Mount Sunapee Advisory Committee / 3 June 2025 Annual Meeting Proposed Parking Lots & Wastewater Treatment Plant

Problem Statement: There is concern that Mount Sunapee Lagoons and Spray Fields are polluting surface and groundwater that flow into Beck Brook, which feeds into Chandler Brook and ultimately Lake Sunapee—a vital drinking water source and recreation hub. Pollution in Lake Sunapee could have catastrophic impacts.

- The proposed Parking Lot will increase the risk of contamination.
- The Waste Water Treatment Facility (WWTF) is an outdated design and has leak concerns, both past, current and future.

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

This construction may require a "level spot" and the only "level spot" is slotted for the proposed parking lot.

Overall Goal: Demonstrate that there is sufficient concern to place a hold on the Parking Lot and to conduct a Risk Management Study for the current WWTF for likely replacement.

How can the state agencies , Vail, NCC, LSPA and community stakeholders work together for an optimal solution?



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List of Current and Potential Concerns

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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
- 1969: NH State Legislature upgrades Sunapee to a "Class A Waterbody" which prohibited waste water discharge
- 1967: A new Waste Water Treatment Facility (WWTF) was designed based on a Pennsylvania State University project
- 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





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.	FROM SUBJECT TO Pr entitled Tanner, f
	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."	this memo 1. 2. 3. 4. 5.
		7.
		SHR/vv 3902V cc: Mr.



George Berlandi, P. E. - DES/WSPCD - Groundwater Protection Bureau

Date	Concern: Monitoring of Spray Fields	J FATE OF NEW HAM, SHIRE				
Source		Inter-Department Communication			Inter-Department Communication	
2/14/1989	"Spraying occurs on wetland soils (Ridgebury) with high				Frank K. Vail, P. E., Project Englisher Hastaustan Engineering Runnau	
	groundwater levelsEffluent disposal in these wetlands areas		FF	OM	Has Suppose Same Insighting Suster Suplastice Network N. H.	
Internal	should probably be ceased"		SU	BJECT	#D80354	
letter from	(NCC: Spraying directly into wetlands continue to this day)			то	Stephen H. Roberts, P. E. Wastewater Engineering Bureau	
Franz Vail to	"The report establishes the likelihood of wastewater exfiltration					
Stephen	from the lagoons. No information was provided as to the depth of					
Roberts,	excavation for the lagoons (i. e., are the lagoons dug into or		ı,	Spraying levels.	g occurs on wetland soils (Ridgebury) with high groundwater The limited sampling HTA performed showed high water levels	
Vvastewater	through the hardpan layer), but it would appear from the			referen	reation noises and standing water at the surface. All ces on land disposal stress the importance of an aerobic zone	
Engineering	infiltration that occurs at low lagoon levels that the lagoons			wetland	areas should probably be ceased.	
	encounter groundwater. This direct connection between		2.	The rep	ort establishes the likelihood of wastewater exfiltration	
	wastewater and groundwater should be investigated		excavation for the lagoons (i. e., are the lagoons dug into a			
	further.""Lagoons seepage should be addressed at the facility			infiltr	ation that occurs at low lagoon levels that the lagoons	
	and corrective action taken".			and gro	undwater should be investigated further.	
	(NCC: An assessment of groundwater flow into and out of the		3.	Water g	uality testing was not particularly extensive. Of nine	
	unlined lagoons has never been done, and therefore no one knows			three w	g locations, two were upstream of the waste disposal site, ere monitoring wells drilled through the hardpan layer (which	
	where the water goes)			would re was of	lagoon effluent. Thus, only three samples were taken which is indicative of officite water quality impacts. Of these the	
	"Water quality testing was not particularly extensiveFurther			brook s	ample was taken near the lagoons and may be upstream of where ater or surface water from the wetland areas would be	
	water quality sampling would be needed to positively document			interce	pted by the brook based on topography and wetland area e. Further water quality sampling would be needed to	
	that no significant water quality degradation ls occurring.			positiv	ely document that no significant water quality degradation is	
	(NCC: The monitoring wells may be too deep and may be		L			
	monitoring below an impervious layer)					

Date Source	Concern: Better testing requested with borings but not done		Hoyle Five Com
9/19/1989	NHDES staff recommend that borings be done to better	s	eptembe
Hoyle, Tanner	understand groundwater flow into and out of the lagoons, but this was never done.	S W 6 P	tate of of Env later Su Contro Hazen 2.0. Box
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Hoyle, Tanner & Associates, Inc.
Five Commerce Park North Bedford, NH 03102 (603) 669-5555 TIP Surveyors companies
eptember 19, 1989
ate of New Hampshire Department of Environmental Services ater Supply and Pollution Control Division Hazen Drive O. Box 95 Incord, New Hampshire 03301
tention: Mr. Franz K. Vail, P.E., Project Engineer
garding: Newbury, New Hampshire Mount Sunapee Spray Irrigation Evaluation, #D80354
ear Mr. Vail:
the purpose of this letter is to address the comments and oncerns raised in your letter of March 17, 1989 regarding HTA's oray irrigation system evaluation for the Mount Sunapee State ork wastewater treatment facilities.
e following represents our responses to your concerns:
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.
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 season- ally perched pan layer water table, and may receive infiltra- tion 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/exfiltra- tion conditions at the lagoons.

Date Source	Concern: Required testing not done)	State of New Hampshire DEPARTMENT OF ENVIRONMENTAL SERVICES WATER SUPPLY & POLLUTION CONTROL DIVISIO	COUNCIL JOINT I BRINGES, COMPAN MCHAELS LITTLE, WAS CHARTON E. H. P. JORTELINK
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?	R	Commiss Commiss State o 105 Lou Concord Attn: 1 Subject Dear Pai Thi: Protect 1. As o was Perr A rr 7/24 app a. b. c. 2. The mon 2500 In a 1166 For	R.P.E. sioner, DR of New Ham don Rd., l, NH 033 Park Supe : Sunapee (Projec: is letter is letter discussed itewater of mit. eview of 1 4/86. In lication a form pro Records 1 foot f All ana form pri Records 1 foot f An up-tr wells, s Greundwal itoring we C, pH, ch addition, susp	6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095 603-271-3504 ED pshire P.O. Box 856 01 rintendent - Sunapee State Park, Spray Irrigation Syst t #870458) ntendent: is a follow-up to a joint inspection perfor u (GPB) and Wastewater Engineering staff or on site, a Groundwater Permit to monitor in n site via spray irrigation requires a Grout the file indicates that an application had order to up-date our files, please complet and return to us with the following informat lytical results available from the monitorie efferably). indicating water levels observed during sp unsaturated thickness. o-date site plan showing the locations of t spray areas and property boundaries. ter Permit will require periodic monitoring ells for the following parameters: specifi loride, nitrate, TKN, total phosphorus, and volatile organic compounds must be analyze permit. The GPB may also require that the pended solids, total coliform and pH.	BRUMARD & FLANK JAMES & BURDEN GLOOKE & HERE WILHER & LAWKE BOOKLEN ON NORMENENT P. D BRUNEL, BURESAU PE JEPHAY TWORK MILLIAM F WALLARE, M.P. M.P.B WILLIAM F WALLARE, M.P. M.P.B WILLIAM F WALLARE, M.P. M.P.B The discharge of Indwater Discharge been filed on The the enclosed new Ition: ng wells, (in table aray times to ensure the monitoring of specified c conductivity at water levels. d twice during the effluent be sampled

Concern: Septic Leak to Private Well		
Letter documenting that a private, shallow well downslope from		
the lagoons was contaminated with E. coli.		Mr. Edward State of New
		Department o Water Supply a
		6 Hazen Dri Concord, NH
		Dear Mr. Schn
		This informs you environment of effluent dispo- State Park Sk surface water all federal, st and implement be the surface disposal syste All three surface disposal syste All three surface one of these most recently ground-water exfiltration. located approx recently aban that contribut supply source was abandone State of New in 1989, revea the water exc Another surf. from a tribut Since the Sta containing nut program includ
	Concern: Septic Leak to Private Well Letter documenting that a private, shallow well downslope from the lagoons was contaminated with E. coli.	Concern: Septic Leak to Private Well Letter documenting that a private, shallow well downslope from the lagoons was contaminated with E. coli.

	Chandler P. Smith PO Box 7473 Vallejo, CA <i>94590</i>
	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 hi environment caused by a wastewater storage effluent disposal to land gystem operating a State Park Ski Area, Mt. Sunapee, NH. I re- surface water, and air monitoring program all federal, state, and local environmental ro and implemented to evaluate risk associate contaminant transport from contaminant : be the surface impoundments and the efflue disposal system.	ealth and the ; treatment, and t the Mt. Sunapee. puest ground-water, s that comply with egulations be planned egulations be planned id with potential sources perceived to nt spray to land
All three surface impoundments are believ. and potentially have pervisus carthen embe impoundments are visibly connected hydraul one of these connected surface impoundment most recently, approximately 5-12 years ago ground-water infiltration. This suggests a pe exfiltration. This most recently constructed located approximately 200 yards, potentially a recently abandoned potable water supply s that contributes water to Mt. View Lake. The supply source, which was used by a family was abandoned after laboratory analyses perf State of New Hampshire, Department of Envir in 1989, revealed non-colliform bacteria co the water exceeding 200 mgle.	ed to be unlined enkments. Two ically. Reportedly, is, The one constructed , has experienced stential for wastewater impoundment is upgradient, from a ource, and a swale he potable water for more than 50 years, armed by the conmental Services, incentrations in
Another surface impoundment is located ap from a tributary of Lake Sunapee.	proximately 100 Sect

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

ENCLOSURE(1) (continued)

Date Source	Concern: Spraying into existing Wetlands & Lagoon leakage	STATE OF NEW HAMPSHIRE Inter-Department Communication
5/28/1991	The system still suffers from "hydraulically overloaded spray	# 870458 DATE May 28, 1991
	areas, spraving of wetland soils, significant leakage from lagoons	FROM Karlee Kenison, Environmentalist AT (OFFICE) Water Supply & Groundwater Protection Section/GPB Pollution Control Division
NHDES internal file	and spray head clogging."	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. <u>Note</u> : 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.

Date Source	Concern: Newbury Public Conserns Not Addressed	ieet- pay-	individual septic systems were for the most part impos- sible to install. Dean Bensley said he was
8/71991	Both the Newbury Conservation Commission and Planning Board	iday	concerned about the use of
1/22/1992 Argus Champion articles	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.	were 5. To 5wer of se- itive and 1 po- of all chool 1 the	park, with the resultant day ger of seepage. He said the state had been hesitant about investigation, taking on tiny steps to deal with the pro- lem. In answer to a question from the audience, Dan Wo gave some further explan
			Gravink letter Marashio also shared a let- ter from Phil Gravink, direc- tor of state ski operations, thanking the board for receiv- ing him in January, and re- porting 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 de- partments involved, the in- tegrity of the licensed engi- neer, Hoyt Tanner and Associates, and by implica- tion of the difficulty his de- partment finds in answering to all of them. He promised whatever coop- eration he can give and to send timely reports to the town on developments as they come up.

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Date Source	Concern: WWTF has Reached its Capacity	198704058 From: Franz K. Vail
4/7/1999 Internal memo from Franz Vail to Commission er'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.	 To: DES.Commissioner's Office.COTWD Date: 4/7/99 1:32m 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 tolprovide 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 i 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 indicating that the lagoons leak significantly and exfiltration, rather than infiltration is the issue. Proposed grading improvements to keep surface 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

Date Source	Concern: Lack of action over 11 years after Order to Stop	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
5/8/2000	Mr. Vail notes that spray is still applied directly to wetlands when	
	the order to stop that was made in 1989.	May 8, 2000
L attar fram		RECEIVED
		Jay Gamble, General Manager MAY 1 @ 2000
Franz Vail,		Mount Sunapee P. O. Box 2021
NHDES, to		Newbury, New Hampshire 03255 DEPARTMENT OF ENVIRONMENTAL SERVICES
Jay Gamble,		Re: Newbury, NH – Mt. Sunapee Spray Irrigation System WWE Project No. D199-0412
Managanat		Dear Mr. Gamble:
Manager at Mt Sunapee		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
Resort		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.

Date Source	Concern: Seepage (Surface leaks) in Spray Fields	DRINKING WATER SOURCE PROTECTION PROGRAM Record of Site Visit Date of Site Visit: July 01, 2005
7/1/2005	Concerned that standing water in the spray fields of up to 6 inches indicates field capacity in spray lanes in some areas was	Location: Newbury, NH Bureau Staff: Stephen Roy
Internal memo by	exceeded.	Site: Newbury – Mt Sunapee State Park Spray Irrigation System – DES #198704058
Steve Roy of NHDES	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.	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:
	"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	 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. The surface seeps termeen end spray line likely receive recharge during a spray event from
	water discharged to these seeps likely receives limited treatment."	sprayed wastewater that does not likely mayed very far from the spray line through shallow soils;) (thus, the water discharged to these scope likely receives limited treatment.)
	"No seeps were observed on the side slopes of the lagoons" - documents that the existing seeps likely formed since then.	

Date Source	Concern: Groundwater PermitConditions not met			
2/1/24 GWP	From Groundwater Permit (GWP)	Current Status		
From DES	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.		



Date Source	Concern: Groundwater PermitConditions not met				
2/1/24	From GWP	Current Status			
GWP From DES	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.			

Date Source	Concern: Groundwater PermitConditions 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	Parameter	Result	Legal Limit	
Nelson Analytical	E. Coli	387 & 1300	< 47 MPN/100 ml	
For MSR	BOD	37	< 30 mg/L	
	TSS	76 & 62	< 30 mg/L	

490 East Industrial Park Drive NELSON ANALYTICAL LAB Manchester, NH 03109 Maine State Certification #NH01005 Vermont State Cerfication # VT1005 www.nelsonanalytical.com (603)622-0200 Maine Radon Certification # ME17500 NH ELAP Accreditation #NH1005 Massachusetts State Certification #M-NH1005 **Report Of Analysis** Customer : Mount Sunapee Resort Date Collected: 07/24/2024 09:00 AM **Client Sample ID:** Collected By : Mount Sunapee Resort, PO #2068910 K. DuBaere Laboratory ID: 124072551.01 Date Received : 07/24/2024 11:10 AM Sample Matrix : Wastewater Temperature Rec'dºC: #20.2 Sample Location: Effluent Grab - WWTF, Mount Sunapee Resort Parameter Result Units Method Rpt Limit 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 07/24/2024 16:25 LS 1 BOD 37 SM 5210B 5.5 07/25/2024 15:12 SUB8 mg/L Nitrate-N <1.0 SM 4500 NO3 D mg/L 1 07/24/2024 12:00 LS 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 NELSON ANALYTICAL LAB 490 East Industrial Park Drive Maine State Certification #NH01005 Manchester, NH 03109 Vermont State Cerfication # VT1005 www.nelsonanalytical.com Maine Radon Certification # ME17500 (603)622-0200 Massachusetts State Certification #M-NH1005 NH ELAP Accreditation #NH1005 **Report Of Analysis** 08/21/2024 08:10 AM **Date Collected:** Mount Sunapee Resort Customer

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.

Client Sample ID: Mu Laboratory ID: 12 Sample Matrix : Wa Sample Location: Ef	ount Sunapee Res 4082230.01 astewater fluent Grab - WW	ort, PO #2068910 VTF, Mount Sunape	e Resort	Collected By : Date Received : Temperature Rec'd°C:	K. DuBaere 08/21/2024 10:30 A #12.0	м
Parameter	Result	Units	Method	Rpt Limit Q	Date/Time Analyzed	Analyst
Total Kieldahl 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
рН	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	Mt Sunapee (spray	Eastman (sprayed onto	Bay District Sewer (no	Wolfeboro (spray fields)	Atkinson Country Club
requirements	fields)	golf course) ¹	spray fields)		(sprayed onto golf course)
	GWP-198801026-N-007	GWP-198801026-G-006	GWP-199007028-M-005	GWP-198705015-W-003	GWP-198801026-G-005
Surface water	Total number of samples	Total number of samples	Total number of samples	Total number of samples	Total number of samples =
	= 4.	= 4.	= 4.	= up to 104.	10.
	At two surface water	At two surface water	At two surface water	At 4 surface water sites,	Surface water sites 1-5,
	sites, twice each year	sites May and	sites once each in May	<u>weekly</u> May - October	September and July of each
	(May and October)	November.	and November. No spray		year.
		Total number of samples	fields. Wastewater is		
			held in 3 unlined sewage		
			lagoons and pumped to		
		Monthly at 14 th fairway.	a treatment facility off		
		Also, influent and	site.		
		effluent phosphorous			
		monthly.			
Groundwater	NONE		N/A.	June and October of	10 monitoring wells, May
				each year (one sample in	and November each year.
				each month)	(orthophosphate)

1 - The 2023 application noted the exceedances for BOD and TSS (albeit the exceedances are all very minor (e.g., 11mg/l when the standard is 10mg/l) except for one which was 84mg/l. Despite the regular, and very high, exceedances at Mt. Sunapee, this issue was not addressed at all by the applicant's engineers or NHDES.

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.

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



Work-in-Progress - NCC Water testing

In late 2025 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



<u>Sites</u>: 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.

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





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

