

**AGENCY OF NATURAL RESOURCES
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
1 NATIONAL LIFE DRIVE
MONTPELIER, VERMONT 05620-3521**

**FACT SHEET
May, 2016**

PERMIT NO.: ID-9-0087
PIN: RU97-0404

NAME AND ADDRESS OF APPLICANTS: Sunrise Homeowners Association, Inc.
P.O. Box 335
Killington, VT 05751

Killington Pico Ski Resort Partners LLC
4763 Killington Road
Killington, VT 05751-9746

NAME AND ADDRESS OF FACILITY:

Sunrise Mountain Village Wastewater Treatment Facility
241 Sunrise Road
Killington, Vermont

RECEIVING WATER(S):

Indirect Discharge via spray disposal to an unnamed tributary of the
Ottawaquechee River

I. Proposed Action, Type of Facility, and Discharge Location:

The above named applicant submitted an application for renewal of ID-9-0087 to the Vermont Agency of Natural Resources which was deemed administratively complete **on 5/18/2016**. The permit authorizes the indirect discharge from the Sunrise Mountain Village Wastewater Treatment Facility which serves the residences of Sunrise Village in Killington, Vermont. The wastewater is treated in a 9 million gallon three-cell aerated lagoon. The lagoon provides the required 45 days of storage capacity for metered spring flows. Following chlorination, the effluent is pumped to an 11 acre sprayfield with a wetted area of approximately 8.9 acres. The approved loading rate for the sprayfield is 2" per consecutive 7-day period.

This indirect discharge can be located on the USGS Killington Peak 7.5' quadrangle map at Latitude N 43° 36' 54" and Longitude W 72° 45' 08". The spray disposal laterals are located between elevations 1100' and 1570'.

II. Description of Discharges:

SUNRISE MOUNTAIN VILLAGE - SPRAY EFFLUENT CHEMISTRY (AVERAGE CONCENTRATIONS (in mg/L) BY SEASON 2011 - 2015)						
SEASON (MONTHS)	BOD₅	TSS	NH₃	TKN	CL	(n)
SUMMER (6-10)	6.8	12.8	1.23	2.9	79.1	23
WINTER (11-3)	3.1	10.9	0.50	1.7	91.0	8
SPRING (4-5)	6.5	14.1	3.50	6.0	73.1	10

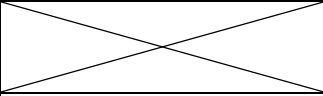
Based on a subset of all available BOD₅ and TSS.

SUNRISE MOUNTAIN VILLAGE - SPRAY EFFLUENT CHEMISTRY (AVERAGE CONCENTRATIONS (in mg/L) BY SEASON 2011 - 2015)						
SEASON (MONTHS)	NO₂	NO₃	TP	TDP		(n)
SUMMER (6-10)	0.06	0.64	2.3	2.0		23
WINTER (11-3)	0.092	0.21	1.5	1.3		8
SPRING (4-5)	0.091	1.42	2.0	1.6		10

SUNRISE MOUNTAIN VILLAGE - AVERAGE INFLUENT AND EFFLUENT CONCENTRATIONS AND AVERAGE REMOVAL PERCENTAGES (2011 - 2015)					
INFLUENT BOD₅ (mg/l)	EFFLUENT BOD₅ (mg/l)	PERCENT REMOVAL	INFLUENT TSS (mg/l)	EFFLUENT TSS (mg/l)	PERCENT REMOVAL
214	6.0	92.9	311	12.8	83.1

Based on a subset of all available BOD₅ and TSS data

III. Receiving Stream Chemical Monitoring Data (Stations for Sprayfield Discharge)

COMPLIANCE WITH VERMONT WATER QUALITY STANDARDS					
2011 – 2015 Results		Unnamed Tributary to Ottauquechee River			
		Sample Results (n)	Upstream Mean	Downstream Mean	WQ Standard
Parameter					
Nitrate (mg/L) ¹	10	0.10	0.24		5.0
Total Phosphorus (mg/L) ¹	10	0.010	0.013		0.012 ²
Total Dissolved Phosphorus (mg/L) ¹	10	0.010	0.010		
Chloride (mg/L)	20	3.2	5.5		230
Turbidity (N.T.U.)	20	0.5 ⁴	0.8 ⁴		10 ³
pH (standard units)	20	6.2	5.6		6.5 – 8.5

¹Only results from June – October used for determining compliance
²Standard for small, high gradient stream
³Standard for cold water fish habitat
⁴Maxima: Upstream: 3.2 NTU Downstream: 8.2 NTU

ID-9-0087
AQUATIC PERMITTING CRITERIA COMPLIANCE DETERMINATION
 (May, 2016)

PARAMETER	DISCHARGE FLOW (gpd)	MEAN ^(a) (mg/L)	95% CV UPSTREAM CONC. ^(b) (mg/L)	CALCULATED DOWNSTREAM CONC. (mg/L)	MEAN DOWNSTREAM CONC. ^(c) (mg/L)	IDR LIMIT (mg/L)
TDP	69,170	0.015	0.012	0.013	0.009	0.013 ^(d)
NO ₃	69,170	0.82	0.13	0.34	0.22	2.0
pH	69,170	6.36	5.27 – 9.17	4.31 – 9.43 ^(e)	6.72	4.65 – 7.99

All data means based on normal distribution or best fit (see below)

(a) Based on downgradient groundwater monitoring well data; n = 42
 (n = number of samples analyzed after removing highest and lowest values for TDP as allowed under IDR §14-909)
 Monitoring wells: #4, #5, #10, #11

(b) Based on minimum n = 20;
 pH in S.U. represents the upstream station range of values from monitoring

(c) Based on minimum n = 20

(d) Reflects 0.001 mg/l allowed increase above background concentration

(e) Not calculated; pH range in S.U. based on downstream monitoring;

(f) pH mean for downstream station; Based on Ln [H+] with n = 20

(g) pH upstream range in S.U.; n = 20

Discharge Flow = 69,170 gallons/day

Receiving Stream: Unnamed tributary of the Ottauquechee River LMMF = 155,100 gallons/day

GW – NO₃ used Raw Data [Normal Distribution]
 GW – TDP used Raw TDP [Normal Distribution]
 GW – pH used Ln [H+] [Best Fit]
 UPSTREAM – NO₃ used Raw NO₃ [Normal Distribution]
 UPSTREAM – TDP used Raw TDP [Normal Distribution]
 UPSTREAM – Only pH range used
 DOWNSTREAM – NO₃ used Raw NO₃ [Best Fit]
 DOWNSTREAM – Raw TDP used [Normal Distribution]
 DOWNSTREAM – For pH used Ln [H+] [Best Fit]

IV. Results of Biomonitoring During Period: 2011 - 2015

Sampling Period	Results	Comments
8-28-2015 to 10-9-2015	NSAAB	No Significant Alteration of Aquatic Biota (NSAAB) was detected based on the biomonitoring results.

V. Discussion of Water Quality Monitoring Results

The results of stream sampling during the period 2011-2015 indicate a slight exceedance of the Vermont Water Quality Standard of 0.012 mg/L for total phosphorus in small, high gradient streams. However, the results of biomonitoring indicate that there is not a significant alteration of the aquatic biota in the stream due to the indirect discharge. Furthermore, the indirect discharge is in compliance with the Aquatic Permitting Criteria as demonstrated above. Finally, there is no significant difference between the data for total phosphorus collected above the zone of the indirect discharge when compared to the data collected below the zone of the indirect discharge. When the parameters compared are nitrate-nitrogen and chloride, a significant difference is observed in both cases, indicating that the spray effluent discharge has a measureable impact on the stream. The changes in stream monitoring outlined below [Condition E4(A)] are intended only to provide additional data for the purposes of showing compliance with the Vermont Water Quality Standards when the permit is renewed in 2021.

VI. Proposed Significant Changes to the Permit:

Condition A(3) - Expiration Date

This permit expires on June 30, 2021. The permittee should apply for renewal of the permit by March 31, 2021.

Condition A(4) – Effective Date

This permit becomes effective on July 1, 2016 (or the date of signing if later).

Condition D(5)(A) - Annual Inspection

The inspection can now be conducted in April or May. In the past, winter snow accumulations have made it difficult to perform the inspection in April. In addition, historically the spray disposal system has not been operated during the months of January – March.

Condition E(3)(A) - Groundwater Monitoring

The sampling months are now June, July, August, September and October to better match the stream sampling requirements contained in E(4)(A) below and the operation of the sprayfield.

Condition E(3)(C) - Underdrain Monitoring

The underdrain sampling is now required in the months of June, August and October to better coincide with groundwater monitoring months.

Condition E(4)(A) – Receiving Stream Monitoring – Chemical

The stream monitoring frequency for the receiving stream has been changed to require sampling during the months of June, July, August, September and October (to be consistent with Water Quality Standards base flow requirements, effective 10/30/14 and with the operation of the sprayfield). Requirements for monitoring dissolved oxygen and E Coli at both stations have been added.

Condition E(4)(B) – Receiving Stream Monitoring - Biological Monitoring

The next round of stream biomonitoring should be conducted during August-September, 2020.

Condition E(5) – Summary Water Quality Evaluation

The next WQ Evaluation is due on March 31, 2021.

END OF PROPOSED CHANGES

Tentative determinations regarding conditions to be included in the pending Vermont Indirect Discharge Permit have been made by the Vermont Agency of Natural Resources, Department of Environmental Conservation. The conditions imposed will assure that the Vermont Water Quality Standards and applicable provisions of 10 V.S.A. Chapter 47 will be met.