intermittent in nature.

4) In Slide #29, Effluent Discharge Temperature Considerations. The picture does not show what the actual maximum temperature of the treated effluent is when it enters the leaching system. The applicant states that there is "Over 30 day retention time to regulate effluent temperature. No net impact on groundwater temperature." Does this statement reflect the fact that the treated effluent enters the leaching chambers multiple times a day and there is a continual vertical and horizontal travel of that effluent 24 hours a day, 365 days per year? Where does all that heat energy go that is added to the unsaturated and saturated soils in the leaching bed?

Please see the response to Comment II.E.1 of the WWC letter dated April 24, 2018. Additionally, the subsurface disposal system is dosed periodically, which means there is not a continuous flow discharging to the subsurface disposal system.

Appendix 4

Ralph Tulis submitted public comments dated April 26, 2018, during the proceedings which are enumerated below in normal text and immediately proceeded by the parties responses in *italics*.

1.

SWAS Detailed Design Calculations, Section 2, Site overview [¶2, page 47 in the application's pdf file]: *"Matthew also asked about the relatively young age of the trees at the site (as observed by Jody Schmidt of the Eastern Highlands Health District) and the former owner mentioned that many trees were cut down in the surrounding area because a relative operated a kerosene powered saw mill several decades ago."* Examining the 1934 aerial map of the area (found at: http://cslib.cdmhost.com/digital/collection/p4005coll10/id/2413) reveals that this area was once more of a relatively treeless meadow and pasture. I can confirm that there was once a sawmill operated on the property because I recall playing in the sawdust pile as a young child, BUT it was located at the far Southerly edge of the property.

http://cslib.cdmhost.com/digital/collection/p4005coll10/id/2413

Comment Acknowledged.

2.

SWAS Detailed Design report, Section 8.10.6 [page 70 in the application's pdf file]: I have concern about the description of the material to be used in the French drains. The text states 3/4" crushed stone or pea stone. By definition pea stone is rounded stone approximately the size of a pea. If this is indeed the intent, fine, but if it is not the the description should be clarified. I'm not sure there is such a thing as 3/4" "pea" stone.

The French drain calls for either ¾" crushed stone or small pea stone. This will be addressed during the development of plans and specifications for construction.

3.

Also in Section 8.10.6, F&O states "The impermeable liner will be installed in separate sections and fused together in the field. There will be a leak test to confirm the PVC liner was properly fused together and installed." The typical PVC liner material can be found in various configurations and thicknesses. It can be smooth or textured, with or without a conductive layer to facilitate electrostatic testing. However the textured liner material specified in Note 1 on Sheet GI-002 [page 237 in the application's pdf file] may not be available with a conductive layer that helps to facilitate seam weld testing.

Comment Acknowledged. This will be addressed during the development of plans and specifications for construction.

4.

SWAS Detailed Design report, Section 8.13, Phosphorus Removal [page 74 in the application's pdf file]:
F&O states *"Using the 10.2 foot unsaturated volume of soil below the leaching trenches for the proposed SWAS indicates 26.1 months of phosphate will be sorbed based on a loading concentration of 13 mg/L and an assumed soil sorption capacity of 10 mg/ 100 g using a design flow rate of 9,000 gpd."* Yet in Appendix H, SWAS Detailed Design Calculations, Section 15, page 13 of 13, uses a Total Leaching System Capacity Q_c of 6,000 gpd. This discrepancy needs to be resolved. Also, the mark-up of drawing CU-105B [page 182 in the application's pdf file] included with Appendix H, SWAS Detailed Design Calculations, indicates an unsaturated soil depth D_{unsat} of 7.4 feet and not the 10.2 feet used in the Section 15 Phosphorus Removal calculations.

The phosphorus sorption capacity calculations were completed using the average daily flow (6,000 gallons per day), which is in line with the CTDEEP regulation requirements.

The minor discrepancy in unsaturated soil depth for the phosphorus sorption calculation results in a SWAS phosphorus sorption capacity of 19 months, which still well exceeds the DEEP requirement of 6 months. This small change is documented in Appendix 7 of the Joint Proposed Decision.

5.

SWAS Detailed Design Calculations, Appendix B, Soil Gradation & Permeability Test Results and in SWAS Detailed Design Calculations, Appendix C, Grain Size Analysis Graphs
[page 103 and beyond in the application's pdf file]:
Grain size analysis done by F&O do not contain any tabulated weights, be it total sample weight or weight retained on each sieve pan, so how are we to spot-check the % passing by weight values given?

The weight retained by each sieve was measured by the testing laboratory. The final results are based on the percent (by weight) of material passing through each sieve.

6.

SWAS Detailed Design Calculations, Appendix F, Site Groundwater Monitoring Data [page 155 and beyond in the application's pdf file]:
Where did the rainfall data come from that has been superimposed on the Groundwater Depth Standpipe Monitoring charts? Was a continuously recording rain gauge set up on the site or are these values from a weather station some distance away? This matters, as rainfall amounts are known to vary dramatically across our region.

This information is from the Windham Airport gauge (KIJD), located 17 miles from the site and is to be used for reference value only. This information was not included in any groundwater volume or behavior calculations. (Refer to exhibit APP-7-12F.)

7.

SWAS Detailed Design Calculations, Appendix H, [page 169 and beyond in the application's pdf file]:

- Calculations pages 5 through 7, dated 29 Sep 2017 - The diagram variables do not match the variables used in the calculations. Please clarify.

The diagram values match the variables used in the calculations. Subscripts were added for internal clarification.

- Pages 6 & 7 the i_{WTI} calculation units are incorrect - feet divided by feet does not equal feet per day.

This minor discrepancy is addressed in Appendix 7 of the Joint Proposed Decision.

- Why is the total effluent flow used in the nitrogen dilution calculations on page 12 based on 6,000 gpd and not 9,000 gpd?

The nitrogen dilution calculations were completed using the average daily flow (6,000 gallons per day), which is in line with the CTDEEP regulation requirements.

- Same question for the phosphorus removal.

Please see the response to Comment No. 4.

- Also, for the precipitation recharge calculation on page 12 a CN value of 73 is used. According to the reference, this is a value for a wooded area. I submit that once construction is complete and the ground surface is stabilized, and considering collateral tree fall around the area, this will change the ground surface to something more like a grassland or meadow. A more realistic CN value by the same reference should be closer to 80.

The slope upgradient of the SWAS will remain the same. The change in nitrogen dilution using a CN of 80 instead of 73 does not affect the design of the SWAS.

- Regarding phosphorus - we know that this element is both good & evil. It is used in fertilizer for agriculture. This is the good. But when phosphorus reaches wetlands and water courses it is evil. If the phosphorus is adsorbed into the soil downstream of the leachfield, what happens when the soil (and the plants that grow on the soil) can no longer use up the excess (see next paragraph)? Please explain.

This process was completed in line with the CTDEEP regulation requirements and followed the instructions therein. Any potential increase in phosphorus can be readily addressed with the addition of a proposed alum feed to the Amphidrome system.

8.

When I read a report prepared by Joyce E. Green (Rufus J. Thayer Otsego Lake Research Assistant, summer 2001, SUNY College of Environmental Science and Forestry, Syracuse, NY) found at:
https://www.oneonta.edu/academics/biofld/PUBS/ANNUAL/2001%20content/(088)%20phosphorus%20paper.pdf
I find the concluding statement states: *"Research has shown that phosphorus derived from septic systems can migrate through soils at rates that make contamination of nearby surface waters likely, even when conventional systems are located on suitable sites."*
While this may not be an exact parallel to the proposed system on this project, the data indicates that the underlying engineered fill will reach an equilibrium condition where it no longer binds the phosphorus, allowing it to travel into ground water far and away from the SWAS. How is this situation going to be avoided; what is the life expectancy of the SWAS's effectiveness, and; how might the system be repaired at some future time?
https://www.oneonta.edu/academics/biofld/PUBS/ANNUAL/2001%20content/(088)%20phosphorus%20paper.pdf

Please see the response to Comment No. 7 above.

9.

SWAS Detailed Design Calculations, Appendix I, [pages 191 through 193 in the application's pdf file]: In the initial Preapplication conference with DEEP, according to F&O's meeting minutes dated 7 Aug 2012, DEEP's agent Ramona Goode's requirement was that *"The current standpipes installed in that material reach a depth of approximately 20 feet and have not been observed with any amounts of groundwater. Deeper groundwater monitoring wells (to be installed by geoprobe drilling equipment) will be required with biweekly groundwater monitoring during the spring 2013 high groundwater season."* The Appendix A Soil Observations show that only TP-A01 through TP-A07 and B-01 through B-15 had been dug/installed prior to the date of these minutes. None reached a depth of "approximately 20 feet" (the deepest reached 108" or 9 feet) and ground water was observed in TP-A02, TP-A06. TP-A03 is suspect as the observations stated "No ground water found to 57"" but the depth did reach 69". Note that the table "Standpipes Installed" [page 98 in the application's pdf file] states the total pipe length was 10'-0". It must also be noted that the "TP-A"series mentioned in Appendix A are not located on drawing XC-103 dated 17 Feb 2017. It is not clear if this series was renumbered to "TP-1xx"

Appendix I (exhibit APP-7-12I) read "approximately 10 feet". Groundwater observed from test pits prior to the meeting referenced in Comment #9 was not located at the site of the proposed SWAS leaching bed. This discrepancy does not affect the SWAS design. This minor discrepancy is discussed in Appendix 7 of the Joint Proposed Decision.

10.

Plan set Drawing GI-002 [page 237 in the application's pdf file] Impermeable Leach bed liner: Specified thickness in Note 1.1 is 40 millimeters. This is obviously unlikely as 40 millimeters is a bit over 1½ inches. If the real value is 40 mils, then the actual thickness is slightly over 1 millimeter. I find nothing in the GM13 specification that addresses the sliding resistance of a textured membrane. Nilex products specifications show that textured liners have 39% of the tensile strength of smooth; 1/7th the elongation at break, and; 83% of the puncture resistance of their smooth product. What is the seam weld testing protocol? Will this be, and should this be, by an electrostatic method?

This will be addressed during the development of plans and specifications for construction.

11.

When examining the seasonal high and low ground water contours on Drawing XC-104 [page 240 in pdf file], dated 17 Feb 2017, I question the allegation that there are bedrock faults into which the groundwater flows as stated in Section 6.5 of the Detailed SWAS Design Report. Why is it simply assumed that the current probes and test holes reached bedrock and not an anomalous rock or boulder or very well-compacted hardpan? If the overall volume of water reintroduced into the ground at the end of the system train relies on an unproven bedrock fault, would not more detailed investigation to prove its existence be warranted, rather than relying on just a few test probes? No soil sampling appears to have been done at the bottom of the C-series geoprobes - might it be possible that there is a strata of very porous material at this layer? If that should prove to be the situation, where does this water go and will it have the capacity to accept the volume of water expected to be discharged?

A driller can tell the difference between hardpan and bedrock by the sounds and vibrations the drill rig produces when contact is made. A drill rig is capable of penetrating hardpan. Furthermore, the driller pulled up the drill rig and shifted it over when there was suspect of encountering a rock or boulder.

The depth to groundwater readings from March 13, 2013 resulted in a conservative assumption that there is a bedrock fracture is near well C-03. This assumption shortens the distance to the closest point of environmental concern (Wetland H) from 195 feet to 75 feet (to the end of the impermeable liner). The capacity of the ground to receive discharge from the impermeable liner is based on an analysis of the depth to groundwater; the cause of a sink in the groundwater table does not affect the capacity calculations.

12.

It does not appear that extensive soil grain size analysis was done at the deeper levels of locations B-11 through B-15 which are adjacent to probes C-02 through C-06, which might have provided insight into the underlying starta that I suggest in the previous paragraph.

For the B-series test pits, a John Deere mini rubber track excavator Model 50D was used with a maximum excavation depth of approximately 10 feet. The maximum depth of the excavation in this location was limited by the equipment. Refer to page 57 of Section 7 (exhibit APP-7-7).

A direct-push Geoprobe was utilized to install wells C-01 through C-06 specifically because larger equipment was unable to access the location in order to locate depth of groundwater. Refer to page 17 of Section 7 of exhibit APP-7-7.

13.

The depths and heights above grade for the C-series probes appear to have discrepancies. The Monitoring Well Completion Reports [pages 267 thru 272 in the application's pdf file] do not include height above grade for C-02 thru C-06. The boring depth indicated on these reports does not agree with the table on page 162 in the application's pdf file. Using the latter to compute ground water elevations (see attached table), I find that that all but C-01 seem to agreed. The Monitoring Well Completion Reports [pages 267 thru 272 in the application's pdf file] do not include height above grade for C-02 thru C-06 and do not seem to agree on the depth to the bottom of the probe.

Mr. Tulis appears to be referring to exhibit APP-7-12N (Appendix N), which is <u>not</u> shown on pages 267 through 272 of exhibit APP-7. Given the page numbers of the pdf referenced in Comment No. 13 are incorrect, the referenced table on "page 162" is unknown. This comment appears to be related to Comment III.A.13 of the WWC Comments dated April 24, 2018, the response for which is repeated below.

The boring depths contained in the monitoring well logs in Appendix N of the Design Report [exhibit APP-7-12N] are the true values and were used to determine the design.

When narrative summary Table 6-1 of the Design Report [exhibit APP-7-6] was assembled, the portion of pipe above the ground surface was subtracted from the boring depths with the exception of well C-05.

When well C-05 was measured as dry on August 5, 2016, the water level meter reached the bottom of the well at a depth of approximately 10 feet without encountering water. Well C-05 was originally installed at 20 feet deep. Based on well installation field book notes, it was evident that a cave-in occurred at some point after installation of this well. Prior groundwater readings were taken during the seasonal high water table periods; therefore the cave-in had not been recognized until the August 2015 monitoring event.

Table 6-1 of exhibit APP-7-6 was not a part of the original application, but had been added during the review process in response to a comment from DEEP. Table 6-1 was <u>not</u> used for design purposes and is a minor discrepancy.

14.

Examing the marked up CU-105B that accompanies the SWAS Detailed Design Calculations, Appendix H [page 182 in the application's pdf file] and studying the seasonal high water profiles, I find some questionable assumptions concerning the underdrains. I understand that the intent of the underdrains is to lower the ground water below the liner. Should not the seasonal high water line demonstrate mounding downstream of the groundwater's reintroduction at the dispersion trench?

There will be minimal mounding due to the reintroduction of groundwater in the calculations. The groundwater was subtracted and then re-added. The "mounding" that does occur has already been accounted for, the calculations for which are included in exhibit APP-7-12H, Section 13.

15.

The bottom of the trench at underdrain #5 is at elevation 597.0, and elevation 596.5 at underdrain #6. The bottom of the trench for the dispersion trench (Sta 1+08±) is 596.0. I have assumed that all of the pipe are 20" in diameter (1.67 feet), although there appears to be discrepancies in the pipe sizes when comparing the marked-up CU-105B to the plan on drawing CU-103 dated 29 Sep 2017, as some there are labeled as 15" diameter. No matter, as it is clear from the sections that this water will be higher that the top of the pipes at underdrains #5 and #6. Since these two pipes are directly connected to the pipe in the dispersion trench, and the fact that water seeks its own level, I submit that all of these pipes will be full to the top. Given this, how effective will the desired ground water drawdown be at underdrains #6 and #5 and perhaps underdrain #4?

The groundwater drawdown will be at a depth 3 feet below the liner so that adequate hydrostatic pressure will equalize the groundwater height. The French drain calculations support the design of the French drain system (see exhibit APP-7-12H, Sections 7 through 11).

16.

It appears from both Section A-A and B-B on the marked up CU-105B that a substantial portion of the SWAS will require removal of the existing soil to an elevation that will be below the stated seasonal low low groundwater. The easy way to avoid specifying how this will be accomplished is to consider it to be left to the contractor's "Means & Methods." However, given the desired constraints required by Earthwork notes #2 and #5, what assurance exists that the bidding contractor(s) will choose the appropriate "Means & Methods." While I do realize that final construction plans have not yet been developed, the use of generic E&S details may not necessarily be appropriate for all conditions.

Comment acknowledged. This will be addressed during the development of plans and specifications for construction.

17.

Regarding overall water use and a net 0 (zero) for the site - drawing water from bedrock wells 510± feet deep, cycling it through the various systems on the site, and reintroducing the water into an alleged bedrock fracture, does not necessarily put the water back into the same aquifer. Unless, of course, connectivity between the source aquifer and the destination aquifer has been established.

The overall hydrogeological conditions of the site will be nominally impacted by the leaching system discharge. The volume of the site's surficial groundwater and surface water is many orders of magnitude more than the volume of wastewater effluent.

18.

While not directly related to this application, why do drawings CU-101, CU-102, CU-103 [pages 243-245 in the application's pdf file], depict a different truck entrance drive than all of the other drawings? Is this a permanent revision or is it a remnant from an unrelated traffic study?

"All the other drawings" referred to in Comment No. 18 are drawings CG-101 and CG-102 [exhibit APP-8]. Drawings CG-101 and CG-102 are old versions that had not been updated as recently as drawings CU-101, CU-102, and CU-103. These drawings will be updated during the development of plans and specifications for construction. The entrance to the truck stop does not affect the septic system design.

Appendix 5

Ralph Tulis submitted public comments dated April 24, 2018, during the proceedings which are enumerated below in normal text and immediately proceeded by the parties responses in *italics*.

1.

After reviewing the plans, I find a rough estimate that something on the order of 3,200 cubic yards (CY) of existing soil has to be removed and replaced with approximately 6,500 CY of selected septic fill material. Assuming 10 CY per truckload (a lower value to keep the weight down, avoiding soil compaction), this equates to at least a total of 1,000 truckloads out and in. Quite honestly, I feel that my estimated numbers are much lower than that which will actually be required.

With the project specifications stating: *"The leaching trench area and the area down-gradient of the system shall be protected from compaction by the contractor's equipment."* and *"The use of rubber-tired equipment such as trucks, compactors, backhoes, bucket loaders, etc. shall not be allowed in these areas."* (Notes 2 & 2.1 under Earthwork), how will this work be accomplished, keeping in mind the topography of the site and the need to avoid disturbing Wetlands Areas I and J? Even if these trucks can utilize the existing travelway adjacent to Wetland Area J, their presence will compact the existing soil adjacent to "J" affecting the overall hydrological properties of "J". Even at that, how can the material be carried the 120 feet or more from (or to) the far Northerly edge of the SWAS footprint?

This level of detail will be determined during the preparation of plans and specifications for construction.

2.

I would suggest that the DEEP also consider what the future may bring—Let's be mindful of:

1. A proposal to close all existing rest areas because of budget issues. What will be the additional increase in demand on this, and on the nearby T/A facility, if or when this occurs?

2. The current Willington I-84 rest area bathrooms are closed from 3:30 pm to 8:30 am - 14 out of 24 hours! Folks are forced to use the porta-potties OR continue on to the next open facility with real indoor toilets. For Eastbound traffic this means T/A, and if there is no Westbound rest area, this new Love's facility will likely capture much of the Westbound traffic.

3. Also, the current Willington I-84 rest areas were closed in March of 2015 for reconstruction of the waste water treatment systems and reopened in around October of 2015. The WWT system influent composition has been based on the data report by T/A to the DEEP—in 2012. Do these data capture a realistic picture of the current waste water composition AND volume?

Comment acknowledged. Rick Shuffield provided expert witness testimony on April 26, 2018 concerning facility operations:

"The closing, or operations, or even if they put new facilities in would have very little impact into the amount of traffic that we're actually going to see. And the main reason why I say that is because we're constrained capacity-wise in the amount of volume that we can do in a location anyway. Our operations (I'll answer this question because it came up earlier) they are 24-hours a day. We are that way in every location, but as you would expect, our volume/flows stay fairly consistent in about 16 or so hours of those days. Normally from 5 o'clock in the morning until approximately 10 [o'clock] we get a little bit more of a rush with trucks [and] between 11 o'clock in the evening and 1 o'clock in the morning. And the reason that rush happens is because they limit the drivers sometimes on when they

can fuel. So if they're allowed to get fuel on a certain day, a lot of times they'll make sure to get it before that day crosses over, or if they weren't able to get it they may roll over into the next day. And then we're typically slower of course over the overnight hours as still most people sleep in the overnight hours. But in this particularly location we only have 55 truck parks, and these 55 truck parks will for all basic purposes be full by about 4 o'clock in the afternoon.... It doesn't mean we won't be selling diesel, because they can still come through and utilize our facilities and exit out, but if they're going to shower (which is really the larger component of the water utilization) they have to have a parking space. So we're constrained on the amount of volume we can put through, based on the constraints of the physical attributes of the location. As it relates to the car aspect of it, we have to some degree some of the same constrains, but even if you have a minor increase in volume, the amount of utilization of a mobile customer is much less because shower is really your driver on your water utilization."

3. **While the design waste water flow for Love's is based on book numbers for the size of the facility and what it offers to the public, exactly what will be the flow rates should the demand exceed those book values? Will it be physically possible to experience a greater number of travelers than what the books say, and will that demand be greater than 6,000 gallons per day?**

Please see the response to Comment No. 2. The calculated design flow is conservative.

Appendix 6

Brian Murphy of the Department of Energy and Environmental Protection Fisheries Division submitted public comments dated April 19, 2018 and May 4, 2018, during the proceedings which are enumerated below in normal text and immediately proceeded by the parties responses in italics.

1. "One of the more challenging aspects of this development will be the containment of disturbed soil during construction. Total area of land disturbance on this 40 acre parcel is estimated at approximately 9.5 acres. The development area is characterized by a very steep, hilly topography ranging in elevation from at 680 ft, near Polster Road downgradient to elevation 565 ft. along Roaring Brook. Project development involves a very significant amount of earth disturbance in which land along the eastern section of the property will be downcut to collect materials which will be used to backfill the steep sloped section along the western edge of the development. Up to three separate tiers of modular concrete retaining walls are proposed to be built along the development perimeter.

   If not properly contained, soil runoff that becomes suspended could enter Wetlands F/G and Wetland H. These wetlands drain into Roaring brook and as such, these wetlands could serve as a "direct conduit" to convey sediment runoff into the mainstream of Roaring Brook. The negative environmental impacts of sediment runoff to water quality and aquatic resources have been well documented by researchers."

   The Applicant is required to apply for and obtain approval under the CT DEEP General Permit for the Discharge of Storm water and Dewatering Wastewaters Associated with Construction Activities for the construction of the development. This General Permit requires that sedimentation and erosion control measures be implemented prior to and during construction. In addition, the proposed subsurface disposal system does not impact the 100 foot wide riparian corridor recommended by CT DEEP Inland Fisheries or the 150 foot wide protective undisturbed riparian corridor along Roaring Brook that was established by the Town of Willington Planning & Zoning and Inland Wetland Commission.

2. "Thermal loading or increases in ambient surface water temperatures during the summer is a serious concern with any commercial development that results in the increase in the amount of impervious surfaces. Site development will result in the creation of over 5 acres of impervious surfaces. Impervious areas act as a heat collector, with heat being imparted to stormwater as they pass over impervious surfaces. In addition, stormwater temperatures can be elevated from solar radiation as they are collected and stored in detention basins. I am concerned that stormwaters may impact the long term survival of coldwater fish species in Roaring Brook, Wetland H as well as the aquatic insect community that provides their main food source."

Stormwater management during construction and post-construction is outside the scope of this permit application. The Permittee will be required to apply for and obtain the appropriate local and state approvals necessary for stormwater management.

3. "It is understood that site development includes the installation of a proposed subsurface wastewater absorption system with a maximum flow of 9,000 gallons per day. The system will have a pretreatment system to reduce wastewaters from the onsite planned food services. The hillside where the SWAS will be installed drains directly into Wetland H, a resource known to support native brook trout.

   The overall design of the SWAS is much larger than originally proposed (foot print 120 ft x 1540 ft) requiring a network of drains below the leaching field's liner to redirect seasonal high groundwater. The area of site disturbance required for excavation and regrading is larger, with its perimeter approximately 25 feet from the edge of Wetland H. As mentioned, Wetland H directly outlets into the mainstem of Roaring Brook and its habitats are supportive of a native brook trout population. Consequently, I am concerned that the physical installation of the SWAS and long term operation of this system could increase surface and groundwater temperature and alter groundwater recharge flow to wetland H. These alterations could degrade Wetland H function and impair its suitability as a coldwater habitat for native brook trout."

   Discharges from the proposed alternative sewage treatment system will have no negative thermal or hydraulic impact on the receiving groundwater and, therefore, Wetland H. DEEP estimates that it will take approximately 28 to 30 days for the wastewater to travel through the grease traps, septic tanks, Amphidrome Treatment System, and the subsurface leachfield. While moving through the leachfield, the wastewater will equilibrate to ambient soil temperature, which at soil depths below grade are 48 to 52 degrees Fahrenheit [Exhibit DEEP-17 (Section IX.C., Page 3)], before it is discharged to the groundwater.

4. Fisheries Recommended Water Quality Monitoring SWAS Draft permit Conditions: Pre-development, DEEP Fisheries Division (FD) staff will be installing two surface water temperature monitoring devices in the mainstem of Roaring Brook and one in wetland H. These three devices will consist of a remote data logger so that the FD can collect continuous surface water temperature data until the project is constructed. In order to make certain that the proposed discharge will not impact surface water temperature in the areas of Roaring Brook, the FD requests that the final permit language include additional water quality monitoring conditions.

   Once the project is constructed the Applicant ("Permittee") would be required, as a condition of the permit, to collect surface water temperature data at the three FD installed temperature monitoring sites. The FD will provide the Permittee with the pre-development GPS coordinates of all three monitoring locations to ensure quality assurance of post development data collection. These data would be compiled and submitted by the Permittee in a report provided to the FD on an annual basis. The period of monitoring shall be a duration of 3 calendar years, post-development.

Also, the FD requests that a condition be added to the draft permit to require the addition of temperature to Table C (Monitoring Location I- Final Effluent) of the final permit to include the parameter of temperature. This condition would be added after turbidity. Lastly, prior to permit issuance, the Permittee will be required to submit a water quality monitoring plan that includes the aforementioned monitoring conditions for review and approval to the FD Fisheries Habitat Biologist, Brian Murphy."

As discussed in DEEP response to Comment No. 3, discharges from the proposed alternative sewage treatment system will have no thermal impact on the receiving groundwater and the downgradient wetlands and watercourses. Because the discharge from the proposed subsurface disposal system will be fully renovated in groundwater and will therefore have no thermal impacts on downgradient wetlands and watercourses, there is no need for the Permittee to perform temperature monitoring in Roaring Brook and/or Wetland H as proposed by the Fisheries Division. Such instream monitoring is therefore not recommended for inclusion in the permit.

Appendix 7

Described herein are the minor revisions to Appendix Q (Engineering Report) of Application No. 2015113, which is exhibit APP-7 of the hearing proceedings. During the technical review of the Application, revisions to the proposed design of the Alternative Sewage Treatment System were made. Not all of the calculated values within the narrative text were updated to match the revisions in the design calculations. None of the changes listed below affect the design of the alternative sewage treatment system.

1. Exhibit APP-7-4
   To be more precise, the first sentence is the seventh (and final) paragraph of Section 4.1 should read "All of the test pits were dug to a depth between **5'-9"** and 8'-9" ".

2. Exhibit APP-7-6
   a. *Table 6-1* should read as follows to properly reflect the data provided in exhibit APP-7-12N, as well as field observations of well C-05 made during the dry weather groundwater monitoring event (August 5, 2016):

Table 6-1: Groundwater Monitoring Well Depths

Monitoring Well ID	Depth
C-01	19 feet
C-02	19 feet
C-03	21 feet
C-04	19 feet
C-05	20 feet*
C-06	16 feet

* Cave-in to a depth of 10 feet occurred sometime after installation of well C-05.

   b. The seasonal low groundwater depth observed for well C-01 should read **10'-6 ¼"** (not 10'-11") in *Table 6-4*.

3. Exhibit APP-8
   a. The first sentence of the first bullet point in Section 8.5 would be more accurate if written as follows: "An engineered septic system fill material with a permeability range of 30 to 50 feet per day was selected to match the permeability range of the native soil **that the impermeable liner will discharge to.**"

   b. The second sentence of the first paragraph in Section 8.8 differs slightly from the value calculated in that same section that used in the design calculations [exhibit APP-7-12H]. The referenced sentence should read as follows: "The impermeable liner was designed to have a slope of 0.316 feet per foot directly below the SWAS and **0.0285 feet per foot** emptying into the groundwater table."

c. The second sentence of the first paragraph in Section 8.9 differs slightly from the design value calculated [exhibit APP-7-12H]. The referenced sentence should read as follows: "Based on Darcy's equation shown in Section 11 of *Appendix H*, a depth of flow of **12.6 feet** will be required for the 9,000 GPD of design flow from the leaching bed."

d. The second half of the third sentence in the second paragraph of Section 8.9 differs slightly from the design value calculated [exhibit APP-7-12H]. The referenced sentence segment should read as follows: "…the total width required to convey the effluent plus groundwater recharge plus rainfall that entered the impermeable liner (from above) is **4.3 feet** wide by 120 feet across. When this additional flow is introduced to the groundwater table there will be an initial build-up of **3.6 feet**."

e. The last sentence of the second paragraph in Section 8.10.2 should read as follows: "The **west** side of the wetland ends as the water seeps into the ground into a pocket of coarse sand with high permeability (50 ft/day or more)."

f. The first sentence of the fourth paragraph in Section 8.10.2 should read as follows: "Wetland J is **south** and adjacent to/upgradient of the SWAS."

g. The second sentence of the second paragraph in Section 8.11 differs slightly from the design value calculated [exhibit APP-7-12H]. The referenced sentence should read as follows: "The travel time for the system is calculated to be **23.2 days**."

4. Exhibit APP-7-12A
   a. A note is missing from *Appendix A*, stating that a standpipe was installed in test pit A-06. Standpipe A-06 is shown on drawing no. XC-103 [exhibit APP-8] and was observed during the site walk [exhibit APP-20].

   b. A note is missing from Appendix A, stating that a standpipe was installed in test pit B-09. Standpipe B-09 was observed during the site walk [exhibit APP-20]. Standpipe B-09 has been dry during every groundwater monitoring event.

5. Exhibit APP-7-12F
   Groundwater elevations listed in Appendix F for standpipe A-06 did not have the portion of the pipe above the ground surface subtracted out of the depth to groundwater readings. All other well elevations were calculated correctly. This does not affect the design.

   The resulting affects to Drawings Nos. XC-104 and CU-104A are minimal and still show the direction of groundwater flow moving from east to west; Drawing Nos. CU-105A and CU-105B of APP-8 already show the correct groundwater elevations.

   The groundwater elevations for standpipe A-06 should read as follows:

Groundwater Elevations (Feet)

Date	A-06
Thu, 02/25/2010	632.25
Mon, 03/01/10	632.83
Thu, 03/04/10	633.25
Mon, 03/08/10	632.50
Thu, 03/11/10	632.25
Mon. 03/15/10	632.75
Thu. 03/18/10	632.50
Mon. 03/22/10	632.42
Thu. 03/25/10	632.75
Mon. 03/29/10	632.83
Thu. 04/01/10	634.83
Mon. 04/05/10	634.00
Thu. 04/08/10	633.58
Mon. 04/12/10	633.42
Thu. 04/15/10	632.25
Tue. 04/20/10	632.08
Thu. 04/22/10	632.08
Mon. 04/26/10	632.08
Thu. 04/29/10	632.08
Mon. 05/03/10	DRY

Date	A-06
Wed, 03/13/2013	NM
Mon, 03/18/2013	NM
Thu, 03/21/2013	NM
Mon, 03/25/2013	NM
Thu, 03/28/2013	NM
Mon, 04/01/2013	NM
Thu, 04/04/2013	NM
Mon, 04/08/2013	NM
Fri, 03/25/2016	638.00
Thu, 04/14/2016	NM
Fri, 08/05/2016	DRY

6. Exhibit APP-7-12H
   a. The i_{WT} (slope of original groundwater table) in Section 8 should be displayed with units of **ft/ft** (not ft/day).

   b. The A_{FU} (area of flow received upgradient) descriptive text in Section 9 reads "6.5 ft tall by 120 ft long". The "6.5 ft" should read "**3 ft**" for items 4 and 5 and "**2 ft**" for item 6.

   c. The "Unsaturated Soil Depth" value used in Section 15 should be **7.4 feet** in place of 10.2 feet. This minor change in depth results in a SWAS phosphorus sorption capacity of 19 months, which still well exceeds the DEEP requirement of 6 months.

   d. The line symbols for Extent of Excavation and Proposed Groundwater Mounding at the bottom of Marked-up Drawing CU-105B are backwards.

7. Exhibit APP-7-12I
   On page 4, the second sentence of the second bullet (of the page) should read "The current standpipes installed in that material reach a depth of approximately **10 feet** and have not been observed with any amounts of groundwater."

8. Exhibit APP-7-12M (APP-8)
   a. The groundwater contour elevations depicted on the Seasonal Low Groundwater Contour Map of drawing No. XC-104 are slightly different from the values provided in *Appendix F* [exhibit APP-7-12F]. While the placement of groundwater contours would shift slightly, the overall direction of groundwater flow remains the same. This does not affect the overall design and will be updated accordingly during preparation of plans and specifications for construction.

   b. Drawing nos. CG-101 and CG-102 are old versions that reference drawing no. CU-103. Drawing nos. CG-101 and CG-102 will be updated accordingly during preparation of plans and specifications for construction.

   c. There are two drawings labelled CU-105B. The first of the two identically labeled sheets should read CU-105A. Sheet CU-105A will be updated accordingly during preparation of plans and specifications for construction.

   d. The line symbols for Extent of Excavation and Proposed Groundwater Mounding at the bottom of drawing no. CU-105B are backwards. Sheet CU-105B will be updated accordingly during preparation of plans and specifications for construction.

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

UIC PERMIT

issued to

Love's Travel Stop & Country Store
10601 North Pennsylvania Avenue
P.O. Box 26210
Oklahoma City, OK 73120

Location Address:
3 Polster Road
Willington, CT 06279

Permit ID: UI0000518

Permit Expires:

Watershed: Roaring Brook

Basin Code: 3104

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) Love's Travel Stop & Country Store, ("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 thirty (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.

(J) On or before the 10-year anniversary of the date of issuance of this permit, the Permittee shall submit for the Commissioner's review, a comprehensive engineering report prepared by a professional engineer licensed to practice in Connecticut that evaluates the performance and operation of the on-site sewage treatment and disposal system. Such report shall include a detailed summary of the discharge monitoring

reports. A physical inspection of the system shall be performed in the presence of Department of Energy and Environmental Protection ("DEEP" or "Department") staff. Prior to conducting the comprehensive review, the Permittee shall contact the Bureau of Materials Management and Compliance Assurance.

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 permit issuance.

"Average Monthly Limit" means the highest allowable average of all grab samples taken during any calendar month.

"Maximum Concentration", in the context of this permit, is defined as the maximum concentration at any time as determined by a grab sample.

"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", means the average monthly concentration of the current month's samples averaged with the average monthly concentration from each of the previous eleven months.

SECTION 3: COMMISSIONER'S DECISION

(A) The Commissioner has made a final determination and found that the installation of a new system will protect the waters of the state from pollution. The Commissioner's decision is based on Application No. 201503113 for permit issuance received on May 1, 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 nine thousand (9,000) 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 22a-461 of the CGS. The Commissioner in no way certifies the safety or effectiveness of any sewage system additive.

(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.

(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 and as outlined in the associated operation and maintenance manual. This includes but is not limited to all aeration equipment, aeration tank cycling, anoxic tanks, chemical feed systems, effluent filters or any other process equipment necessary for the optimal removal of pollutants. The Permittee shall neither bypass nor fail to operate any of the approved equipment or processes without the written approval of the Commissioner.

(F) The discharge shall not exceed and shall otherwise conform to the specific terms and conditions listed in this permit. The discharge is restricted by, and shall be monitored in accordance with the Table(s) A through (C), 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 in accordance with this permit. The Permittee shall report pH values, specifically maximum and minimum, for each day of sample collection

(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) Unless a different classification of certified operator is required under a separate written approval issued by the Commissioner, 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 Table (D), which is incorporated into this permit as Attachment 2.

(M) The Permittee shall perform ground water monitoring in accordance with Table (E), which is incorporated into this permit as Attachment 3.

(N) The monitoring and sampling required within this permit is the 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 thirty (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:

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.

(f) Copies of all hard-copy DMRs shall be submitted concurrently to the local Water Pollution Control Authority (hereinafter "WPCA").

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 sewage treatment system is operating in accordance with the approved plans and specifications and is achieving compliance with all permit limits and conditions. As part of such verification, 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 Willington 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 Willington.

(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 Willington. 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 on the land records in the Town of Willington.

(D) Every two (2) 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 discovered.

A copy of each audit shall be submitted concurrently to the local WPCA and to the local Health Department.

This permit is hereby issued on

_____

Robert E. Kaliszewski
Deputy Commissioner
Department of Energy and Environmental Protection

cc: Local Health Dept.
DMR

ATTACHMENT 1

TABLE A				
Discharge Serial No. 301-2A			Monitoring Location: G	
Wastewater Description: Domestic Sewage Influent to Wastewater Treatment Plant				
Monitoring Location Description: Septic Tank Effluent				
Average Daily Flow: 6,000 gallons per day			Maximum Daily Flow: 9,000 gallons per day	
INSTANTANEOUS MONITORING				
Parameter	**Units**	**Average Monthly Limit**	**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

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 B				
Discharge Serial No. 301-2B			Monitoring Location: J	
Wastewater Description: Effluent Intermediate Process				
Monitoring Location Description: Reactor Tank				
Average Daily Flow: 6,000 gallons per day			Maximum Daily Flow: 9,000 gallons per day	
INSTANTANEOUS MONITORING				
Parameter	**Units**	**Average Monthly Limit**	**Sample Type**	**Sample Frequency**
pH	SU	---	Grab	Weekly
Temperature	° F	---	Grab	Weekly
Alkalinity	mg/l	---	Grab	Weekly
Turbidity	NTU	---	Grab	Weekly
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 C					
Discharge Serial No. 301-2			Monitoring Location: 1		
Wastewater Description: Pretreated Domestic Sewage Effluent					
Monitoring Location Description: Final Effluent (Discharge from pretreatment system)					
FLOW/TIME BASED MONITORING					
Parameter	**Units**	**Average Daily Flow Limit**	**Maximum Daily Flow Limit**	**Sample Type**	**Sample Frequency**
Flow Rate (Average daily)[1]	gpd	6,000	9,000	Daily flow	Continuous
INSTANTANEOUS MONITORING					
Parameter	**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	7[2]	10[3]	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
Oils & Grease	mg/l	---	---	Grab	Twice per month
Turbidity	NTU	---	---	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. The 7 mg/l limit is based on a Twelve Month Rolling Average as defined in Section 2(B) of this Permit and shall be effective twelve (12) months from permit issuance.
3. The limit of 10 mg/L shall be effective the date of permit issuance.

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 D INSPECTION, MONITORING AND MAINTENANCE REQUIREMENTS		
Discharge Serial No.: 301-2	Monitoring Location: S	
Wastewater Description: Domestic Sewage		
Average Daily Flow: 6,000 gallons per day	Maximum Daily Flow: 9,000 gallons per day	
Inspection, Monitoring, or Maintenance	**Discharge Serial No.**	**Minimum Frequency**
Depth of sludge in septic tank[s]		During pump-out
Pump out septic tank[s]		Annually
Pump out grease trap[s]		Quarterly
Mechanical inspection of septic tank baffles		During pump-out
Mechanical inspection of grease trap baffles		During pump-out
Mechanical inspection of septic tank effluent filter		During pump-out
Clean septic tank effluent filter		During pump-out
Mechanical inspection of pump station[s]		Quarterly
Pump out pump chamber[s]		Annually
Pump out equalization tank		Annually
Test run of emergency generator		Quarterly
Pump out holding tank (water from floor drains only)		As needed
Water meter readings of water usage		Weekly
Visual inspection of Amphidrome System		Monthly
Visual inspection of anoxic chambers		Monthly
Visual inspection of denitrification filter		Monthly
Visual inspection of anoxic fixed film reactor		Monthly
Visual inspection of final settling tank		Monthly
Mechanical inspection of alarms		Monthly
Mechanical inspection of carbon feed system		Monthly
Mechanical inspection of alkalinity feed system		Monthly
Mechanical inspection of valve chamber(s)		Monthly
Visual inspection of distribution chambers		Quarterly
Visual inspection of surface condition of leaching field		Quarterly
Depth of ponding in leaching field		Quarterly
Mow grass over leaching field		3 times per year

ADDITIONAL NOTES:

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 Eastern Highlands 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 Eastern Highlands Health District Director of Health.

ATTACHMENT 3

TABLE E GROUNDWATER MONITORING			
Discharge Serial No. 301-2		**Monitoring Location:** GW	
Groundwater Monitoring Location No.: TBD		**Description:** Downgradient monitoring well	
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	Instantaneous
Total Dissolved Phosphorous	mg/l	Quarterly	Grab
Temperature	°F	Quarterly	Instantaneous

FINAL
IWWC
Approval

Town of Willington
Inlands Wetlands and Watercourses Agency
40 Old Farms Road
Willington, Connecticut 06279

Date: **May 8, 2012**

Permit: **W2011-51**

Applicant Address: 10601 Pennsylvania North Oklahoma City, OK. 73126

The Willington Inland Wetlands and Watercourses Commission approved your application to conduct certain regulated activities. Your attention is directed to the conditions of the enclosed Permit. You should read your permit carefully, as all construction or work must conform to that which is authorized.

If you have not already done so, you should contact your local Planning and Zoning Office to determine local permit requirements, if any on your project.

If you have any questions concerning the enclosed permit, please contact the Agency at (860) 487-3123.

Sincerely,

S. Jorgensen

Wetlands Agent

cc: pzc
bldg. off
file

TOWN OF WILLINGTON
INLAND WETLANDS AND WATERCOURSES AGENCY
WILLINGTON, CT 06279

INLAND WETLANDS PERMIT NO. **W2011-51**

This authorization refers to your application to conduct a regulated activity within inland wetlands and/or watercourses on:

3 Polster Road Willington, CT Map 46 Lot 16 & 17

The Willington Inland Wetlands and Watercourses Commission on **April 23, 2012** considered your application with due regard for the criteria enumerated in Section 22a-41 of the General Statutes and in 22a-39.5 of the State Regulations and has found that the proposed work, as specified and conditioned below, is in conformance with the purposes and provisions of said section and the applicable provisions of Connecticut's Water Quality Standards relating to construction:

Construct a travel stop and country store
Map title Love's Travel Stops & Country Store 3 Polster Road Willington Connecticut Inland Wetland Application October 2011 Revised January 30, 2012 – Town Review Comments (IWWC) Location Map scale 1" = 1000'

This Permit is issued to **Love's Travel Stops & Country Stores** subject to with the following conditions and/or modifications:

1. The permittee shall notify the Willington Inland Wetlands and Watercourses Agency no fewer than seven (7) days prior to the start of any clearing or construction as to the date of the commencement of such activity and immediately upon its completion.

2. The permittee shall employ best soil and erosion control management practices, consistent with the terms and conditions of this permit to control storm water discharges and to prevent pollution of wetlands and watercourses and in accordance with the 2004 Storm Water Quality manual by CT DEP, 2002 CT Soil & Erosion Control Guidelines, and DEP Bulletin 34.

3. All work and all regulated activities conducted pursuant to this authorization shall be consistent with the terms and conditions of this permit. Any structures, excavation, fill, obstructions, encroachments or regulated activities not specifically identified and authorized herein shall constitute a violation of this permit and may result in its modification, suspension, or revocation. Upon initiation of the activities authorized herein, the permittee thereby accepts and agrees to comply with the terms and conditions of this permit.

4. This authorization is not transferable without the written consent of the Willington Inland Wetlands and Watercourses Agency.

5. In evaluation this application, the Agency has relied on information provided by the applicant and, if such information subsequently proves to be false, deceptive, incomplete and/or inaccurate, this permit may be modified, suspended or revoked.

6. The permittee shall immediately inform the Agency of any problems involving wetlands or watercourses which have developed in the course of, or which are caused by, the authorized work.

7. No equipment or material including without limitation, fill, construction materials, or debris, shall be deposed, placed, or stored in any wetland or watercourse on or off site unless specifically authorized by this permit.

8. The Commission or it's agent may make regular inspections at reasonable hours, of all regulated activities for which permits have been issued under these regulations.

9. This permit is subject to and does not derogate any present or future property rights or other rights or powers of the State of Connecticut or the Town of Willington and conveys no property rights in real estate or material nor any exclusive privileges, and is further subject to any and all public and private rights and to any federal, state, or local laws or regulations pertinent to the property or activity affected hereby.

10. Any modifications to the plan shall be submitted to the Commission for their review and approval.
11. Three construction bonds shall be submitted to the Commission prior to the commencement of construction activity. The first such bond shall be for sedimentation and erosion control; the second for the construction of the access road to the detention basins and the detention basins; and the third for final stabilization of the site, including landscape plantings. Cost estimates shall be submitted by the applicant's engineer for review and approval by the Commission. All bonds shall be by cash (must be used for erosion and sedimentation control), letter of credit, or passbook in the name of the Commission in a form satisfactory to the Commission's attorney.
12. Daily site inspection logs and E&S inspection reports shall be conducted by the site engineer (hereinafter "the Engineer") and submitted electronically on a weekly basis to the Commission. The Commission approves Fuss & O'Neil as the site engineer. Any change in designation of the Engineer will require Commission approval in order to establish that the replacement engineer is sufficiently familiar with the approved plans, specifications, and conditions.
13. Prior to construction, proof of registration with the DEEP for a permit for Storm water and Dewatering Wastewaters from Construction Activities shall be submitted to the Commission.

14. Environmental Assessment of vernal pool #2 (wetland D) shall be collected prior to construction by a qualified individual (to be approved by the applicant and the Commission) with additional sampling one, two, three and five years after construction is completed. Monitoring may be required to be extended if the results are not conclusive to determine whether or not significant changes to the ecological condition of the vernal pool have occurred. Annual report shall be submitted to the Commission. "Environmental assessment" includes the monitoring of plant life, amphibians, reptiles, and invertebrates and changes in the health and reproductivity of the population. If monitoring indicates adverse impacts, the applicant shall, within such time period as the Commission may specify, submit a remediation plan for the Commission to review and approve in order to prevent or remediate harmful impacts to the sensitive areas.

15. Groundwater monitoring wells shall be installed prior to construction in two areas. The first area is down gradient of the proposed diversion swale between Wetland J and detention basin #2 to determine if the diversion (swale) is working as designed. Monitoring wells shall also be installed down gradient of the two infiltration areas indicated on the applicants' plan, with water collected and periodically tested for organic carbon, aromatic hydrocarbons, and heavy metals. Copies of the results shall be submitted to the Commission. If groundwater monitoring indicates the presence of petroleum products, the applicant shall, within such time period as the Commission may specify, submit a remediation plan for the Commission to review and approve in order to prevent or remediate harmful impacts to the sensitive areas.
16. Water quality [and temperature] of Roaring Brook both above and below the site shall be monitored, with base line data collected prior to construction and then semi-annually for the first 5 years, thereafter annually.
17. Copies of manufacturer specifications for oil water separators; Vortech units etc shall be submitted to the Commission. Computations for the proposed Vortech hydrodynamic separators and corresponding by-pass manhole systems should be provided. The Commission must approve the specifications and calculations provided prior to unit installation.
18. The Engineer shall provide a design for the membrane liners for both detention basins. The designs should include specific details and specification that are in accordance with manufacturers specifications. Complete design calculations for the liner in detention basin #2 shall be submitted along with specific details and manufacturer specifications regarding installation and maintenance. The Commission must approve the design and specifications prior to installation.
19. The Engineer shall be on-site and oversee the dewatering and construction of the detentions basins as well as the diversion ditch swale for detention basin #2. A report indicating the Engineer's approval of such work shall be submitted to the Commission.
20. Detailed design calculations and final retaining wall plans shall be submitted by the Engineer, to be reviewed and approved by the Land Use Engineer. The Engineer shall be on-site to oversee the construction of the retaining wall, the compaction of soils, and the functional integrity of the adjacent E & S controls. A report indicating the Engineer's approval of such work shall be submitted to the Commission. During construction, submissions of daily inspection reports shall be submitted to the Commission, and photographs of the work shall be submitted to the Commission weekly.

21. The spill prevention/maintenance plan shall be reviewed and approved by the Commission prior to occupancy of the site or the filling of any tanks with petroleum products. The document shall include a comprehensive maintenance plan that addresses the oil/water separators, Vortech units, detention basins, level spreaders, oil containment boom, catch basin sumps, asphalt maintenance etc. It shall include the description of all testing to be done and a map showing the location of said testing. It shall include a plan for training all new employees and managers. Any violation of the spill prevention/maintenance plan shall constitute a violation of this permit and subject the applicant, owner, or other persons involved to the penalties provided by law.
22. A snow removal plan that excludes sodium chloride includes chemical application rates, method of application, storage of materials, and area of snow stockpile to be submitted, and approved by the Commission prior to occupancy of the site.
23. Engineered site as-built plans shall be submitted to the Commission. These plans shall include surveyed invert and outlet elevations of all drainage structures.
24. Copies of all groundwater, potable water, storm water testing done for State agencies shall be submitted to the Commission.
25. Whenever this motion refers to "the Commission," the Commission shall have the option to delegate the required reviews and approvals to its staff, including, but not limited to, the Inland Wetlands Enforcement Officer and the Commission's consulting engineer.

26. Permit expires April 23, 2021.

LEGAL NOTICE

The Willington Inland Wetlands & Watercourse Commission approved the following with conditions on April 23, 2012.

W2011-51 Application for construction of travel stop, including store, food service, fueling station and associated construction 3 Polster Road (on the west side of Polster & north of Lohse Road at the intersection Owner: Frank W & Joseph Malack Applicant: Love's Travel Stops and Country Stores.

Details can be found in the minutes dated April 23, 2012 in the office of the Town Clerk

Dated this 7th day of May, 2012 Land Use Secretary

Publish dates ASAP
Chronicle

Email to Chronicle May 7, 2012

Rec'd 8/1/14

P & Z Final Approva

Planning and Zoning Commission
40 Old Farms Road Willington, CT 06279
September 17, 2013 7:30 PM
Meeting Minutes

Roll Call

Members Present
Andrew Marco, Chairman
Edward Standish- Vice-Chairman
Walter Parsell - Secretary
Thomas Murphy
Phil Nevers
Doug Roberts – Alternate

Members Absent:
J. Sullivan - excused
James Poole - excused

Also Present:
Susan Yorgensen – Planner/Zoning Agent
Mark Branse – Land Use Attorney
Caleb Hamel of Branse/Willis Firm

Regular Meeting

Chairman Marco called the Meeting to order at 8:00.

Old Business

PZC2013-3 Application for Zone Change from R80 zone to Design Commercial (DC) zone at 00 Polster Road & 3 Polster Road & 00 Polster Road (Map 46 Lots 16 & 17) Owner: Joseph & Frank Malack/ Applicant: Love's Travel Stops & Country Stores (Received February 19, 2013 Public Hearing April 16, 2013 continued to May 7, 2013, May 21, 2013, June 4, 2013, June 18, 2013 – extension granted /Decision by September 17, 2013.)

PZC2013-4 Application for Special Permit for motor vehicle fuel sales, tire repair and replacement, retail trade and two restaurants (Travel Stop) at 00 Polster Road & 3 Polster Road (Map 46 Lots 16 & 17) Owner: Joseph & Frank Malack / Applicant: Love's Travel Stops & Country Stores (Received February 19, 2013 Public Hearing April 16, 2013 continued to May 7, 2013, May 21, 2013, June 4, 2013, June 18, 2013 – extension granted /Decision by September 17, 2013.)

Chairman Marco said they have heard great deal of testimony and reviewed the draft motion at the earlier workshop. The Commission reviewed the motion.

E. Standish MOTIONED TO APPROVE PZC 2013-3 APPLICATION FOR ZONE CHANGE FROM R80 ZONE TO DESIGN COMMERCIAL ZONE

At 00 Polster Road & 3 Polster Road (Map 46 Lots 16 & 17)

Owner: Joseph & Frank Malack/Applicant: Love's Travel Stops & Country Stores

The Willington Planning and Zoning Commission have considered the standards and factors in Section 12 of the Willington Zoning Regulations and other relevant zoning provisions. The Commissioners have utilized their own knowledge of the area and have reviewed the written comments and verbal testimony offered by the applicant, the applicant's experts, Commission staff, the public, and state officials. Review letters were provided by, among others, the Capitol Region Council of Governments; the Windham Region Council of Governments; Brian Murphy, Senior Fisheries Biologist, Connecticut Department of Energy and Environmental Protection Inland Fisheries Division, Habitat Conservation and Enhancement Program; the Willington Conservation Commission; the Willington Board of Selectmen, and all such letters have been considered by the Commission in reaching its decision. The Commission hereby finds that, as modified and conditioned by this Motion and the Special Permit Motion below:

1. The proposed Design Development is of such location, size, and character that, in general, it will be in harmony with the appropriate and orderly development of the area and will not be detrimental to the orderly development of adjacent properties

AND THAT

2. The location and size of the proposed uses, the intensity of operations involved in such uses, and the site layout will not be detrimental to the character of the neighborhood

AND THAT

3. The relationship between the proposed uses and the access streets is such that vehicular and pedestrian traffic generated by the proposed uses will not be detrimental to the character of the neighborhood

AND THAT

4. The establishment of the proposed Design Commercial Zone will not hinder or discourage the appropriate development and use of adjacent land and buildings or impair the value thereof

AND THAT

5. The proposed uses provide the best possible design of structures and land uses compatible with the shape, size, and topographic and natural character of the site without destroying valuable natural assets or pollution of lakes, streams, and other water bodies

AND THAT

6. For the reasons stated above, the proposed zone change is in full accordance with the Willington Plan of Conservation and Development

AND THAT

7) The petition filed by owners of property within five hundred (500') feet of the proposed change of zone does not include more than twenty (20%) per cent of the land within such area, as determined by the Commissions consulting engineer, and therefore does not trigger the two-thirds vote requirement of Conn. Gen. Stat. Section 8-3(b).

Therefore, the proposed zone change from R80 Zone to Design Commercial Zone is approved, with notations and modifications, effective October 1, 2013.

The notations and modifications required by this approval are:

1. Title block shall be revised to include "Zone Change and Preliminary Site Development Plan/DC Zone" (hereafter, "the Plan.")
2. Pursuant to Section 12.04 and as offered by the applicant, all land, outside of the construction limit lines to be preserved as open space shall be so noted on the plan.

P. Nevers seconded the motion. A vote was held. A.Marco, T. Murphy, P. Nevers, E. Standish and W. Parsell voted to approve the application. J. Sullivan and D. Roberts voted to deny the application. Motion carried.

E. Standish MOTIONED TO APPROVE PZC2013-4 APPLICATION FOR SPECIAL PERMIT

For motor vehicle fuel sales, tire repair and replacement, retail trade and two restaurants (Travel Stop)

• Fence adj to Res Zone (ask Susan)

At 00 Polster Road & 3 Polster Road (Map 46 Lots 16 & 17)

Owner: Joseph & Frank Malack/Applicant: Love's Travel Stops & Country Stores

The Willington Planning and Zoning Commission have considered the standards and factors in Sections 4 and 13 of the Willington Zoning Regulations and other applicable sections of the Regulations. The Commissioners have utilized their own knowledge of the area and have reviewed the written comments and verbal testimony offered by the applicant, the applicant's experts, Commission staff, the public, and state officials, and hereby finds that:

1) The proposed uses consist of a motor vehicle gasoline and service station, motor vehicle limited repair and services, restaurants, and retail trade, along with associated accessory uses and parking.
2) Public hearings were held on April 16, May 7, May 21, June 4, June 18, and July 16, 2013.
3) Review letters were provided by, among others, the Capitol Region Council of Governments; the Windham Region Council of Governments; Brian Murphy, Senior Fisheries Biologist, Connecticut Department of Energy and Environmental Protection Inland Fisheries Division, Habitat Conservation and Enhancement Program; the Willington Conservation Commission; the Willington Board of Selectmen, and all such letters have been considered by the Commission in reaching its decision.
4) The applicant provided a traffic study performed by Mark Vertucci, P.E., PTOE, of Fuss & O'Neill, Inc.
5) No tributary of Roaring Brook on the site drains a watershed of 200 acres or more, and therefore Section 4.23 of the Willington Zoning Regulations is not applicable to this application.
6) The property is proposed to be serviced by on-site wells and an on-site septic system.
7) The permit application will be complete provided all conditions of permit approval are adhered to.
8) The Commission finds that the application, as modified and conditioned in this Motion, complies with the applicable criteria of its Regulations.

Therefore, the Commission approves, subject to the conditions and modifications , the Special Permit application of Love's Travel Stops & Country Stores, 10601 Pennsylvania North, Oklahoma City, OK, 73126 as presented and shown on plans entitled "Love's Travel Stop & Country Store, 3 Polster Road, Willington, Connecticut" dated October 2011, revised to July 2, 2013, as prepared by Fuss & O'Neill,

Inc., scale as noted, consisting of sheets GI-001, GI-002, VO-1, GI-101, GI-102, XC-101, CP-101, CS-101, CS-102, CR-101 through CR-110, CG-101 through CG-104, CX-101, CU-101 through CU-104, CE-101, CE-102, LP-101, LP-102, EL-101, A-101 through A-106, CE-501, CE-502, CD-501 through CD-516, additional submitted sheets, and all associated samples submitted and provided to the Commission for lighting, building materials, and fencing. The inclusion of any sheet in the foregoing list does not deem the plan on that sheet approved if such plan is deemed not approved by the conditions below.

The conditions are set forth as follows:

GENERAL CONDITIONS

1. Plans shall be revised to include any technical revisions required by the Commission, its staff, its counsel, or its engineer.
2. All modifications to the plans shall be subject to approval by the Commission
3. A copy of all state and local permits shall be submitted to the Commission within 30 days of granting
4. Recommendations of the Connecticut Department of Transportation shall be incorporated into the final design.
5. Title block shall be revised to include "Special Permit/Final Site Development Plan"
6. PZC and IWWC motions of approval shall be added to the plans.
7. A complete site as-built plan, depicting all improvements including but not limited to septic, drainage structures, and utilities, shall be submitted prior to issuance of a Certificate of Occupancy; future changes to the site will require the submission of additional as-builts reflecting those changes.
8. The form and terms of all performance bonds required by these conditions shall be subject to approval by the Commission.
9. Review of all plans submitted according to these conditions and modifications to the Plan shall be considered components of this Special Permit application and Site Development Plan review and shall be governed by all relevant provisions of the zoning regulations, and shall be subject to the level of discretion accorded under such provisions.
10. The Commission may, at its sole discretion, delegate to Commission staff, the Land Use Attorney, the Land Use Engineer, and/or Commission consultants the ability to approve any submission by the applicant made to fulfill these conditions of approval.
11. The Commission recognizes that it has the option of modifying or conditioning the Application in order to address deficiencies, and the Commission concludes that all deficiencies can be remedied by conditions and modifications based on the information and arguments now contained in the record, and that such conditions and modifications do not substantively alter the Application to the extent that any parties are deprived of their rights to be heard. These conditions and modifications are drawn directly from the testimony and evidence received during the public hearing and are intended to be responsive to them. These conditions and modifications are integral to this approval and not severable from it; but for these conditions and modifications, the Commission would have denied the Application without prejudice so that an acceptable plan could be designed and submitted.

UNAPPROVED PLANS & REQUIRED RECTIFICATION

12. The submitted signage plan is not approved; subject to approval by the Commission, the applicant shall submit a complete signage plan, depicting with specificity, in addition to the information on the currently submitted plan, the dimensions for 1) all additional signs required by these conditions and 2) all signs bearing any corporate logo or symbol of Love's Travel Stops & Country Stores, Subway, or any other tenant or occupant of any building on the property. Such signage plan shall also provide for small signs noting that idling is prohibited, in order to protect the environment and prevent wear and tear on truck engines.

13. The submitted landscaping plan is not approved; subject to approval by the Commission, the applicant shall submit a complete landscaping plan incorporating plantings that meet Sections 4.14, 13.06.04, and 13.05.13 of the Willington Zoning Regulations. This landscaping plan shall include all landscaping for the area within the highway limits, and any landscaping in that area shall not conflict with the requirements of State of Connecticut authorities. This landscaping plan will incorporate signature boulders and will indicate that all stone walls removed during construction, demolition, or regrading on the site shall be salvaged and incorporated into the landscaping plan.
14. The submitted lighting plan is not approved; subject to approval by the Commission, the applicant shall submit a complete lighting plan describing
    a. Locations of all site lighting
    b. Locations of all building lighting
    c. Specification sheets and/or detail sheets for all light fixtures, which shall be full-cutoff lights.

ADDITIONAL REQUIRED PLANS

15. All plans required by this subsection shall be subject to approval by the Commission pursuant to Conditions 8, 9, and 10 of this Approval and shall include, in addition to the terms required below, provisions for performance bonding of the work described by those plans
16. The applicant shall submit a complete litter control plan; the bond for this plan shall be annually renewable and may be adjusted up or down based on experience with implementation of the litter control plan;
17. The applicant shall submit a complete snow control and removal plan that excludes the use of sodium chloride and describes:
    a. Chemical application rates
    b. Method of chemical application
    c. Storage of materials
    d. Area of snow stockpile
    e. All assistance provided to the Town by the applicant in controlling snow around the property.
    f. Interior sidewalks shall be kept free of snow and ice and otherwise maintained.
18. The applicant shall submit a complete landscaping maintenance plan to ensure:
    a. the planting of all plants depicted on the landscaping plan submitted pursuant to Condition 13 of this Approval
    b. the annual inspection of all plantings
    c. the replacement of any plants that do not survive for two full calendar years following issuance of a Certificate of Occupancy
    d. the maintenance of all plantings integral to the drainage system
19. The applicant shall submit a complete water quality monitoring plan, in accordance with the water quality monitoring plan required by the Willington Inland Wetlands and Watercourses Commission and the recommendations made by Brian Murphy, Senior Fisheries Biologist, Connecticut Department of Energy and Environmental Protection in his letter to the Commission dated June 28, 2013.
20. The applicant shall supplement the erosion and sedimentation control plan with a more detailed plan completely conforming to the most recent edition of the "Connecticut Guidelines for Soil Erosion and Sediment Control" (DEP Bulletin 34) and also incorporating the recommendations of Brian Murphy, Senior Fisheries Biologist, Connecticut Department of Energy and Environmental Protection in his letter to the Commission dated June 28, 2013; the entirety of the erosion and sedimentation control plan as supplemented shall be subject to the approval and bonding requirements of Condition 15 of this Approval.
21. The applicant shall submit a roadway maintenance plan detailing the extent of their maintenance of the roadway between the I-84 interchange and the northerly end of the site, including

a. In coordination with the Willington Department of Public Works, the applicant shall perform extra plowing especially at the turns (the three access drives and surrounding roadway) and sanding in those areas.
b. In coordination with the Willington Department of Public Works, the applicant shall perform road bed maintenance where it is damaged by trucks using the facility, including damage from both truck weight and the volume of truck traffic.
c. Maintenance of pavement markings, to be renewed every five (5) years
d. Maintenance of directional signs indicated in the applicant's traffic study, and as required in this Motion.
e. Snow control and removal to the extent not addressed in the snow control and removal plan in Condition 17 of this Approval

ADDITIONAL REQUIRED SUBMISSIONS

22. Prior to construction, demolition, or regrading on the site, the applicant shall submit a complete sightline maintenance plan, indicating:
    a. the positions and dimensions of all areas where maintenance of sightlines will be necessary.
    b. the plan for maintaining sightlines.
    c. that no construction, demolition, or regrading on the property will be conducted until the sightlines described therein have been established.
23. As offered by the applicant and pursuant to Section 12.04 of the Willington Zoning Regulations, all land outside the construction limit lines shall be preserved as open space in the form of a conservation easement, the terms of which shall be subject to approval by the Commission.
24. Prior to the start of any construction, demolition, or regrading on the site, the applicant shall submit to the Town all necessary conveyances and easements to allow for the proposed widening of Polster Road; the terms of such conveyances and easements shall be subject to approval by the Commission's attorney.
25. Prior to the start of any construction, demolition, or regrading on the site, the applicant shall obtain a General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities from the Connecticut Department of Energy and Environmental Protection and submit to the Town a copy of the permit and the required Stormwater Pollution Prevention Plan.
26. As recommended by the Land Use Engineer, Jacobson & Associates, Inc., in their letter to the Commission dated June 18, 2013, the applicant shall submit design calculations for the proposed storm drainage facilities within Polster Road for review and approval by the Land Use Engineer.
27. As recommended by the Land Use Engineer, Jacobson & Associates, Inc., in their letter to the Commission dated June 18, 2013, the applicant shall submit a standard detail for proposed guide rail end anchorages, and add such approved detail to the Plans. The Commission elects to require the steel-backed wood guide rails depicted on Sheet CD-504.

ADDITIONAL CONDITIONS

28. The architecture of the plan shall be as submitted by the applicant, and any modification thereof shall be subject to the approval of the Commission.
29. No alcoholic beverages shall be sold or served on the premises.
30. There shall be no trailer box or dolly drop-off area.
31. The number of parking spaces shall be as follows: 53 car, 56 truck.
32. A clerk of works shall be hired by the Town, the cost of which shall be reimbursed by the applicant.
33. All pavement, curbing, fencing, walkways, guide rails, and screening shall be inspected annually and repaired as necessary to keep them in good repair.
34. All outdoor storage is prohibited.

P&Z must vote on this →

35. All overnight parking, except by employees of the applicant or any tenant or occupant of a building on the property, is prohibited.
36. All air compressors used to power tire changing equipment or related equipment shall be located inside the "tire changing building" depicted on sheet CS-101.
37. All areas not occupied by a building as depicted on sheet CS-101, paved as depicted on sheet CS-102, covered by stone, aggregate, or gravel as depicted on sheets CG-101 and CG-102, or covered by trees or shrubs as depicted on the landscaping plan submitted pursuant to Condition 13 of this Approval shall be maintained as lawn or groundcover, not gravel, bituminous, or the like, and not as woodchips except as necessary for mulching under the landscaping maintenance plan described in Condition 18 of this Approval; maintenance of this lawn or groundcover shall be included in the maintenance plan submitted pursuant to Condition 18 of this Approval.
38. Glare-reducing glass or opaque window treatments shall be used in or on all windows and doors on the south, east, and west faces of any building.
39. Wheel stops shall be installed in all parking spots of the truck parking area, subject to approval by the Commission; parking of trucks in other than approved truck parking areas shall be prohibited.
40. The applicant shall install traffic control signs, the text, coloring, and location of which shall conform to Connecticut Department of Transportation standards and be subject to approval by the Commission, at each end of the one-way lane on the westerly side of the retail/restaurant building
41. The applicant shall install warning signs, the text, coloring, and location of which shall conform to Connecticut Department of Transportation standards and be subject to approval by the Commission, at the intersection of Mihaliak and Polster roads indicating that eastbound traffic along Route 320 does not stop.
42. The applicant shall install warning signs, the text, coloring, and location of which shall conform to Connecticut Department of Transportation standards and be subject to approval by the Commission, on Polster Road near the northerly end of the property indicating that no truck turn-around area is available beyond that point.
43. Prior to any construction, demolition, or regrading on the property, the applicant shall provide to the Commission and record on the Willington land records all necessary sightline easements, with the positions, dimensions, and terms of those easements subject to approval by the Commission.
44. No music or amplified sound shall be played outside the buildings by the applicant or by any tenant or occupant of a building on the site, with the exception of an on-site P.A. system; the volume of this on-site P.A. system shall be in accordance with applicable Town or State noise regulations.
45. Approval of the Subsurface Waste Absorption System by the Connecticut Department of Energy and Environmental Protection shall be obtained before issuance of a Certificate of Occupancy.
46. The applicant shall seek a declaratory ruling from the Connecticut Department of Public Health to determine whether a Certificate of Public Convenience and Necessity is required for the proposed development; if such Certificate is necessary, a copy of the certificate shall be provided to the Commission prior to issuance of a Certificate of Occupancy.
47. Approval of the wells supplying water to the property by the Department of Public Health shall be obtained before issuance of a Certificate of Occupancy.
48. The plans depict an outside trash receptacle, often referred to as a "dumpster," along the westerly side of the development, with screening detailed on Sheet CD-502. The dumpster shall be confined to this area and shall be the sole location authorized.
49. All conditions of approval of this development by the Willington Inland Wetlands and Watercourses Commission are hereby incorporated by reference into this Approval, and where those conditions of approval conflict with the conditions of this Approval, the more restrictive shall apply.
50. The applicant shall designate a fenced dog rest area, with the location and fence design to be subject to the approval of the Commission.

W. Parsell seconded the motion. A vote was held. A. Marco, T. Murphy, P. Nevers, E. Standish and W. Parsell voted to approve the application. J. Sullivan and D. Roberts voted to deny the application. Motion carried.

New Business

PZC2013-27 Resubdivision Plan (one new residential lot) of lot #5 map entitled "Property of Albert J. Barone Jr. Route 32 and Fisher Hill Road Willington, Conn"; dated Nov, 1980 approved June 2, 1981 for a 4.8 acres lot at 224 River Road (Map 19 Lot 22 Zone R80) Owner/Applicant: Kenneth Golden (Received September 3, 2013 Public Hearing October 1, 2013 Decision within 65 days after close of P.H.)

Public Hearing has been set for October 1, 2013.

PZC2013-31 Application for Special Permit to open retail store selling crafts, decorations and gift wrapping with shipping at 15 River Road (Map 5 Lot 3 Zone DC) Owner: Amy Moore Applicant: Elsie Martin (Received September 17, 2013 Public Hearing by November 19, 2013 decision within 65 days after closes of P.H.)

P. Nevers would like to see a full listing of sales items in the application.

Public Hearing was set for October 1, 2013.

Minutes

Postponed to October 1, 2013.

Correspondence

No correspondence at this time.

Meeting adjourned.

Respectfully submitted,

Michele Manas
Recording Clerk

SERVICE LIST

Love's Travel Stop and Country Store
App. # 201503113

Party	**Representative(s)**
Applicant	
Love's Travel Stop & Country Store 3 Polster Road Willington, CT 06279	Rick Shuffield rick.shuffield@loves.com
Fuss and O'Neill 146 Hartford Avenue Manchester, CT 06040	Rachel Schnabel rschnable@fando.com Matthew Jermine mjermine@fando.com
DEEP	
Materials Management and Compliance Assurance Water Permitting & Enforcement Division 79 Elm Street Hartford, CT 06106	Lauren Jones lauren.jones@ct.gov Michael Hart Michael.hart@ct.gov
Petitioner	
Ralph Tulis PO Box 200 Willington, CT 06279	rtulis@charter.net
Interested Person	
Kathleen Demers Willington Conservation Commission 48 Mason Road Willington, CT 06279	Kdemers48@gmail.com