EXH 45

RECEIVED
JUL 14 2025
Land Use Department

Elizabeth Burdick

From: Megan Thomas <megan@epiccleantec.com>
Sent: Wednesday, July 9, 2025 6:18 PM
To: Daha, Antoanela
Cc: Richard Ross; Elizabeth Burdick; Jones, Lauren; Charlie Klewin
Subject: Re: Sweet Hill Acres Application 202406985
Attachments: 250709_Application #202406985 Flow Basis.pdf

Good afternoon.

Thank you for the clarification provided below.

Please find attached a letter addressing the project's design flow, per your comment 2a. As discussed in our previous meeting, we hope to receive feedback on the design flow well in advance of the project's reapplication deadline in September. We welcome your feedback and would be happy to discuss this further on a call if preferred.

Best wishes,
Megan Thomas

epiccleantec

801.550.4486 | megan@epiccleantec.com
epiccleantec.com

From: Daha, Antoanela <Antoanela.Daha@ct.gov>
Date: Wednesday, July 9, 2025 at 1:31 PM
To: Megan Thomas <megan@epiccleantec.com>
Cc: Richard Ross <richard@epiccleantec.com>, planner@ledyardct.org <planner@ledyardct.org>, Jones, Lauren <Lauren.Jones@ct.gov>, Charlie Klewin <king.klewin@gmail.com>
Subject: RE: Sweet Hill Acres Application 202406985

Good afternoon.
In lieu of direct monitoring during the seasonal high groundwater period, the seasonal high groundwater level at your site can be estimated using groundwater level records from a nearby USGS well. While there is no prescribed maximum distance, the closer the USGS well is to your site, the better the correlation is likely to be. Importantly, the USGS well should have comparable site conditions—such as geology, land use, topography, and hydrology—to ensure its hydrogeological setting is representative of your site. By analyzing seasonal groundwater trends from the USGS well, and assuming similar responses to precipitation events, you can establish a relationship between the two locations. This allows you to estimate the seasonal high groundwater level at your site by interpolating or adjusting groundwater levels recorded at the USGS well. You do need several readings on your site in order to make the correlation.
I hope this helps.
Antoanela

Antoanela L. Daha
Environmental Engineer
UIC Permitting and Compliance Program
Water Permitting and Enforcement Division

epiccleantec

8425 Market St.
San Francisco, CA 94103
epiccleantec.com

July 9, 2025

Connecticut Department of Energy and Environmental Protection Headquarters
79 Elm Street
Hartford, CT 06106-5127

Applicant: Sweet Hill Acres, LLC
DEEP Application No.: 202406985
Project Location: 19 & 29 Military Highway, Ledyard, CT 06335

Dear Ms. Daha:

The intent of this letter is to address item 2a of your letter dated June 3, 2025:

> *2. Design Flow*
>
> *a. The current design flow is based on a single example from California—an area with known water use restrictions. Less than 150 gpd can be accepted, but 91 gpd/bedroom is not in agreement with flows utilized in Connecticut. The Connecticut Guidance for Design of Large-Scale On-site Wastewater Renovation Systems has applicable information on how to determine appropriate flows. Please also consider that the information should be based on maximum occupancy.*

We would like to gain alignment on the flow generation value to utilize for the site. Following confirmation of the proper generation value, the system design will be updated and resubmitted along with responses for the remaining items identified in the June 2025 letter.

Please note that the number of units and bedrooms has changed since the previous application submission, and the updated values (278 units, 460 bedrooms) are reflected in this letter for clarity. The updated unit and bedroom count will be reflected in the application resubmittal as well.

LOCAL DATA

USGS PER CAPITA BASIS – NEW LONDON COUNTY

Utilizing the most current data available from the United States Geological Survey (USGS) Domestic Water Use study (2015), the domestic household use in New London County was 34 gpcd (gallons per capita per day) for public and self-supplied water sources, see Figure 1 for screenshot references from the study findings.

Source: https://waterdata.usgs.gov/ct/nwis/water_use/

8425 Market St.
San Francisco, CA 94103
epiccleantec.com

Water Use Data for Connecticut

Refresh Date: June 2018
Year(s): 2015
Area: County
County Codes(s): 011
County Name(s): New London County
Category Code(s): DO
Category Name(s): Domestic

State Code	State Name	County Code	County Name	Year
09	Connecticut	011	New London County	2015

Domestic per capita use, public-supplied, in gallons/person/day	Domestic per capita use, self-supplied, in gallons/person/day
34	34

Figure 1. Excerpts from USGS per capita domestic water use study, website summary

USGS PER CAPITA BASIS – STATE OF CONNECTICUT

Utilizing the most current data available from the United States Geological Survey (USGS) Domestic Water Use study (2015), the domestic household use for the state was 35 gpcd which is slightly higher than New London County local use per Figure 1.

Table 6. Domestic water withdrawals and deliveries, 2015.

State	Self-supplied domestic						Public supply			Total domestic use		
	Self-supplied population (thousands)	Percent of total population	Withdrawals (Mgal/d) By source: Ground-water	Withdrawals (Mgal/d) By source: Surface water	Withdrawals (Mgal/d) Total	Self-supplied per capita use (gal/d)	Population served (thousands)	Water deliveries (Mgal/d)	Public-supply per capita use (gal/d)	Total population (thousands)	Water use (withdrawals and deliveries) (Mgal/d)	Total domestic per capita use (gal/d)
Connecticut	861	24	30.8	0	30.8	36	2,730	96.0	35	3,590	127	35

Figure 2. Excerpt from USGS domestic water study (2015)

epiccleantec

8425 Market St.
San Francisco, CA 94103
epiccleantec.com

OCCUPANCY BASIS – TOWN OF LEDYARD

Based on data from Connecticut's Partnership for Strong Communities, 2024 Housing Data Profiles, the average household size is 2.76 within the Town of Ledyard and has historically declined between 2000 and 2022, see Figure 3.

Source: https://housing-profiles.s3.amazonaws.com/2024/Ledyard.pdf

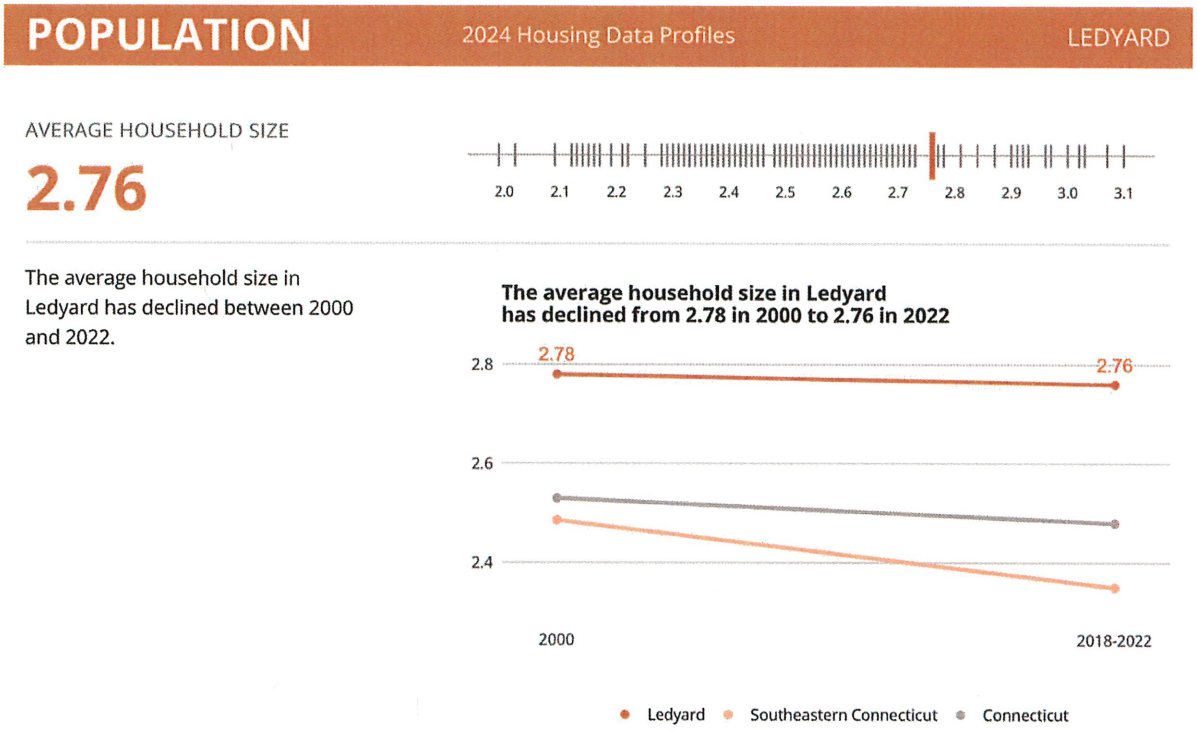

Figure 3. Excerpt from 2024 housing data profile

epiccleantec

8425 Market St.
San Francisco, CA 94103
epiccleantec.com

HOUSING QUANTITY – TOWN OF LEDYARD

Based on data from Connecticut's Partnership for Strong Communities, 2024 Housing Data Profiles, the total number of single family and multifamily homes is a combined value of 5,975 homes, see Figure 4.

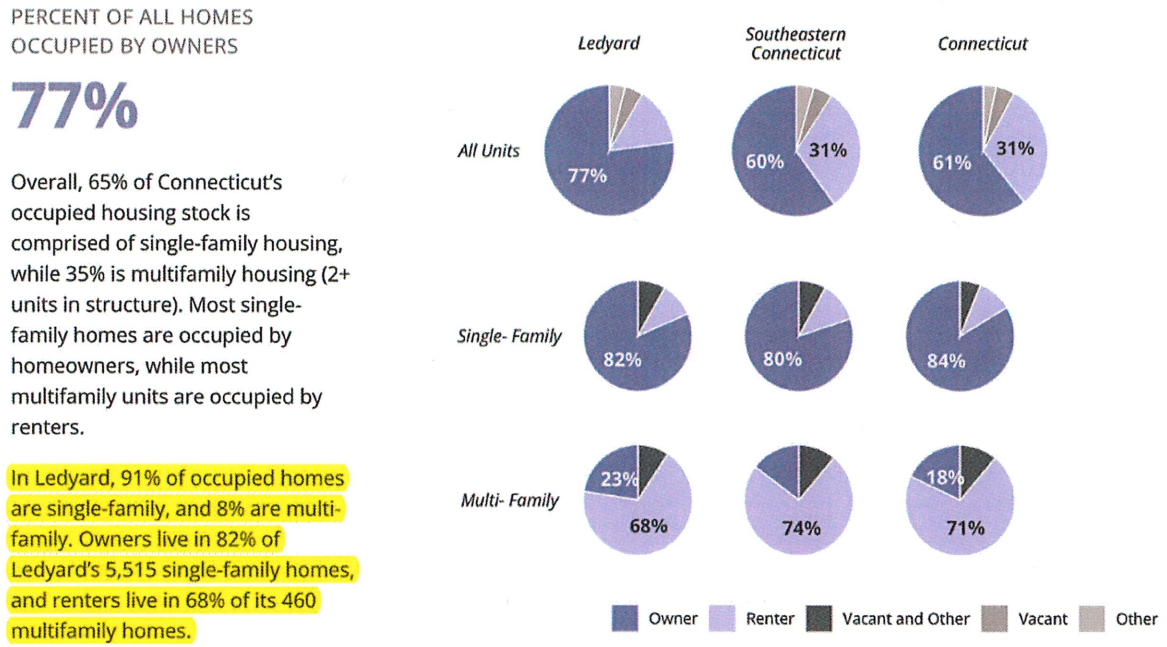

Figure 4. Excerpt from 2024 housing data profile

TOTAL POPULATION – TOWN OF LEDYARD

Based on data from Connecticut's Partnership for Strong Communities, 2024 Housing Data Profiles, the total population is estimated at 15,394 people, see Figure 5.

Figure 5. Excerpt from 2024 housing data profile

Average occupancy = 15,394 ppl / 5,795 homes = 2.57 ppl/home

8425 Market St.
San Francisco, CA 94103
epiccleantec.com

The average occupancy calculation shown above is lower than the reported value in Figure 3. The more conservative value per Figure 3 is used for the revised design basis calculations proposed for the project.

FLOW GENERATION BASIS – GALES FERRY PROJECT

Using the project site's data above, and assuming all domestic water use translates into domestic wastewater volume:

Generation Rate: 34 gcpd * 2.76 ppl/household = 93.84 gpd/household

Using the average generation basis per household and calculating the flow from the proposed 278 unit multi-family housing development dwelling units:

Total Wastewater (avg): 93.84 gpd/household * 278 units = 26,088 gpd

No public data appears to be available detailing the total number of bedrooms for all housing in the Town of Ledyard so it is not possible to directly correlate this flow generation rate on a per bedroom (BR) basis. The average occupancy rate occurs in single and multi-bedroom households. Calculating the average wastewater generation rate for the proposed project:

Basis of calc: 460 total rooms within proposed 278 unit development

Average Wastewater generation (per BR) = 26,088 gpd / 460 BR = 56.7 gpd/BR

Utilizing a safety factor of maximum daily flows is important for proper equipment and dispersal area sizing per State guidelines. A ratio of 1.5 minimum is required per Figure 6 for dwelling unit developments.

4. Peak Flow Ratios

a. Maximum Daily Flows

The best prediction of maximum day flow ratios (Maximum Day/Average Day) can be made from analyzing data from similar facilities where daily water use information is available for a period of at least 365 consecutive calendar days at full occupancy of the facilities. Where such data is not available, the following maximum day flow ratios should be considered:

Facility Type	Max. Day Flow Ratio
1. dwelling unit developments (clusters of single family dwellings, retirement and elderly housing units, etc.)	Not less than 1.5
2. commercial and institutional facilities	Not less than 2.0

These maximum day flow ratios should be applied to the design average daily flows acceptable to the Department. The applicant's engineer should consult with the Department regarding the flow ratios to be used in predicting maximum day wastewater flows.

Figure 6. Excerpt from Section III of the Connecticut Guidance for Design of Large-Scale On-site Wastewater Renovation Systems

epiccleantec

8425 Market St.
San Francisco, CA 94103
epiccleantec.com

Calculating the peak wastewater daily volume for the proposed project utilizing a peak day ratio (2.0x Maximum Day/Average Day) greater than state minimum guidelines (1.5 ratio min per Figure 6):

Proposed increase over min peak flow ratio = 2.0 / 1.5 = 133% increase

Peak Wastewater basis = 26,088 gpd * 2.0 = 52,175 gpd

Rounding that value up to the nearest thousand = 53,000 gpd

Unit generation basis (peak) = 53,000 gpd / 460 BR = 115.2 gpd/BR

The proposed peak daily wastewater generation rate proposed for the basis of redesign is 53,000 gpd.

CONCLUSION

The proposed peak daily wastewater generation rate is based on data available for the Town of Ledyard and utilizing a peak flow ratio greater than the state guideline minimum value. We believe voluntarily increasing the safety factor meets the stated requirements by DEEP in discussions and in the June 2025 letter since the design basis peak flow rate is 133% greater than the minimum stated in the State's guidelines.

We look forward to feedback and concurrence from DEEP regarding the peak daily flow basis in order to update the design and associated documents for wastewater system permitting review. Please contact us regarding questions or further discussion at your convenience.

Sincerely,

Richard Ross, P.E.

VP of Engineering