Mount Sunapee Advisory Committee / 3 June 2025 Annual Meeting
Proposed Replacement Waste Water Treatment Facility

Newbury Conservation Commission

Lake Sunapee Protective Association

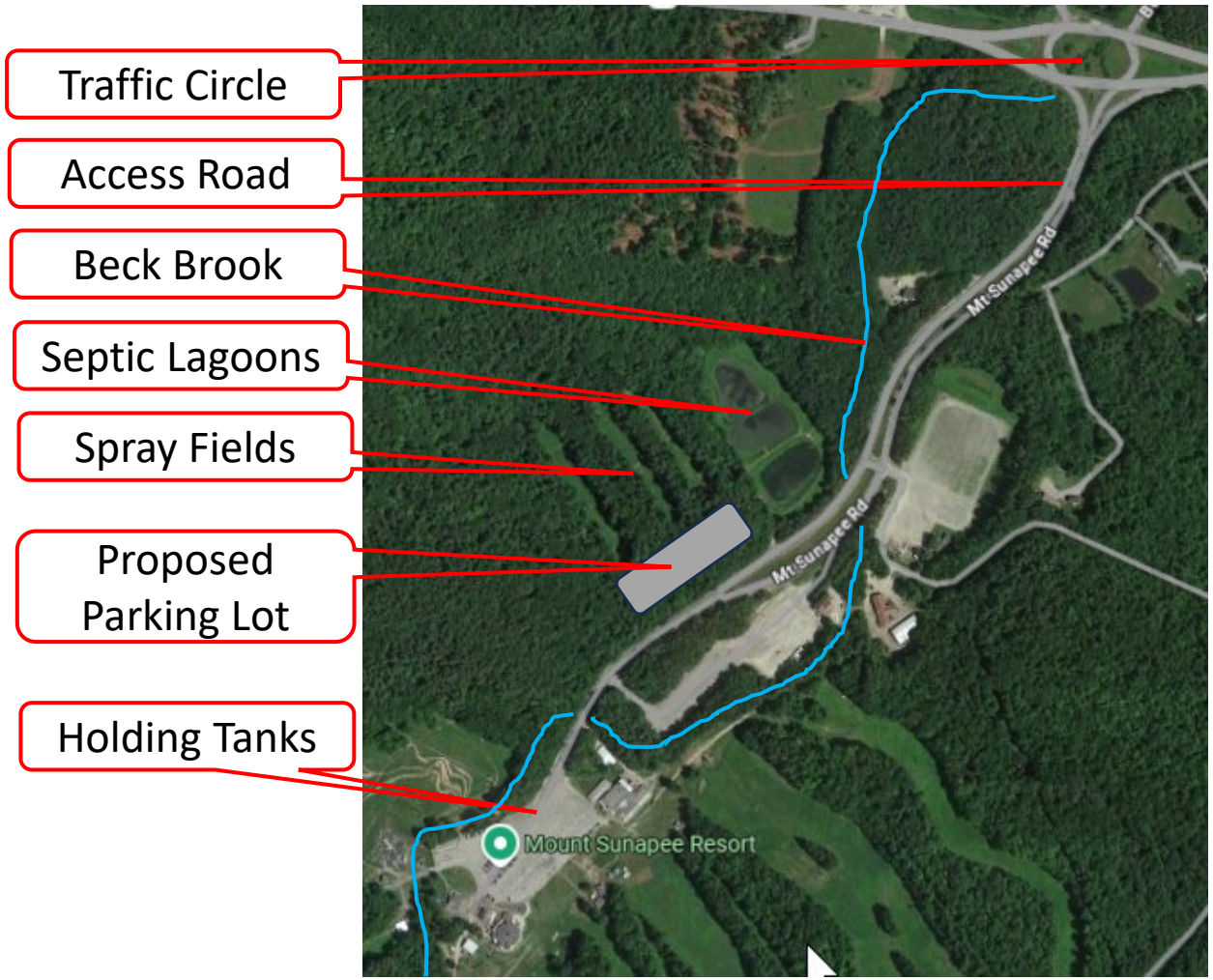
Problem Statement: There are serious concerns that Mount Sunapee Septic Lagoons and Spray Fields are polluting surface and groundwater that ultimately feeds into Lake Sunapee - a vital drinking water source and recreation hub. Pollution of Lake Sunapee would have catastrophic impacts.

The 54-year-old Waste Water Treatment Facility (WWTF) has:

- an outdated design and no longer meets current standards
- leak concerns, both past, current and future
- spraying of black water into wetlands
- excessive levels of E.coli, BOD, TSS
- exfiltration from the lagoons of both groundwater and septic effluent
- concerns with proposed Parking Lot increasing the risk of contamination

Overall Goal: Replace the current septic lagoons and spray fields with a new package WWTF (factory-fabricated and modular with sub-surface leaching field) that would meet or exceed all current environmental standards.

NCC and LSPA want to work together with state agencies and local stakeholders towards this goal.



A Short History of the WWTF

- 1948: Skiing starts
- 1961: Two lagoons were constructed for septic storage and the contents of the lagoon were chlorinated and discharged during spring high-water directly into Beck Brook and then flowed into Lake Sunapee
- 1967: A new Waste Water Treatment Facility (WWTF) was designed based on a Pennsylvania State University project
- 1969: NH State Legislature upgrades Sunapee to a “Class A Waterbody” which prohibited waste water discharge

- 1971: A new WWTF system was completed.
  - Wastewater from all buildings flows to septic holding tanks beneath parking lots.
  - In septic tanks, liquids separate from solids, with solids periodically pumped off-site.
  - Liquids are pumped from septic tanks to lagoons, where suspended solids settle.
  - Liquids are then pumped thru sprinkler heads to spray fields.
  - Liquids drain from spray fields through vegetation into groundwater

Why is there a concern about water quality?

Property Values

Valuation of Lake Sunapee
for Newbury, Sunapee & New London
From Dartmouth / Rockefeller Center

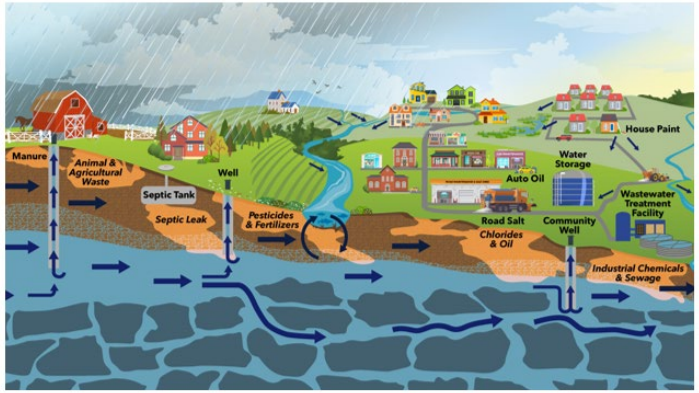
$4.1 billion in property values

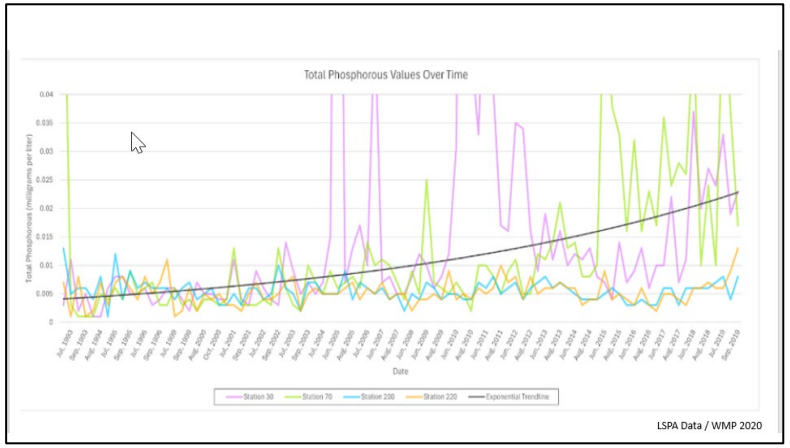
$52.8 million in property town tax value

10.8 million in ski area infrastructure

$120 million in revenue from tourism

Everything Flows Downhill!





Lake Sunapee Has Experienced Cyanobacteria Blooms

Herrick Cove 21 Aug '10

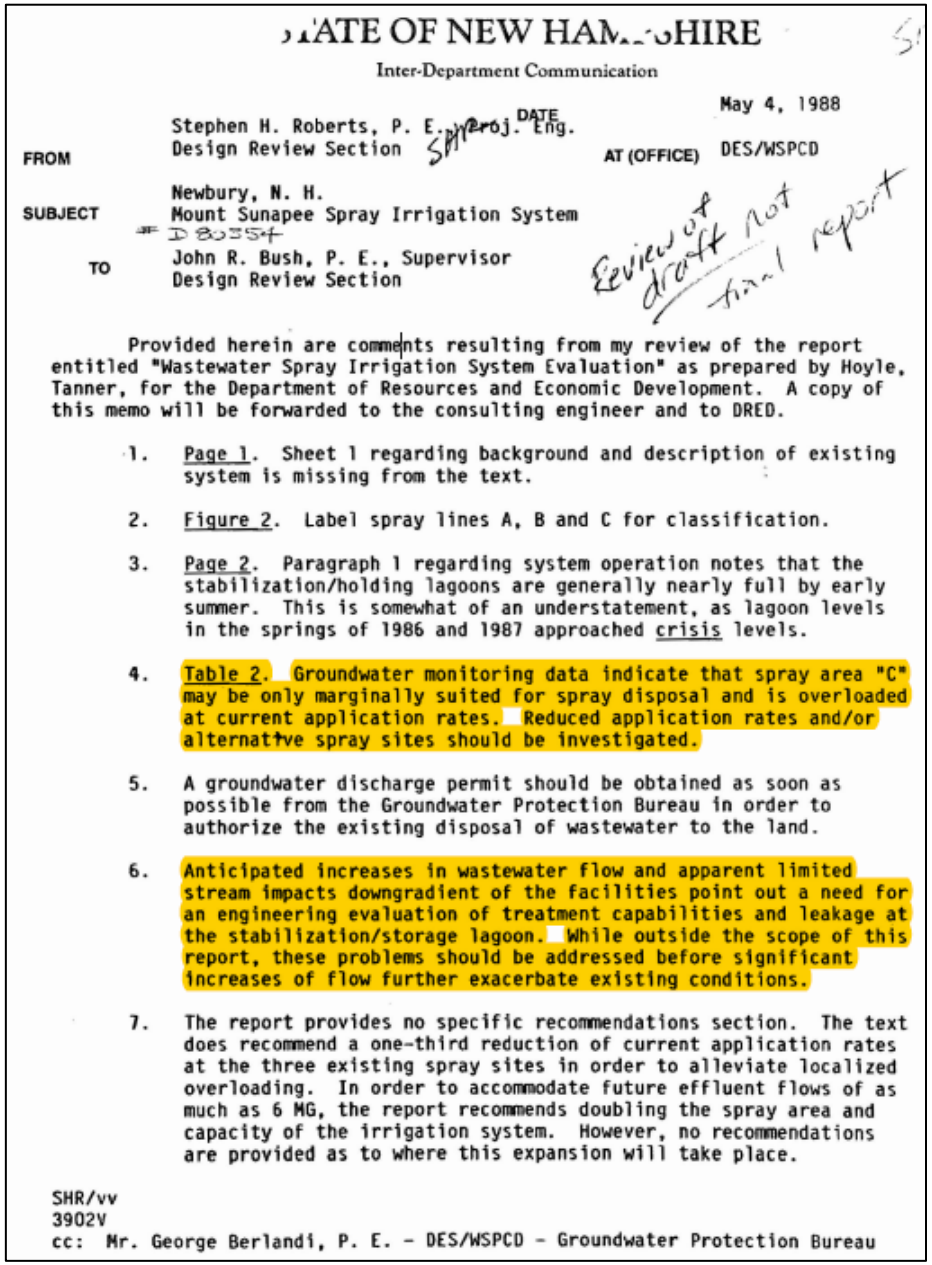
Herrick Cove 11 Sept '05

Would You Swim in This?

Photos Courtesy of M. Eliasson

Historic Concerns with Citations

Date Source	Concern: Spray fields may be overloaded
5/4/1988 John Bush, supervisor of Groundwater Bureau, NHDES	"4. Table 2. Groundwater monitoring data indicate that spray area "C" may be only marginally suited for spray disposal and is overloaded at current application rates. Reduced application rates and/or alternative spray sites should be investigated. 6. Anticipated increases in wastewater flow and apparent limited stream impacts downgradient of the facilities point out a need for an engineering evaluation of treatment capabilities and leakage at the stabilization/storage lagoon. While outside the scope of this report, these problems should be addressed before significant increases of flow further exacerbate existing conditions."



STATE OF NEW HAMPSHIRE

Inter-Department Communication

FROM: Stephen H. Roberts, P. E., Proj. Eng. — DATE: May 4, 1988
Design Review Section — AT (OFFICE): DES/WSPCD

SUBJECT: Newbury, N. H.
Mount Sunapee Spray Irrigation System
D 80354

TO: John R. Bush, P. E., Supervisor
Design Review Section

Review of draft not final report

Provided herein are comments resulting from my review of the report entitled "Wastewater Spray Irrigation System Evaluation" as prepared by Hoyle, Tanner, for the Department of Resources and Economic Development. A copy of this memo will be forwarded to the consulting engineer and to DRED.

1. Page 1. Sheet 1 regarding background and description of existing system is missing from the text.

2. Figure 2. Label spray lines A, B and C for classification.

3. Page 2. Paragraph 1 regarding system operation notes that the stabilization/holding lagoons are generally nearly full by early summer. This is somewhat of an understatement, as lagoon levels in the springs of 1986 and 1987 approached crisis levels.

4. Table 2. Groundwater monitoring data indicate that spray area "C" may be only marginally suited for spray disposal and is overloaded at current application rates. Reduced application rates and/or alternative spray sites should be investigated.

5. A groundwater discharge permit should be obtained as soon as possible from the Groundwater Protection Bureau in order to authorize the existing disposal of wastewater to the land.

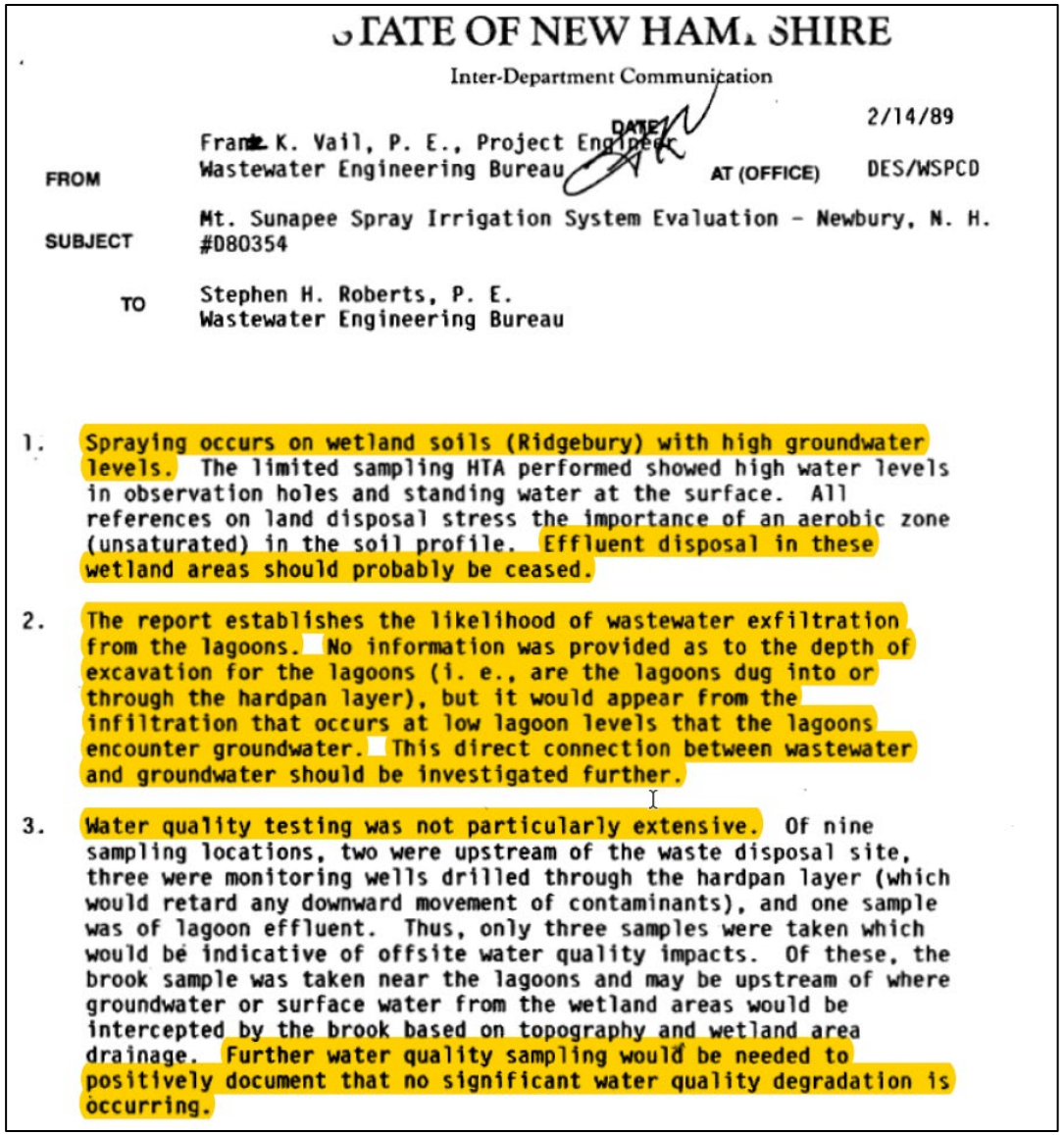
6. Anticipated increases in wastewater flow and apparent limited stream impacts downgradient of the facilities point out a need for an engineering evaluation of treatment capabilities and leakage at the stabilization/storage lagoon. While outside the scope of this report, these problems should be addressed before significant increases of flow further exacerbate existing conditions.

7. The report provides no specific recommendations section. The text does recommend a one-third reduction of current application rates at the three existing spray sites in order to alleviate localized overloading. In order to accommodate future effluent flows of as much as 6 MG, the report recommends doubling the spray area and capacity of the irrigation system. However, no recommendations are provided as to where this expansion will take place.

SHR/vv
3902V
cc: Mr. George Berlandi, P. E. - DES/WSPCD - Groundwater Protection Bureau

Historic Concerns with Citations

Date Source	Concern: Monitoring of Spray Fields
2/14/1989 Internal letter from Franz Vail to Stephen Roberts, Wastewater Engineering Bureau, NHDES	"Spraying occurs on wetland soils (Ridgebury) with high groundwater levels....Effluent disposal in these wetlands areas should probably be ceased" (NCC: Spraying directly into wetlands continue to this day) "The report establishes the likelihood of wastewater exfiltration from the lagoons. No information was provided as to the depth of excavation for the lagoons (i. e., are the lagoons dug into or through the hardpan layer), but it would appear from the infiltration that occurs at low lagoon levels that the lagoons encounter groundwater. This direct connection between wastewater and groundwater should be investigated further."..."Lagoons seepage should be addressed at the facility and corrective action taken". (NCC: An assessment of groundwater flow into and out of the unlined lagoons has never been done, and therefore no one knows where the water goes) "Water quality testing was not particularly extensive...Further water quality sampling would be needed to positively document that no significant water quality degradation ls occurring. (NCC: The monitoring wells may be too deep and may be monitoring below an impervious layer)



STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE 2/14/89

FROM Franz K. Vail, P. E., Project Engineer
Wastewater Engineering Bureau AT (OFFICE) DES/WSPCD

SUBJECT Mt. Sunapee Spray Irrigation System Evaluation - Newbury, N. H.
#D80354

TO Stephen H. Roberts, P. E.
Wastewater Engineering Bureau

1. Spraying occurs on wetland soils (Ridgebury) with high groundwater levels. The limited sampling HTA performed showed high water levels in observation holes and standing water at the surface. All references on land disposal stress the importance of an aerobic zone (unsaturated) in the soil profile. Effluent disposal in these wetland areas should probably be ceased.

2. The report establishes the likelihood of wastewater exfiltration from the lagoons. No information was provided as to the depth of excavation for the lagoons (i. e., are the lagoons dug into or through the hardpan layer), but it would appear from the infiltration that occurs at low lagoon levels that the lagoons encounter groundwater. This direct connection between wastewater and groundwater should be investigated further.

3. Water quality testing was not particularly extensive. Of nine sampling locations, two were upstream of the waste disposal site, three were monitoring wells drilled through the hardpan layer (which would retard any downward movement of contaminants), and one sample was of lagoon effluent. Thus, only three samples were taken which would be indicative of offsite water quality impacts. Of these, the brook sample was taken near the lagoons and may be upstream of where groundwater or surface water from the wetland areas would be intercepted by the brook based on topography and wetland area drainage. Further water quality sampling would be needed to positively document that no significant water quality degradation is occurring.

Historic Concerns with Citations

Date Source	Concern: Better testing requested with borings but not done
9/19/1989 Hoyle, Tanner	NHDES staff recommend that borings be done to better understand groundwater flow into and out of the lagoons, but this was never done.

Hoyle, Tanner & Associates, Inc.
Five Commerce Park North · Bedford, NH 03102 · (603) 669-5555
HTA companies — engineers architects planners surveyors

September 19, 1989

State of New Hampshire Department
of Environmental Services
Water Supply and Pollution
Control Division
6 Hazen Drive
P.O. Box 95
Concord, New Hampshire 03301

SEP 21 1989

Attention: Mr. Franz K. Vail, P.E., Project Engineer

Regarding: Newbury, New Hampshire
Mount Sunapee Spray Irrigation Evaluation, #D80354

Dear Mr. Vail:

The purpose of this letter is to address the comments and concerns raised in your letter of March 17, 1989 regarding HTA's spray irrigation system evaluation for the Mount Sunapee State Park wastewater treatment facilities.

The following represents our responses to your concerns:

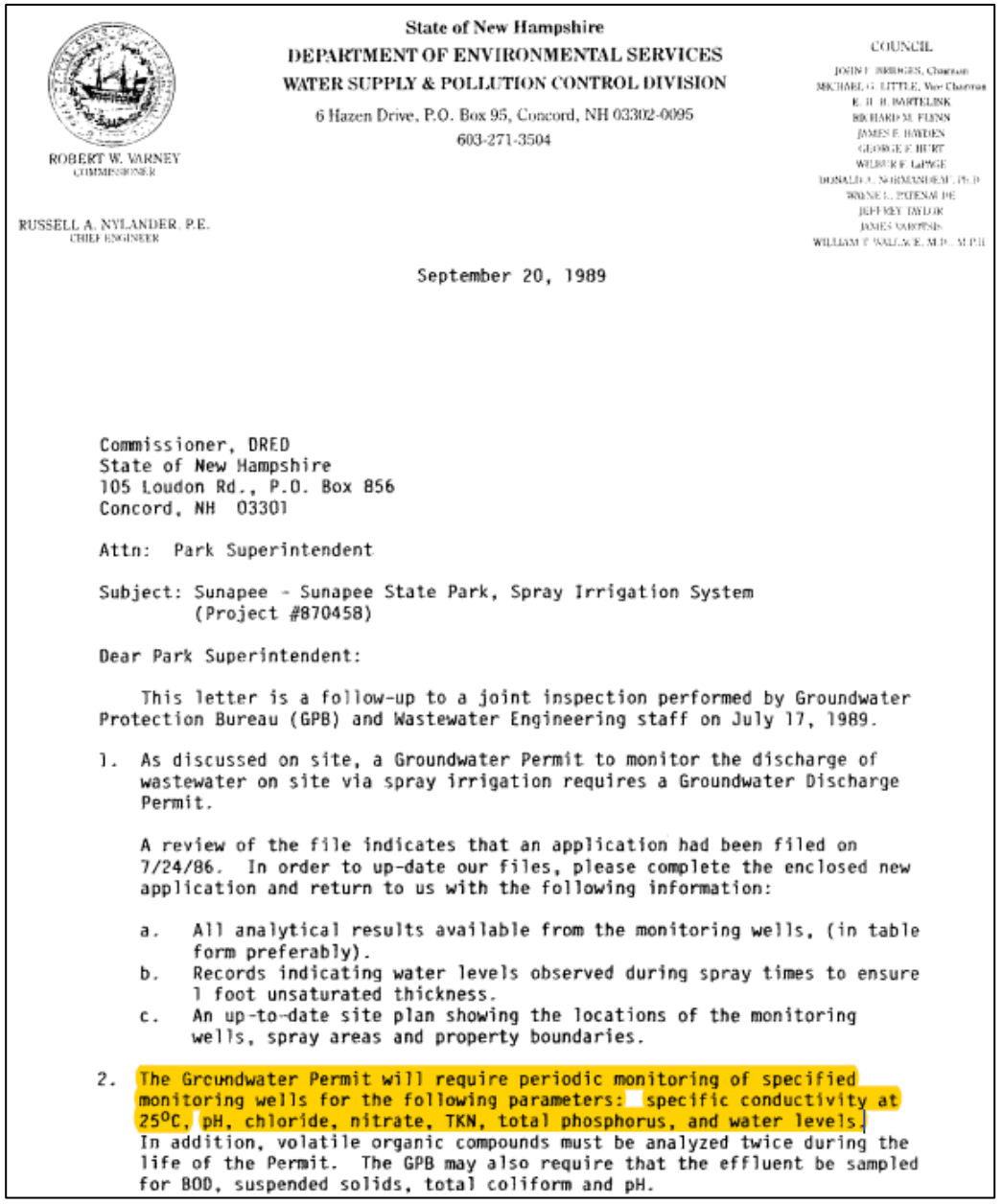
1. Spraying does occur on wet soils along approximately one half of C-line, and on small low areas along A-line. Sprinkler heads should be removed along A-line where soil saturation occurs. It may be possible to relocate C-line to the east, away from the wet soil areas, and if necessary reduce application rates to prevent excessive hydraulic loading. High intensity soils mapping may be necessary to select wet areas where sprinklers should be removed or replaced with nozzles of lower capacity.

2. Enclosed please find copies of lagoon cross section design drawings which indicate pre-existing grade and design grades for lagoons one and two. The western portion of Lagoon Number One was excavated to up to six feet below pre-existing grade. The western portion of lagoon number two was excavated up to 10 feet below pre-existing grade. No design drawings are available for Lagoon Number Three. However, this lagoon also appears to be excavated to below pre-existing grade.

   It appears that the lagoons are excavated below the seasonally perched pan layer water table, and may receive infiltration when lagoon levels are low. Soils investigation work for deepening and possibly lining the lagoons will involve installation of borings to establish soil stratigraphy, groundwater levels, and depth to bedrock. This information will also help to clarify groundwater infiltration/exfiltration conditions at the lagoons.

Historic Concerns with Citations

Date Source	Concern: Required testing not done
9/20/1989 NHDES to NH DRED (now DNCR)	Total phosphorous in the groundwater was among the parameters to be monitored, but for unknown reasons, total phosphorous was later removed from the required parameters (although it is still analyzed but in just two water samples and only twice each year). This is the only permit, among several similar wastewater treatment facilities in New Hampshire, that does not contain a requirement for monitoring of total phosphorus. Therefore, this is an inconsistency in how the facility has been approached compared to perhaps all other similar facilities in the state. **Why has Mt Sunapee not received the same scrutiny?**



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
WATER SUPPLY & POLLUTION CONTROL DIVISION
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
603-271-3504

ROBERT W. VARNEY
COMMISSIONER

RUSSELL A. NYLANDER, P.E.
CHIEF ENGINEER

COUNCIL

September 20, 1989

Commissioner, DRED
State of New Hampshire
105 Loudon Rd., P.O. Box 856
Concord, NH 03301

Attn: Park Superintendent

Subject: Sunapee - Sunapee State Park, Spray Irrigation System
(Project #870458)

Dear Park Superintendent:

This letter is a follow-up to a joint inspection performed by Groundwater Protection Bureau (GPB) and Wastewater Engineering staff on July 17, 1989.

1. As discussed on site, a Groundwater Permit to monitor the discharge of wastewater on site via spray irrigation requires a Groundwater Discharge Permit.

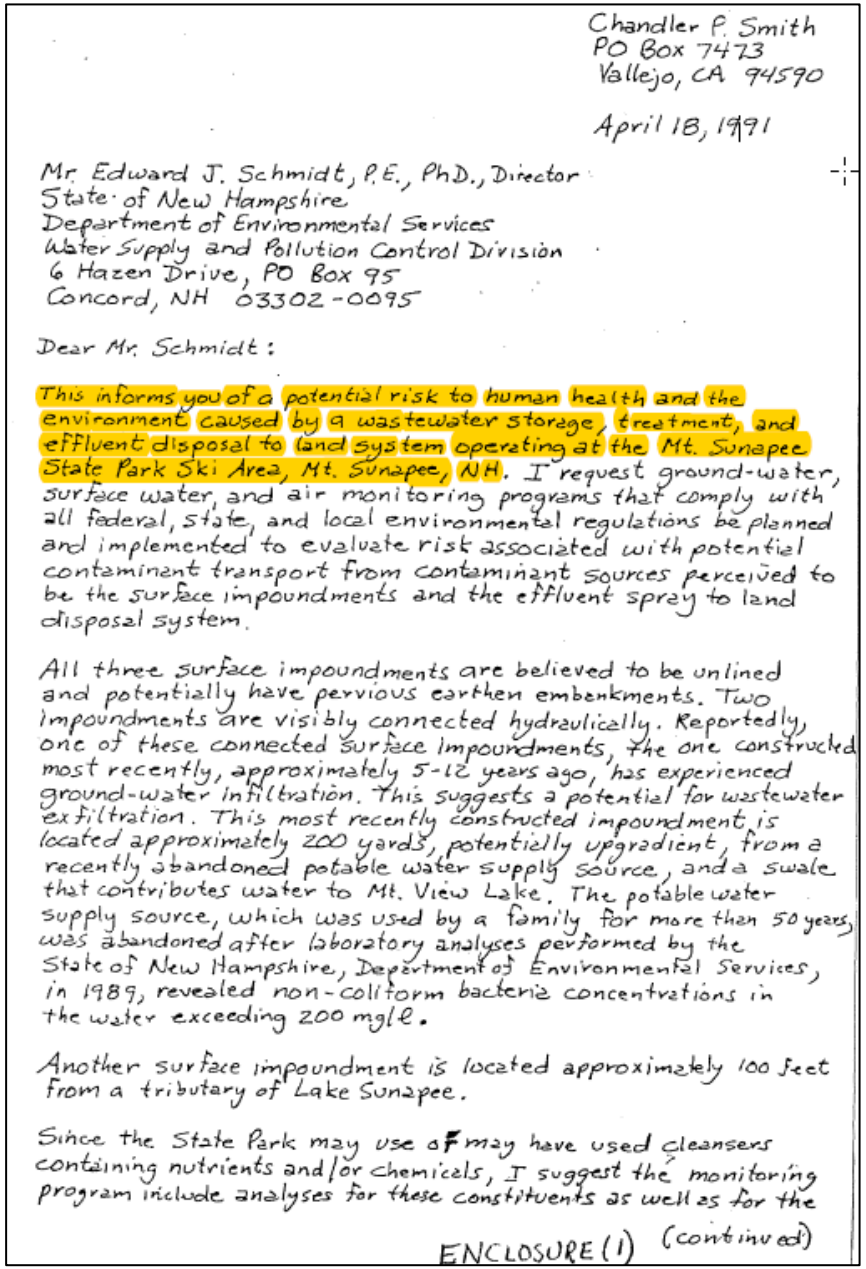
   A review of the file indicates that an application had been filed on 7/24/86. In order to up-date our files, please complete the enclosed new application and return to us with the following information:

   a. All analytical results available from the monitoring wells, (in table form preferably).
   b. Records indicating water levels observed during spray times to ensure 1 foot unsaturated thickness.
   c. An up-to-date site plan showing the locations of the monitoring wells, spray areas and property boundaries.

2. The Groundwater Permit will require periodic monitoring of specified monitoring wells for the following parameters: specific conductivity at 25°C, pH, chloride, nitrate, TKN, total phosphorus, and water levels. In addition, volatile organic compounds must be analyzed twice during the life of the Permit. The GPB may also require that the effluent be sampled for BOD, suspended solids, total coliform and pH.

Historic Concerns with Citations

Date Source	Concern: Septic Leak to Private Well
4/18/1991 Mr. Chandler Smith to NHDES	Letter documenting that a private, shallow well downslope from the septic lagoons was contaminated with E. coli.



Chandler P. Smith
PO Box 7473
Vallejo, CA 94590

April 18, 1991

Mr. Edward J. Schmidt, P.E., PhD., Director
State of New Hampshire
Department of Environmental Services
Water Supply and Pollution Control Division
6 Hazen Drive, PO Box 95
Concord, NH 03302-0095

Dear Mr. Schmidt:

This informs you of a potential risk to human health and the environment caused by a wastewater storage, treatment, and effluent disposal to land system operating at the Mt. Sunapee State Park Ski Area, Mt. Sunapee, NH. I request ground-water, surface water, and air monitoring programs that comply with all federal, state, and local environmental regulations be planned and implemented to evaluate risk associated with potential contaminant transport from contaminant sources perceived to be the surface impoundments and the effluent spray to land disposal system.

All three surface impoundments are believed to be unlined and potentially have pervious earthen embankments. Two impoundments are visibly connected hydraulically. Reportedly, one of these connected surface impoundments, the one constructed most recently, approximately 5-12 years ago, has experienced ground-water infiltration. This suggests a potential for wastewater exfiltration. This most recently constructed impoundment is located approximately 200 yards, potentially upgradient, from a recently abandoned potable water supply source, and a swale that contributes water to Mt. View Lake. The potable water supply source, which was used by a family for more than 50 years, was abandoned after laboratory analyses performed by the State of New Hampshire, Department of Environmental Services, in 1989, revealed non-coliform bacteria concentrations in the water exceeding 200 mg/l.

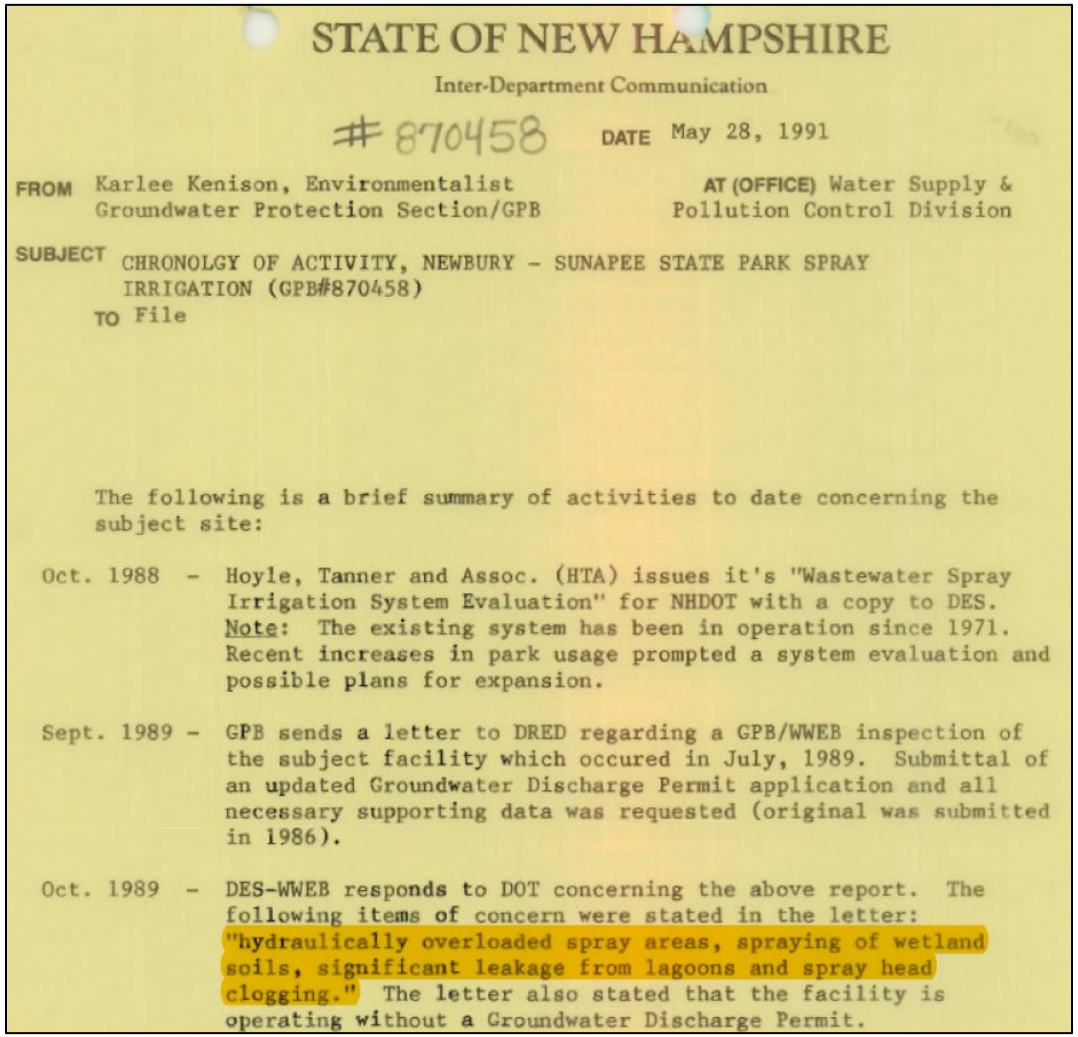
Another surface impoundment is located approximately 100 feet from a tributary of Lake Sunapee.

Since the State Park may use of may have used cleansers containing nutrients and/or chemicals, I suggest the monitoring program include analyses for these constituents as well as for the

ENCLOSURE (1) (continued)

Historic Concerns with Citations

Date Source	Concern: Spraying into existing Wetlands & Lagoon leakage
5/28/1991 NHDES internal file	The system still suffers from "...hydraulically overloaded spray areas, spraying of wetland soils, significant leakage from lagoons and spray head clogging."



STATE OF NEW HAMPSHIRE

Inter-Department Communication

#870458 DATE May 28, 1991

FROM Karlee Kenison, Environmentalist
Groundwater Protection Section/GPB
AT (OFFICE) Water Supply & Pollution Control Division

SUBJECT CHRONOLGY OF ACTIVITY, NEWBURY - SUNAPEE STATE PARK SPRAY IRRIGATION (GPB#870458)

TO File

The following is a brief summary of activities to date concerning the subject site:

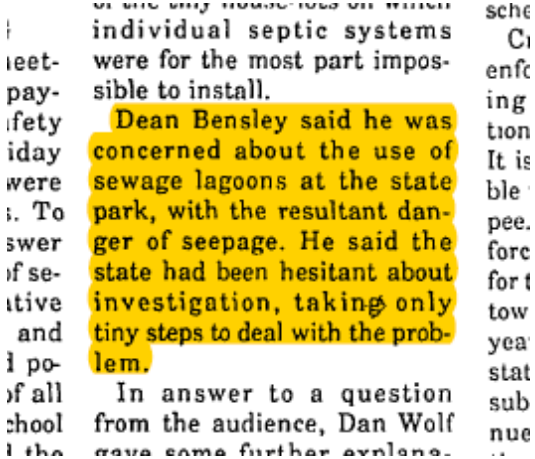
Oct. 1988 - Hoyle, Tanner and Assoc. (HTA) issues it's "Wastewater Spray Irrigation System Evaluation" for NHDOT with a copy to DES. Note: The existing system has been in operation since 1971. Recent increases in park usage prompted a system evaluation and possible plans for expansion.

Sept. 1989 - GPB sends a letter to DRED regarding a GPB/WWEB inspection of the subject facility which occured in July, 1989. Submittal of an updated Groundwater Discharge Permit application and all necessary supporting data was requested (original was submitted in 1986).

Oct. 1989 - DES-WWEB responds to DOT concerning the above report. The following items of concern were stated in the letter: "hydraulically overloaded spray areas, spraying of wetland soils, significant leakage from lagoons and spray head clogging." The letter also stated that the facility is operating without a Groundwater Discharge Permit.

Historic Concerns with Citations

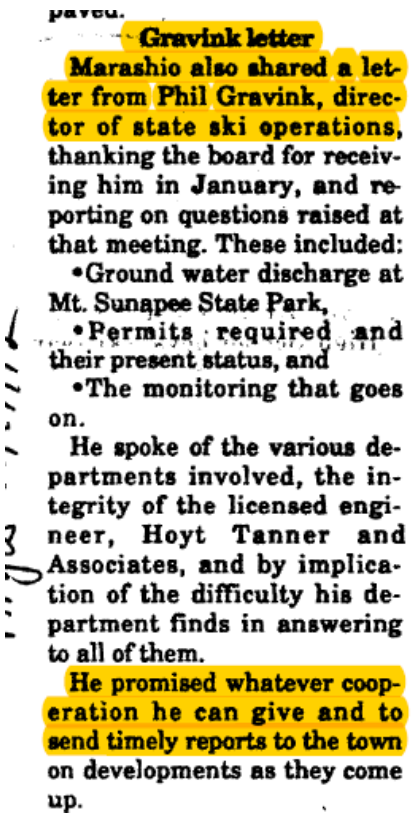
Date Source	Concern: Newbury Public Conserns Not Addressed
8/71991 1/22/1992 Argus Champion articles	Both the Newbury Conservation Commission and Planning Board concerned about water quality impacts and leakage from the unlined sewage lagoons. NHDES staff state that stormwater is causing major impacts to water quality of Beck Brook.



individual septic systems were for the most part impossible to install.

Dean Bensley said he was concerned about the use of sewage lagoons at the state park, with the resultant danger of seepage. He said the state had been hesitant about investigation, taking only tiny steps to deal with the problem.

In answer to a question from the audience, Dan Wolf



Gravink letter

Marashio also shared a letter from Phil Gravink, director of state ski operations, thanking the board for receiving him in January, and reporting on questions raised at that meeting. These included:

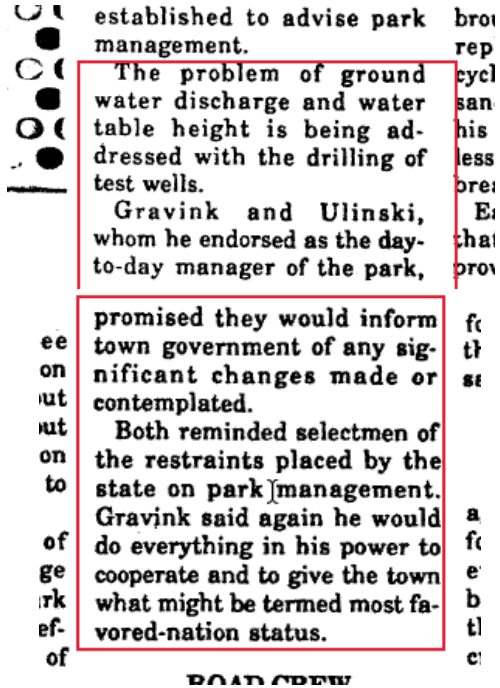
•Ground water discharge at Mt. Sunapee State Park,

•Permits required and their present status, and

•The monitoring that goes on.

He spoke of the various departments involved, the integrity of the licensed engineer, Hoyt Tanner and Associates, and by implication of the difficulty his department finds in answering to all of them.

He promised whatever cooperation he can give and to send timely reports to the town on developments as they come up.



established to advise park management.

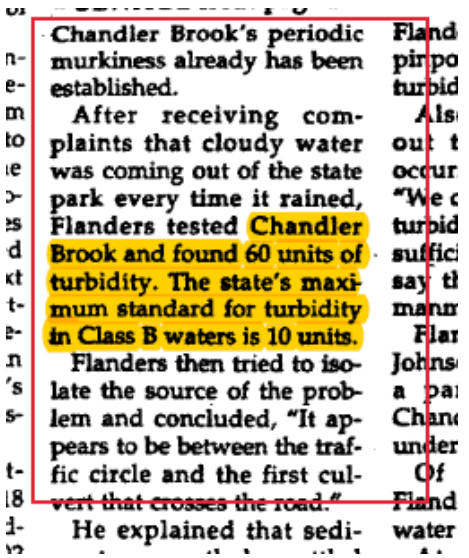
The problem of ground water discharge and water table height is being addressed with the drilling of test wells.

Gravink and Ulinski, whom he endorsed as the day-to-day manager of the park,

promised they would inform town government of any significant changes made or contemplated.

Both reminded selectmen of the restraints placed by the state on park management. Gravink said again he would do everything in his power to cooperate and to give the town what might be termed most favored-nation status.

ROAD CREW



Chandler Brook's periodic murkiness already has been established.

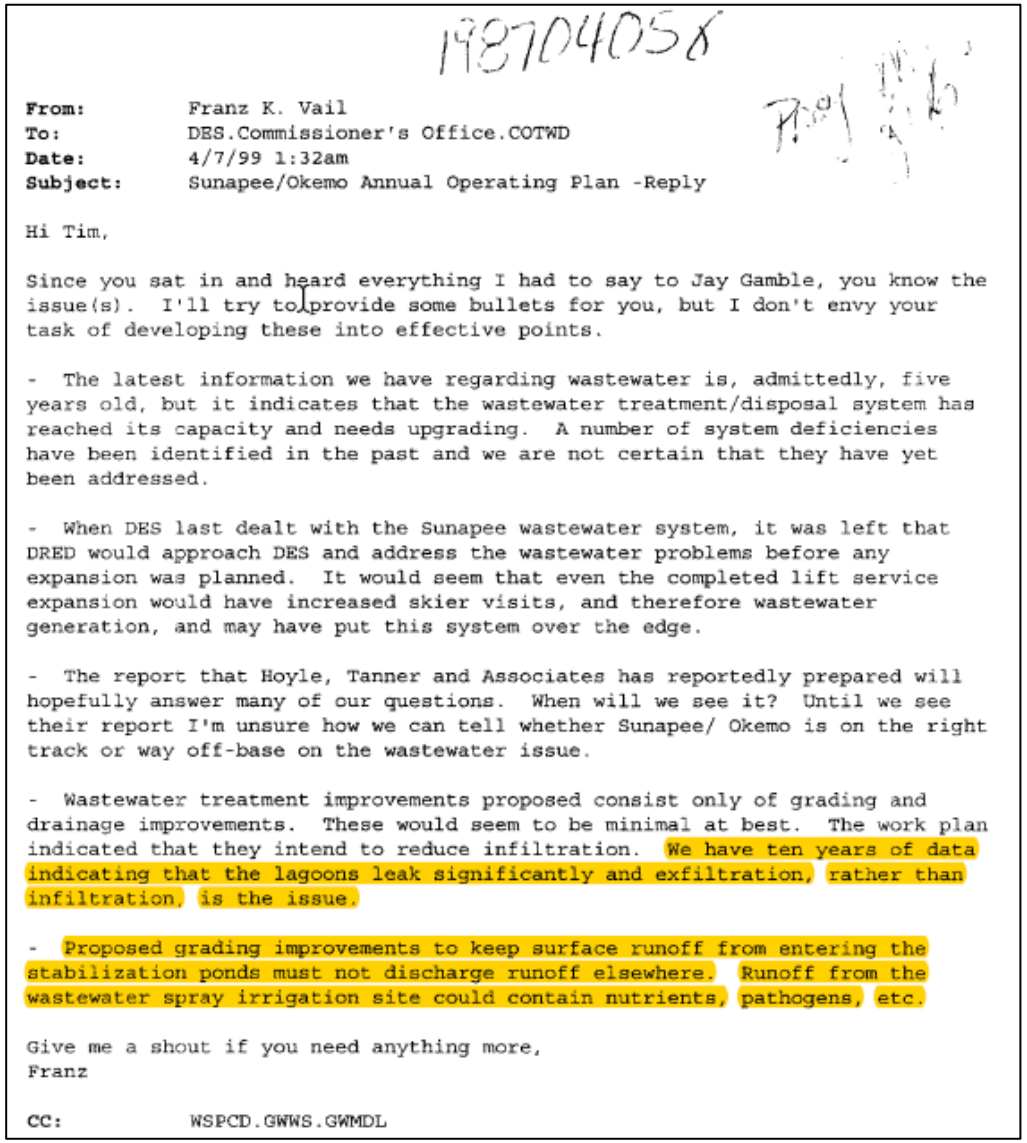
After receiving complaints that cloudy water was coming out of the state park every time it rained, Flanders tested Chandler Brook and found 60 units of turbidity. The state's maximum standard for turbidity in Class B waters is 10 units.

Flanders then tried to isolate the source of the problem and concluded, "It appears to be between the traffic circle and the first culvert that crosses the road."

He explained that sedi-

Historic Concerns with Citations

Date Source	Concern: WWTF has Reached its Capacity
4/7/1999 Internal memo from Franz Vail to Commissioner's Office, NHDES	"We have ten years of data indicating that the lagoons leak significantly and exfiltration, rather than infiltration, is the issue" Mr. Vail was also concerned about solutions to infiltration from the fields to the lagoons: "Proposed grading improvements to keep surface runoff from entering the stabilization ponds must not discharge runoff elsewhere. Runoff from the wastewater spray irrigation site could contain nutrients, pathogens, etc." Despite knowing this in 1999, no was sampling have ever been conducted of this runoff and it was intentionally diverted to flow directly into Beck Brook, including upstream of SW-1 sampling site, which is supposed to be the control site.



19870405 8

From: Franz K. Vail
To: DES.Commissioner's Office.COTWD
Date: 4/7/99 1:32am
Subject: Sunapee/Okemo Annual Operating Plan -Reply

Hi Tim,

Since you sat in and heard everything I had to say to Jay Gamble, you know the issue(s). I'll try to provide some bullets for you, but I don't envy your task of developing these into effective points.

- The latest information we have regarding wastewater is, admittedly, five years old, but it indicates that the wastewater treatment/disposal system has reached its capacity and needs upgrading. A number of system deficiencies have been identified in the past and we are not certain that they have yet been addressed.

- When DES last dealt with the Sunapee wastewater system, it was left that DRED would approach DES and address the wastewater problems before any expansion was planned. It would seem that even the completed lift service expansion would have increased skier visits, and therefore wastewater generation, and may have put this system over the edge.

- The report that Hoyle, Tanner and Associates has reportedly prepared will hopefully answer many of our questions. When will we see it? Until we see their report I'm unsure how we can tell whether Sunapee/ Okemo is on the right track or way off-base on the wastewater issue.

- Wastewater treatment improvements proposed consist only of grading and drainage improvements. These would seem to be minimal at best. The work plan indicated that they intend to reduce infiltration. We have ten years of data indicating that the lagoons leak significantly and exfiltration, rather than infiltration, is the issue.

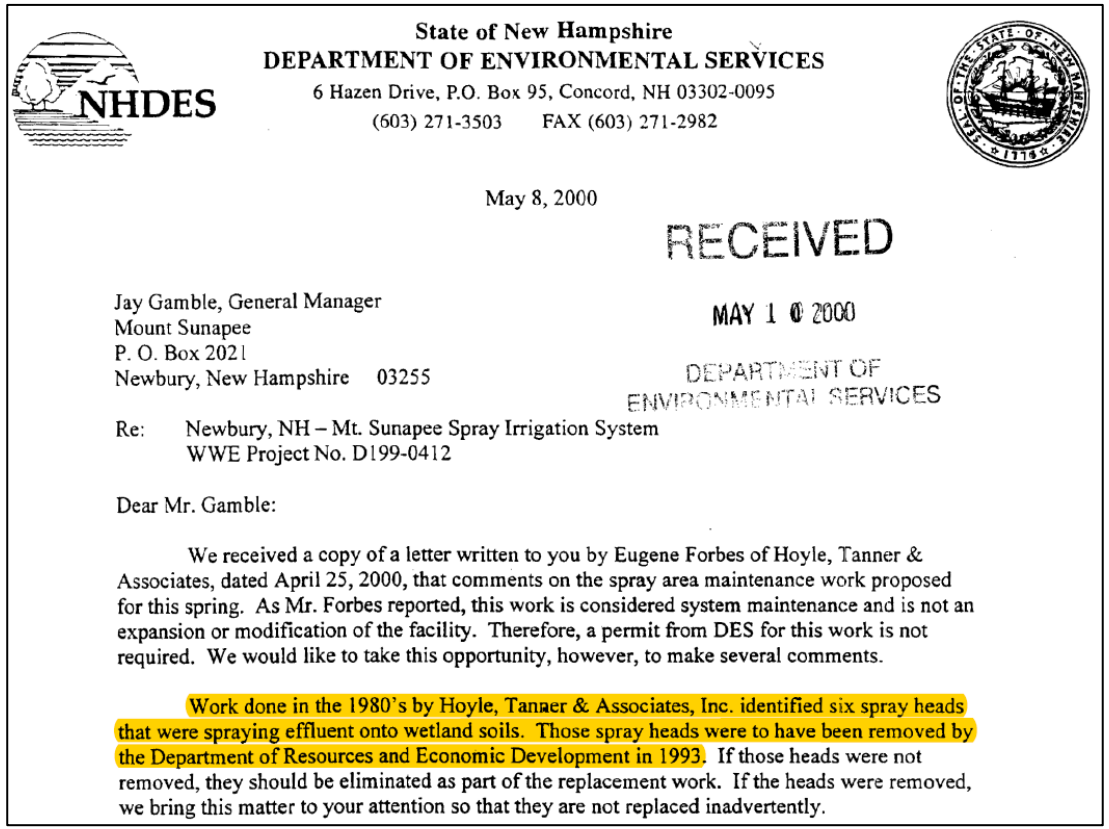
- Proposed grading improvements to keep surface runoff from entering the stabilization ponds must not discharge runoff elsewhere. Runoff from the wastewater spray irrigation site could contain nutrients, pathogens, etc.

Give me a shout if you need anything more,
Franz

CC: WSPCD.GWWS.GWMDL

Historic Concerns with Citations

Date Source	Concern: Lack of action over 11 years after Order to Stop
5/8/2000 Letter from Franz Vail, NHDES, to Jay Gamble, General Manager at Mt Sunapee Resort	Mr. Vail notes that spray is still applied directly to wetlands when the order to stop that was made in 1989.



State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-3503 FAX (603) 271-2982

NHDES

May 8, 2000

RECEIVED
MAY 1 0 2000
DEPARTMENT OF
ENVIRONMENTAL SERVICES

Jay Gamble, General Manager
Mount Sunapee
P. O. Box 2021
Newbury, New Hampshire 03255

Re: Newbury, NH – Mt. Sunapee Spray Irrigation System
WWE Project No. D199-0412

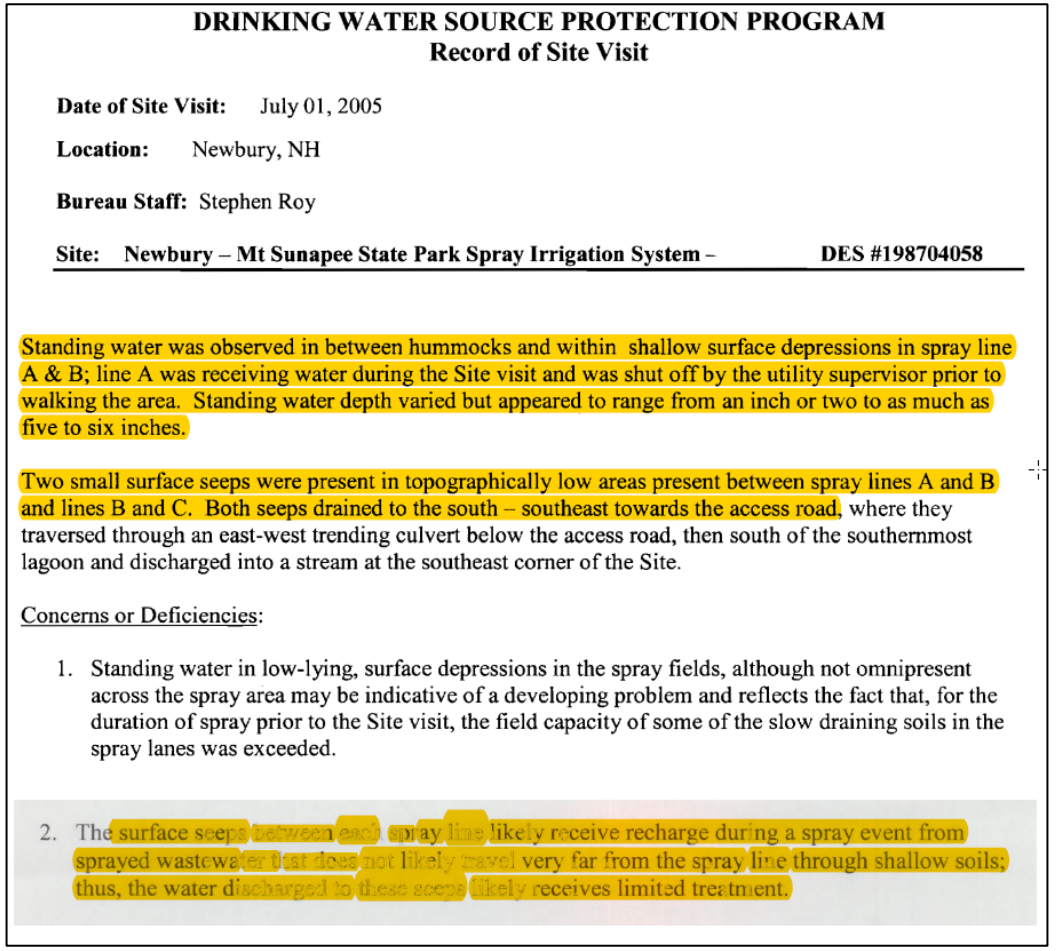
Dear Mr. Gamble:

We received a copy of a letter written to you by Eugene Forbes of Hoyle, Tanner & Associates, dated April 25, 2000, that comments on the spray area maintenance work proposed for this spring. As Mr. Forbes reported, this work is considered system maintenance and is not an expansion or modification of the facility. Therefore, a permit from DES for this work is not required. We would like to take this opportunity, however, to make several comments.

Work done in the 1980's by Hoyle, Tanner & Associates, Inc. identified six spray heads that were spraying effluent onto wetland soils. Those spray heads were to have been removed by the Department of Resources and Economic Development in 1993. If those heads were not removed, they should be eliminated as part of the replacement work. If the heads were removed, we bring this matter to your attention so that they are not replaced inadvertently.

Historic Concerns with Citations

Date Source	Concern: Seepage (Surface leaks) in Spray Fields
7/1/2005 Internal memo by Steve Roy of NHDES	Concerned that standing water in the spray fields of up to 6 inches indicates field capacity in spray lanes in some areas was exceeded. Reported that there were seeps between lines A and B and between B and C and both flowed through proposed parking lot 4, then under access road. DES knew that this flow occurred but application by HTA and review of that application by DES staff appear to have missed this important fact. "The surface seeps between each spray line likely receive recharge during a spray event from sprayed wastewater that does not likely travel very far from the spray line through shallow soils; thus, the water discharged to these seeps likely receives limited treatment." "No seeps were observed on the side slopes of the lagoons..." - documents that the existing seeps likely formed since then.



DRINKING WATER SOURCE PROTECTION PROGRAM
Record of Site Visit

Date of Site Visit: July 01, 2005

Location: Newbury, NH

Bureau Staff: Stephen Roy

Site: **Newbury – Mt Sunapee State Park Spray Irrigation System –** **DES #198704058**

Standing water was observed in between hummocks and within shallow surface depressions in spray line A & B; line A was receiving water during the Site visit and was shut off by the utility supervisor prior to walking the area. Standing water depth varied but appeared to range from an inch or two to as much as five to six inches.

Two small surface seeps were present in topographically low areas present between spray lines A and B and lines B and C. Both seeps drained to the south – southeast towards the access road, where they traversed through an east-west trending culvert below the access road, then south of the southernmost lagoon and discharged into a stream at the southeast corner of the Site.

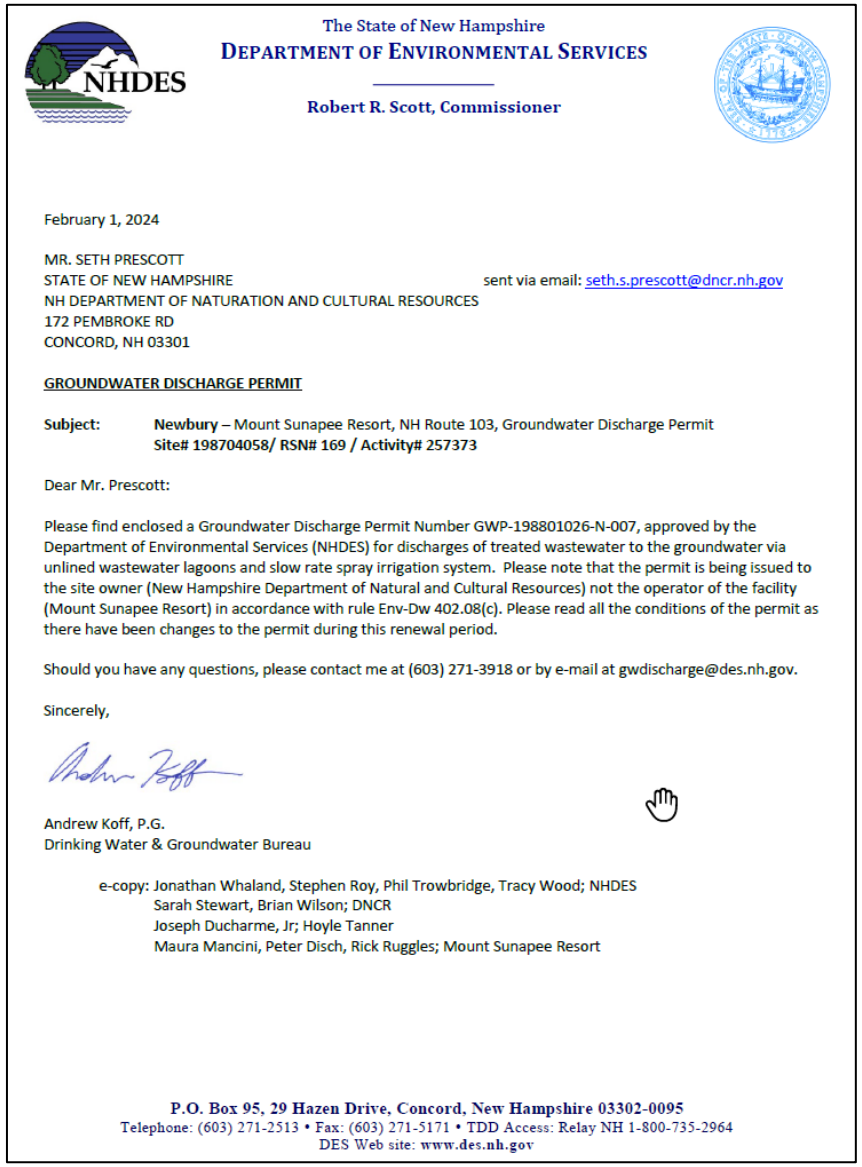
Concerns or Deficiencies:

1. Standing water in low-lying, surface depressions in the spray fields, although not omnipresent across the spray area may be indicative of a developing problem and reflects the fact that, for the duration of spray prior to the Site visit, the field capacity of some of the slow draining soils in the spray lanes was exceeded.

2. The surface seeps between each spray line likely receive recharge during a spray event from sprayed wastewater that does not likely travel very far from the spray line through shallow soils; thus, the water discharged to these seeps likely receives limited treatment.

Historic Concerns with Citations

Date Source	Concern: Groundwater Permit…Conditions not met	
2/1/24 GWP From DES	**From Groundwater Permit (GWP)**	**Current Status**
	Condition #15. Annual groundwater (GW) quality results summery due in January annually with an assessment of trends in the data, and a short narrative concerning any changes, improvements, or activity, concerning the site.	No such reporting has been done. There has been no correspondence from GW Bureau addressing this violation by the operator.
	Condition #18-2 of note the plan to replace outdated infrastructure	Planned construction in 2027. Deficiencies were noted in a Hoyle Tanner report in 2023.
	Condition #18-3 Sludge volumes currently in lagoons due February 3, 2025.	No such data has been reported. There has been no correspondence from GW Bureau addressing this violation by the operator.



The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
Robert R. Scott, Commissioner

February 1, 2024

MR. SETH PRESCOTT
STATE OF NEW HAMPSHIRE
NH DEPARTMENT OF NATURATION AND CULTURAL RESOURCES
172 PEMBROKE RD
CONCORD, NH 03301

sent via email: seth.s.prescott@dncr.nh.gov

GROUNDWATER DISCHARGE PERMIT

Subject: **Newbury** – Mount Sunapee Resort, NH Route 103, Groundwater Discharge Permit
Site# 198704058/ RSN# 169 / Activity# 257373

Dear Mr. Prescott:

Please find enclosed a Groundwater Discharge Permit Number GWP-198801026-N-007, approved by the Department of Environmental Services (NHDES) for discharges of treated wastewater to the groundwater via unlined wastewater lagoons and slow rate spray irrigation system. Please note that the permit is being issued to the site owner (New Hampshire Department of Natural and Cultural Resources) not the operator of the facility (Mount Sunapee Resort) in accordance with rule Env-Dw 402.08(c). Please read all the conditions of the permit as there have been changes to the permit during this renewal period.

Should you have any questions, please contact me at (603) 271-3918 or by e-mail at gwdischarge@des.nh.gov.

Sincerely,

Andrew Koff, P.G.
Drinking Water & Groundwater Bureau

e-copy: Jonathan Whaland, Stephen Roy, Phil Trowbridge, Tracy Wood; NHDES
Sarah Stewart, Brian Wilson; DNCR
Joseph Ducharme, Jr; Hoyle Tanner
Maura Mancini, Peter Disch, Rick Ruggles; Mount Sunapee Resort

P.O. Box 95, 29 Hazen Drive, Concord, New Hampshire 03302-0095
Telephone: (603) 271-2513 • Fax: (603) 271-5171 • TDD Access: Relay NH 1-800-735-2964
DES Web site: www.des.nh.gov

Historic Concerns with Citations

Date Source	**Concern: Groundwater Permit…Conditions not met**	
2/1/24 GWP From DES	**From GWP**	**Current Status**
	Condition #22 By 8/24 staff gauges to be installed in each lagoon and weekly reporting results.	No apparent gauges were installed to date and therefore no reporting of levels. 4/7/25. There has been no correspondence from GW Bureau addressing this violation by the operator.
	Condition #24 Discharge volumes shall not exceed 2” per week including precipitation.	No way to verify this, as there is no accurate metering of effluent sprayed; it is only approximated.
	Condition #27 Effluent to meet secondary treatment levels of BOD And TSS	The operator of the facility has routinely exceeded these limits for years. There has been no correspondence from GW Bureau addressing this violation by the operator. The results on record show this violation has occurred for several years.
	Condition #30 The permittee shall maintain a one-foot minimum of unsaturated soil depth at all times in the spray fields area…..	No evidence of data exists to show compliance. In 1991 the GW permit approval required piezometers to measure this, the state granted the delay until a soil study was conducted because they were concerned that spray was entering wetlands and there may be a necessity to relocate the spray fields. This was completed shortly after, confirmed spraying in the wetlands, no change in spray area to avoid the wetlands and piezometers were apparently installed but there is no independent verification.

Historic Concerns with Citations

Date Source	**Concern: Groundwater Permit…Conditions not met**	
2/1/24 GWP From DES	**From GWP**	**Current Status**
	Condition #31 The activities shall not cause surface runoff….	During 3 visits, one with the administrators of Ground Water and Wetland Bureau and Phil Throwbridge of the Commissioner's Office, showed real time evidence of runoff from operating spray fields. Additionally, we observed spray from the spray line was going directly into wetlands.
	Condition #32 Complete records of spray application rates and lagoon levels to be kept.	It is assumed that accurate data to meet this condition is required. Flow rates from spray application are estimated based on pump efficiency and time run. There is no data on lagoon levels. This is so important to determine the amount of effluent that exfiltrates in ground water. Volumes of influent to the lagoons are reported. The meters measuring those amounts are not frequently operating because the meters are powered by batteries and cold weather issues cause them to fail. There are no gauges in the lagoons to monitor levels, especially during no spray periods.
	In general…	Having reviewed the GWP it is clear that there have been many violations of the permit. What is not clear is why the regulator has turned a blind eye to the violations.

Today's Concerns – Water Analysis

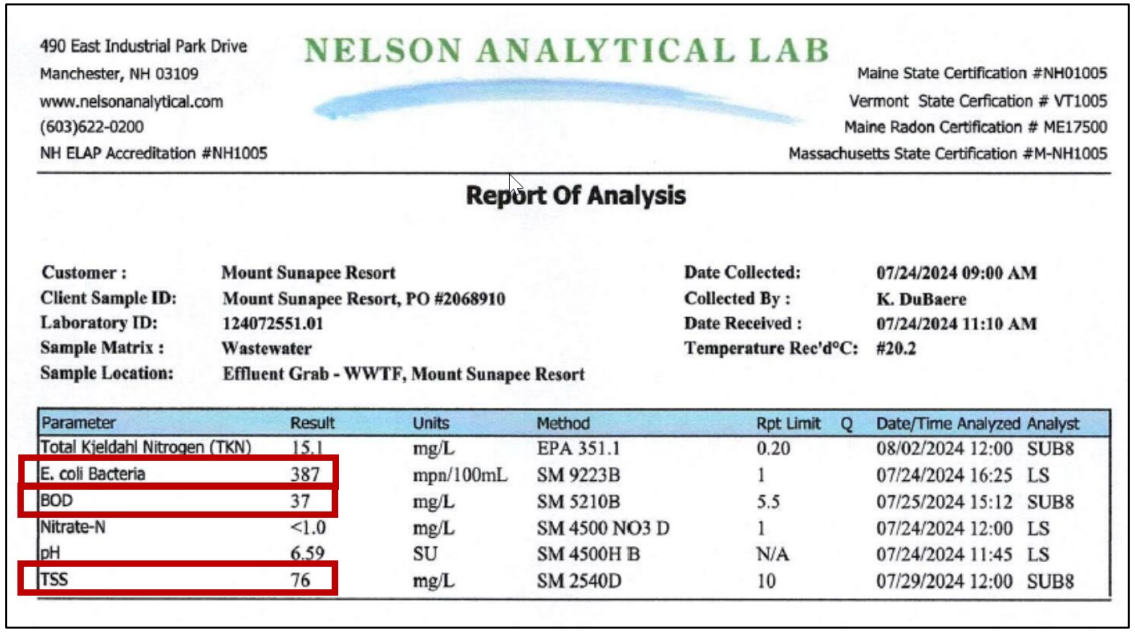
Date Source	Concern: MSR Operators in violation of their permit conditions
7/24/24 8/21/24 Nelson Analytical For MSR	

Parameter	Result	Legal Limit
E. Coli	387 & 1300	< 47 MPN/100 ml
BOD	37	< 30 mg/L
TSS	76 & 62	< 30 mg/L

From 2018 to 2024, the effluent violated permit conditions for Total Suspended Solids (TSS) and Biological Oxygen Demand (BOD) 62% and 22% of the time, respectively. Although all these data are publicly available on the NHDES One Stop website, there is no indication that this has been documented by NHDES as a violation of a permit condition. From 2018-2022, E. coli was >100 counts/100ml for 18 of 56 (32%) effluent samples.

Therefore, there are high levels of E. coli in the effluent about 1/3 of the time during spray events.

E. coli = type of bacteria ≈ fecal contamination
BOD = Biological Oxygen Demand ≈ organic water pollution
TSS = Total Suspended Solids ≈ particulate water pollution



490 East Industrial Park Drive
Manchester, NH 03109
www.nelsonanalytical.com
(603)622-0200
NH ELAP Accreditation #NH1005

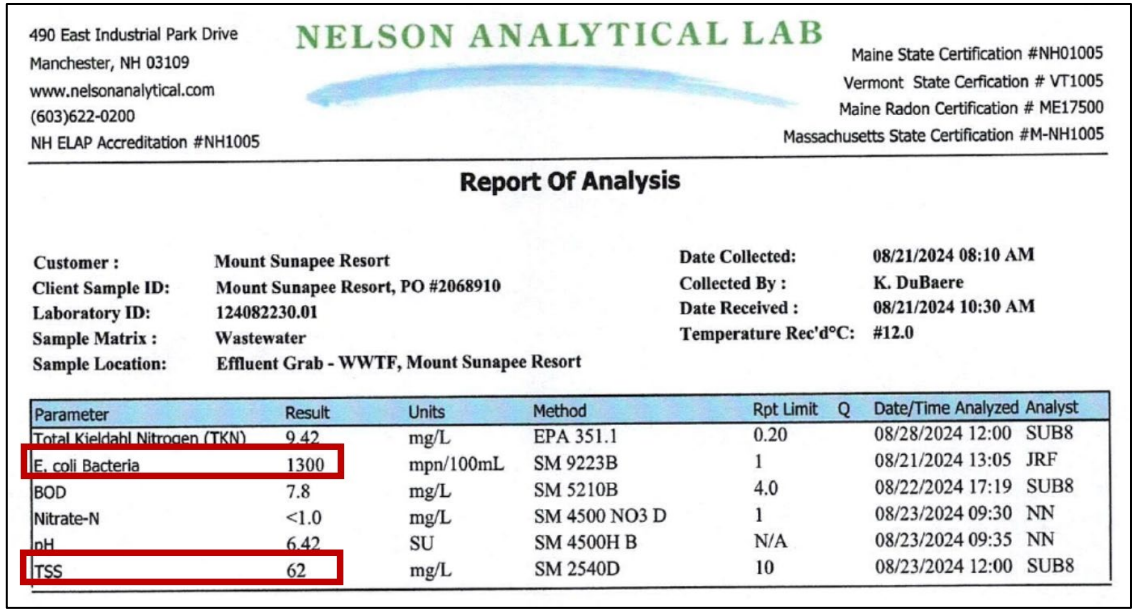
NELSON ANALYTICAL LAB

Maine State Certification #NH01005
Vermont State Cerfication # VT1005
Maine Radon Certification # ME17500
Massachusetts State Certification #M-NH1005

Report Of Analysis

Customer :	**Mount Sunapee Resort**	**Date Collected:**	**07/24/2024 09:00 AM**
Client Sample ID:	**Mount Sunapee Resort, PO #2068910**	**Collected By :**	**K. DuBaere**
Laboratory ID:	**124072551.01**	**Date Received :**	**07/24/2024 11:10 AM**
Sample Matrix :	**Wastewater**	**Temperature Rec'd°C:**	**#20.2**
Sample Location:	**Effluent Grab - WWTF, Mount Sunapee Resort**		

Parameter	Result	Units	Method	Rpt Limit	Q	Date/Time Analyzed	Analyst
Total Kjeldahl Nitrogen (TKN)	15.1	mg/L	EPA 351.1	0.20		08/02/2024 12:00	SUB8
E. coli Bacteria	387	mpn/100mL	SM 9223B	1		07/24/2024 16:25	LS
BOD	37	mg/L	SM 5210B	5.5		07/25/2024 15:12	SUB8
Nitrate-N	<1.0	mg/L	SM 4500 NO3 D	1		07/24/2024 12:00	LS
pH	6.59	SU	SM 4500H B	N/A		07/24/2024 11:45	LS
TSS	76	mg/L	SM 2540D	10		07/29/2024 12:00	SUB8



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Vermont State Cerfication # VT1005
Maine Radon Certification # ME17500
Massachusetts State Certification #M-NH1005

Report Of Analysis

Customer :	**Mount Sunapee Resort**	**Date Collected:**	**08/21/2024 08:10 AM**
Client Sample ID:	**Mount Sunapee Resort, PO #2068910**	**Collected By :**	**K. DuBaere**
Laboratory ID:	**124082230.01**	**Date Received :**	**08/21/2024 10:30 AM**
Sample Matrix :	**Wastewater**	**Temperature Rec'd°C:**	**#12.0**
Sample Location:	**Effluent Grab - WWTF, Mount Sunapee Resort**		

Parameter	Result	Units	Method	Rpt Limit	Q	Date/Time Analyzed	Analyst
Total Kjeldahl Nitrogen (TKN)	9.42	mg/L	EPA 351.1	0.20		08/28/2024 12:00	SUB8
E. coli Bacteria	1300	mpn/100mL	SM 9223B	1		08/21/2024 13:05	JRF
BOD	7.8	mg/L	SM 5210B	4.0		08/22/2024 17:19	SUB8
Nitrate-N	<1.0	mg/L	SM 4500 NO3 D	1		08/23/2024 09:30	NN
pH	6.42	SU	SM 4500H B	N/A		08/23/2024 09:35	NN
TSS	62	mg/L	SM 2540D	10		08/23/2024 12:00	SUB8

Today's Concern - Phosphorus Testing Comparison of NH Spray Fields

Why are Mount Sunapee testing requirements *minimal* compared to other Spray Fields ?

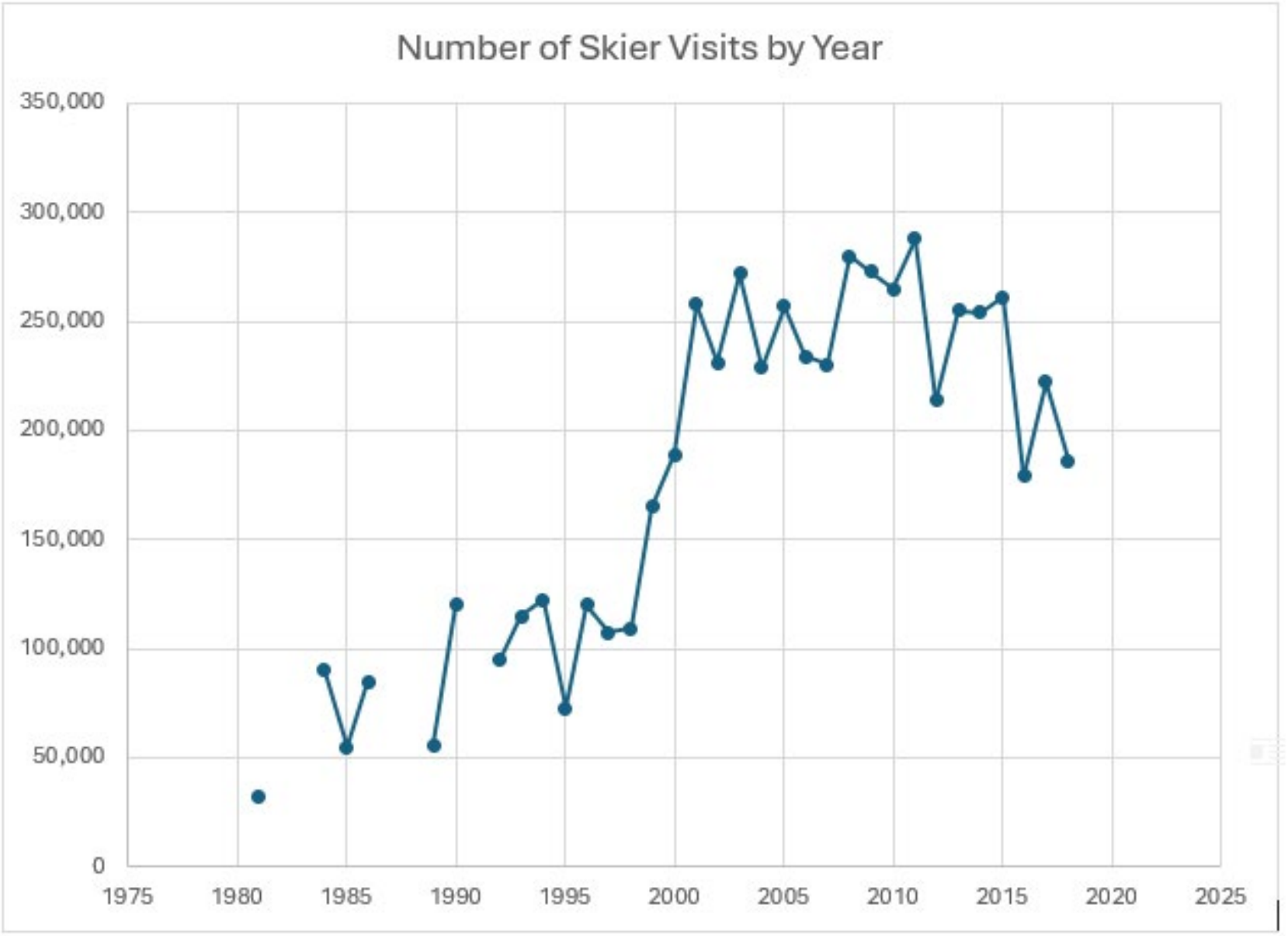
Phosphorous sampling requirements	**Mt Sunapee (spray fields) GWP-198801026-N-007**	**Eastman (sprayed onto golf course) GWP-198801026-G-006**	**Bay District Sewer (no spray fields) GWP-199007028-M-005**	**Wolfeboro (spray fields) GWP-198705015-W-003**	**Atkinson Country Club (sprayed onto golf course) GWP-198801026-G-005**
Surface water	NONE	Total number of samples = 4. At two surface water sites May and November. Total number of samples = 12. Monthly at 14th fairway. Also, influent and effluent phosphorous monthly.	Total number of samples = 4. At two surface water sites once each in May and November. No spray fields. Wastewater is held in 3 unlined sewage lagoons and pumped to a treatment facility off site.	Total number of samples = up to 104. At 4 surface water sites, weekly May - October	Total number of samples = 10. Surface water sites 1-5, September and July of each year.
Groundwater	NONE	NONE	N/A.	June and October of each year (one sample in each month)	10 monitoring wells, May and November each year. (orthophosphate)

Today's Concern - Skier Days

- Original design and capacity studies of the WWTF can not be found.
- Current capacity of the WWTF is not noted in the plans.
- The plotted data was from:
  - State archives
  - published Annual Operating Plans issued by Mount Sunapee Resort / Okemo Mountain
- Similar data is not published in the Annual Operating Reports as Vail Resorts does not disclose year-over-year visitation

Fundamental Questions:

- **What is the capacity of the WWTF?**
- **What is the current year-round visitation of the Park?**

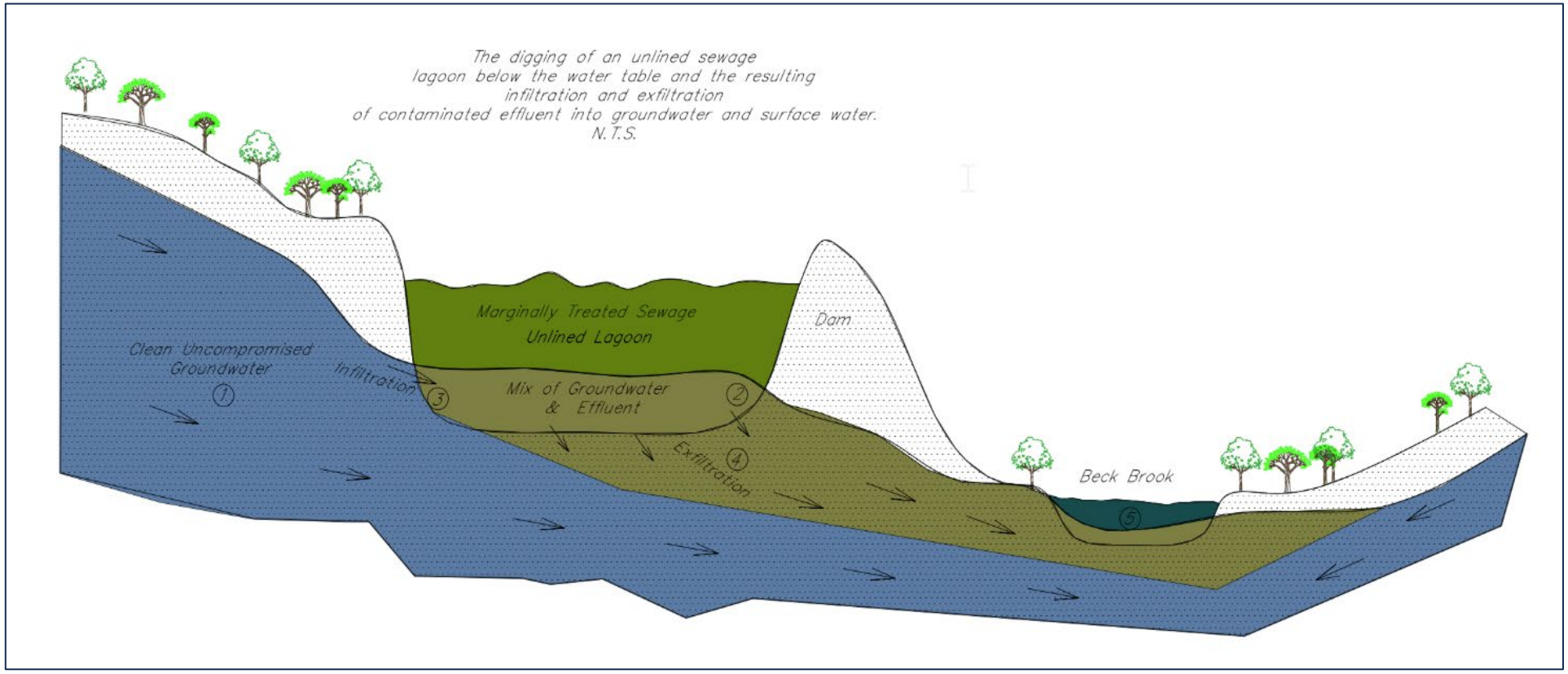


Today's Concern - Dam Leaks to Beck Brook

Seeps & leakages from the gabion basket, north 500' to the Pump House / April 2024

Today's Concern – Lagoon Exfiltration Contamination

1. Groundwater travels downslope with the slope.
2. The unlined lagoons were cut into the groundwater table as part of construction.
3. Relatively clean groundwater flows into the pond through infiltration.
4. Contaminated, partially treated effluent mixes with the groundwater and exists downslope, through exfiltration.
5. Contaminated groundwater flows downslope and reaches the surface in the valley that was created by Beck Brook.
6. Beck Brook carries the contaminated water to Lake Sunapee

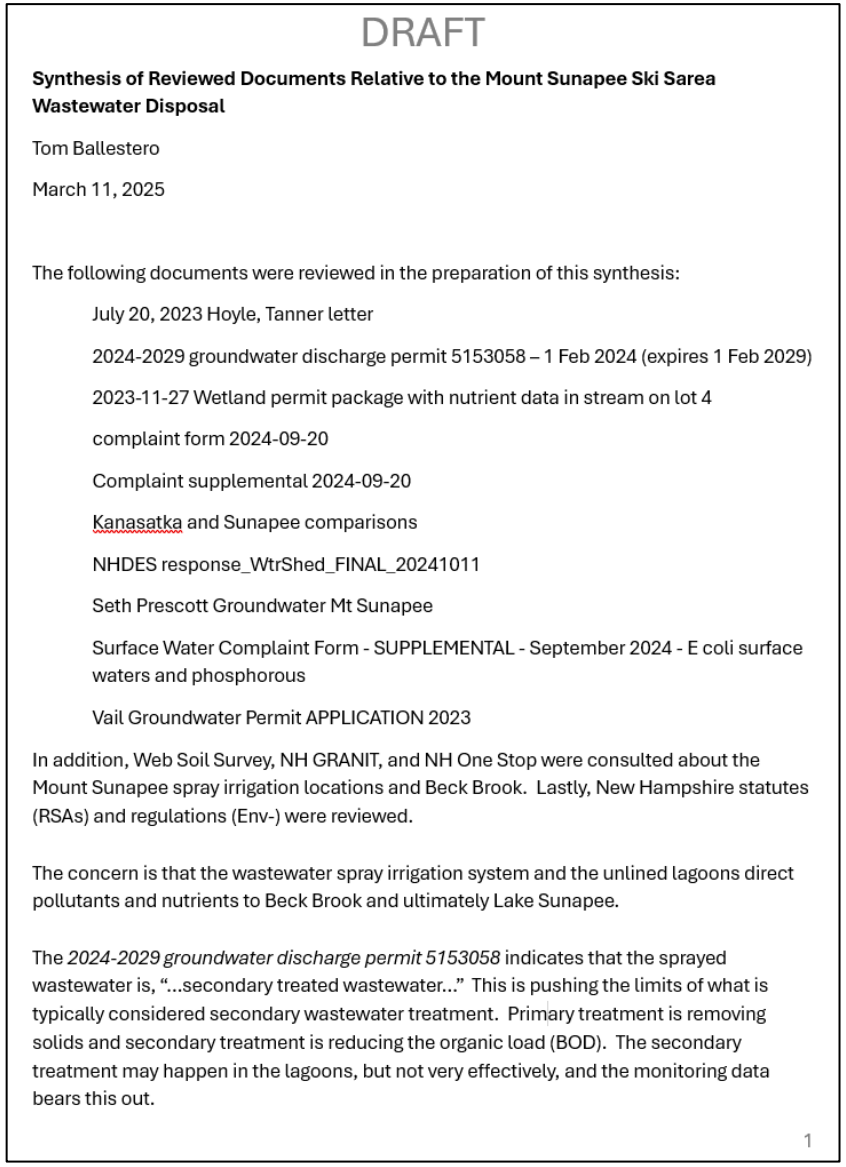


Work-in-Progress - Ballestero Report Summary

NCC contracted with Tom Ballestero PhD, PE, PG, PH, CGWP and founder UNH Stormwater Center to review existing state documentation regarding the existing WWTF at Mount Sunapee. The work is on-going but available in draft form.

Based on a telcon in March…

- Spray irrigation is not appropriate because BOD and TSS routinely exceed values in permit. Lagoons are not considered secondary treatment.
- Monitoring program in the stream is insufficient. Ineffective minor program to assess the system.
- Groundwater map with locations of wells but no info about water depths of this wells. Water flows downhill and the map shows it flowing to the stream. We don't know if that GW is going into the stream. They have not presented enough geology information to make inferences about where the spray water goes.
- Groundwater flow from lagoons.
- Hydrologic balance of the system is not known. No real data on this.



DRAFT

Synthesis of Reviewed Documents Relative to the Mount Sunapee Ski Sarea Wastewater Disposal

Tom Ballestero

March 11, 2025

The following documents were reviewed in the preparation of this synthesis:

July 20, 2023 Hoyle, Tanner letter

2024-2029 groundwater discharge permit 5153058 – 1 Feb 2024 (expires 1 Feb 2029)

2023-11-27 Wetland permit package with nutrient data in stream on lot 4

complaint form 2024-09-20

Complaint supplemental 2024-09-20

Kanasatka and Sunapee comparisons

NHDES response_WtrShed_FINAL_20241011

Seth Prescott Groundwater Mt Sunapee

Surface Water Complaint Form - SUPPLEMENTAL - September 2024 - E coli surface waters and phosphorous

Vail Groundwater Permit APPLICATION 2023

In addition, Web Soil Survey, NH GRANIT, and NH One Stop were consulted about the Mount Sunapee spray irrigation locations and Beck Brook. Lastly, New Hampshire statutes (RSAs) and regulations (Env-) were reviewed.

The concern is that the wastewater spray irrigation system and the unlined lagoons direct pollutants and nutrients to Beck Brook and ultimately Lake Sunapee.

The *2024-2029 groundwater discharge permit 5153058* indicates that the sprayed wastewater is, "…secondary treated wastewater…" This is pushing the limits of what is typically considered secondary wastewater treatment. Primary treatment is removing solids and secondary treatment is reducing the organic load (BOD). The secondary treatment may happen in the lagoons, but not very effectively, and the monitoring data bears this out.

1

Dr. Ballestero is also Streamworks' Principal and has over 45 years of academic and professional experience.

Work-in-Progress - NCC Water testing

In late 2024 NCC realized that additional testing was needed to fully understand the current status at Mount Sunapee.

Past testing was not done on a on a continuous and frequent basis and did not always test for the proper parameters.

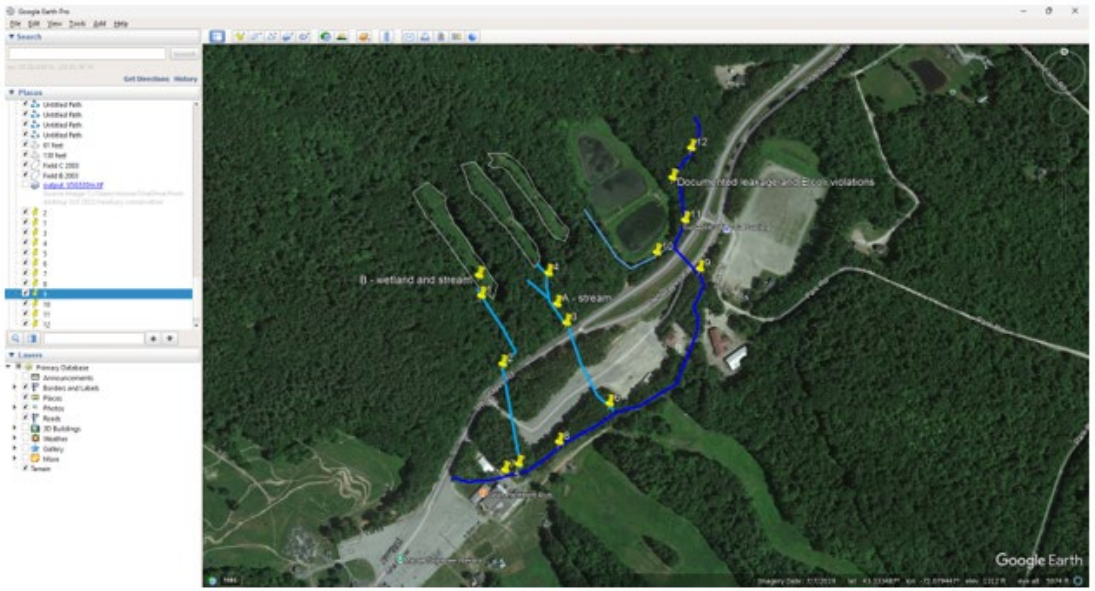
NCC consulted with LSPA and Dr. Tom Ballestero / Streamworks LLC to determine the optimal test sites, parameters, and frequency.

Testing is currently underway and needs additional sampling before any conclusions can be drawn.

Sampling was done at 6 sites on March 25, April 8 and April 30, 2025
The Plan is to sample every two weeks through November 2025.

Parameter	Requirements	Fee $	Comment	Final Fee
Phosphorus TP	Preserved with H2SO4	20		$20
Phosphorus SRP (Dissolved available phosphorus)	Filtered in field 0.45um filter	20		$20
Nitrogen TN	Lab performs this by analyzing Nitrate + Nitrite and TKN (Total Kjeldahl Nitrogen)	12 + 25		$37
Nitrogen DIN	Nitrate + nitrite + ammonia	12 + 30		$42
E.coli	MPN Most Probable Number (MPN)	30	Should be analyzed within 8 hrs of collection	$30
E.coli (by Colby-Sawyer lab)	MPN Most Probable Number (MPN)	30	Should be analyzed within 8 hrs of collection	$20
			Total weekly cost (E coli by Colby-Sawyer)	**$834**

Water Quality Sampling Plan 2025



Sites: 1,2, 3, 9, 12 and at LSPA site at traffic circle (6 sites total). A site upstream of the Learning Center in Beck Brook may be added for some dates.

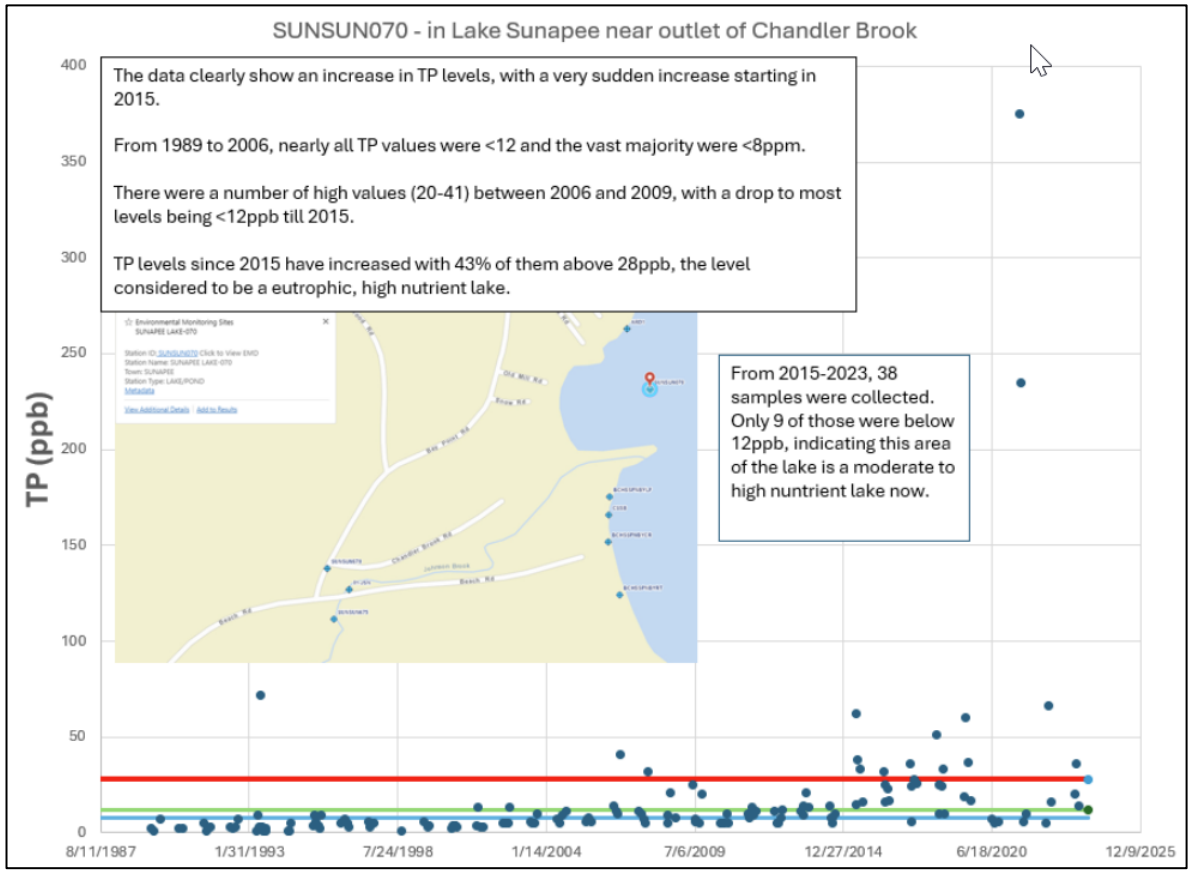
Frequency: weekly. After four weeks, evaluate if OK to go to bi-weekly.

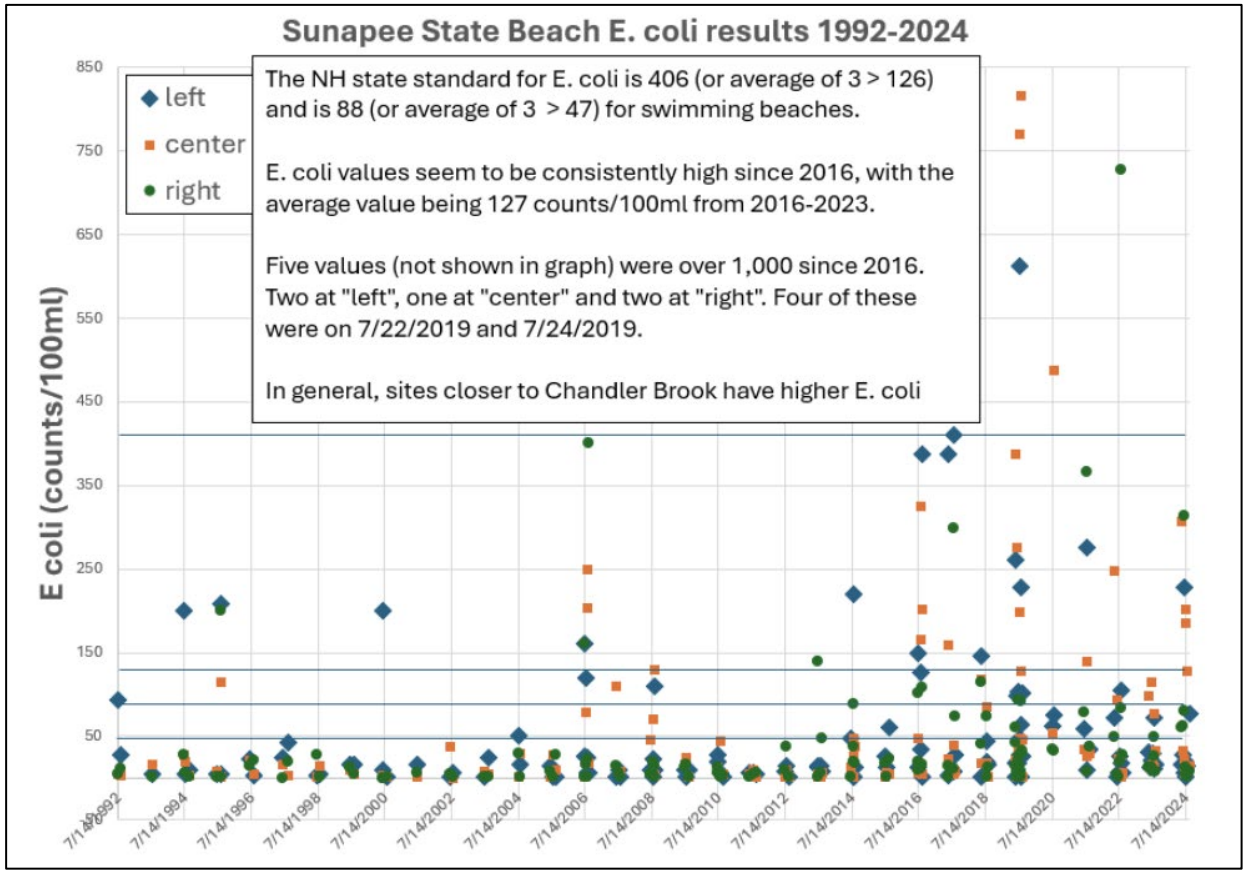
Lab: for all except E. coli: NH DHHS lab in Concord. Costs below. E. coli to be done at Colby-Sawyer lab as it costs $20 and NHDHHS lab is cost is $30.

Work-in-Progress – Correlating Phosphorus & E.coli Data to the Septic Lagoons

The two graphs below are from data collected by LSPA and DNCR over the last 20+ years. Both show that the total phosphorous and E. coli immediately north of the state beach and at the state beach have increased dramatically since about 2015.

We can't show direct cause and effect or tease out the relative magnitudes of the different sources, however the graphs show there is a concern with water quality issue at the beach.



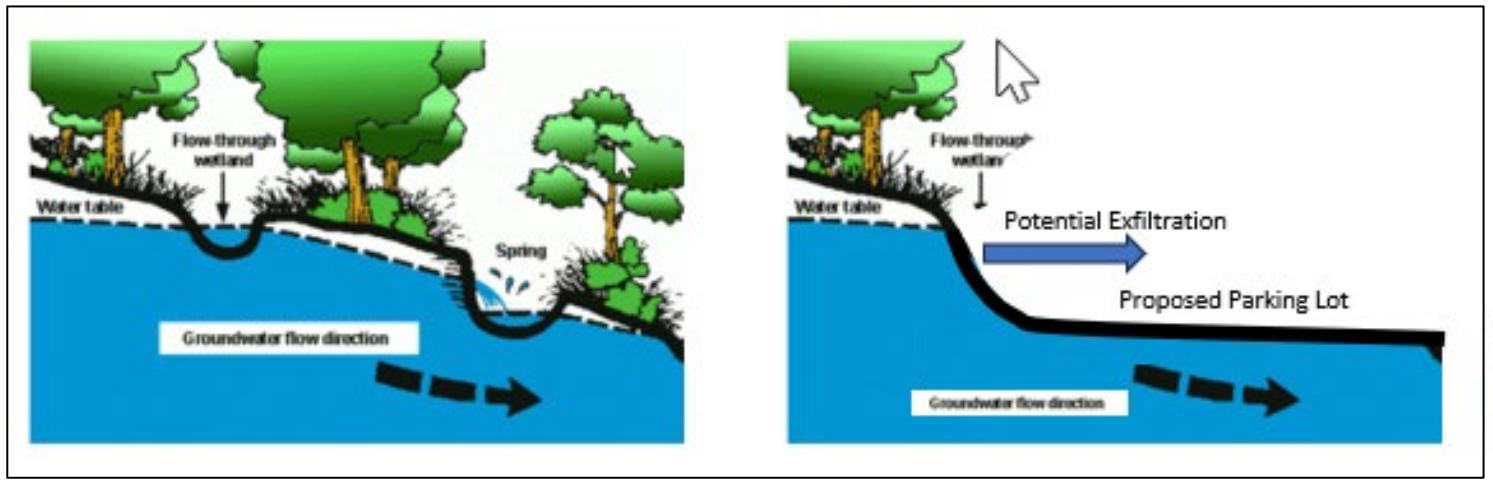


Future Concern - Proposed Parking Lot 4

Concern
Groundwater from the Spray Fields is currently filtered by surface and subsurface soils. The proposed parking lot would remove much of this filtration layer, significantly reducing groundwater purification before it emerges as surface water.

Current Flow Path

Proposed Flow Path



Future Suggestion - Package Waste Water Treatment Facility

One Potential Solution: Replace the current septic lagoons and spray fields with a new package WWTF (factory-fabricated and modular facility with sub-surface leaching field) that would meet or exceed all current environmental standards.

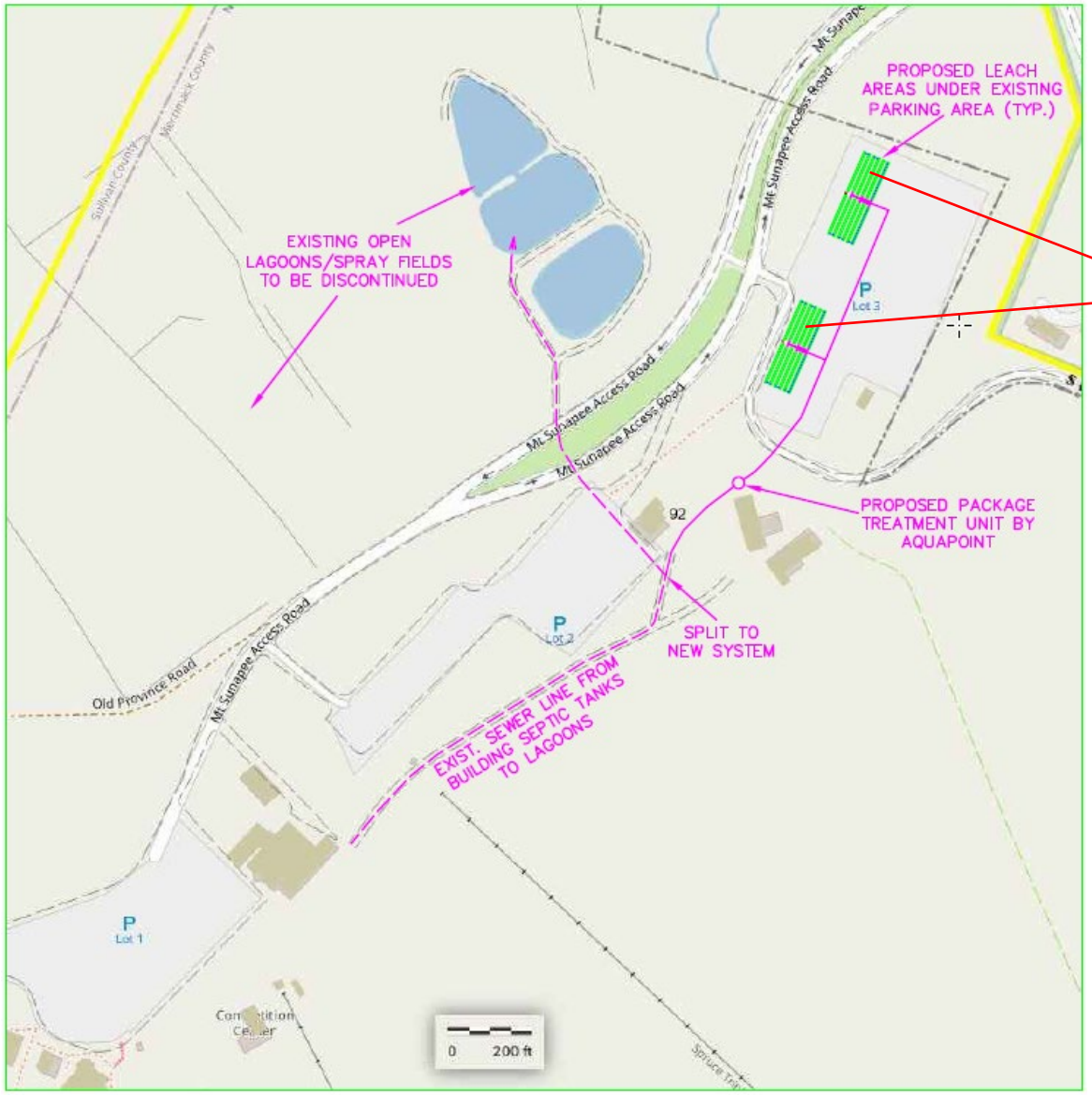
NCC has prepared the following concept of a new WWTF and it is based on our members and their professional experience in septic design. Aquapoint, New Bedford MA, provided support on the packaged treatment equipment. They examined the Mount Sunapee Resort design criteria and provided a proposed quote for a package treatment facility that would work with a conventional leaching field.
Note: This is an initial concept proposal. The WWTF will still require a professional design, permitting, and construction management.

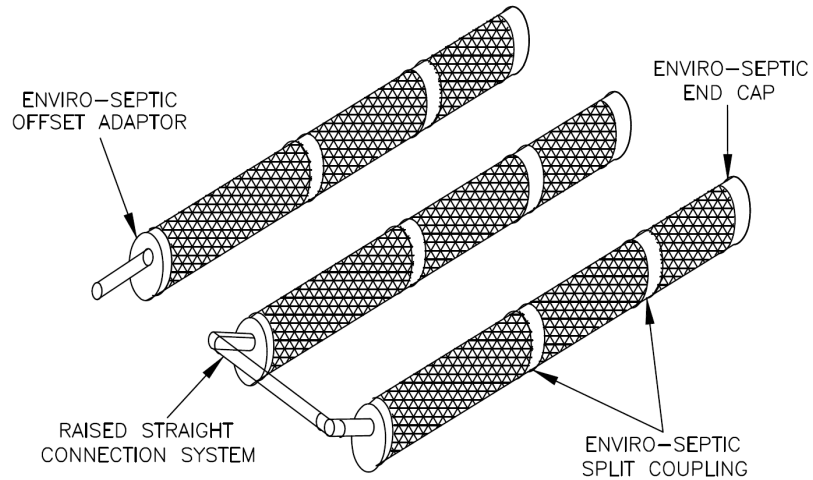
Specifications:		
	Settled Influent	**Effluent**
Design Flow	12,500 gpd	Subsurface
BOD	250 mg/l	30 mg/l
TDS	250 mg/l	30 mg/l

Approximate Cost:	
Item	**Cost**
Existing Septic Tanks & Grease Traps / Pumped & Inspected	$10,000
Settling & Flow Equalization Tanks w/ Bioclere Treatment Unit	$362,000
Enviro-Septic Leaching Field w/ Pump Chamber & Structural Cover	$350,000
Design, Permitting & Management	$80,000
Aquapoint Maintenance (100 hour/yr x 100$/hr)	$10,000
Deconstruction & Restoration of Lagoons & Spray Fields	$200,000
Sub-total	$1,012,000
50% Contingency	$506,000
Total	**$1,518,000**

Future Suggestion - Package Waste Water Treatment Facility

This plan is for conceptual purposes only.
Variations on the design are numerous.





ENVIRO–SEPTIC™
PATENT PENDING
LEACHING SYSTEM (TYPICAL)

Leaching Field

Enviro-Septic pipe
Required = 6,250 ft
Proposed = 6,400 ft
Peak Storage = 25,600 gal

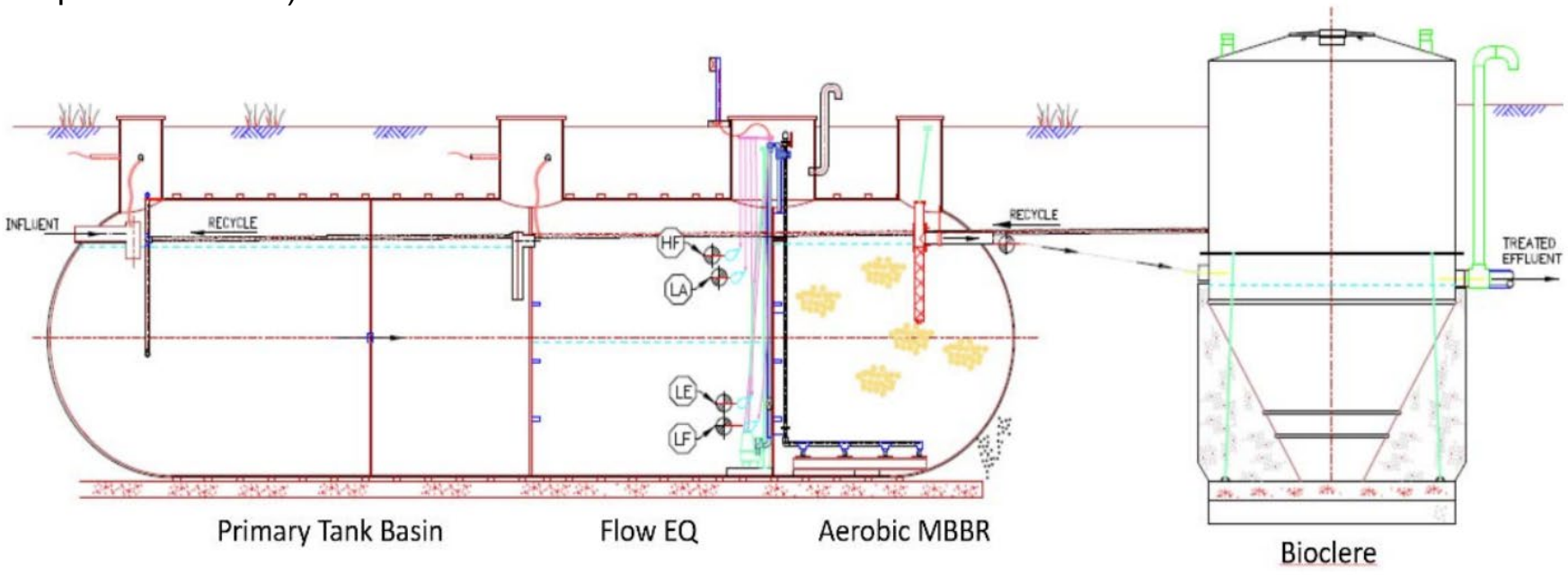
Enviro-Septic Pipe with 18” of structural cover is designed for traffic loading per Presby Environmental, Inc

Future Suggestion - Package Waste Water Treatment Facility

Aquapoint Bioclere is a two-stage hybrid biological treatment process integrating a moving bed biofilm reactor (MBBR) with a high-rate trickling filter. (25,000 gal. Settling Tank and 10,000 gal. Flow Equalization Tank)

Features & Benefits

- Treats flows from 200 to 100,000 gpd
- Cost effective treatment with efficient installation and operation
- Treats high strength wastewater
- Internal flow stabilization treats intermittent flows
- Fully automated pump system
- Self adjusting process control
- Small footprint / Compact design
- Gravity flow system
- Quiet operation
- Sealed and insulated for seasonal conditions
- Durable UV resistant fiberglass construction
- Minimal energy usage
- Remote monitoring control options



Future Suggestion - Package Waste Water Treatment Facility

AQUAPOINT

Sam Seymour, Regional Sales Manager
585-473-3300 direct
email: sseymour@aquapoint.com

May 13, 2025

Mr. Alden Beauchemin, Land Consultant / Septic Designer
Keyland Enterprises, LLC
412 West River Rd.
Hooksett, NH 03106

Re: Mount Sunapee Resort 12,500 gpd – Aquapoint Estimate

Dear Alden:

Thank you for your inquiry. Based on the information provided, we have assumed the following wastewater characteristics for the purposes of this budgetary estimate.

	Settled Influent	Effluent
Design Flow	12,500 gpd	Subsurface
BOD	250 mg/l	30 mg/l
TSS	250 mg/l	30 mg/l

Proposed Configuration
Aquapoint recommends the following layout for this application: Grease Traps on all food service sources per code, By Others, Primary Settling Tank(s), Flow Equalization, and (1) Bioclere unit. Please see example drawings.

Equipment Outline and Estimate:
- (1) 25,000 gal. FRP Primary Settling Tank (10' dia. x 48' long)
  w/Deadmen, Straps, and Turnbuckles

- (1) 10,000 gal. FRP Flow Equalization Tank (8' dia. x 32' long)
  w/Deadmen, Straps, and Turnbuckles,
  3 Hp Submersible Mixer/Aerator,
  Aquapoint Duplex 230v/1ph Flow EQ Pumps on SS Rails,
  (4) Float Switches, and PLR Timer Controls

- (1) Aquapoint Bioclere Model 36/24 Unit w/ PLR Control Panel (12' in dia.)

- (1) Set Engineering Design Calculations, Specifications, Drawings, Submittals, and Technical Manuals

- (3) Days of Aquapoint onsite consultation for Installation, Commissioning and Operator Training

Total Aquapoint Tanks and Equipment Delivered: $362,000
Allow 12 to 14 weeks, from receipt of Order, for shipment

Installation Considerations
Ancillary, piping, wiring and site work are the responsibilities of others.

Where groundwater is present, additional concrete ballast is recommended. The groundwater elevation must be determined prior to system installation to provide buoyancy calculations and specify ballast.

Electrical work includes mounting the Control Panels, providing power supply to each Panel and, the installation of conduit and wiring to each treatment component.

Additional Considerations
As Site Plans become available, we would like to review them with you to ensure proper design and use of the equipment. Upon completion of Aquapoint's Plan review a final Bid/Quote can be provided.

This estimate reflects the design parameters as indicated above and assumes no other environmental factors which may adversely affect treatment. Floor strippers and products containing Quaternary Ammonium Chlorides (QAC's) are found in many cleaners and sanitizers, these are highly toxic to some wastewater treatment system bacteria and should not be discharged to the treatment system. We recommend that toxic products be replaced with oxidizing cleaners.

Operating Costs
Operation of the systems described herein are fully automated and do not require day-to-day maintenance. This system will require monthly inspections of all components and annual pumping of the Primary Settling/Recycle Tank, as determined by design.

Annual O&M costs of the system can be based on the operation of each Bioclere unit at 767 Kwh/month, plus, fractional use of the Flow Equalization Pumps. Maintenance may be based on a monthly service schedule, monitoring and other Permit requirements, maybe additional.

Warranty Information
All equipment provided is warranted against defects in materials and workmanship for a period of one year from the date of installation.

Thank you for considering this system and please feel free to contact me as you have questions.

Sincerely,

Sam Seymour
Aquapoint
585-473-3300

Other Concerns – Stormwater Issues Persist

This stream originates between the spray fields and flows under parking lot 2. The concern is plowed snow from the parking lots into the stream. The snow contains sand and salt.

According to multiple measurements of specific conductance in winter/spring 2025, it appears it is very close to not meeting water quality standards. It flows into Beck Brook about 50 feet downstream from the location of this photograph

Photo taken Apr 30 2025