

WILLINGTON CONSERVATION COMMISSION MEETING

5/16//2018 Meeting

Call to Order: The meeting was called to order @ 7:05 pm.

Roll Call: P. Andersen, J. Cartabiano, M. Drobney, C. Jordan, M. Schreiber, R. Shabot.

On a motion by CJ/M, J. Kulig was seated for K. Demers. Unanimous vote.

Approval of Minutes of 4/18/18: Minutes were approved as written on a motion by CJ/JC. 6 ayes, 1 abstain: MS

Present to Speak: NA

Finance: The balance for FY17/18 is \$951.45.

Old Business/Status Reports

- A. Love's Travel Stop (Wastewater Treatment System permit):** PA, KD, RS went on the Wastewater Treatment System site visit on 4/23/18. DEEP held a public hearing on Love's permit application on 4/24/18 at the Willington Public Library. WCC members attended the public hearing and provided comments related to concerns about potential impact to Roaring Brook and wetlands. In addition to the public hearing, K. Demers attended DEEP's evidentiary hearings in Hartford and was deposed at that time. On a motion by CJ/RS: **WCC attaches to the minutes the documents of the public hearing, the Final/Signed copy of the Letter addressed to J. Deshais, Hearing Officer, Office of Adjudications, DEEP and the appendices prepared by KD for the Evidentiary hearings at DEEP as authorized by WCC at the 4/1/18 meeting . Unanimous vote.**
- B. Willington Farm Tour: June 10:** On a motion by JC/RS: **WCC approves expenditures not to exceed \$400.00 for publicity for the Willington Farm Tour highlighting agricultural resources in Willington. Unanimous vote.**
- C. Open space land considerations:** 1. Red Oak Hill – Tabled. 2) Coles-Rte. 44 – The owner now has an independent appraisal of the property. Joshua's Trust is no longer interested in acting on the parcel after receiving the appraisal report. PA will provide the owner with information about the Windham Land Trust.
- D. Properties Management**

1. Fenton-Ruby Park/Drobney Sanctuary: PA is scheduling a barberry cleanup date at the park.

2. Knowlton Preserve/Talmadge Tract: PA stained the new signs for the parking lot and Talmadge Spur/Nipmuck Trail intersection. They will be installed after CJ paints the lettering.

E. Spring Walk, Talks and Programs: Morning of June 10?: WCC will not be hosting an educational walk at Fenton-Ruby Park due to the short notice for securing a docent and adequate notice for publicity.

F. Easement/property monitoring: Site visit form. Tabled.

G. Town Development: Tabled.

H. Collaborative Organizations: Tabled.

I. Other: Tabled.

New Business

A. Communications: CT Water Company which provides the greater Mansfield area with a public water supply has a Water Systems Advisory board that meets quarterly. They informed WCC of the advisory board. PA will inquire about the term limits and who the current Willington representative is on their board.

B. Other: None.

Next Meeting: 6/20/18

Adjournment: Meeting adjourned @ 7:57 pm.

Minutes submitted by Marilyn Schreiber, Recording Secretary

Willington Conservation Commission
40 Old Farms Road
Willington, CT 06279



April 24, 2018

Janice Deshais, Hearing Officer
Office of Adjudications
Department of Energy and Environmental Protection (DEEP)
79 Elm Street
Hartford, CT 06106-5127

Re: Love's Travel Stop and Country Store
Application # 201503113

Dear Ms. Deshais,

The Willington Conservation Commission would like to thank you for scheduling a Public Hearing today in Willington regarding Love's Travel Stop's permit application to discharge wastewaters from a proposed alternative sewage treatment and subsurface disposal system to groundwater at 3 Polster Road in Willington. We appreciate the effort that you, the CT DEEP Waste Permitting Division staff and the applicant and their representatives have gone through to prepare for this public hearing so that our Commission and other community members can ask questions, provide comments and raise concerns as needed.

Out of respect for your efforts, we thoroughly reviewed over 500 pages of documents provided by the applicant, DEEP staff and other sources related to this permit application. Additionally, representatives from our Conservation Commission attended the public site walk on 4/23/18, located at 3 Polster Road in Willington.

Note - In our following comments:

"APP - #" refers to the pre-hearing exhibit information filed by the Applicant

"DEEP - #" refers to pre-hearing information filed by DEEP Waste Permitting Staff

"WCC - #" refers to material submitted by Willington Conservation Commission for the public hearing.

*This 4/24/18 letter will be referred to as "WCC-1"; Referenced Appendices are included within it.

CONSERVATION COMMISSION'S CONCERN

The applicant is proposing to construct and operate an Alternate Treatment System (ATS), consisting of a biological wastewater pretreatment and an engineered subsurface leaching system, also referred to as a Subsurface Wastewater Absorption System (SWAS). We believe that as designed, this system will

not adequately protect nearby ground and surface waters from pollution and may impair their functions and value. Our particular points of environmental concern related to this permit are Wetlands H, I, J and Roaring Brook, which lie in close proximity to the proposed SWAS (APP-8, Drawings XC-101, CG-102, CU-103, and CU-104B).

To make our case, we start by describing Wetlands H, I, J and Roaring Brook as well as their intrinsic functions and value. We will then describe the threats to the water quality of these points of concern posed by not only the SWAS, but also by overall development of the site, since these threats can be both additive and cumulative. Finally we will list the specific reasons and evidence that create doubt that the proposed SWAS will adequately treat the wastewater to a level required to prevent pollution of groundwater and maintain high water quality in our points of concern.

I. Wetland Descriptions and Functions

The descriptions and some of the functions of these wetlands and Roaring Brook can be found in the Applicant’s Wetland Assessment Report, October 2011 (APP-2). The report notes that:

- A. Wetland H complex is “formed by an intermittent stream and groundwater seeps. It discharges off-site to Roaring Brook. Portions of this intermittent stream/seep contain sections of standing and flowing water. Hydrology is attributed to groundwater discharge off the steep hill located to the east. The vegetation community would be classified as Red Maple/Skunk Cabbage Seasonally Flooded Forest” (p. 8).
- B. Wetland I is “a small groundwater seepage wetland. Groundwater seasonally and intermittently discharges to the surface and flows overland a short distance where it then infiltrates back into the ground. The vegetation community would be classified as Red Maple/Skunk Cabbage Seasonally Flooded Forest” (p. 8).
- C. Wetland J is “located to the west of Polster Road. Hydrology is attributed to groundwater discharge off the steep hill located to the east, as well as periodic stormwater discharge from Polster Road. A moderately sized wetland area collects groundwater and stormwater runoff and slowly discharges to the west through an intermittent stream or infiltrates into groundwater. The maximum standing water in the wetland is less than 12 inches. The vegetation community would be classified as a Red Maple/Skunk Cabbage Seasonally Flooded Forest” (p. 9).
- D. Watercourse/Wetland A/B (Roaring Brook) “bordering the western side of the Site is a perennial watercourse. Along both sides of the river are pockets of wetlands associated with the active floodplain. The hydrology of the wetlands is attributed to Roaring Brook as well as groundwater discharge” (pp. 6-7). “A review of Hagstrom et al (1989) survey of fisheries for Roaring Brook 75 meters downstream and upstream of Polster Road in Willington, Connecticut lists thirteen species of fish. Of notable interest was the presence of wild population of both brook and brown trout” (p. 9).*

**It should be noted that the applicant’s description of Roaring Brook and its associated floodplain wetlands appears limited to that portion of Roaring Brook which was located on the southwestern border of the development Site. The only mention of Roaring Brook’s proximity to the Site’s northwestern boundary and the proposed SWAS is found in the description of Wetland H which “discharges off-site to Roaring Brook.” (p. 8). Also the applicant’s drawing plan set (APP-8) does not show a complete delineation of Wetland H’s boundaries as it travels off-site and joins Roaring Brook on the Nipmuck State Forest property. Of interest however, their drawing set does show complete delineation of Wetland D and partial delineation of Roaring Brook as they continue off-site to private property along the southern border (APP-8, Drawing XC-101).*

E. In section 3.4, “Evaluation of Wetland Function & Value”, the Wetland Assessment notes:

- 3.4.1. *Groundwater Recharge/Discharge* – “This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where groundwater can be discharged back to the surface. All the wetlands on site have some component of groundwater recharge and/or are hydrologically dependent on groundwater discharge. Wetlands C, E, H, I, J, and X are dependent upon local, shallow groundwater discharge” (p. 10).
- 3.4.2. *Floodflow Alteration* – “This function is the ability to store inflowing water from storm or flooding events, resulting in detention and retention of water on the wetland surface. Wetland A/B (Roaring Brook) provides flood storage during higher flows conveyed by the Roaring Brook...Wetland J is a level area that provides temporary retention of stormwater runoff from Polster Road” (p. 10).
- 3.4.3. *Fish and Shellfish Habitat* – “This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shellfish habitat. As discussed above, Roaring Brook provides habitat to a wide-range of fish species. The remaining wetland areas are not capable of supporting fish populations” (p. 11).
- 3.4.4. *Sediment/Toxicant/Pathogen Retention* – “This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens...Wetland J is a level area that provides temporary retention of sediment from Polster Road” (p. 11).
- 3.4.5. *Nutrient Removal* – “This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries...Wetland J is a level area that provides temporary retention of nutrients from Polster Road” (p. 11).
- 3.4.7. *Wildlife Habitat* – “This function considers the effectiveness of the wetland to provide habitat for various types of populations of animals typically associated with

wetlands and the wetland edge. Well defined, stable and vegetated banks provide excellent habitat for a wide range of fish as well as terrestrial and semi-aquatic species in Wetland A/B (Roaring Brook wetland complex). In addition, variable in-stream habitats (riffles, pools and bars) and substrates (boulders, stones, cobbles and gravel) offer a diverse habitat...Wetlands D, F/G and H provides a diverse habitat for wildlife. Numerous food sources exist given the high degree of diversity of vegetation. Wetlands I, J and X provide limited wildlife habitat. Some food sources exist throughout these wetlands given the moderate degree of diversity of vegetation” (pp.11-12).

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

In June 2013, per the request of the Town of Willington’s Conservation Commission (WCC), Brian D. Murphy, Senior Fisheries Biologist from CT DEEP Inland Fisheries Division, Habitat Conservation and Enhancement Program provided a fisheries assessment and report to the Town of Willington’s Planning and Zoning Commission (PZC) related to Love’s application for a zoning change (Attached as WCC -1, Appendix A).

In his report, Mr. Murphy thoroughly describes the important characteristics of Roaring Brook that make it a high quality, cold water fishery and give it status as a Class 3 Wild Trout Management Area. Through field observations, he noted that Wetland H is a tributary of Roaring Brook because its waters are directly conveyed into its mainstem. He noted that *“the last segment of Wetland H, 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. Eggs incubate within gravel over the fall and winter periods with eggs hatching in late February or early March. Fry remain in the gravel until their yolk sacs are absorbed at which time the fry emerge from underneath the gravel and move into preferred stream microhabitats. Consequently this wetland supports a seasonal fisheries resource although the stream channel may actually dry up during summer low flow periods. During such an occurrence, juvenile brook trout would subsequently move down into the mainstem of Roaring Brook. Once reaching maturity, brook trout will home and move back to this wetland channel to reproduce. 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 important that the proposed development does not impact the long term survival of this coldwater fish species in this tributary”* (p. 2-3).

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).

During his general review of the development’s potential impact to fisheries, Mr. Murphy raised many concerns, including threats of erosion and sedimentation due to significant amounts of soil disturbance, especially during construction. He cited research that showed sediment runoff may

“reduce populations of aquatic insects and fish by eliminating physical habitat while suspended sediments will reduce dissolved oxygen levels” and “prevent successful nest development of trout.” He advised that *“successful protection of all wetlands, the brook trout community in Wetland H and Roaring Brook fisheries resources is dependent upon successful containment of sediments and stormwaters on this property”* (pp. 3-4).

Mr. Murphy also had concerns about the loss of trees and overhead forest canopy due to development, stating that the Inland Fisheries Division advises *“that riparian corridors be protected with a 100 foot wide undisturbed riparian buffer zone”, further noting that, “A riparian wetland buffer is one of the most natural mitigation measures to protect the water quality and fisheries resources of watercourses”* (pp. 4-5).

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.

Describing other potential development impacts, Mr. Murphy noted that *“stormwaters which outlet to wetlands, ponds and watercourses can contain a variety of pollutants that degrade downstream water quality to the detriment of aquatic organisms. Pollutants commonly found in stormwater include hydrocarbons (gasoline and oil), herbicides, heavy metals, road salt, fine silts and coarse sediment. Nutrients, total phosphorous and total nitrogen in stormwater runoff fertilize stream waters causing water quality degradation. Additionally, fine silts in storm waters that remain in suspension for prolonged periods often cannot be effectively removed from engineered stormwater detention basins and/or roadway catch basins.”*

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

Mr. Murphy stated that *“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 storm waters 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.”* Detention Basin #2 is adjacent to the proposed SWAS and its level spreader outlet is less than 50 feet from the edge of Wetland F/G (which also provides cold, clean, unpolluted water to Roaring Brook). Removal of vegetation and overhead cover can also expose wetlands to more direct sunlight and solar heating.” Mr. Murphy posed the question of whether the combination of all these changes due to development could significantly increase water temperatures in Wetland F/G and Roaring Brook, noting that *“ambient water temperatures greater than 70 degrees F can seriously threaten trout survival.”* He also noted that *“viable options for post development remediation of increased water temperatures are most likely very limited.”*

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.

Specific concerns about the preliminary design of the Subsurface Wastewater Absorption System (SWAS) were also raised by Mr. Murphy, due to the leach field’s proximity to Wetland H which outlets into the mainstem of Roaring Brook. He noted that *“wastewaters can contain nitrogen, phosphorus and synthetic organic chemicals that may result in eutrophication of recipient groundwaters.”* He posed questions about whether discharge from the leach field could raise groundwater and surface water temperatures of Wetland H. He did note that *“this septic system will be regulated by DEEP”* and *“DEEP will treat any downgradient wetland (or watercourse) as a point of environmental concern, and require that wastewaters be fully renovated in the ground prior to reaching Wetland H and Roaring Brook. This includes assurances that surface water temperatures will not be increased.”*

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

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?
7. WCC Recommendations:
 - 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.
 - 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.
 - 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.

In his conclusion, Mr. Murphy stated that *“in light of the potential adverse effects on important wetland and riverine resources resulting from intensive commercial development of the Love’s Travel Stops & Country Stores facility, it is recommended that the Town of Willington carefully consider the environmental consequences of rezoning this 40 acre parcel. If a development is approved, it is recommended that permit conditions are included that address the concerns listed above.”*

On September 17, 2013, Willington’s PZC did approve the zoning change and issued a special permit for the development with conditions (WCC-1, Appendix C). One of the conditions was that *“the applicant shall submit a complete water quality monitoring plan, in accordance with the water quality monitoring plan required by Inland Wetlands and Watercourses Commission (IWWC) and the recommendations made by Brian Murphy, Senior Fisheries Biologist, DEEP in his letter to the Commission dated June 28, 2013”*.

Previously, on April 23, 2012, Willington’s IWWC had approved Love’s application for construction of the travel stop, with the following water quality related conditions (WCC-1, Appendix D):

- *“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.”

- *“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.”*

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.
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.

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

Given that the DEEP permit in question relates only to the applicant’s proposed discharge of wastewater from an alternate sewage treatment and subsurface disposal system to groundwater, we understand that consideration of many of the potential site development impacts to water quality outlined above are outside the purview of a Hearing Officer. However, we felt it was important to start with a general overview of many of the development challenges related to water quality, since the potential threats to the surface and groundwater quality in Wetlands H, I, J and Roaring Brook are both additive and cumulative.

After a thorough review of the applicant’s permit application materials, it is our contention that there is sufficient evidence to question the accuracy and validity of some of the applicant’s data, assumptions and design analysis and raise doubt that the proposed treatment system will treat the wastewater to a level required to prevent pollution of groundwater and maintain high water quality of points of concern, including Wetlands H, I, J and Roaring Brook.

Following is a list of comments and questions that make our case about the credibility of the applicant’s data, assumptions and design analysis:

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.
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).
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.
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.
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).
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.
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.
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.

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.
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.
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.
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”*?
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.
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.

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.
 - 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.
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”.
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?
 - 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?
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?
 - 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.
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).

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).
 - b. Does “refusal” always indicate bedrock during well installation with a “geoprobe”, or could it be due to hitting large rocks or boulders?
 - 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?
 - d. If it is a bedrock fracture, where does groundwater flow from this area?
 - 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).
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.
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”.
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.
 - 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?
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?

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.”*
- What is the estimated total cubic yardage of this fill?
 - How many estimated cubic yards of native soil will be removed to add this fill?
 - How is the fill tested in the field to be sure it meets the desired permeability range?
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.”*
- 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?
 - 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.)
 - Why was this berm containment extended so far?
 - 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)?
 - What affect will this berm containment have on the infiltration of rainwater over this entire area?
 - 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?
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.
- How long will each wall be? What material is used between the two north walls where grade changes are noted on CU-103?
 - How high are the walls above proposed grade? What portion will be below grade?
 - 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?

- 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)
 - 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).
 - 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?
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?
 - b. How often do valves need to be used to control each lateral’s pressure?
 - 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?
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?
 - 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).
 - c. Who will be collecting quarterly groundwater samples as required by DEEP?
 - d. Will results of quarterly samples be automatically shared with Willington’s IWWC and PZC?
 - 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.

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]).
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.
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).
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”*.
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.)
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.
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.

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).
 - 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).
 - 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.
 - iv. There are no groundwater contours showing 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.

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

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....
 - 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).
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.
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?
 - b. Will truck drivers be allowed to dispense water into their potable water tanks?
 - 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?
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.
 - 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.
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?
 - b. Has any water testing been done yet?
 - c. Is any "water softening" or other treatment anticipated?
 - 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?
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.
 - 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.
 - c. What will keep the French drains from clogging with fine sediments?
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*”.

B. Review of “SWAS Detailed Design Calculations” (APP-7, Appendix H)

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.
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.
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.
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)
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”.

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.)
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).
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.
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.
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.
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.
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.
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?

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.
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.
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.

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

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

The size and features of the SWAS’s leaching system design have significant potential to change the existing hydrology, temperature and functions of the adjacent Wetlands I and J and downgradient Wetland H. This design plan is intrusive and threatens to alter the existing surface and groundwater conditions because:

- 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;
- 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;
- 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;
- 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;

- 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;
- 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;
- 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
- 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.

SUMMARY

Based on the comments, questions and concerns we have raised throughout this letter, we believe that we have made a strong case that this wastewater discharge permit should not be approved as designed and submitted because:

1. There appears to be sufficient inconsistencies and errors in the applicant’s narrative, data analysis and design calculations, to raise doubt as to the thoroughness of the design plan and consequently the effectiveness of the SWAS to protect the waters of the state.
2. The overall impact to water quality [including temperature] in Wetland H, I and J, as well as Roaring Brook, have not been adequately addressed in this application.
3. The intrusive size and features of the SWAS design, including significant disturbance of native soils will change the overall hydrology in the area and ultimately affect the water quality [including temperature], function and value of Wetlands H, I and J and possibly Roaring Brook.

To quote Conservationist Aldo Leopold:

“A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”

Respectfully,

A handwritten signature in black ink, appearing to read "Peter Andersen". The signature is fluid and cursive, with a long horizontal stroke at the end.

Peter Andersen, Chairman

A handwritten signature in black ink, appearing to read "Kathleen Demers". The signature is cursive and somewhat stylized, with a large initial 'K'.

Kathleen Demers, Vice Chairman

Appendix A

Letter to Willington PZC from Brian D. Murphy, Senior Fisheries Biologist
CT Dept. of Energy and Environmental Protection Inland Fisheries Division,
Habitat Conservation and Enhancement Program

Dated June 28, 2013



June 28, 2013

Mr. George Marco, Chairman
Willington Planning and Zoning Commission
40 Old Farms Road
Willington, CT 06279

Dear Chairman Marco,

Per a written request by the Town of Willington, Conservation Commission to Connecticut Department of Energy and Environmental Protection (DEEP) Deputy Commissioner Susan Whalen dated May 2, 2013, it is understood that the Town of Willington Planning and Zoning Commission has under its review an application concerning a possible zoning change (R80 zone to Design Commercial (DC)) for assessors parcels 46/016 and 46/017 and special permit application on an approximate 40 acre parcel along Polster Road. It is understood that the application is for the development of a Love's Travel Stops & Country Stores facility.

Given that the north and western boundaries of the parcel proposed for development border the Nipmuck State Forest as well as Roaring Brook, the agency respectfully submits to the commission the following comments. Our assessment was based upon a review of site development plans entitled, "Love's Travel Stop & Country Store : zone change and special permits application" dated February 2013 provided by the applicant's consultant Fuss & O'Neill, Inc. (FO), various reports also provided by (FO) and two separate onsite field reviews of the property. These comments discuss the importance and value of the fisheries resources within Roaring Brook and outline concerns over how the proposed development may alter these valuable natural resources.

Roaring Brook

Roaring Brook is a moderate to large size stream (30-40 ft wide) with its origins beginning in northwest Union and extending downstream to its confluence with the Willimantic River near the intersection of Interstate 84 and Route 32. The brook is generally well shaded with light tea-stained tannic water as it flows through undeveloped woodlands, wetlands and through long sections of state forest (Neal Hagstrom, personal communication).

Roaring Brook adjacent to the area proposed for development is of moderate gradient containing long stretches of heterogeneous riffle and run habitats with a few pools. Pools are relatively shallow being less than 2 feet in depth. Streambed substrates primarily comprise

cobbles and gravel with a good diverse mixture of small to large sized boulders that provide locally important water velocity refugia and create more heterogeneous microhabitats. The brook does include significant pieces of large wood debris (LWD) that have been recruited from an undisturbed riparian zone. LWD results in the creation of more diverse microhabitats, especially low velocity regions that afford velocity refugia for juvenile stream fishes. More can be learned about the importance of large woody debris at:

<http://www.ct.gov/deep/lib/deep/fishing/restoration/largewooddebrisfactsheet.pdf>

Roaring Brook morphological stream types as described by Rosgen (1996) ranged from channel type "B" to "C" along the property proposed for development. These stream types are relatively stable although steep streambank areas along stretches of "C" channels can be susceptible to erosion. No erosion was observed along these steep areas of Roaring Brook.

Given the presence of high quality instream and riparian habitats, Roaring Brook has been designated as a Class 3 Wild Trout Management Area (WTMA) from Route 190 Stafford downstream to its confluence with the Willimantic River. In addition to its ability to support native brook trout, the brook also supports wild or naturally reproduced brown trout. Consistent with the management of a Class 3 WTMA, the Inland Fisheries Division (IFD) also supplements the trout population with the stocking of over 2,600 adult size brook, brown and rainbow trout as well as brown trout fry and fingerlings. Roaring Brook is known for good first year survival of stocked brown trout fry (Humphreys and Hagstrom 2011). Based upon annual surveys, it is suspected that wild brown trout may emigrate downstream into the Willimantic River. The Willimantic River is also designated as a Trout Management Area from the confluence of Roaring Brook downstream to the Route 74 bridge crossing, a distance of approximately 2.5 miles.

Roaring Brook is inhabited by a relatively robust fish population given the size of the stream. In addition to trout, Roaring Brook supports a diverse abundance of fluvial dependent fish species that include: blacknose dace, white sucker, fallfish, common shiner and redfin pickerel. The only diadromous fish in Roaring Brook is American eel due to the presence of numerous downstream dams.

Wetland F/G, Tributary to Roaring Brook

This large (5.4 acre) red maple/eastern hemlock wetland does not support any fisheries resources however waters from this wetland are directly conveyed into Roaring Brook, thus providing a source of cold, clean and unpolluted waters.

Wetland H, Tributary to Roaring Brook

Based upon field observations, waters from this wetland are directly conveyed into the mainstem 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. Eggs incubate within gravel over the fall and winter periods with eggs hatching in late February or early March. Fry remain in the gravel until their

yolk sacs are absorbed at which time the fry emerge from underneath the gravel and move into preferred stream microhabitats. Consequently, this wetland supports a seasonal fisheries resource although the stream channel may actually dry-up during summer low flow periods. During such an occurrence, juvenile brook trout would subsequently move down into the mainstem of Roaring Brook. Once reaching maturity, brook trout will home and move back to this wetland channel to reproduce. 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 important that the proposed development does not impact the long term survival of this coldwater fish species in this tributary.

Realizing the importance of native brook trout and their habitats, a unique partnership is now underway between state, federal, and local agencies, academia, as well as non-profit government organizations and private citizens called the Eastern Brook Trout Joint Venture (EBJTV). As part of the National Fish Habitat Initiative, this venture is a geographically focused, locally driven scientifically based effort with goals to protect, restore, and enhance aquatic habitat throughout the eastern range of brook trout. More can be learned about these efforts at: <http://www.easternbrooktrout.org/>

Erosion and Sedimentation

Certainly one of the more challenging aspects of this development proposal will be the containment of disturbed soils during construction. Total area of land disturbance is estimated at approximately 12.39 acres and construction phasing is not proposed. The development area is characterized by very steep, hilly topography ranging in elevation from at 680 ft. near Polster Road downgradient to elevation 565 ft. along Roaring Brook. In addition, according to CT ECO soils mapping of the site, areas of the project site in which mass earthwork will be accomplished are comprised of Canton-Charlton soils of which erosion susceptibility has been delineated as being "susceptible" to "most susceptible" to erosion. 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 Wetland F/G and Wetland H. As previously mentioned both of these wetlands drain into Roaring Brook and as such, these wetlands could serve as a "direct conduit" to convey sediment runoff into the mainstem of Roaring Brook. Wetland F/G may provide some natural attenuation of sediment runoff given its larger size (5.4 acres); however, the proposed level spreader/outlet of northwest detention basin #2 is located at the northern end of Wetland F/G, which is closer in distance to the wetland's confluence with Roaring Brook.

The negative impacts of sediment runoff have been well documented by researchers. Sediment will reduce populations of aquatic insects and fish by eliminating physical habitat while suspended sediments will reduce dissolved oxygen levels (Cordone and Kelley 1961). Suspended sediments may prevent successful nest development of trout (Bell 1986). As

reported by Meehan (1991), sediment deposition can severely impact spawning substrate abundance and quality. Meehan (1991) indicated that erosion and sedimentation of instream habitat could alter channel morphology by increasing the stream width-depth ratio, incidence and severity of stream bank erosion, channel braiding, and reduced pool volume and frequency.

Erosion control and sediment narrative CE-501 describes the sequential steps of erosion and sediment control implementation. Both detention basins # 1 and 2 are proposed to be constructed and functional prior to mass land disturbance at the top of the property. Initially these detention basins will function more as sediment basins. The proposed level spreader outlets for these basins are very close to the edge of wetlands F/G and D. All construction sites can be vulnerable to runoff events especially from the period of initial installation until the time in which all controls have been installed and fully functioning as designed. Mass land disturbance and retaining wall construction will only occur after basins are in place.

For a project of this size, the successful protection of all wetlands, the brook trout community in Wetland H and Roaring Brook fisheries resources is dependent upon the successful containment of sediments and stormwaters on this property. Daily inspection and maintenance of all erosion/sediment controls and basins is critical to ensure that the potential for sedimentation of the downstream receiving areas is minimized. While erosion and sediment control plans look very functional on paper, the maintenance and inspection aspect of erosion and sediment control is extremely important to protect downgradient sensitive environments.

Contractors should be ready to mobilize and conduct inspections especially during and after weekend storm events. A detailed inspection and maintenance plan should be provided that specifies how often sediment basins will be inspected, how the necessity for sediment removal will be determined, where removed sediments will be disposed, and the name and contact information of the individual responsible for implementing the plan.

If this development project receives local approval, it is recommended that instream turbidity levels be monitored continuously in the mainstem of Roaring Brook below the project through the installation of remote automated instrumentation. Data should be collected prior to active construction in order to collect background ambient data as a reference and continue until project completion. This monitoring will help ensure compliance with State water quality standards and ensure the use of best management practices. A turbidity monitoring plan should be made a condition of any local approvals.

Riparian Corridor Protection

It is the policy of the IFD that riparian corridors be protected with a 100 ft. wide undisturbed riparian buffer zone. A riparian wetland buffer is one of the most natural mitigation measures to protect the water quality and fisheries resources of watercourses.

This policy and supportive documentation can be viewed on the DEEP website at:
<http://www.ct.gov/dep/lib/dep/fishing/restoration/riparianpolicy.pdf> and
<http://www.ct.gov/dep/lib/dep/fishing/restoration/riparianpositionstatement.pdf>.

It is understood that both Planning and Zoning and Inland Wetland Commission regulations for the Town of Willington include a special 150 ft. wide protective undisturbed riparian corridor zone alongside Roaring Brook. This undisturbed corridor exceeds IFD policy standards. The development as proposed will not "directly" alter, disturb or impact riparian functions of Roaring Brook.

Stormwaters and thermal loading

Site development includes a variety of stormwater treatment measures to provide detention and filtration. The proposed two detention basins are designed to handle up to a 100-year storm event. Overall, it is expected that stormwaters measures may remove a minimum of 80% of total suspended solids (Fuss and O'Neill 2012).

Stormwaters that outlet to wetlands, ponds and watercourses can contain a variety of pollutants that degrade downstream water quality to the detriment of aquatic organisms (Klein 1979). Pollutants commonly found in stormwaters include hydrocarbons (gasoline and oil), herbicides, heavy metals, road salt, fine silts, and coarse sediment. Nutrients, total phosphorous and total nitrogen in stormwater runoff fertilize stream waters causing water quality degradation. Additionally, fine silts in stormwaters that remain in suspension for prolonged periods often cannot be effectively removed from engineered stormwater detention basins and/or roadway catch basins.

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 stormwaters 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. The proposed level spreader outlet from Detention Basin #2 is less than 50 feet in distance from the edge of Wetland F/G.

There is concern that project development may impact water quality characteristics (particularly water temperature) of Wetland F/G since this wetland provides a source of cold, clean and unpolluted waters to Roaring Brook. Removal of hillside vegetation especially tall hemlocks in concert with clearing along the east side of Wetlands F/G due to the construction of the maintenance access road will expose this wetland to more direct sunlight and solar heating. The hydrology of this wetland is attributed to surrounding upland areas (Fuss and O'Neill 2011). Clearing of vegetation, alteration of adjacent uplands into impervious surfaces and the fact that post development Wetland F/G is the recipient of stormwater runoff may in combination potentially increase the water temperature regime over pre-development levels. That being said, it is difficult to predict if post-development stormwater runoff will translate

into such "significant" increased water temperature regimes in Roaring Brook. Ambient water temperatures greater than 70° F can seriously threaten trout survival; consequently, the release of any warm stormwaters into Roaring Brook can create a highly unsuitable environment for these coldwater species. While future water quality monitoring may document such an increase, the question is how increased water temperatures can be mitigated "after" development has occurred? Viable options for post development remediation of increased water temperatures are most likely very limited.

If this development project receives local approval, it is recommended that collection of post development surface water temperature data and dissolved oxygen data be required within Roaring Brook Brook through the installation of remote automated instrumentation. Data should be collected from the time period June through September within one reference upstream background location and one downstream location. It is understood that water quality monitoring has been made a condition of the IWWC approval and consistent with local approval, remote monitoring should occur for a period of 5 years.

Subsurface Wastewater Absorption System (SWAS)

Site development includes a proposed subsurface wastewater absorption system with an average flow of 6,000 gpd (design flow of up to 9,000 gpd), (Fuss and O'Neill 2013). The system will have a pretreatment system to reduce wastewaters from the onsite planned food services.

As previously mentioned, Wetland H directly outlets into the mainstem of Roaring Brook and physiochemical habitats within this stream channel are supportive of a native brook trout population. As such, there is concern relative to potential water quality impacts to Wetland H and Roaring Brook due to the close location of the proposed septic system leach field to these sensitive resources (within 110 feet). Wastewaters can contain nitrogen, phosphorus and synthetic organic chemicals that may result in the eutrophication of recipient groundwaters. Would discharge from the proposed leach field impact groundwater and surface water temperatures of Wetland H? If so, increased water temperatures could threaten long term trout survival in Wetland H. It is noted that this septic system will be regulated by DEEP and the applicant will have to apply for a discharge permit to the Subsurface Sewage Disposal Program. DEEP will treat any downgradient wetland (or watercourse) as a point of environmental concern, and require that wastewaters be fully renovated in the ground prior to reaching Wetland H and Roaring Brook. This includes assurances that surface water temperatures will not be increased. It is understood that quarterly groundwater monitoring will be required as part of DEEP approval (Fuss and O'Neill 2013).

Conclusion

In light of the potential adverse affects on important wetland and riverine resources resulting from intensive commercial development of the Love's Travel Stops & Country Stores facility, it is recommended that the Town of Willington carefully consider the environmental consequences of rezoning this 40 acre parcel. If a development is approved, it is recommended that permit conditions are included that address the concerns listed above.

Sincerely,

Brian D. Murphy

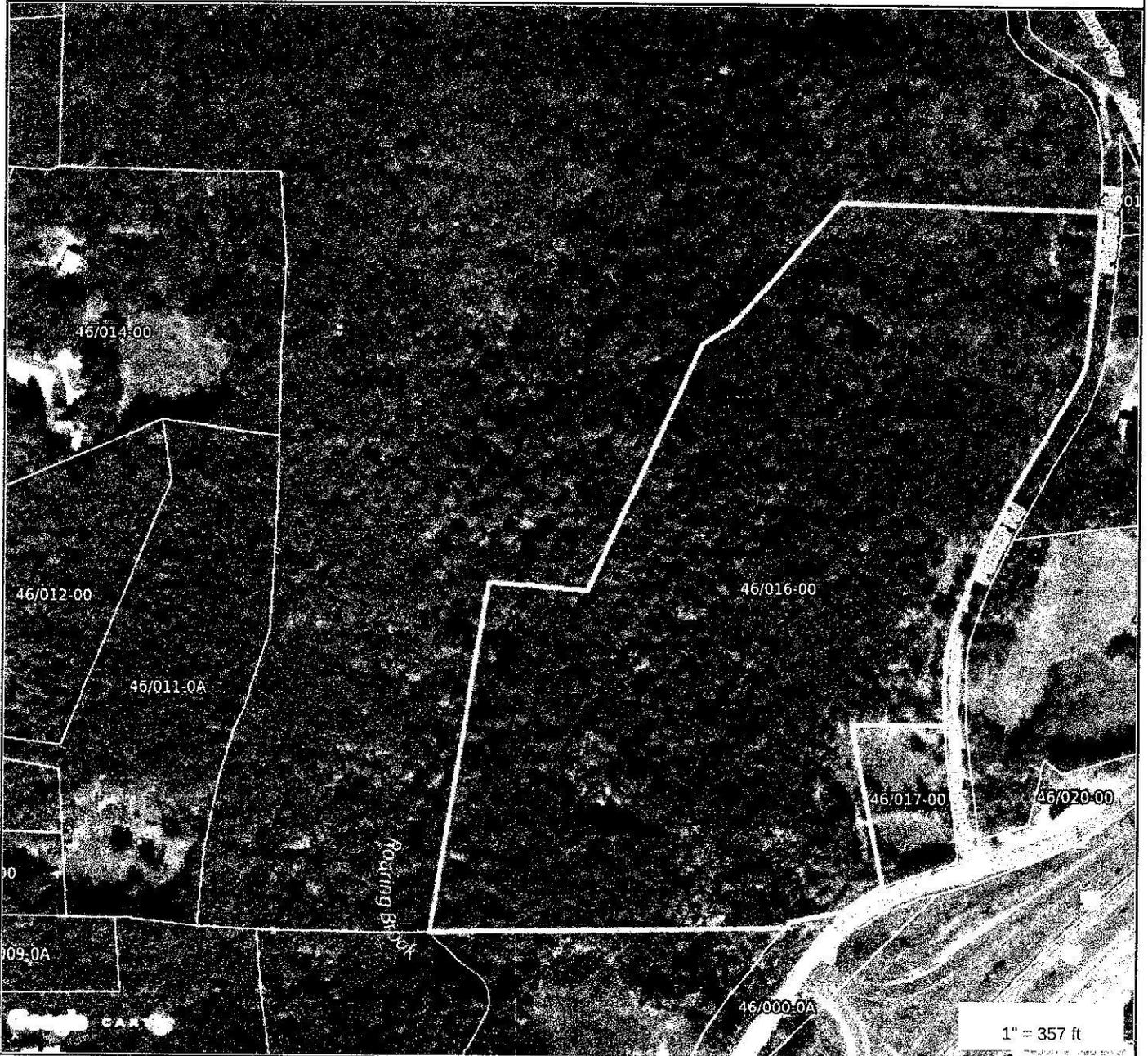
Brian D. Murphy, Senior Fisheries Biologist
Connecticut Department of Energy and Environmental Protection
Inland Fisheries Division, Habitat Conservation and Enhancement Program
209 Hebron Road
Marlborough, CT 06447
860-295-9523

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Appendix B

Satellite Map of Forest Cover over Love's Parcel #46/016-00



Property Information

Property ID 09013160-3756
Location POLSTER RD
Owner LOVE'S TRAVEL STOPS & COUNTRY STORES INC



MAP FOR REFERENCE ONLY
 NOT A LEGAL DOCUMENT

CRCOG makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Appendix C

Willington Planning and Zoning Commission

Minutes 09/17/2013

PZC Meeting Minutes 09/17/2013

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:

- 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

- 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

- 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

- 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

- 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

- 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 Commission 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:

Title block shall be revised to include "Zone Change and Preliminary Site Development Plan/DC Zone" (hereafter, "the Plan.") 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)

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:

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.

Public hearings were held on April 16, May 7, May 21, June 4, June 18, and July 16, 2013.

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 applicant provided a traffic study performed by Mark Vertucci, P.E., PTOE, of Fuss & O'Neill, Inc.

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.

The property is proposed to be serviced by on-site wells and an on-site septic system.

The permit application will be complete provided all conditions of permit approval are adhered to.
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

- Plans shall be revised to include any technical revisions required by the Commission, its staff, its counsel, or its engineer.
- All modifications to the plans shall be subject to approval by the Commission
- A copy of all state and local permits shall be submitted to the Commission within 30 days of granting
- Recommendations of the Connecticut Department of Transportation shall be incorporated into the final design.
- Title block shall be revised to include "Special Permit/Final Site Development Plan"
- PZC and IWWC motions of approval shall be added to the plans.
- 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.
- The form and terms of all performance bonds required by these conditions shall be subject to approval by the Commission.
- 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.
- 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.
- 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

- 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.
- 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.
- The submitted lighting plan is not approved; subject to approval by the Commission, the applicant shall submit a complete lighting plan describing
- Locations of all site lighting

- Locations of all building lighting
- Specification sheets and/or detail sheets for all light fixtures, which shall be full-cutoff lights.

ADDITIONAL REQUIRED PLANS

- 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
- 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;
- The applicant shall submit a complete snow control and removal plan that excludes the use of sodium chloride and describes:
 - Chemical application rates
 - Method of chemical application
 - Storage of materials
 - Area of snow stockpile
 - All assistance provided to the Town by the applicant in controlling snow around the property.
 - Interior sidewalks shall be kept free of snow and ice and otherwise maintained.
- The applicant shall submit a complete landscaping maintenance plan to ensure:
 - the planting of all plants depicted on the landscaping plan submitted pursuant to Condition 13 of this Approval
 - the annual inspection of all plantings
 - the replacement of any plants that do not survive for two full calendar years following issuance of a Certificate of Occupancy
 - the maintenance of all plantings integral to the drainage system
- 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.
- 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.
- 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
 - 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.
 - 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.
 - Maintenance of pavement markings, to be renewed every five (5) years
 - Maintenance of directional signs indicated in the applicant's traffic study, and as required in this Motion.
 - 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

- Prior to construction, demolition, or regrading on the site, the applicant shall submit a complete sightline maintenance plan, indicating:
 - the positions and dimensions of all areas where maintenance of sightlines will be necessary.
 - the plan for maintaining sightlines.
 - that no construction, demolition, or regrading on the property will be conducted until the sightlines described therein have been established.

- 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.
- 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.
- 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.
- 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.
- 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

- 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.
- No alcoholic beverages shall be sold or served on the premises.
- There shall be no trailer box or dolly drop-off area.
- The number of parking spaces shall be as follows: 53 car, 56 truck.
- A clerk of works shall be hired by the Town, the cost of which shall be reimbursed by the applicant.
- All pavement, curbing, fencing, walkways, guide rails, and screening shall be inspected annually and repaired as necessary to keep them in good repair.
- All outdoor storage is prohibited.
- All overnight parking, except by employees of the applicant or any tenant or occupant of a building on the property, is prohibited.
- 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.
- 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.
- 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.
- 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.
- 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
- 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.
- 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.
- 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.
- 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.

- 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.
- 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.
- 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.
- 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.
- 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.
- 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

Appendix D

Willington Inland Wetlands and Watercourses

Minutes 04/23/2012

IWWC Minutes 04/23/2012

Inland Wetland and Watercourse Commission
40 Old Farms Road, Willington, CT ~06279
April 23, 2012
Special Meeting Minutes

Members Present:

Dave Schreiber – Co-Chairman
Ken Metzler – Co-Chairman
Tess Gutowski
Mark Drobney
Heather Dionne - Alternate

Members Absent:

Evan Brand
Greg Blessing – Alternate.

D. Schreiber called the meeting to order at 7:10.

Heather Dionne seated for Evan Brand.

W2011-51 Application for construction of travel stop, including store, food service, fueling station and associated construction west of Polster Road & north of Lohse Road at the intersection of these roads (Map 46 Lots 16 & 17 Zone). Owner: Frank W & Joseph Malack Applicant: Love's Travel Stops & Country Stores (Received November 14, 2011 Public Hearing January 9, 2012 Decision within 35 days after close of P.H.)

The members reviewed the application. Ken Metzler moved to approve file W2011-51. Tess Gutowski seconded the motion. There was a discussion regarding the conditions Tess Gutowski asked to amend #5 to include a plan for remediation, K. Metzler amended his motion to read:

MOTION FOR APPROVAL APPLICATION W2011-51

MOVED, that the Willington Inland Wetlands Commission approve Application #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 of these roads, also identified as (Assessors Map 46 Lots 16 & 17 Zone R80), Owner: Frank W & Joseph Malack Applicant: Love's Travel Stops & Country Stores, based on the following findings and subject to the following conditions.
Findings

- The Commission finds that the application is complete and that sufficient information has been provided by the applicant to allow the Commission to reach a decision on the merits.
- The Commission has given due consideration to the reports received, particularly from the Commission's consulting engineer, its consulting soils scientist, and the Conservation Commission.
- Because the Commission determined that the application involved a significant activity, as defined in its regulations, it held a public hearing on the application. The finding of significant activity requires, per Section 10.3, that the Commission deny the application unless it finds that no feasible and prudent alternative exists to the activity which has no impact, or a lesser impact, with such impact evaluated based on the criteria of Section 10.2
- The Commission finds that there are no feasible or prudent alternatives that would reduce or eliminate any adverse impacts of the proposed activity, which alternatives have not been incorporated into the plans during the course of the application process, or which are required under the conditions of this approval. For that reason, the conditions of approval contained in this motion are integral to the approval, and the Commission could not and would not have granted approval but for such conditions.
- The Commission finds that Vernal Pool # 2 (Wetland D) is of special significance due to its exceptionally high productivity and quality, and that protection of Vernal Pool D is essential to a finding of no adverse impact.
- The Commission also finds that Roaring Brook, and especially its water quality, nutrient levels [and water temperature changes] are of great concern. The Commission fears that the level of change will reach a tipping point and the water quality and temperature will change, reducing the biodiversity of these bodies of water, and therefore regular monitoring is necessary.

Appendix E

Preliminary SWAS Design Report

“Subsurface Wastewater Absorption System

Love’s Travel Stope and Country Store, Willington, CT”

Dated January 2013

Preliminary SWAS Design Report
Subsurface Wastewater Absorption System



Love's Travel Stop & Country Store
Willington, CT

January 2013



FUSS & O'NEILL
Disciplines to Deliver

Fuss & O'Neill
146 Hartford Turnpike
Manchester, CT 06040

NO.	DATE	DESCRIPTION	BY	CHKD
1	08/27/12	DESIGN	JAYR	
2	09/11/12	REVISION	JAYR	

PROJECT NUMBER	1783252
PROJECT NAME	LOVES TRAVEL STORE & COUNTRY STORE
DATE	08/27/12
SCALE	AS SHOWN

DATE	08/27/12
SCALE	AS SHOWN
PROJECT NUMBER	1783252
PROJECT NAME	LOVES TRAVEL STORE & COUNTRY STORE
DATE	08/27/12
SCALE	AS SHOWN

DATE	08/27/12
SCALE	AS SHOWN
PROJECT NUMBER	1783252
PROJECT NAME	LOVES TRAVEL STORE & COUNTRY STORE
DATE	08/27/12
SCALE	AS SHOWN

1/8" = 10'-0"

FUSS & ONEILL
INCORPORATED
116 HARTFORD RD
MANSFIELD, CT 06109
860-846-2849

WWW.FO.COM

LOVES TRAVEL STORE & COUNTRY STORE
SUBSURFACE WASTEWATER ABSORPTION SYSTEM
PRELIMINARY DESIGN

WILMINGTON
CONNECTICUT

PROJECT NO. 2007145301
DATE: OCTOBER 2011

FIGURE 6

