

**Response summary for comments received on the Vermont  
2010 Draft versions of the:**

- ❖ ***303(d) List of Impaired Waters (Part A)***
- ❖ ***List of Priority Waters (Parts B-G)***

Attachment A: Part B justification for Big Spruce Brook

Attachment B: 1272 Order issued to Stowe Mountain Resort

## ***Draft Lists Comment Period***

A public comment period was established upon the release of the draft 2010 303(d) List of Impaired Waters and the 2010 List of Priority Waters (the Lists) from March 11, 2010 through April 9, 2010. In conjunction with the release of the draft Lists, an informational public meeting was conducted in Waterbury on March 24, 2010 to present the Lists and to answer any questions.

At the close of the public comment period, VTDEC had received comments from the following seven parties:

Commenter:	Submitted by:	Identification:
City of Rutland	Same	Rutland
Stowe Mountain Resort	VHB/Pioneer	Stowe
Windham Regional Commission, Natural Resources Committee	Same	WRC
Stratton Area Citizen's Committee	Same	SACC
USEPA Region 1	Same	USEPA1
Bromley Mountain Ski Resort	VHB/Pioneer	Bromley
Summit Ventures NE, LLC (Sugarbush Resort)	VHB/Pioneer	Sugarbush

Some comments have been edited or paraphrased for greater clarity and brevity, but every effort was made to preserve the original meaning and context. Comments are grouped according to pertinent sections of the lists.

### ***Part A and Interim List Comments***

1. Comment: We are concerned that sediment has been removed as a pollutant from the West River below Ball Mt Dam to Townshend Dam -10miles (VT11-10). It appears that the sediment that was released from Ball Mt Lake into the West River below the Ball Mt Dam over 10 years ago has been washed away enough to create an equilibrium in the flow of sediment. Though sediment may not be a concern today, erosion continues to discharge sediment into the West River which settles in Ball Mt Lake. We believe a TMDL is still deemed necessary in order to establish erosion controls on sediment release in the future. There has yet to be a complete study of the effects of sediment on the fish and aquatic habitat in VT11-10. Therefore, VT11-10/sediment should NOT qualify for "Interim Delisting". [SACC]

Response: As was correctly stated, the sediment impairment being delisted was indeed caused by sediment releases through the operation of the dam that have since ceased to occur. The intent of the 303(d) List is to document current and ongoing impairments, not to anticipate problems that may occur in the future. However, as data becomes available, or as there are observed specific sedimentation problems associated with the West River, the VTDEC will evaluate these occurrences and list reaches as appropriate according to the Assessment and Listing Methodology.

2. Comment: The elevated temperature pollutant for VT11-10 affecting the fish community is given low priority. The West River is an important water for recreation and the propagation of fish. Because of the potential for hydro power projects at both Dams, temperature should meet water quality standards for the successful protection of the fish community. The problem should be given a higher priority than LOW. [SACC]

Response: The priority given on the 303(d) List is specifically for TMDL development and is not necessarily the same priority for implementing other fixes. In this instance, a TMDL is not seen as the most efficient means for mitigating the temperature problems which are caused primarily by the impoundment behind the dams.

As noted as the response to comment #24, the 401 Water Quality Certification for the currently proposed hydroelectric project is under development. Development and operation of the hydro project may affect the downstream temperature regime. Once the project is operating and temperature data can be obtained, the Department will be in a position to determine the mitigation measures that may be necessary.

3. Comment: For Stevensville Brook (VT07-11), currently listed as impaired due to acid and which is proposed for delisting in sub-part IO because it now meets criteria for aquatic life support, please provide EPA with the alkalinity and pH data referenced in the write-up. Given that the identified pollutant was acid, if the pH values are not within the range specified in Vermont's water quality standards, and the deviation from this range is not attributable to natural causes, this segment may need to remain in Part A. [USEPA1]

Response: Upon further review of existing data, it appears that the initial listing attributing "acid" as the primary stressor was incorrect. The stressor causing the impairment of the macroinvertebrate community was thought to be low pH or acidity due to periodic measures of low pH, with the likely source "acid precipitation". The last three assessments in 2002, 2003, and 2007 show the macroinvertebrate community to be attaining its Class B management designation. In reviewing the pH, alkalinity, conductivity and hydrologic observations, the VTDEC believes the impaired condition is more associated with hydrologic scour of the stream bed and macroinvertebrate community than low pH

Since 1999, the site has been sampled four times for pH at the time of the biomonitoring assessment. See results below:

<i>Year</i>	<i>pH</i>
1999	6.52
2000	6.09
2002	6.74
2007	7.47

These data indicate, not unexpectedly, a naturally fluctuating pH regime that is common at higher elevations with poorly buffered soils. While acid stress in higher elevation streams has been identified as the primary stressor in a number of 303(d) listed streams, it does not appear to

be the case in Stevensville Brook. In those instances, routinely low pH and alkalinity and failure to meet biocriteria together indicate a failure to meet WQS with acid as the primary stressor.

Going back to the 1998 biomonitoring data for Stevensville Brook, the “fair” rating of the macroinvertebrates was given in 1998 and 1999 was associated with observed scour of the channel and the macroinvertebrate community itself. This scour was further confirmed by observing the precipitation record. Since that time, the sampling in 2000, 2002, and 2007 showed no observable scour to the channel and the community was rated as “very good”, “excellent” and “good” respectively.

4. Comment: Soapstone Brook (VT10-14), currently listed as impaired by sediment and metals (Fe and As) and which is proposed for delisting in sub-part IO because it now meets criteria for aquatic life support, please provide any available data on metals and sediment levels. If such data are not available, please include in the final submission an explanation of why VTDEC has concluded that these pollutants have been sufficiently addressed. [USEPA1]

Response: The macroinvertebrate community was assessed on the main stem of Soapstone Brook and Tributary # 3 in 1993. The main stem was assessed as “Exc-Very good”, and Tributary # 3 was assessed as “fair”. The biometrics of density and richness were below expectations from two sampling events in 1993 on the Tributary # 3. When these two metrics are below expectations, indicating a greater than moderate level of departure from reference expectation for a SHG stream type, habitat and/or toxicity are generally the stressor categories responsible. Observations of the substrate habitat at the time of sampling does indicate that sediment and embeddedness was elevated at the Tributary # 3 reach in 1993. Metals iron and arsenic were also a concern since the Argonaut talc mine was in the upper watershed. No in stream metals data is available.

As a result of the biological assessment of “fair”, the Tributary # 3 was listed as impaired with sediment, iron and arsenic as possible stressors. In 2007 the macroinvertebrate community was assessed as excellent. Density, richness and EPT richness were all at a reference condition level. Substrate observations show that sand and embeddedness improved to very good. A water quality sample collected at the time of the biological assessment shows that metals were all very low. While iron and arsenic were detected they were both well below any ALS acute or chronic level. This sample also shows the stream to be moderate in pH in the mid 7’s, with a high alkalinity of over 100 mg/l. Nutrients TP, and TN were also very low. Chloride is slightly elevated indicating some road salt influence, but at 27mg/l still well below any ALS concern.

The Argonaut mine implemented a treatment system to control iron and arsenic in the late 1990’s. It consists of a ferric sulfate injection and a treatment/detention basin system. The permit has required surface water sampling for arsenic from Tributary # 3 on a quarterly basis. Monitoring results since 2001 are summarized in **Table 1**. The results show that arsenic was very low with maximum values below 5 ug/l for all years except 2004 and 2008. In both years, a single sample was over the acute ALS criteria of 360 ug/l, at 500ug/l in 2004, and 380ug/l in 2008 but are within the allowable short-term exceedance of once every three years. The remaining quarterly samples for each year however, were at or below the detection limit of 5

ug/l, resulting in yearly averages of 125ug/l, and 97 ug/l, respectively, below the chronic level of 190 ug/l. These data show that arsenic with the exception of the two excursions over the last 10 years is well below any ALS criteria in Soapstone Tributary # 3.

**Table 1** Maximum and average yearly total As=Arsenic reported from quarterly compliance monitoring samples collected from Soapstone Brook Trib 200 ft below the last settling pond # 2 of the Argonaut Mine As Treatment system.

Location	Year	Max As ug/l	Avg As ug/l
Soapstone Brook Trib # 3 200ft Argonaut Mine Pond # 2	2001	5	1.3
	2002	5	2.5
	2003	5.8	5.2
	2004	500	125
	2005	5.0	3.8
	2006	5.0	5.0
	2007	2.0	1.5
	2008	380	97.5
	2009	2.0	2.0

5. Comment: For Folsom Brook (VT08-20), which is proposed for delisting because it is now meeting Vermont's E. coli criterion, please provide EPA the 2009 data referenced, for our records. [USEPA1]

Response: See data table below. The most recent data available is from 2008 and the sampling was conducted by a local watershed group Friends of the Mad River.

	Folsom Brook			No. Branch Folsom Brook		
	# of samples	# > WQS (77cfu/100mls)	GeoMean (cfu/100mls)	# of samples	# > WQS (77cfu/100mls)	GeoMean (cfu/100mls)
<b>2004</b>	6	1	17	6	0	6
<b>2005</b>	6	1	45	6	0	19
<b>2006</b>	6	1	8	6	1	11
<b>2008</b>	5	0	11	5	0	11

6. Comment: Over several editions of the 303(d) list the State has, evidently arbitrarily, attributed the dearth of "indicator species"(by speculation) to pathogens, sediment, nutrients, toxics and metal leachate from the closed landfill. However, the State has not sampled or tested for these pollutants and therefore has no numeric values to compare to a healthy stream. The sampling that was done by the City as part of the post closure monitoring of the landfill resulted in the landfill leachate being removed as a cause of impairment. We are concerned with the careless manner in which the designation was arrived at. [Rutland]

Response: For the proposed 2010 List of Priority Waters, Moon Brook (mouth to RM 2.9) is proposed to be delisted from Part A (303(d) List) and moved to Part D (TMDL completed) because a TMDL was developed to remediate the stormwater impairment and subsequently

approved by USEPA Region 1 February 19, 2009. Currently, no reaches of Moon Brook are slated for listing on Part A for any other pollutants. Although the reach in question is proposed for placement on Part D, it is still considered impaired by stormwater at this time based on the latest biomonitoring and habitat information. In response to specific assessment and listing issues raised below, VTDEC will again clarify its current position as to the primary cause of impairment to Moon Brook.

7. Comment: Currently, the Vermont Agency of Natural Resources' position is that the impairment is caused by stormwater. VTANR maintains that excessive runoff from impervious (developed) areas is degrading the ecosystem in the brook to the point where the targeted fish and insects cannot thrive. There is not sufficient evidence to draw this conclusion. This assumption seems to have been made because the brook is impaired and it flows through an urban area.

(...)

There is solid evidence of temperature impairment due to the presence of on-stream ponds. Years of in-stream study have shown that the indicator species cannot survive in Moon Brook due to elevated summer temperatures. The temperature increases are caused primarily by the two on-stream ponds (Combination and Piedmont). In fact the State's own Commissioner of the Department of Fish and Wildlife after consultation with his staff wrote in a letter dated December 12, 2005, that; "Elevated summer water temperature downstream of Combination Pond is almost certainly the factor that causes impairment of Moon Brook resulting in the listing as an impaired water."

If not for the State's bias against urban areas, we believe that this problem would be the primary focus as it was with the Mettawee River, which is proposed to be delisted due to successful temperature remediation efforts. [Rutland]

Response: It is highly probable that multiple factors related to watershed development, erosion, urban runoff, and on stream ponds are resulting in alterations to the biological, chemical and physical characteristics of the stream and thereby are contributing to the aquatic life use support (ALUS) impairment. The VTDEC has relied primarily on biological inference, assessment site habitat observations, and watershed land use to identify the general stressors most likely to contribute to the observed ALUS impairments. Additional data provided by the City of Rutland (temperature and geomorphology), Bear Creek Environmental (geomorphology) and the Upper Otter Creek Watershed Council (water chemistry) have been incorporated into the stressor assessment. The biota below Combination Pond show a clear loss of cold water taxa from both macroinvertebrate and fish assemblages. Macroinvertebrate functional group composition is skewed. Some recovery in taxa richness is seen in the mid reaches, where habitat is rated good and temperature stress begins to decrease. In the lower reaches however macroinvertebrate taxa richness again becomes poor, and the bio index again begins to elevate indicating a combination of sediment, nutrient and possible toxic stress associated with stormwater is likely the most significant cause of impairments in these lower reaches (VTDEC Stormwater-Impaired Water Report to the Legislature, 2009).

The percent urban land-use in the Moon Brook drainage is high, typical of urban streams. Beginning at about RM 2.8 directly below Combination Pond, the proportion of developed land increases from less than 10 percent to 17 percent. By RM 1.5 it more than doubles to 38 percent. Below Route 7 it continues to increase and at RM 0.6 to its highest level of almost 43 percent with a greater percentage of the developed space being classified as medium to high intensity. Generally this level of development will result in significant changes in both the hydrology and sediment loading of a stream. Seven stormwater-impaired streams in the Burlington area average 62% (range 39-96%) developed land in their drainages while six “attainment” streams average only 6 % developed land (range 0-18%).

Recent Phase 1 and Phase 2 geomorphic studies of the Moon Brook watershed have identified per cent urban land use, road density, and stormwater input as significant stressors on the hydrology and sediment load of Moon Brook (Bear Creek Environmental, 2008, River Corridor Plan Moon Brook Watershed). The condition of the aquatic habitat as it relates to the physical geomorphology of the stream has been shown to be in fair to poor condition especially below the Route 7 corridor (Bear Creek Environmental, 2006, Stream Geomorphic Assessments). In the same 2006 report, sedimentation was identified as one of several habitat features that were responsible for the fair to poor habitat rating. As a result it was recommended that stormwater controls be implemented whenever possible in the watershed.

8. Comment: Once the temperature problem is solved we agree with the Fish and Wildlife Commissioner that the indicator species will return to the upper reaches of Moon Brook. However, they will not thrive in the lower reaches of the brook because, regardless of water quality, the natural habitat is unsuited to their needs. This fact has been documented both through research and field investigation. These arguments and the data to back them up were submitted to, and rejected by, VTANR. [Rutland]

Response: Moon Brook was listed as impaired based primarily on the biological data from hard bottom stream sites located upstream from the low gradient sites at RM 0.1, 0.3, and 0.4. Established metric and index criteria were applied to data to evaluate these upstream sites. Macroinvertebrates were evaluated using the Small High Gradient community type criteria. Fish community data for the middle section of Moon Brook were evaluated using the Mixed Water Index of Biotic Integrity (MWIBI). The lower sites (RM 0.3 and 0.1), were evaluated by comparison of individual biometric responses to attainment stream ranges for fish and macroinvertebrates, and simply confirmed assessments from upstream sites.

Macroinvertebrates: The low gradient reach of Moon Brook below Forest Street and Mussey Brook RM 0.4 were sampled using the sweep net technique in 2005 and 2008. Macroinvertebrate data from these samples was assessed by comparing the data to a set of biological metrics from eight minimally disturbed streams with a similar low gradient and soft bottom, sand-silt dominated substrate type. The biometrics used for the analysis consisted of four from current criteria applied to hard bottomed streams, and four others that are regarded as good indicators of health for soft bottom communities. Assessments of the two Moon Brook sites and

one Mussey Brook site were based on the degree of departure of biometric values from the Moon-Mussey sites to values from the eight attainment sites.

In general, the assessments show that the low gradient samples from Moon and Mussey brooks are lower in total, EPT and EOT richness and % intolerant organisms (see table explanation of abbreviations) and higher in the percent of tolerant taxa, Bio Index and % Oligochaete worms than attainment streams. Based on these biometrics, the lower reaches of Moon and Mussey brooks were assessed as fair- not meeting the minimum Class B criteria.

Table of macroinvertebrate biometric values used to make the assessment of low gradient stream habitat of Moon and Mussey Brooks. Richness = number of identified taxa”, EOT’=taxa from orders Ephemeroptera, Odonata and Trichoptera . “EPT” = Ephemeroptera Plecoptera and Trichoptera, Oligo% = Proportion of sample as Oligochaete worms, “% 3 Dom” proportion of sample of top three taxa, “% Tolerant” = percent of taxa with BI values  $\geq 7$ , and “# INTOL”= taxa with BI values  $\leq 3$ . Bolded values from Moon and Mussey brooks are those that fall below the entire range of none attainment sites for that particular biometric.

Location - Attainment Streams	Density	Richness	EOT	Bio Index	%TOL	#INTOL	Oligo%	EPT
Burnt Meadow Brook	1584	54	29	5.86	31	13	1.0	19
Peach Brook	439	50	21	3.11	7	13	4.7	15.5
Brighton Brook	613	74	19	5.12	0	12	1.5	14
Seymour Brook	3776	50	17	3.87	3	12	0.3	13
Willow Brook	1752	41	17	2.56	0	15	0.0	11
Otter Creek Trib # 27	1264	42	12	2.70	0	15	0.6	16
Button Brook	2264	70	17	3.76	0	33	0.4	26
Sanford Brook	2060	49	15	3.42	4	11	0.4	10
Minimum	439	41	12	2.56	0	11	0	10
Maximum	3776	74	29	5.86	31	33	4.7	26
MEAN	1719	53.8	18.4	3.80	5.6	15.5	1.1	15.6
Moon Brook 0.1 (2008)	1334	35	15	5.16	27	4	5.8	6
Moon Brook 0.4 (2008)	327	39	10	6.60	34	7	14.4	7
Mussey Brook 0.1 (2004)	1017	28	10	6.85	63	3	10.6	6

Fish: The City of Rutland has argued that Moon Brook RM 0.3 is a naturally soft-bottomed site. The DEC initially assessed RM 0.3 using the MWIBI with the result of an assessment of Poor. A specific determination between natural hard and soft bottom is difficult to make here because at that point Moon Brook loses gradient, deposits sediment and begins a natural habitat transition into a low gradient, reach with more sand and silt. Altered channel hydrology from urban activities complicates the determination.

No IBIs have been generated for stream reaches in Vermont that are predominately sand or silt bottom. For these reaches a multiple biometric evaluation includes consideration of parameters

such as total density collected in the first electrofishing pass, the evenness of distribution, proportion of tolerant-intolerant species, and feeding type.

The Department assessed the Moon Brook fish assemblage at RM 0.1 and RM 0.3 using multiple biometric evaluation by comparing the metrics to five coldwater soft bottom streams that met Class B standards. Because the 2005 sample was dominated by generalist feeding species with no cold water species or trout collected, it was assessed as Fair.

The RM 0.1 sample, collected in 2008, supported remarkably low numbers of fish (total density only 4 fish/100m<sup>2</sup>). Few or no individuals were collected, even from favorable habitat patches (leaf packs or cover of woody debris) where fish would normally inhabit. The minimum density value for all wadeable sized streams required for compliance with Class B standard is 7/100m<sup>2</sup>. The mean total density from the five attainment sites is 36/100m<sup>2</sup> range (17-78). As a result this site can clearly be considered in non compliance with the minimum Class B standard based on the 2008 sample and was assessed as Poor.

The Mussey Brook site, RM 0.1, having a substrate of 78% gravel and cobble, was assessed using the MWIBI during 2004 and 2006. The site scored 25 (Poor) and 9 (Poor) respectively, not meeting Class B standard.

It is the Department's position that the lower reach of Moon Brook, while currently not attaining the Class B Standard for the fish community, certainly has the potential to do so. The lower reach of Moon Brook supports the species required, that would, in the right proportions, comprise a community that would be in compliance with the Class B Standard. Indeed, in 1993, the RM 0.3 community met Class B criteria. These criteria can be met there without the occurrence of cold water species (trout and sculpin). A healthy representation of intermediately tolerant species such as common shiner and tessellated darter along with the presence of intolerant cutlips minnow coupled with a lower portion of generalist feeding species can result in a Good or even Very Good multiple biometric evaluation assessment at these sites.

Again, it is important to note that macroinvertebrate and fish assessments from these lower sites were not the primary basis for listing Moon Brook as impaired, but is supportive of this listing. Multiple years of data from hard bottomed sites upstream provided ample evidence of impairment.

9. Comment: Other evidence in the TMDL seems to support, rather than refute the temperature argument. The impairment is noted as extending from the confluence with Otter Creek upstream to mile point 2.3 (the discharge of Combination Pond). This is consistent with the evidence that implicates temperature rise in the pond as a primary cause of impairment. Stormwater as the pollutant is a surrogate for sediment. The fact that the impairment begins where in-stream sediment is minimal or non-existent, immediately downstream of a huge and very effective sediment trap (Combination Pond) contradicts the stormwater argument. [Rutland]

Response: VTDEC has made its impairment determination based on biological data from a number of sites along the length of the stream; from sampling sites at the mouth to stations

upwards of three miles upstream (above Combination Pond). VTDEC does not dispute that while increased water temperature is indeed a stressor of the biotic community in Moon Brook, particularly trout in the upper watershed below the ponds, there are multiple indicators that stormwater runoff is the primary stressor across the watershed (see response #7 above), especially as indicated at sampling results at the lowest monitoring point.

Data from stream monitoring stations from the mouth to the end of the impaired reach at RM 2.9 (10 sites in total) don't indicate a uniform impact from stressors but rather show response to stressors originating from the makeup of the watershed draining to each point along the stream. The area below the ponds is more directly impacted by temperature and less by stormwater. Moving downstream, the temperature impacts are somewhat mitigated (indicated by City of Rutland temperature monitoring data) and the monitoring stations receive proportionally more runoff from impervious surfaces. This impact is reflected in both the habitat condition and ultimately the biologic response. Looking only at a subsection of the entire watershed (e.g. that draining Combination Pond) would disregard considerable information describing impacts to the overall stream, specifically the accumulated stressors causing impacts at the mouth of Moon Brook.

10. Comment: The graph on page 14 of the TMDL shows the flow characteristics for Moon Brook and the attainment stream (Tenney Brook) as being virtually indistinguishable. Considering them as flow-duration curves, it appears that the goal is to have flow conditions that occur once a year in Moon Brook occur instead every 370 days or so. (Again keep in mind that this is without the necessary adjustment for the combined sewer area.) [Rutland]

Response: When compared to other stormwater TMDL targets developed in Vermont, the flow reductions for Moon Brook as represented in the EPA-approved Moon Brook TMDL do tend to be at the lower end of the spectrum (however, not the lowest). As stormwater controls are implemented to meet to Q0.3% target, benefits will be realized across the entire flow duration curve by their very nature of treating whatever flows they receive. As has previously been mentioned in the Moon Brook TMDL response summary, VTDEC intends to make adjustments to account for the area of the watershed that drains to the combined sewer in the watershed modeling phase of the implementation planning process.

11. Comment: The State of Vermont acknowledges that the cost in financial and other resources required to implement the TMDLs is staggering. It also acknowledges that those expenditures, in this case may not resolve the problem. If there is any reasonable doubt about the effectiveness of the program for any particular watershed, prudence and fairness require that the Use Attainability Analysis (UAA) be conducted before implementation begins, not "If sufficient progress toward the water quality standards is not achieved after any particular implementation stage..." as advocated by the State.

We agree with USEPA when they write: "We do not believe that setting unattainable uses advances actions to improve water quality."

Considering the inhibitions and costs of the regulatory consequences now associated with a stormwater impaired designation, it is critically important that caution is used when making that determination. Even before the current economic downturn, there were projects in Rutland that were considered but subsequently abandoned in the face of the stormwater impairment classification. While continued economic growth and opportunities are important another issue that concerns us is the fact that by using inappropriate criteria on the lower reaches, the State is making it impossible to get Moon Brook of the impaired list since the natural stream conditions will never produce the required data. [Rutland]

Response: 40 CFR 131.10 stipulates that Use Attainability Analyses (UAA) are appropriate for the elimination of Designated Uses, where these uses are not identified as Existing Uses per 40 CFR 131.10. The intent of UAA is to acknowledge that certain waters may never have been able to attain a Designated Use, in the instance where the use classification in question is inappropriately designated.

40 CFR 131.10 defines the term “Existing Use” as “a use which has actually occurred on or after November 28, 1975, in or on waters, whether or not the use is included in the standard classification of the waters, and whether or not the use is presently occurring.” As stated above, VTDEC’s assessment of aquatic life use at RM 0.3 conducted in 1986, 1993 and 2005 were fair, *good* and fair respectively using the multiple biometric evaluation approach. An assessment of *good* indicates attainment of the Class B Aquatic Life Use defined by Vermont Water Quality Standards, based on VTDEC Procedures for biological assessment. This empirical demonstration that RM 0.3 attained the use in 1993 could identify Aquatic Life Use in Moon Brook as an Existing Use, as defined by EPA above. As such, promulgation of a UAA to eliminate the use of Aquatic Life may not be appropriate in this instance, and could run counter to the Vermont Water Quality Standards.

12. Comment: There are a number of accepted options for moving forward. The most appropriate of those is to acknowledge the failure of Moon Brook to meet the State Water Quality Standards is due to a non-pollutant alteration, resulting in artificially elevated water temperatures, and list under Part F failure due to flow modification (associated with the two aforementioned on-stream ponds). This will allow the City and State to continue working collaboratively together and concentrate our collective resources to formally mitigate for temperature, which is mutually understood to be where the first efforts should be expended. While it is also understood that this may result in the watershed being delisted from 303(d), if the efforts to mitigate for temperature prove ineffective (an unlikely scenario), then the State can exercise its authority and place it back on the 303(d) list as stormwater impaired. [Rutland]

Response: For the reasons listed above in previous responses, VTDEC believes that stormwater is the primary cause of impairment in Moon Brook. Furthermore, it is our understanding that increased water temperatures causing aquatic life support use impairment due to excessive heat loading is considered impairment due to a “pollutant” and would therefore need to be listed on the 303(d) List. The 2008 EPA approved 303(d) List contains examples of such listings including Ball Mountain Dam on the West River (VT11-10) and the Mettawee River (VT02-05).

13. Comment: In regards to the temperature impairment: Remove the "designated use of Aquatic Life Support(ALS) as allowed under Title 40, Chapter I, Part 131, Section 131.10 (g) (40 CFR 131.10) allows a State to remove a designated use which is not an existing use if the State can demonstrate that attaining the designated use is not feasible because: .... (4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or to operate such modification in a way that would result in the attainment of the use." [Rutland]

Response: See response # 11 above.

14. Comment: In regards to the inappropriate substrate: Remove the "designated use of Aquatic Life Support (ALS) as allowed under the same section of 40 CFR 131.10: .....(5) physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses." [Rutland]

Response: See response # 11 above.

15. Comment: Move Moon Brook from the 303(d) listing to Subpart IO as a water that was inaccurately placed on the Impaired Waters List working towards getting it properly classified as temperature impaired. This will also require readdressing the inappropriate TMDL. [Rutland]

Response: Currently, as discussed in detail above, VTDEC believes there is sufficient evidence indicating that Moon Brook has been correctly identified as impaired by the combined effects of stormwater runoff. Moreover, EPA has approved this listing previously, as well as the TMDL for Moon Brook.

16. Comment: Implement a Use Attainability Analysis(UAA) and proceed as appropriate based upon the results of that analysis. [Rutland]

Response: See response # 11 above.

17. Comment: I am writing in follow-up to our meeting at the Department of Environmental Conservation (DEC) on March 26, 2010, regarding the proposed inclusion of a segment of Big Spruce Brook on the draft 2010 list of impaired waters requiring TMDL development (303(d) list). Thanks for coordinating the meeting with Rob Apple, Mary Nealon of Bear Creek Environmental (BCE), and me. We appreciate the effort that DEC staff have made to gather and analyze water quality data to assess existing conditions on Big Spruce Brook.

As you know, Stowe Mountain Resort (SMR) has made major efforts through the implementation of the Spruce Peak project to incorporate state-of-the-art stormwater

management systems, as well as other measures to enable water quality improvements within the watershed. In addition, considerable effort has been made by SMR to modify cultural practices of resort personnel to ensure a continued focus on water quality over time. As indicated by the biomonitoring results (see attached summary tables), although water quality in Big Spruce Brook has improved markedly over time, some impacts remain. At station MS-10 (river mile 0.2) near the mouth of Big Spruce Brook, results show full compliance with all SHG biocriteria for 2009. At station MS-10a (river mile 0.3), located upstream of the golf clubhouse, monitoring of aquatic biota has occurred since 2006. These results show attainment during 2007, and a downturn following that year's sampling.

As a result, SMR has investigated potential sources of the impairment (Big Spruce Brook, VT08-12) and has identified two significant impacts:

- Occurrence of a significant iron seep from fill material below the practice tee and golf clubhouse, which is directly upslope of the monitoring station at RM 0.3. This seepage appears to have begun in 2007, following construction in this area.
- Occurrence of turbid discharges from the small sedimentation basin located adjacent to Big Spruce Road which discharges into Big Spruce Brook at RM 0.6

Based on our review of the information, with input from Mary Nealon of BCE and Rob Apple of SMR, we believe that these sources are principally responsible for the ongoing water quality impacts to this reach of Big Spruce Brook. As discussed during the meeting, SMR is willing to work with the DEC to identify and implement remedial measures to address these impacts outside the TMDL process. We believe that this approach will result in more targeted and more timely results to fully restore water quality conditions on Big Spruce Brook. Therefore, we request that DEC not include Big Spruce Brook on the 2010 303(d) list, but rather include this water body on the Part B list of waters for which other pollution control measures can be expected to result in attainment of water quality standards in a reasonable period of time. SMR looks forward to working with DEC in establishing the appropriate means by which this outcome can be achieved. [Stowe]

Response: Upon review of the current water quality conditions, known stressors to the aquatic community and the likelihood of stressor remediation, VTDEC concurs that the appropriate listing is not to the 303(d) List but rather to Part B of the Vermont Priority Waters List. This list equates to Category 4b of EPA's Listing Guidance whereby "other pollution control requirements (e.g. best management practices) required by local, State or Federal authority" are stringent enough to implement applicable water quality standards within a reasonable period of time (See 40 CFR 130.7(b)(1)).

On May 6, 2010, the VTDEC issued a 1272 Order to Stowe Mountain Resort (See Attachment B) requiring a water quality remediation plan to be developed and implemented to address the identified stressors believed to be the source of impairment in this stream reach. See Attachment A for a complete justification for Part B listing of Big Spruce Brook, developed in accordance with EPA listing guidance. As of this writing, a remediation plan has been submitted and approved according to the issued Order.

18. Comment: As you know, BMB from River Mile (RM) 1.9 to RM 2.9 is proposed to be included in the 2010 303(d) List of Waters Part A – Impaired Surface Waters in Need of a TMDL due to stormwater. BMB was sampled by DEC in 2006, 2008, and 2009 at RM 1.9 and did not meet criteria for aquatic life support (ALS), although sampling conducted at RM 1.6 in 2009 did meet ALS criteria. According to the *Aquatic Life Use Attainment Assessment of Bromley Brook* (DEC, January 2010), BMB also shows signs of sedimentation and chemical signatures associated with stormwater impacts. In addition, the BMB watershed above RM 1.9 is described in the DEC report as approximately 21 percent developed.

Based on a review of available 2009 aerial imagery the watershed upslope of BMB RM 1.9 contains approximately five percent impervious surface including 1.8 acres of impervious surface associated with VT Route 11 (0.9 percent of watershed), 3.9 acres of ski area parking (1.9 percent of watershed), and roughly 5.0 acres of other impervious surface, primarily associated with single family residential areas (2.4 percent of watershed). Based on research performed nationally which has evaluated the relationship between water quality impairment and impervious surfaces BMB, at five percent upslope impervious surface, would only show minor effects as a result of stormwater runoff. In general, significant water quality impacts as a result of stormwater runoff occur when the upslope watershed reaches between 10 and 25 percent impervious with more severe effects observed as impervious surface climbs above 25 percent. Thus, it is not immediately evident that stormwater runoff is the stressor responsible for the impairment. In addition, no significant construction has occurred at Bromley since the mid-1980s, so there is no basis for a change in conditions that would have given rise to such an impairment.

Part A of the 303(d) list is reserved for surface waters with clearly identified water quality impairments and a clear linkage to a pollutant of human origin, and includes the most stringent regulatory burden under the Clean Water Act for stakeholders within its watershed. Due to the limited amount of sampling data and the absence of a clear linkage, BMB would more appropriately be placed on Part C – Surface Waters in Need of Further Assessment. The three aquatic biota samples taken at BMB RM 1.9 show significant variability and do not necessarily indicate a specific trend or cause of impairment. Indeed, the most recent (2009) sampling shows that 7 of 8 of the SHG biometrics were met at this station.

At this point, several factors need to be more fully evaluated to better determine the stream condition, which supports the recommendation for a Part C listing. These factors include:

- Selection of appropriate sampling locations which provide representative habitat conditions
- Full evaluation of ongoing biological monitoring data collected in accordance with Bromley's indirect discharge permit
- Assessment of the impacts of natural conditions as a contributor to observed sedimentation (e.g., is RM 1.9 within a depositional reach associated with a significant grade break in the channel?)
- A more detailed assessment of the upslope drainage area including delineation of impervious surface, field verification of the watershed boundary, and identification of outfalls conveying stormwater into the stream

- Additional field assessment of stream channel characteristics using DEC stream geomorphic assessment protocols.

More complete assessment of BMB, as listed above, would verify the stream condition and provide additional data to corroborate the factors currently affecting water quality. In addition, the data gathered as a result of the assessment would serve as the first step in developing mitigation efforts, if appropriate, in support of improving water quality.

In conclusion, VHBP recommends that, due to the absence of a clear linkage between the water quality effects and upslope stormwater runoff demonstrated above, Bromley Mountain Brook be excluded from the 303(d) Part A – Surface Waters in need of a TMDL list, but included on the Part C – Surface Waters in Need of Further Assessment list. We believe that this would provide DEC and other stakeholders the opportunity to properly assess and understand existing water quality conditions in time for the next listing cycle, in order to make the appropriate decision at that time. [Bromley]

Response: The Department is aware of the current literature on the general biological impacts as it relates to stormwater runoff, percent urban or developed land, and impervious surfaces. The Department uses this information to help it prioritize and target where biological assessments are done. It then uses the biological assessments to determine the biological integrity of a stream, and whether the stream is supporting its management classification goals. The Department does not use a percent impervious or other map derived land use model to determine if a stream is impaired. The Department uses the biological assessment fingerprint, coupled with land use information (percent developed land), as well as water quality, and habitat observations to determine the likely cause/source of an impairment. In the case of Bromley Mountain Brook (aka Mill Brook, Tributary #6), the biological fingerprint indicates a habitat based impairment (i.e. low density, richness and at times high percent Oligochaeta). The high percent developed land, elevated chlorides, and the stream habitat observations of very high embeddedness, and percent sand strongly implicate stormwater and its associated physical and chemical water quality, and hydrologic alterations as the cause of the impairment.

The macroinvertebrate community samples were collected from appropriate “riffle” habitat within a representative reach of Bromley Mountain Brook. Habitat condition of embeddedness and percent sand were assessed within the “riffle” habitat where the biological samples were collected. The natural condition of this type of habitat is low percent embeddedness, and fines. The relevant stream type for reference condition comparison is “Small-High Gradient”. Only recent data are presented here since all streams to be listed are done using the most current data.

A detailed assessment of the current watershed hydrology, a stream geomorphic assessment, all storm water discharge points, and current operational stormwater permits will be necessary information and are the first steps in developing the remediation plan for the watershed. The Department is aware that development within the watershed not associated with Bromley Ski area, as well as State Highway Route 11 are all stormwater contributors to Bromley Mountain Brook and will be part of remediation planning as it is developed

19. Comment: “Bromley Mountain Brook” does not appear to be an official USGS stream name and the brook segment proposed for listing does not include the ski trails or peak of Bromley Mountain. This stream appears to be an unnamed tributary of Mill Brook. In addition references to “Bromley Brook” in the DEC report are potentially confusing, as a USGS-named stream by this name originates on the west side of Bromley Mountain and drains to the Hudson River Basin. [Bromley]

Response: Due to the potential confusion with the adjacent USGS named “Bromley Brook”, VTDEC proposes to identify this portion of Mill Brook as “Mill Brook, Tributary #6”. This will identify it as the sixth tributary entering Mill Brook, upstream from its confluence with the Winhall River.

20. Comment: Based on measurements taken using the Vermont Hydrography Dataset the stream reach of BMB above RM 1.9 is approximately 3,200 feet (0.63 miles) long ending in a small pond located just downslope of Route 11. The one mile stream segment of BMB described on the draft 303(d) list is longer than the mapped length of the stream above RM 1.9 and should be restated to reflect the actual 0.63 mile length. [Bromley]

Response: VTDEC will edit its initial mileage estimate to 0.7 miles, upstream from RM 1.9, based on the Vermont VHD and other channel observations made at the site.

21. Comment: On behalf of Summit Ventures NE, LLC. dba Sugarbush Resort (Sugarbush), VHB Pioneer is providing this request to remove Rice Brook in Warren, Vermont (Waterbody ID: VT 08-20) from the March 2010 Draft 303(d) List of Impaired Waters in need of TMDL development. This letter follows up on my March 19, 2008 letter to you that also requested de-listing of Rice Brook. In response to that de-listing request, the Vermont Department of Environmental Conservation (DEC) had asked for additional biomonitoring demonstrating continued attainment of the biocriteria for at least two years.

As you know, Rice Brook, along with Clay Brook, is listed on Part A of the March 2010 Draft 303(d) List of Waters in Need of TMDL Development. These waters are further denoted as among the group of waters for which the impairment is due to stormwater runoff, and in the case of Clay Brook, also due to iron. Beginning in 2003, working collaboratively with the Mad River Valley Planning District through a 319 Grant, Sugarbush implemented numerous small scale stormwater treatment measures along the existing Sugarbush Village Road. Subsequently, during 2005, in coordination with DEC and Act 250, Sugarbush embarked on a comprehensive and extensive series of actions under state regulatory and permitting programs, to address these impacts through the implementation of remedial measures. These actions and the associated reductions in sediment loading and hydrologic impact were documented in the *Water Quality Remediation Plan: Clay Brook and Rice Brook Watersheds*, prepared by VHB Pioneer and dated October 15, 2008. This report also presented the rationale for the absence of a need for a TMDL.

Additionally, Sugarbush has voluntarily continued to conduct monitoring of aquatic biota during 2008 and 2009, at five sites on Rice Brook ranging from the headwaters, to near the confluence

with Clay Brook. All biological monitoring, taxonomy and data analysis work were performed fully in accordance with DEC Protocols. These data are presented in detail in the attached technical memorandum. For both 2008 and 2009, the results show full compliance with all biometrics at all five sites, with the exception of the Density metric for 2008 at Station BD-2 where the result (297 organisms) fell just short of the threshold value (300 organisms required). Thus, these data clearly demonstrate that the Water Quality Remediation Plan has been successful, since the aquatic biota sampling on Rice Brook consistently documents attainment of the Class B2-3 biocriteria for two years.

Therefore, in accordance with the listing and de-listing methodologies specified in the Vermont DEC Water Quality Division's September 9, 2005 document *2006 Vermont Surface Water Assessment Methodology Including Vermont Listing Methodology*, we strongly believe that Rice Brook should be de-listed during the 2010 listing cycle. [Sugarbush]

Response: Upon review of the most current biomonitoring data, VTDEC concurs that it is appropriate to remove Rice Brook from the 303(d) List of Impaired Waters because it is currently in compliance with the Vermont Water Quality Standards.

Rice Brook drains a small watershed dominated by the Sugarbush Ski Area baselodge, housing units, parking lots, and ski trails located in Warren Vermont. The tributary is approximately 1.6 miles in length and has a beginning elevation of 1,300 feet and an ending elevation of about 2,100 feet. The tributary empties to Clay Brook which is a tributary of the Mad River. In the early 1990s until about 2000 the brook was found to be extensively sedimented leading to macroinvertebrate assessments of “poor” at RM 0.3 and “fair” up to RM 1.1, at five sampling locations. As a result, the tributary was listed as impaired and included on the 303(d) List as failing Aquatic Life Support (ALS). Between 2002 and 2007 the macroinvertebrate community showed signs of improvement with some locations assessed as “fair-good” and “good”. The most recent macroinvertebrate data from 2008-2009 indicates compliance with Class B Water Quality Standards at all five locations, and were assessed as being “Very High Quality” for five of the ten assessments over this two year period.

Biological assessments have occurred almost annually on Rice Brook at five sample reaches since 1990 totaling 18 years of samples. The sample reaches have bracketed significant land use activities and an indirect WWTF discharge located between RM 0.4 and 0.6. Throughout the 1990s the macroinvertebrate community was found to be very low in density, richness and EPT taxa at all locations. The lower two sites were also high in percent Oligochaeta. This type of community fingerprint is often associated with sediment problems and sand embeddedness of the substrate. Embeddedness was found to be very high, and the percent fines reached 60% at the lowest reaches. As such, Rice Brook was placed on the 303(d) List for stormwater.

In 2002 the Sugarbush Resort developed a Water Quality Remediation Plan as part of its Act 250 review of its base area development for the Lincoln Peak area. The first phase of this work occurred in 2003 and continued through 2006. Significant stormwater control infrastructure was either upgraded or constructed through a series of projects. Biological assessments showed mixed results from 2002 through 2006. In general the density, richness and EPT species began to increase and the percent Oligochaeta in the lower reach declined significantly.

In 2007, four of five monitoring locations met or were at the threshold of compliance with Class B ALS biocriteria for Small High Gradient streams. In 2008 and 2009 all locations met Class B ALS biocriteria, with one location just under the threshold level for density, and five of the ten assessments over the two-year period, meeting “very high” quality Class B ALS criteria. The embeddedness rating from 8 of 15 assessments from 2007 through 2009 was “very good” (<25% embeddedness), with only one embeddedness rating in the fair or 50-75% range, all others being rated “good”. Sediment percent fines also generally decreased at all locations except the lowest reach RM 0.3. This indicates that the fines are moving out of the system and not increasing at the upper reaches.

Following the implementation of the WQ Remediation Plan, the macroinvertebrate community as assessed in 2008 and 2009 has met the Class B ALS biocriteria guidance for a SHG stream. In fact, a number of locations now support a very high quality Class B community. As such, Rice Brook will be removed from the impaired waters list.

22. Comment: The Committee supports the addition to the 303(d) List of VT11-16, Bromley Mountain Brook, for stormwater. [WRC]

Response: Duly noted

23. Comment: The Committee supports the addition to the 303(d) List of VT13-10, Commissary Brook, for sediment. [WRC]

Response: Duly noted

24. Comment: *VT11-10 West River below Ball Mountain Dam to Townshend Dam (10 miles).* This section of river is again listed as low priority for TMDL completion. The Committee notes that the Responsiveness Summary to comments on the 2006 draft List indicated that the priority would remain LOW unless the process of “ongoing investigations conducted by the USACOE in cooperation with other parties . . . fails to bring about anticipated water quality improvements.” The Committee inquires if there is a defined time frame for evaluating whether the anticipated water quality improvements have been attained. If there is not, the process is entirely open-ended and is unlikely make progress remediating the problems. The Committee recommends that the Department establish a reasonable deadline for determining such success or lack thereof. [WRC-resubmitted 2008 comment]

Response: The 401 Water Quality Certification for the currently proposed hydroelectric project is under development. Development and operation of the hydro project may affect the downstream temperature regime. Once the project is operating and temperature data can be obtained, the Department will be in a position to determine the mitigation measures that may be necessary.

25. Comment: *Iron Stream, trib to Tannery Brook, “source(s) need further assessment.”* The Committee supports implementation of the necessary assessment and, further, notes there are relevant actions regarding Mt. Snow’s proposed West Lake project currently in both the Vermont Act 250 and the USFS NEPA processes. [WRC-resubmitted 2008 comment]

Response: Duly noted

26. Comment: *North Branch Deerfield River, Tannery Road to 0.2 mile above Snow Lake.* This reach is rated high priority for TMDL completion, as it was in 2006. The WRC supported this priority ranking then and continues to do so. Despite the high priority, there does not appear to have been action; what is the timetable? [WRC-resubmitted 2008 comment]

Response: TMDL priority for this stormwater impaired reach has been changed to “Low” on the 2010 303(d) List because the Department is planning an alternative remediation approach as an alternative to TMDL development. This impairment does remain a high priority for remediation.

Technical protocols for the “lowland” urban stormwater TMDLs were developed and utilized for TMDL development for all 12 of the “lowland” urban stormwater impaired reaches. TMDLs have been completed and the Department has issued permits to require implementation of BMPs to remediate those watersheds. However, similar technical protocols for stormwater TMDL development were found not to be appropriate for the stormwater impaired “mountain” watersheds. In lieu of TMDL development, the Department will work cooperatively with the ski areas and other property owners in these watersheds to develop Water Quality Remediation Plans that identify problematic conditions and develop applicable remediation measures. VTDEC anticipates requiring the development of the Plans in 2010. Permits or enforcement orders will be issued as necessary to ensure implementation.

27. Comment: *VT12-05 North Branch Deerfield River, vicinity of West Dover.* This section of the Deerfield River is low priority for TMDL, needing further assessment for causes/sources of high *e. coli* levels, as was the case in 2006. The WRC supported such assessment then and continues to do so; what is the timetable? [WRC-resubmitted 2008 comment]

Response: VTDEC currently has no timetable in place for completing further investigations into this impairment. VTDEC had a watershed coordinator assigned to the basin 12 area but that person was laid off in June 2009 due to budgetary constraints. VTDEC, in conjunction with its analytical services partnership program that provides analytical laboratory services, would welcome a monitoring proposal from an interested and local group to carry out a monitoring and assessment of *E.coli* levels of the North Branch in the vicinity of West Dover.

## **Part B Comments**

28. Comment: Lower Deerfield River (VT12-01) is listed in part B due to impairments to aquatic life caused by low water temperatures associated with hypolimnetic releases from Harriman Reservoir. EPA approved the placement of this segment in Part B a number of cycles back with the understanding that monitoring data required by the 401 Water Quality Certification would be used to drive additional mitigation measures if aquatic life criteria were not met. This process is clearly not working; the data are still “being reviewed” at least a half-dozen years after they were collected. Consistent with EPA’s guidance and regulations, this segment should either be moved back to Part A, or possibly to Part F (waters altered by flow regulation) depending on the circumstances of this case. [EPAR1]

Response: Since the cause of the impairment is not pollutant related it is not appropriate for this segment to be listed either on Part B (EPA Category 4b) or Part A – 303(d). The lack of heat energy is clearly not a pollutant and the impairment is caused not by pollutant loading but rather the operation of the dam by releasing colder hypolimnetic waters. This assessment is clearly supported by the Vermont Assessment and Listing Methodology as well as EPA listing guidance that requires a pollutant to be the cause of impairment for 303(d) listing.

VTDEC believes that the 401 Water Quality Certification is still the appropriate means by which to address this problem. In order for this problem to remain visible to the public, it will be identified on Vermont’s Part F List of Waters.

29. Comment: For future listing cycles, we strongly suggest that any recently restored segments proposed for delisting from parts B or D be included in the public review draft at the end of each section as interim lists similar to sub-part IO of Part A. This would provide the public an opportunity to see the important progress represented by these restorations, and it would also provide EPA a consistent basis for reviewing and tracking these changes. [EPAR1]

Response: Duly noted

## **Part C Comments**

30. Comment: *VT11-01 Lower Williams River (mouth upstream to Middle Branch confluence).* The list notes problems, but does not specify any assessment. What would be assessed, by whom, and in what timeframe? [WRC-resubmitted 2008 comment]

Response: The Lower Williams River conditions need review by both the Department of Environmental Conservation and the Department of Fish and Wildlife to see if further assessment is actually needed or whether implementation strategies need to be determined. The Basin 11 Water Quality Management Plan recommends identifying areas of degraded fish habitat so that restoration actions can be designed and implemented.

31. Comment: *VT11-05 Lower Saxtons River*, “need fish community data.” This need was noted in the 2006 list. The WRC comment in 2006 was “What is the timetable for further assessment?” Understanding that this reach is in the DEC assessment rotation for this year and is considered a high priority, the Committee recommends implementing the assessment this year. [WRC-resubmitted 2008 comment]

Response: Resource constraints precluded conducting fish biomonitoring in 2008.

32. Comment: *VT11-16 Winhall River (I.P. Co. bridge to mouth)*. The list identifies the problems, but does not provide information regarding further assessment. The 2006 Responsiveness Summary indicated that VT F&W would continue salmon population survey work that would provide information on aquatic habitat and water quality in this stretch of river. Has this been done and what are the relevant results? [WRC-resubmitted 2008 comment]

Response: VT F&W has conducted regular annual fish monitoring in support of salmon stocking and for trout presence. Data collected does indicate temperature stress, however, no specific studies have been initiated to determine the cause.

### ***Part E Comments***

33. Comment: *VT11-07 West River*. The list identifies Eurasian water milfoil as the problem and hand pulling at the management or control activity. Noting that this management program has been conducted for several years by a private party with funding garnered from various sources, including town and state, the Committee endorses continued state support of it. [WRC-resubmitted 2008 comment]

Response: Brattleboro has received grants through the ANC Grant-in-Aid program annually since 2003. They have applied for funds to continue the project in 2010 and VTDEC is in the review process and hopes to announce awards in the near future. VTDEC is fully supportive of their efforts.

34. Comment: *VT12-01L02 Sadawga Lake*. The list identifies Eurasian water milfoil as the problem and states there is “no control.” The Committee inquires whether there is a plan to initiate management or control activities. If not, the Committee recommends the Department develop and implement one. [WRC-resubmitted 2008 comment]

Response: Based on a 2006 DEC survey, the level of watermilfoil in Sadawga is “moderate” - locally abundant growth here and there along the shoreline. Unfortunately, the resources do not exist at VTDEC to develop and implement management plans to manage watermilfoil on all watermilfoil infested waters in the state. VTDEC has encouraged local (town) involvement in management and spread prevention. If the town or a local group were interested, VTDEC would be happy to discuss management and available funding options.

## **Part F Comments**

35. Comment: The Committee notes and supports the fact that the following water is added to Part F, Altered by Flow Regulation becoming a high priority for action – VT11-07, West River, mouth to Grassy Brook. [WRC]

Response: Duly noted

36. Comment *VT11-10 West River below Ball Mtn. dam to Townshend dam.* The list states, as it did in 2006, that all uses are impacted by artificial flow regime at dam and that USACOE is studying structural modifications to bring operations in compliance with VTWQS. What is the status of that studying and when might modifications be implemented? The Committee notes that USACOE has issued operational guidance sheets that would likely help address the problems, if faithfully implemented, but review of USGS flow data indicates the guidance is frequently not followed. The Committee inquires about the origin of the stated date of 2010 for projected compliance. The modification study effort has been cited in the past and the operational guidance has existed for a number of years, but they do not appear to have succeeded in achieving compliance. The Committee inquires what informs the projected 2010 compliance. [WRC-resubmitted 2008 comment]

Response: The upgrade of the Ball Mountain Dam automated system was implemented in 2009. There appeared to be an improvement under certain flow conditions, but not others.

The entire operation at Ball Mountain will change if hydroelectric generation is installed at the dam. The developer claims that outflow regulation will be improved. It is not certain the project will be developed, and the capabilities of the hydropower system to regulate outflow is still unclear, but that process has to play out before we consider other alternatives.

37. Comment: *VT11-10L01 Ball Mountain Reservoir.* The list states “water level fluctuation alters aquatic habitat” and that ANR and USACOE are negotiating to bring operations into compliance with VTWQS. The comments on VT11-10, above, apply equally here. [WRC-resubmitted 2008 comment]

Response: Stabilizing the pool year round (with the exception of water storage during flood control operations) is being considered by the USACOE for several reasons and is likely to be proposed by the hydro developer if the project continues to move forward.

38. Comment: *VT11-16 Mill Brook (1.6 miles) and Tributary to Mill Brook (2.2 miles).* 2006 WRC comments asked “Why are there no dates for Projected WQS Compliance?” The 2006 Responsiveness Summary acknowledged that Bromley’s snowmaking withdrawal “is not yet in full compliance with the winter conservation flow standard” and that the Department “prioritizes those snowmaking systems that are new or expanding. Consequently, no compliance schedule or actions have been developed for Bromley.” Given the extent of the impacts (Mill Brook partial support 1.6 out of 8 miles total length; tributary non-support 0.7 mile, partial support 1.5 miles out of 2.5 mile total length), the Committee recommends the Department initiate compliance efforts. [WRC-resubmitted 2008 comment]

Response: Bromley has not made changes to its snowmaking system that would trigger a review under the snowmaking rules. ANR would have to initiate a review under Title 10, Section 1003. This is not a quick and simple process, and other program priorities have taken precedence.

39. Comment: *VT11-18L01 Hapgood Pond (Peru)*. As in the 2006 list, the draft 2008 list provides no description of Current Status/Management or Control Activity and no projected date for WQS Compliance. The 2006 Responsiveness Summary indicates the issue will be addressed in the basin planning process. The Committee encourages the Department to engage with relevant parties, e.g., GMNF and VT F&W, to address. [WRC-resubmitted 2008 comment]

Response: To date, resource constraints have prohibited addressing this issue in the basin planning process.

40. Comment: *VT12-05 Cold Brook, insufficient flow below snowmaking water withdrawal*. The inadequate flow leads to partial support for 2.5 miles of 5.3-mile total length. The Committee recommends the Department engage with Mt. Snow and the owners of Haystack to address the problem, as both resorts are planning and have been pursuing snowmaking augmentation. [WRC-resubmitted 2008 comment]

Response: See response #41 below

41. Comment: *VT12-05, North Branch Deerfield River, non-support 2.2 miles, partial support 9.3 miles out of total length of 13.3 miles*. Status states that Mt. Snow filed an application to abandon this source and develop new intake below Cold Brook. In fact, Mt. Snow's application is for a new source and is not immediately linked to the abandoning of Snow Lake as a source. ANR is negotiating with Mt. Snow about this linkage as part of the Act 250 process for the new source. The Committee recommends the department support such an explicit linkage. [WRC-resubmitted 2008 comment]

Response: Haystack is not currently operating, but had proposed an expansion of snowmaking storage before suspending ski area operations. ANR will address flows at the Cold Brook withdrawal when the snowmaking expansion proposal is reactivated.

Flows below Snow Lake are being addressed in Mt. Snow's Act 250 proceeding for construction of West Lake and the new snowmaking water withdrawal on the North Branch.

Attachment A: Part B justification for Big Spruce Brook

**Listing of Big Spruce Brook on Part B of Vermont's  
2010 List of Priority Surface Waters**

Based on data received during the public comment period on Vermont's draft 2010 303(d) list, Big Spruce Brook is listed on Part B of Vermont's 2010 List of Priority Surface Waters. Waters listed on Part B are assessed as impaired, but do not require development of a Total Maximum Daily Load.

EPA's July 29, 2005 Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act provides that state waters may be listed on Part B if technology-based limitations required by the Act, more stringent effluent limitations required by state, local or federal authority or "other pollution control requirements" (e.g. best management practices) required by local, State or federal authority are stringent enough to implement applicable water quality standards within a reasonable period of time. EPA conducts a case-by-case evaluation of a state's decision to list a water on Part B.

The decision of the Vermont Department of Environmental Conservation (DEC) to list Big Spruce Brook on Part B of Vermont's 2010 List of Priority Surface Waters is based on a determination that there are "other pollution control requirements" sufficiently stringent to achieve applicable water quality standards within a reasonable period of time. This memo summarizes the rationale for this decision in accordance with EPA's 2005 Guidance.

**I. Statement of Problem Causing the Impairment**

Macroinvertebrate biomonitoring has been conducted on Big Spruce Brook since 2000 at rivermile (RM) 0.2 and since 2006 at RM 0.3 as part of a larger settlement agreement associated with Stowe Mountain Resort's (SMR) Act 250 Master Development Plan. Biomonitoring results developed by SMR since 2006 are given below and indicate current compliance at RM 0.2 while RM 0.3 remains out of compliance.

	<b>Site RM 0.2</b>	<b>Site RM 0.3</b>
<b>2006</b>	Fair	Fair
<b>2007</b>	Good	Good/Fair
<b>2008</b>	Fair	Fair/Poor
<b>2009</b>	Good	-
<b>2009</b>	Good	Fair

A meeting with Stowe Mountain Resort (SMR) representatives, their environmental consultants and the VTDEC staff was held during the comment period for the 2010 Draft 303(d) List. Initially, Big Spruce Brook was slated for 303(d) listing due to iron and sediment discharges resulting in the continued non-compliance at RM 0.3. However, information presented at the meeting was compelling that the primary sources of the

impairment had been identified. VTDEC staff concurred that the sources presented were consistent with on-site observations. Namely, a localized groundwater seep associated with the practice green was contributing significant iron discharges to the stream and were having a dramatic impact on the macroinvertebrate community. Additionally, intermittent sediment discharges associated with an upstream stormwater sedimentation basin were occurring and placing additional stress on the macroinvertebrate community. It was determined that remediation of these two sources would allow the stream to come back into compliance with the Vermont Water Quality Standards within a reasonable period of time.

## **II. Description of Proposed Implementation Strategy and Supporting Pollution Controls**

EPA's 2005 Guidance provides that EPA, in evaluating whether a particular set of pollutant controls are sufficient to allow placement of an impaired water on Part B, will consider a number of factors, including: 1) the authority (local, state, federal) under which the controls are required and will be implemented with respect to sources contributing to the water quality impairment; 2) existing commitments made by the sources to the implementation of controls (including an analysis of the amount of actual implementation that has already occurred); 3) the availability of dedicated funding for the implementation of the controls; and 4) other relevant factors as determined by EPA on a case by case basis. Since the overriding objective of the Part B alternative is to promote implementation activities designed to achieve water quality standards in a "reasonable period of time," the 2005 Guidance provides that EPA will also consider the existence of identifiable consequences for the failure to implement the proposed pollution controls.

DEC has a number of existing regulatory and enforcement tools that it considers sufficient "pollution control requirements" that will result in the attainment of water quality standards in Big Spruce Brook within a reasonable period of time. Given that the existing impairments in Big Spruce Brook are due to the activities of a single entity, SMR, these tools can be applied in a coordinated fashion to efficiently attain water quality standards.

The following permitting and enforcement tools have been, and others may be, utilized to remediate Big Spruce Brook:

### **A. 1272 Orders**

#### **Order Relating to Development of Water Quality Remediation Plan**

On May 6, 2010, DEC issued an order pursuant to 10 V.S.A. §1272 ordering SMR to, no later than 45 days following the Order, develop remediation strategies for the two identified pollutant sources and submit them to the Department for approval. These plans must identify the remediation methods that will be employed, a description of preventative measures to be taken to avoid additional discharges and a monitoring plan design suitable to assess progress towards mitigation. Upon approval of the plans, SMR

will have 90 days to implement remediation measures. The Order is provided in Attachment C of the 2010 303(d) Listing Response Summary. Any failure to comply with this Section 1272 Order may be enforced in Vermont's Environmental Court.

## **B. Permitting Tools**

### **Stormwater Operational Permits**

DEC has broad authority to regulate discharges of stormwater runoff from both existing and future impervious surfaces constructed at SMR. This authority is provided in Vermont's stormwater statute, 10 V.S.A. Section 1264, and in DEC's Stormwater Management Rule. Although the permitting threshold has changed over time, permits have been required for discharges of stormwater runoff from impervious surfaces since 1978. Significant areas at SMR are currently covered under these operational stormwater permits. These permits require the collection, treatment and control of stormwater runoff from impervious surfaces. Permit terms and conditions are enforceable through an action in Vermont's Environmental Court pursuant to the Agency's Environmental Enforcement Statute, 10 V.S.A. Section 8001 et. seq.

If needed to manage currently unpermitted stormwater discharges, the Stormwater Management Rule provides broad authority for DEC to "reach back" and require stormwater treatment for these impervious surfaces if this is ultimately necessary to restore Big Spruce Brook. This broad permitting authority is provided in Section 18-302(a)(5) of the Stormwater Management Rule, which provides that a stormwater discharge permit is required for the following discharges of regulated stormwater runoff:

A discharge from any size of impervious surface if the Secretary determines that treatment is necessary to reduce the adverse impacts of the discharge due to the size of the impervious surface, drainage pattern, hydraulic connectivity, installation or modification of drainage or conveyance structures, location of the discharge, existing stormwater treatment, or other factors identified by the Secretary.

This authority allows the Secretary to require treatment on impervious surfaces that did not previously meet stormwater permitting thresholds as necessary to prevent an adverse impact on receiving waters. Impervious surfaces that may have predated stormwater permitting requirements or that did not meet prior stormwater permitting thresholds may therefore be required to obtain a stormwater permit as the Secretary deems necessary pursuant to Rule Section 18-302(a)(5).

In addition, DEC has broad authority to impose whatever permit conditions are necessary to meet Vermont's Water Quality Standards through 10 V.S.A. Section 1264(e)(1), which provides:

The secretary may issue, condition, modify, revoke or deny discharge permits for regulated stormwater runoff, as necessary to assure achievement of the goals of

the program and compliance with state law and the federal Clean Water Act. . . The permit shall contain such additional conditions, requirements and restrictions as the secretary deems necessary to achieve and maintain compliance with the water quality standards, including but not limited to requirements concerning recording, reporting, and monitoring the effects on receiving waters due to the operation and maintenance of stormwater-management facilities.

### **Stormwater Construction Permits**

DEC is the delegated authority in Vermont for the federal stormwater construction permitting program. DEC currently requires permit coverage for any construction activity that disturbs equal to or greater than one acre. Coverage is provided through an individual construction permit or through an authorization to discharge issued pursuant to DEC's General Permit 3-9020 for Stormwater Runoff from Construction Sites. Permit coverage requires the implementation of erosion prevention and sediment control measures during construction activities.

### **Residual Designation Authority**

Under Clean Water Act ("CWA") section 402(p), 33 U.S.C. § 1342(p), the United States Environmental Protection Agency ("EPA") established permitting requirements for certain stormwater discharges. EPA established such requirements in two phases: Phase I, 55 Fed. Reg. 47990 (Nov. 16, 1990); and Phase II, 64 Fed. Reg. 68,722 (Dec. 8, 1999). In addition, section 402(p)(2)(E) and (6) and 40 C.F.R. § 122.26 (a)(9)(i)(C) and (D), provide that the EPA Regional Administrator or, in states where there is an approved state program, the State Director may designate additional stormwater discharges as requiring National Pollutant Discharge Elimination System (NPDES) permits where he or she determines that: (C) stormwater controls are needed for the discharge based on wasteload allocations that are part of "total maximum daily loads" (TMDLs) that address the pollutants of concern, or (D) the discharge, or category of discharges within a geographic area, contributes to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States. This authority is commonly referred to as the Residual Designation Authority (RDA). This authority is an additional tool that ANR has at its disposal to ensure that water quality violations in Big Spruce Brook are remediated.

### **C. Enforcement Options**

ANR possesses two primary enforcement tools which could be utilized as necessary to ensure that SMR takes all steps necessary toward attaining water quality standards in Big Spruce Brook. First, ANR's Environmental Enforcement Statute, 10 V.S.A. 8001 et.seq. provides for an enforcement action in Vermont's Environmental Court for non-compliance with a statute, related rules, permits, assurances or orders. The Enforcement Statute also provides for the issuance of assurances of discontinuance, administrative orders, emergency orders, administrative orders, administrative penalties and permit

stays. Second, ANR has broad authority to impose necessary conditions through the issuance of a 1272 Order. 10 V.S.A. §1272 provides broad authority as follows:

If the secretary finds that any person's action, or an activity, results in the construction, installation, operation, or maintenance of any facility or condition which reasonably can be expected to create or cause a discharge to waters in violation of this subchapter, or to violate the board's rules under section 6025 of this title relating to significant wetlands, the secretary may issue an order establishing reasonable and proper methods and procedures for the control of that activity and the management of substances used therein which cause discharges or violations of board rules with respect to significant wetlands in order to reduce or eliminate those discharges and rule violations with respect to significant wetlands.

### **III. Estimate of Time When Water Quality Standards Will be Met**

EPA's 2005 Guidance provides that impaired streams for which a TMDL are not required must attain water quality standards within a "reasonable period of time." What constitutes a reasonable period of time will vary depending on factors such as the initial severity of the impairment, the cause of the impairment, riparian condition, channel condition, the nature and behavior of the specific pollutant, the size and complexity of the segment, the nature of the control action, cost, public interest, etc.

Given the nature of stormwater runoff and groundwater remediation, it is not possible to estimate with precision when water quality standards will be met. However, certain factors suggest that Big Spruce Brook will respond rather quickly after the pollutant sources are remediated. Upon remediation of sediment discharges from the identified sedimentation basin, residual sediment in the stream channel will likely be flushed downstream rather quickly which will improve the aquatic habitat conditions in this steep headwater area. Likewise, remediation of the ongoing iron seep will eliminate a significant localized stressor to the aquatic biota.

### **IV. Schedule for Implementing Necessary Pollution Controls**

The 1272 Order issued to SMR includes tight timeframes for performing the necessary work. Once DEC has approved the water quality remediation plan submitted by SMR pursuant to the May 6, 2010 Order, SMR will have 90 days to fully implement remediation measures.

### **V. Description of and Schedule for Monitoring Milestones for Tracking and Reporting Progress on Implementation of Pollution Controls**

Monitoring data will be gathered as part of the approved water quality remediation plan prepared by SMR pursuant to the 1272 Order. This data will be used to revise order terms to ensure that necessary actions are taken to achieve water quality standards compliance.

## **VI. Commitment to Revise as Necessary the Implementation Strategy and Pollution Controls**

DEC is committed to requiring SMR to revise, as necessary, the water quality remediation plan which is submitted pursuant to DEC's May 6, 2010 1272 Order. DEC is also committed to using the full range of its permitting tools as outlined above to ensure that permitting conditions work in tandem with the remediation measures required in the water quality remediation plan in order to move toward attainment of water quality standards.

Attachment B: 1272 Order issued to Stowe Mountain Resort

**AGENCY OF NATURAL RESOURCES  
DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
WATER QUALITY DIVISION  
103 SOUTH MAIN STREET  
WATERBURY, VT 05671-0405**

**IN THE MATTER OF:       Stowe Mountain Resort  
                                  Big Spruce Brook**

**In accordance with the provisions of 10 V.S.A. §1272, the Secretary (“Secretary”) of the Vermont Agency of Natural Resources (“Agency”) makes the following:**

**FINDINGS OF FACT**

1. Big Spruce Brook, located in the town of Stowe, Vermont, is a small, cold water, Class B stream and is a tributary to the West Branch of the Little River. The lower watershed and stream reaches of Big Spruce Brook are located on property owned by the Stowe Mountain Resort (SMR). Based on the drainage area, elevation and stream gradient, Big Spruce Brook is assessed for Aquatic Life Support (ALS) using the Small High Gradient (SHG) macroinvertebrate stream type Biocriteria guidelines.
2. Macroinvertebrate biomonitoring has been conducted, primarily by SMR, on Big Spruce Brook at two locations – river mile (RM) 0.2 and RM 0.3. Sampling at RM 0.2 extends back to 2000 and has been sampled annually between 2003 and 2009. The RM 0.3 site has been sampled annually between 2006 and 2009. Recent biomonitoring data shows that RM 0.2 has been in compliance with the Water Quality Standards biocriteria for the last two consecutive years and three of the last four years. RM 0.3 has shown noncompliance with the biocriteria for the last four years.
3. The Agency placed Big Spruce Brook on Part C of the 2008 Vermont List of Priority Waters, thereby identifying it as in need of further assessment to determine compliance with the Vermont Water Quality Standards. Based on SMR biomonitoring data since the 2008 listing cycle, the Agency has determined that Big Spruce Brook upstream of site 0.3 is not in compliance with the Vermont Water Quality Standards for aquatic life support due to sediment and iron stresses.
4. SMR has submitted information to the Agency that identifies sediment and iron stressors that are likely sources of Big Spruce Brook’s noncompliance with the Vermont Water Quality Standards. Agency staff met with SMR to review watershed information and have determined that the identified sources of iron and sediment are substantial enough to result in noncompliance in this relatively small watershed.
5. Based on this information, the Secretary has decided to list Big Spruce Brook on Part B of the Vermont Priority Waters List, which is submitted to EPA for approval. Waters

listed on Part B are considered impaired but do not require the development of a Total Maximum Daily Load (TMDL). However, impaired waters may only be listed on Part B if a water quality remediation plan is developed that assures that water quality standards will be attained within a reasonable period of time.

6. Without the development and implementation of a water quality remediation plan to address the impairment of Big Spruce Brook, it reasonably can be expected that the combined influences of sediment discharges and iron groundwater seeps from identified sources at SMR will continue to create or cause discharges to waters in violation of Subchapter 1 of Chapter 47 of Title 10 and the Vermont Water Quality Standards.

### **ORDER**

**In accordance with the provisions of 10 V.S.A. §1272, the Secretary, based on the above findings of fact, hereby issues the following order to establish methods and procedures to eliminate or control the discharges:**

- A. Within 45 days of the issuance of this Order, SMR shall submit to the Secretary for review and approval a Water Quality Remediation Plan (the Plan) to control the following sources of water quality impairment in Big Spruce Brook:
  - 1) the groundwater iron seep associated with fill material below the practice green and golf clubhouse and, 2) sediment discharges from the small sedimentation basin located adjacent to Big Spruce Road which discharges into Big Spruce Brook at RM 0.6.
- B. The Plan shall contain a detailed proposal for the control of the groundwater iron seep associated with the practice green, and include:
  1. A description of methods that SMR will implement to minimize or eliminate the groundwater iron seep;
  2. A description of preventative measures to be taken during implementation to minimize the potential for discharges to Big Spruce Brook; and
  3. A monitoring plan and schedule designed to assess success of mitigating the groundwater iron seep and progress towards mitigating the iron impacts on Big Spruce Brook.
- C. The Plan shall contain a detailed proposal for the control or elimination of sediment discharges associated with the drainage area contributing to the small sedimentation basin located adjacent to Big Spruce Road which discharges into Big Spruce Brook at RM 0.6, including:
  1. A description of methods that SMR will implement to minimize or eliminate the discharge of sediment;

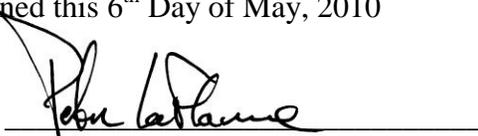
2. A description of preventative measures to be taken during implementation to minimize the potential for discharges to Big Spruce Brook; and
  3. A monitoring plan and schedule designed to assess success of mitigating the sediment discharge and progress towards mitigating the sediment impacts on Big Spruce Brook.
- D. Items required in B and C above may be submitted separately, but within the allotted timeframe, so as not to delay the initiation of either project based on a separate timetable of the other.
- E. Within 90 days of the Secretary's approval of items B and C above, SMR shall implement the control measures detailed in the approved plans. SMR shall notify the Secretary upon completion of the control measures.
- F. SMR shall submit the results of the monitoring required by this Order to the Secretary as set forth in the approved plans associated with items B and C above.
- G. The State of Vermont and the Agency reserve continuing jurisdiction to ensure future compliance with all statutes, rules, and regulations applicable to the facts and violations set forth herein above.
- H. Nothing in this Order shall be construed as having relieved, modified, or in any manner affected SMR's on-going obligation to comply with all other federal, state or local statutes, regulations or directives applicable to SMR in the operation of its business, nor does it relieve SMR of the obligation to obtain all necessary federal, state, and local permits.
- I. This order is not a resolution of any enforcement action that may be pending, contemplated, or initiated in these matters.
- J. Pursuant to 10 V.S.A. Chapter 220, any appeal of this Order must be filed with the clerk of the Environmental Court within 30 days of the date of the Order. For further information, see the Vermont Rules for Environmental Court Proceedings, available on line at [www.vermontjudiciary.org](http://www.vermontjudiciary.org). The address for the Environmental Court is 225 North Main Street, Suite 1, Barre, VT 05641 (Tel. # 802-479-4487).
- K. This Order shall be effective immediately upon signing and remain in effect until such time as the activities governed under this Order are completed or until such time as the Agency rescinds this Order or issues a subsequent Order, or whichever comes first.
- L. This approval does not grant any exclusive rights or privileges, which would impair any rights possessed by other riparian or littoral owners of the State of Vermont. It does not grant any right, title, or easement to or over any land not owned in fee by the applicant, nor does it authorize any damage to private property or invasion of private rights or the violation of Federal, State or local laws or regulations.

- M. The Agency, in issuing this order, accepts no legal responsibility for any damage, direct or indirect of whatever nature and by whoever suffered arising out of the activities described.
- N. SMR shall allow access to Agency representatives, upon the presentation of proper credentials, to inspect the subject site and sample any discharge or receiving waters as necessary to assess compliance with this Order and other applicable state laws related to water quality.

Justin G. Johnson, Commissioner  
Department of Environmental Conservation

Signed this 6<sup>th</sup> Day of May, 2010

By:

A handwritten signature in black ink, appearing to read "Peter LaFlamme", is written over a horizontal line.

Peter LaFlamme, Director  
Water Quality Division