

**TOTAL MAXIMUM DAILY LOAD
for SEDIMENT**

**TRIBUTARY #1 to NORTH BRANCH
BALL MOUNTAIN BROOK**

Waterbody ID: 11-15

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Introduction and Waterbody Description

The impaired water for which this TMDL was developed is identified on the 1998 Vermont 303(d) List as Tributary #1 to North Branch Ball Mountain Brook and is located by the Waterbody ID VT11-15. This is an unnamed stream but is referred to as "Tributary #1" throughout this document and other supporting documentation.

This stream is located in the upper reaches of the West River Basin in subbasin 11-15, as defined by the State of Vermont River Basins map. The stream is classified as Class B in the Vermont Water Quality Standards effective April 21, 1997. This TMDL aims to restore the impaired waterbody to at least the minimum level described in these standards.

Tributary #1 and its associated watershed of 0.6 mi² lies almost entirely within the holdings of a single property owner. The Stratton Corporation, single owner of a ski resort and associated adjacent properties, developed a multi-year development Master Plan which was submitted for review under Vermont's Act 250 land use and development control law. According to the Act 250 review process, one aspect is to review potential effects development may have on adjacent water resources. Since waters listed on the 1998 303(d) list were identified within the area of impact, including Tributary #1, a requirement of permit approval was the development of a remediation plan to restore impaired waters. Stratton Corporation agreed to develop and implement a water quality remediation plan.

One permit requirement of Act 250 was the Stratton Master Plan-Water Quality Remediation Plan (SWQRP), developed by Pioneer Environmental Associates, LLC with review, comment and approval provided by the Vermont Department of Environmental Conservation, Division of Water Quality. This plan provides the basis for the TMDL and is referred to extensively throughout this document and provides the necessary supporting information. The SWQRP is provided as supporting documentation under a separate cover.

A description of the watershed is given in the SWQRP, Section 2.2, including stream descriptions, existing land uses and other detailed information. A site plan of the watershed is given as an Appendix map in the SWQRP where the Tributary #1 watershed is identified as the sum of the sub-basins labeled "B".

Problem Assessment and Pollutant Sources

Problem Assessment

Macroinvertebrate sampling of Tributary #1 was conducted by the State of Vermont in the fall of 1997. Results of that sampling identified the biologic integrity of the stream to be poor and that it was not meeting the minimum Class B criteria. Indications were that the impairment was based on habitat degradation primarily from excessive sand/silt loading. Habitat evaluation revealed a high substrate embeddedness. From this evaluation, Tributary #1 was placed on the

1998 303(d) List of Impaired Waters. A complete description of the biological assessment is given in Appendix A.

In addition to excessive sediment loading to the stream, significant hydrologic change has occurred in the watershed which has increased peak discharge rates during precipitation and snow melt events. The increase in peak runoff rates is the result of land use changes that have increased impervious area. These changes exacerbate the sediment loading problem and play a role in the stream habitat impairment. Remediation measures need to reduce both the sediment loading amount and the peak discharge runoff rates.

Based on the 1997 evaluation of Tributary #1, growth of filamentous algae and lack of significant portions of the riparian buffer also appeared to be having a negative impact on the macroinvertebrate community as identified in Appendix A. In addition to the observed sedimentation impacts, observations identified a shift in the macroinvertebrate community composition, in part, caused by the lack of leaf litter and by the prolific filamentous algal growth. The shifts resulted in an decrease in the shredder species typical for this stream type.

Priority Ranking

According to the 1998 Vermont 303(d) List, TMDL development for Tributary #1 was scheduled for 2002. This represents a high priority scheduling for TMDL development considering that TMDLs were scheduled over a 15 year period extending through 2013. Watershed planning efforts in the state in conjunction with the Act 250 permitting process allowed this TMDL investigation, and subsequent management plan, to be developed earlier than anticipated.

Pollutant of Concern

The Tributary #1 TMDL was developed for sediment. High degrees of substrate embeddedness, primarily from sand, have degraded macroinvertebrate habitat. However, consideration of the hydrologic conditions that significantly added to the stream's impairment also played a large role in determining the remedial measures necessary under this phased TMDL. While altered hydraulic conditions are not technically considered pollutants by EPA, those conditions play a direct role not only in sediment loading, but also stream habitat alteration.

Also identified as a source of impairment of Tributary #1 was the growth of filamentous algae. The prolific growth of algae in portions of the stream was attributed to increased available light and nutrients. Portions of the riparian buffers have been lost, thus allowing a greater amount of light to enter the stream to fuel algal growth. Also fueling algal growth are nutrients associated with elevated sediment loading.

It is anticipated that the remediation measures set forth in the SWQRP will sufficiently address the ancillary impacts other than the primary impairment of sedimentation. While there is considerable uncertainty in predicting benthic algal growth and nutrient dynamics in small mountain streams, one significant consideration is key to the overall success of the restoration of Tributary #1. Since phosphorus has such a strong affinity to particulate matter, significant and

sufficient nutrient reductions are anticipated in association with the sediment loading reductions outlined in this TMDL and the SWQRP. Also addressed in the SWQRP are plans to reestablish riparian buffer sections that when implemented will decrease light and increase leaf litter to the stream. These additional actions in conjunction with the decrease of nutrient inputs from sedimentation are expected to significantly limit instream algal growth.

Pollutant Sources

Field observations were used to document specific areas of nonpoint source sediment loading to Tributary #1. The small size of the drainage area and short length of Tributary #1 allowed a thorough investigation of sediment sources and other factors contributing to stream impairment. These sources fall into several categories including road crossings, drainage ditches and parking lots. A description of sediment sources is given in the SWQRP, Section 2.2.3. Specific areas of concern are:

- Road crossings (West Hill Rd., Stratton Mountain Rd., Maple Hill Rd., North Branch Rd., Middle Ridge Rd.)
- Stratton Wastewater Treatment Plant access drive
- Ditch below liftline lodge
- Diversion weir at Stratton Lake
- Existing parking lots #2, #3, and #4
- Vicinity of Stratton Mountain Inn
- Vicinity of Birkenhaus and Stratton Mountain School

While the sediment sources listed above are given for specific areas, they fall into several projects prioritized for management actions. Individual restoration projects were given an impact ranking (Table 1) based on field observations and measurements which consider the significance of each of the water quality impact factors identified in Section 2 of the SWQRP. These factors include existing land uses, hydrology, erosion and sediment yield, riparian vegetation, channel processes and water quality.

Table 1. Prioritized areas for management activities based on Impact Ranking.

Impact Ranking	Management areas
1	Existing parking lots
2	Village Center/Commercial Development
3	Golf Course
4	WWTF Drive
5	Stratton Mtn. Road
6	Stream relocation at old spray field
7	On-stream Pond (Snyder)
8	Ski trails/work roads
	Single family housing ¹ Roads (private public) ² Condominium projects ¹

¹ denotes activities believed to have minimal water quality impacts

² areas/activities to be field-evaluated during 1999

Most of the prioritized actions above deal primarily with sediment reductions, however, actions proposed for the Golf Course, WWTF Drive, and the On-stream Pond include reestablishment of the riparian buffer. Loss of portions of the riparian buffer were identified as contributing to the impairment of Tributary #1.

Natural Background

A distinction was not made between natural background loadings of sediment and the total sediment load to Tributary #1. The assumption was made that because of the small size of the watershed, the problem areas could be identified and treated to minimize sediment loading to the stream. These problem areas were observed to be major contributing factors to impairment. Any natural loading that occurred was considered to be minimal and did not contribute significantly to the impairment.

Applicable Water Quality Standards and Numeric Water Quality Target

State Water Quality Standard

There is no applicable numeric standard for the sediment load carried in streams in the Vermont Water Quality Standards, but Tributary #1 is listed as impaired based on narrative criteria. The excessive sedimentation to Tributary #1 (as measured through various biometrics) has resulted in

a violation of the Vermont Water Quality Standard's § 3-01(B)(5) which states that there shall be:

No change from background conditions that would have an undue adverse effect on the composition of the aquatic biota, the physical or chemical nature of the substrate or the species composition or propagation of fishes.

Designated Uses

Since Tributary #1 is rated as a Class B waterbody, the Vermont Water Quality Standards state in § 3-03(A) and that:

Class B waters shall be managed to achieve and maintain a high level of quality, that is compatible with the following beneficial values and uses:

including § 3-03(A)(1):

Water of a quality that consistently exhibits good aesthetic value and provides high quality habitat for aquatic biota, fish and wildlife.

Since macroinvertebrate biomonitoring data did not meet the criteria for Class B standards, Tributary #1 does not support the designated uses for Class B waters.

Antidegradation Policy

In addition to the above standards, the Vermont Water Quality Standards contain, in part, the following antidegradation policy in § 1-03(A):

The waters of the State shall be managed in accordance with the Water Quality Standards to protect, maintain and improve water quality in such a manner that the beneficial values and uses associated with their classification are attained. All waters, except mixing zones, shall be managed so that, at a minimum, a level of water quality compatible with all beneficial values and uses associated with the assigned classification are obtained and maintained.

Numeric Water Quality Target

Section 303(d)(1)(C) of the Clean Water Act states that TMDLs "shall be expressed at a level necessary to implement the applicable water quality standards..." Without specific numeric targets defining "undue adverse effect" stated in the Vermont Water Quality Standards, a set of numeric biological community criteria were established to identify when conditions were not fully supporting the standards. The VT DEC uses a variety of biological indicators to identify when conditions exist that are not fully supportive of the expected aquatic community for a particular stream type. Table 2 lists the specific macroinvertebrate biometric values used to determine compliance with the Class B Water Quality Standards. These values were adopted as

the numeric targets for the Tributary #1 TMDL. The latest results describing the condition of Tributary #1 are also include in Table 2.

Table 2. Aquatic invertebrate biometrics, water quality targets and Tributary #1 results.

Biometric	Description	Tributary #1 Results ¹	Class B Criterion (WQ Targets)
Density	Relative abundance of organisms in a sample	299	> 500
Species Richness	Number of different taxa in a sample unit	41	≥ 30
EPT	Number of water quality sensitive taxa from the insect orders Ephemeroptera, Plecoptera and Trichoptera.	11	≥ 18
EPT/Richness	Ratio of water quality sensitive EPT taxa to all taxa found in Community	0.27	> 0.45
Biotic Index	The community tolerance to organic/nutrient loading, based on the tolerances of the species found in the community	2.76	< 2.75
EPT/EPT & Chironomid	Ratio of density of EPT taxa to EPT and tolerant Chironomidae	0.20	> 0.45
% Dominant Genera	Percent of dominant genera in the community	21%	< 40%

¹ As assessed on October 1, 1997. Complete description of the assessment results is given in Appendix A.

Sediment targets were also developed as restoration goals for Tributary #1 and are given below in Table 3. While the biological criteria given in Table 2 are the ultimate measure for attainment of water quality standards, the sediment targets act as another means of tracking the effectiveness of the phased implementation measures. These targets give a relative estimation of sediment loading by evaluating resultant instream conditions. A further description of the sediment targets is given in section 5.3.2 of the SWQRP.

Table 3. Sediment Indices, Targets and Status of Tributary #1.

Sediment Index	Tributary #1 Results ¹	Target Value
% Embeddedness	50 - 75%	< 25%
% <i>Oligocheata</i>	31%	< 5%
Pebble Count	not assessed	to be determined

¹ As assessed on October 1, 1997. Complete description of the assessment results is given in Appendix A.

Perhaps the best measure for quantification of sediment loading for this TMDL is percent embeddedness. This index allows both the quantification of sediment loading and provides a measure of macroinvertebrate habitat condition. The pre-remediation percent embeddedness was measured to range from 50% to 75% and a target goal of < 25 % was developed. The target goal of 25% embeddedness was selected because it represents an "excellent" substrate condition for benthic macroinvertebrates.¹

Linkage Analysis

The linkage analysis is a required TMDL element that establishes the cause-and-effect relationship between measurable water quality targets and identified sources. This can be accomplished through a number of methods from qualitative assumptions based on sound scientific judgement to the use of sophisticated predictive models. The method chosen should be supported by monitoring data that associate waterbody responses to specific loading conditions.

The cause of the impairment in Tributary #1 was determined to be excessive sedimentation due to sediment loading as identified by macroinvertebrate community sampling and habitat assessment. This lead to an extensive visual watershed assessment directed at locating specific sediment sources. During the qualitative assessment, sediment sources were quite clear in this small watershed and determined to be the primary cause of impairment. Best professional judgement dictated that effective control of all or most observed sediment sources contributing to the impairment would ultimately return the stream to compliance with Class B water quality standards.

This qualitative method to link the desired water quality targets to the observed sources was deemed appropriate in this watershed primarily because of its small area. A thorough survey identified significant pollutant sources that could be addressed by implementing remediation measures. Under the phased TMDL approach, incremental water quality gains are tracked by

¹ USEPA. 1989. Rapid Bioassessment Protocols for Use in Streams and Rivers: Benthic Macroinvertebrates and Fish (EPA440/4-89/001). United States Environmental Protection Agency. Office of Water. Washington, DC.

monitoring as implementation measures are undertaken. The required level of sediment loading reductions are realized when biocriteria standards and numeric targets are met.

In addition to the above qualitative linkage, a quantitative assessment of sediment loading was also developed. The simple method employed here allows a gross estimation of instream sediment loads that result based on watershed loading conditions. This estimation represents average overall stream condition based on field observations. By using the instream sedimentation target of 25 % embeddedness as the desired endpoint, the required instream load reductions can be calculated. In other words, the current or pre-remediation condition resulted in an instream embeddedness of 50-75 %, so the necessary instream sediment reductions are those that result in an embeddedness rating of 25 % or less. It is expected that over time, with sediment control measures in place, the existing instream sediment will move through the system and a more stable equilibrium between sediment loading and the instream condition will be established. The discussion below describes these calculations.

First, the pre-remediation instream sediment load producing the 50-75 % embeddedness needs to be calculated. By knowing the median size of the dominant natural substrate, the depth of what 50-75 % embeddedness represents, the relative area between the dominant particles where the fines settle, and the physical properties of the sediment fines, in this case sand, this value can be obtained. The values used for the sediment loading calculations are given below in Table 4 and are described in the following discussion.

Field observations reveal that the dominant natural substrate particle size is cobble (64 - 128 mm diameter). While there are other natural particles both larger and smaller than cobble present, namely boulders and gravel respectively, the cobble size class dominates. For the sake of simplification, the median cobble diameter in the size class, 96 mm, is used for the calculations of sediment volumes and loadings. By using the median cobble diameter, the depth of sediment fines can be calculated for both pre-remediation and target conditions of embeddedness. The embeddedness of the pre-remediation condition of 50 - 75 % represents a sediment depth of 48 - 72 mm. The remediation target of 25% embeddedness is a sediment depth of 24 mm.

Next, by using the observed percentage of sand coverage of stream bottom, the volume of the interstitial spaces between the larger natural particles can be determined for the sediment depths of interest. Sand was observed to cover approximately 20% of the stream bottom in the areas sampled. On a per square meter basis, this represents 0.2 square meters of sand for every square meter of stream bottom. The pre-remediation volume of fine sediment ranges from 0.0096 to 0.0144 cubic meters and the target volume of for 25 % embeddedness equals 0.0048 cubic meters.

When calculating the volume of the sand in the streambed alone, consideration must be given to the porosity of sand. A loose sand mixture has a porosity value of approximately 0.4, that is, approximately 40 % of a given volume is empty space. So in calculating the volume of sand in the stream for any given condition, as done above, the volume of the interstitial space between

cobbles must be multiplied by 0.6. This product gives the actual volume of sand between the cobbles and disregards the empty spaces between the particles.

Finally, in order to convert the fine sediment volume to a mass per unit area in-stream loading, the physical characteristics of the fine sediment must be considered. Sand has a density of approximately 2.65 grams per cubic centimeter. Multiplying the density by the actual volume of sand in the interstitial spaces gives the resulting in-stream loading for any given depth of embeddedness.

Table 4. Data used to calculate pre-remediation and target sediment loading rates.

	Pre-remediation	Target
% Embeddedness	50 - 75 %	25 %
Dominant natural substrate	cobble	cobble
Median diameter of dominant natural substrate	96 mm	96 mm
Depth of fine sediment	48 - 72 mm	24 mm
Interstitial area between natural substrate	0.2 m ²	0.2 m ²
Dominant fine sediment type	sand	sand
Porosity of fine sediment - estimated	0.40	0.40
Density of fine sediment - estimated	2.65 gr/cm ³	2.65 gr/cm ³

The loading ranges for both the pre-remediation and target values for Tributary #1 are given in Table 5. Based on the methodology for determining sediment loading described above, an estimated reduction of solids loading between 50 and 67% will be necessary to meet the instream sediment target of 25 % embeddedness.

Table 5. Estimated instream sediment loading condition.

	Fine sediment (sand) loading (kg/m ²)	% reductions necessary to meet instream target
Pre-remediation	15.3 - 22.9	50 - 67%
Target	7.6	

The strength of this quantitative approach is that it estimates the actual fine sediment loading to the streambed, which is the primary cause of impairment. This approach is based on observations and eliminates many of the uncertainties and complexities involved with monitoring water column suspended solids and predicting the fate and transport of sediments originating

from the watershed. This method does not attach expected load reductions associated with the various remediation measures, however, as discussed above in the qualitative linkage approach, the size of the watershed allowed extensive visual investigations of sediment sources and utilized professional judgement to prioritize appropriate remediation measures to attain standards.

In addition to the qualitative assessment of sediment sources and the quantitative loading analysis presented above, an analysis of hydrologic alteration due to change in land use was also used to link causes of pollutant loading and the impaired condition of Tributary #1.

Comparisons of peak discharge runoff rates between Tributary #1 and an adjacent, largely undeveloped watershed were used to gain a qualitative understanding of the hydrologic impacts that directly affect sedimentation and habitat alteration. By bringing peak runoff flows of Tributary #1 more in line with the reference watershed through remediation measures, there will be an expected reduction in a major contributing factor to sediment loading.

A further discussion of the hydrologic implications related to sediment loading and habitat change in Tributary #1 is given in the SWQRP, section 2.2.2.

TMDL Allocations

The TMDL is considered the loading capacity of a waterbody for a particular pollutant and EPA regulations require that a TMDL include a wasteload allocation (point sources), a load allocation (nonpoint sources) and a margin of safety. The margin of safety accounts for any lack of knowledge concerning the relationship between effluent limitations and water quality. Regulations also require that seasonal variations be considered when determining allocations.

As specified in the regulations, TMDLs may be expressed in terms of either "mass per unit time, toxicity, or other appropriate terms." Because of the nature of sediment loading and deposition in small mountain streams, this TMDL bases its allocations on "other appropriate terms."

Because sediment loading is largely a function of runoff characteristics related to rainfall and snowmelt events, expressing it as daily loading is clearly not appropriate. Annual loading may give a better overall indication of the magnitude of reductions needed, but it is not perfect either, because of the dynamics involved with sediment generation and transport in mountain streams and the role that large infrequent storms have on moving sediment. Annual loadings can fluctuate dramatically.

Instead, the sediment allocation for Tributary #1 is given as the percent reduction in sediment loading necessary to achieve an instream condition believed to provide optimal macroinvertebrate habitat conditions. As the calculations from the previous section indicate, the reduction in fine sediment loading to reduce embeddedness from the pre-remediation range of 50-75 % to 25 % is approximately 50-67 %.

Wasteload Allocations

There are no sediment point sources in the watershed discharging to Tributary #1. Therefore, the TMDL recommends a Wasteload Allocation of zero.

Percent reductions of fine sediment loading needed from Point Sources	0 % - there are no point sources present
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Load Allocations

Nonpoint sources of sediment are considered the sole category of pollutant to the impairment of Tributary #1 and, therefore, all reductions required in this TMDL are allocated to those sources.

Percent reductions of fine sediment loading needed from Nonpoint Sources	50 - 67 %
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The SWQRP, Section 4.0, establishes a water quality impact ranking for each of the contributing sources of impairment. For each identified problem, an associated remediation measure has been scheduled for implementation. By scheduling remediation projects according to their relative beneficial impacts, rapid improvements are be expected earlier in the remediation phase rather than later. This adaptive management approach creates an initial expectation for improvement but also allows modification as monitoring results may require.

Margin of Safety

The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between effluent limitations (or in this case nonpoint source remediation measures) and water quality. This margin of safety can be either implicit in the analysis by using conservative assumptions or explicit as a separate loading allocation. In the case of Tributary #1, an implicit margin of safety was used.

There is an inherent margin of safety established for the Tributary #1 TMDL with the selection of a conservative percent embeddedness target of <25 %. A "good" embeddedness rating covers a wide range of values from 25% to 50% and in most instances provides adequate habitat for the expected macroinvertebrate community based on stream type. A percent embeddedness rating of less than 25 % is considered "excellent" as interpreted both by the Vermont DEC and EPA's rapid bioassessment protocols and has been selected as the target for this TMDL. With such a conservative target as the goal of the implementation measures, compliance with the Vermont water quality standards should be assured.

Also, since this phased TMDL relies on followup monitoring and adaptive management, an added level of assurance is gained. The adaptive approach being applied in Tributary #1 ensures water quality standards will ultimately be met through continued monitoring and remediation actions. If monitoring indicates that implemented projects are not enough to sufficiently improve water quality, then remediation measures continue. Also, as part of the Act 250 permit process,

future development in the impaired watershed outside the scope of the remediation plan is not allowed until the water quality standards are met.

Seasonal Variation

A TMDL is also required to consider seasonal variation in the loading analysis and resulting allocations to ensure water quality standards will be met throughout the year under various environmental conditions. Seasonal variation was inherently incorporated in the consideration of this TMDL for Tributary #1 and will be protective of water quality throughout the year.

The selected numeric water quality endpoints represent water quality conditions that are a result of the cumulative impacts of both dry and wet weather conditions that occur over extended periods. Because of this, the allocations and resulting implementation measures are directed primarily at reducing sediment sources and not at the sediment delivery mechanisms. By utilizing this approach, seasonal variations have little effect on sediment loading if the sources are no longer present. Examples include elimination of gravel parking lots and stabilization of eroding soils.

The SWQRP Implementation Plan also includes measures to treat stormwater runoff to significantly reduce sediment entering the stream. Examples include extended detention and infiltration basins and vegetated drainage areas to reduce sediment loading. The implementation measures selected will be engineered to function under all climatic conditions to sufficiently treat stormwater runoff throughout the year.

Monitoring Plan for TMDL Development Under the Phased Approach

A plan for continued monitoring is essential and required for any phased TMDL. An extensive monitoring plan has been developed and is explained in detail in the SWQRP, Section 5.4. The section below gives the overall monitoring approach and the rationale used for its development. The monitoring of Tributary #1 is only a part of an overall monitoring plan provided in the SWQRP. The described monitoring plan provides a holistic monitoring approach including not only the 303(d) listed waters of Tributary #1, but also adjacent impacted watersheds.

Since the implementation of this TMDL and water quality management plan is to be a phased process, a long-term monitoring plan was developed. The overall approach of the monitoring plan is to develop a reliable baseline documenting existing conditions, and to track future changes in water quality resulting from discrete and incremental remediation measures. A five year data collection program was established beginning in 1999. The Stratton Corporation is primarily responsible for data collection, however, all results are submitted to Vermont Agency of Natural Resources in the form of an annual performance report.

Specific to Tributary #1, nine sampling locations have been established for which a variety of parameters are monitored. Although this TMDL is developed for sediment, the SWQRP covers a broad range of parameters including water chemistry, sediment, temperature and

macroinvertebrates. Not every sampling location is monitored for all parameters, but each site is monitored for parameters specific for tracking progress of implementation measures.

In-stream measures of sediment load include the Pebble Count Procedure and Percent Embeddedness. Targets for each of these have been developed and annual monitoring results will track the progress of habitat improvement over the course of the implementation plan. Combined with the biomonitoring portion of the plan, compliance status with the Vermont Water Quality Standards will be tracked until conditions exist that can perpetuate continued compliance.

Implementation Plan

Strategies to Remediate Impairments

A number of remediation measures were identified for water quality improvement and many were meant to specifically reduce sedimentation in Tributary #1. All potential measures were ranked according to their overall impact for improving water quality and habitat condition. The ranking is based on field observations and measurements that consider relative benefit potential. A list of all proposed implementation measures is provided in the SWQRP, section 4.0 and 4.2 and includes parking lot runoff treatment and modification, land use conversion and buffer improvement among others.

To aid in identification and ranking of appropriate remediation measures, a hydrologic analysis was conducted for each subbasin within the Tributary #1 watershed. A breakdown of peak flow rates and total runoff volumes for a two year storm was conducted for existing conditions and following the proposed implementation plan measures. The results from this analysis are given in the Appendix of the SWQRP.

Implementation Schedule

A complete schedule for implementation of remedial measures is given in the SWQRP, Section 5.0. Remediation measures for Tributary #1 are expected to be completed by 2001 and biocriteria standards for Class B waters are expected to be attained by 2005.

Reasonable Assurances

In waters impaired solely by nonpoint sources, reasonable assurances that implementation measures will be carried out are not required for a TMDL to be approved. However, EPA encourages states to provide reasonable assurances whenever possible that may include regulatory, non-regulatory, and or incentive-based measures. The TMDL for Tributary #1 includes an extensive implementation plan aimed at restoring the stream to the acceptable numeric targets.

Since the SWQRP was developed as a permit requirement of the Vermont Act 250 land use and development control law, there is a strong incentive, and reasonable assurance, that the plan will

be implemented. The primary land owner, Stratton Corporation, will be ineligible for future development permits outside the scope of the remediation plan until the impaired waters, including Tributary #1, attain the Vermont Water Quality Standards. Implementation of remediation measures has begun in coordination with the VT-DEC.

Public Participation

As described previously, the SWQRP was developed through the Vermont Act 250 land use and development control permit process. As a part of that process, an extensive public participation process was involved. In EPA's initial comment letter of March 15, 2000 for the draft Tributary #1 TMDL, EPA stated that "EPA policy is that there must be full and meaningful public participation in the TMDL process." Vermont DEC believes that the public participation in the development of the Tributary #1 TMDL as part of the Stratton Water Quality Remediation Plan more than satisfies this policy and meets all legal requirements.

The Stratton Water Quality Remediation plan was an outgrowth of the proceedings considering an application by the Stratton Corporation (Stratton) for a master plan permit for major development plans under Act 250. Vermont's Act 250 law is nationally acclaimed for its comprehensive and integrated approach to reviewing regional, economic, social and environmental impacts of major development projects. In effect for three decades, the law and its procedures are now an institution well known by all Vermonters with more than a passing interest in environmental issues. A surprising number of the state's residents can rattle off the Act's "10 Criteria" for reviewing projects. (See Appendix B for the Act 250 Process and the 10 criteria).

Act 250 addresses the broader impacts from large scale development projects that are not covered by Department of Environmental Conservation's (DEC) discharge permit programs. For example, the Act 250 Commission found that Stratton must address all the nonpoint source pollution associated with the proposed master plan, whether a DEC permit for a discharge is required or not. The Stratton Water Quality Remediation Plan was the mechanism adopted by the Commission for addressing nonpoint source pollution at Stratton. In addition, Act 250 regulators can supplement DEC requirements by imposing stricter conditions on discharges than those included in DEC discharge permits.

The Act 250 process is quasi-judicial in nature. Public notice of a permit application includes an invitation to become a party to the proceedings. As explained in the Appendix B, the applicant; the municipal planning commission; the municipality, represented by either the selectman, alderman, or trustees; the regional planning commission; and affected State agencies are, by law, parties to the proceedings. Adjoining property owners who have requested a hearing or appeared at the first hearing and other persons or groups found to be appropriate parties under Environmental Board's "Rule 14(B)" may also be admitted as parties. The criteria for gaining party status are broad. To become a party an individual or group must demonstrate that their interests are affected under any of the 10 criteria or show that their participation will materially

assist Act 250 regulators by providing testimony, cross-examining witnesses, or offering argument or other evidence relevant to the 10 criteria.

The initial Act 250 public notice regarding Stratton's application for a master plan permit dated February 26, 1997 is found in Appendix B. As a result of that notice the Stratton Area Citizen Committee (SACC), a local and vocal citizen group with long standing interest in water quality, and the Vermont Natural Resources Council (VNRC), a statewide environmental organization with a special interest in water quality were both admitted as parties to the proceedings. Unlike citizens in the typical informational public hearing, parties in Act 250 proceedings may introduce evidence, present expert testimony, cross examine witnesses of other parties, file legal memorandum and proposed findings of fact, and seek administrative and judicial appeals of regulatory rulings.

To abbreviate a long story, as a result of water quality concerns raised by SACC, VNRC and DEC the Act 250 district commission requested comments from DEC on how the commission should respond to Stratton's expansion plans in light of the fact that its existing developments were contributing to nonpoint source violations of state water quality standards. DEC's response was to suggest that Stratton be required to prepare and implement a water quality remediation plan with specific water quality improvement targets as a condition of going forward with new development projects.

On April 9, 1999 the district commission issued notice of a public hearing (Appendix B) "to review a specific plan for correcting impaired stream segments and achieving compliance with the Vermont Water Quality Standards." The commission also requested that DEC approve the plan and "set quantifiable benchmarks by which to judge the effectiveness of the remediation strategy." The development of the water quality remediation plan was a collaborative process involving DEC and Stratton and review by VNRC. The plan was presented for approval at a public hearing before the Act 250 district commission. The plan was approved by the district commission along with a master plan permit. The plan also requires periodic public meetings to review implementation progress.

The water quality remediation plan is currently being implemented. VNRC appealed the district commission's master plan permit approval to the state Environmental Board on several grounds. VNRC's appeal is not directed at the water quality remediation plan's benchmarks although they are seeking that new development be postponed until waters are no longer impaired.

In summary, the Stratton Water Quality Remediation Plan was the result of more than two years of intense public hearings over water quality concerns. The hearings included ongoing input from local officials, state government, local citizens and statewide environmental interests.

It should be noted that the Clean Water Act does not require public participation in establishing TMDLs. The applicable EPA rules at 40 CFR 130.7(c)(1)(ii) read as follows:

"(ii) TMDLs shall be established for all pollutants preventing or expected to prevent attainment of water quality standards as identified pursuant to paragraph (b)(1) of this section. Calculations to establish TMDLs shall be subject to public review as defined in the State CPP."

The relevant portion of Vermont's current CPP reads as follows:

"The Department no longer centralizes the public participation implementation effort. Implementation is the responsibility of the program manager under policy direction and overview by the Commissioner. Each program manager is in a position to identify and insure participation in the decisions uniquely significant to his/her program and the involved public." (State of Vermont 1995 Continuing Water Quality Management Planning Process, p. 45)

In this case, it made no sense to initiate an independent and duplicative public notice and comment process on the TMDL given the extensive public involvement in the Act 250 master plan permit proceedings which lead to the development of the TMDL and govern its implementation.

The Stratton Water Quality Remediation Plan is a perfect example of using existing state regulatory mechanisms and their attendant public participation requirements to restore impaired waters. Public participation was fully consistent with the CPP and EPA rules. In fact, we doubt that many TMDL's nationally have undergone such a rigorous public process.

Finally, we note the following quotes from Secretary Browner's press release introducing EPA's new TMDL rules:

"Under the final program signed today, the U.S. Environmental Protection Agency would work in partnership with state and local governments to develop common sense, flexible solutions for cleaning up the 40 percent of U.S. waterways that presently do not meet the goals for public-health protection."

"States and local communities will have maximum flexibility to determine how best to meet cleanup goals by setting their own TMDL's, or total maximum daily loads."

"And it allows maximum flexibility for state and local governments to develop cleanup plans."

We believe that the public participation which led to the Stratton Water Quality Remediation Plan is a perfect example of the "common sense, flexible solution" to nonpoint source impaired waters that Secretary Browner is aiming for.

Appendix A

**Results of Tributary #1 Bioassessment
October 1, 1997**

Agency of Natural Resources
Department of Environmental Conservation

Water Quality Division
Biomonitoring and Aquatic Studies Unit
R.A.LaRosa Laboratory
802-244-4520

MEMORANDUM

To: The Record

From: Steve Fiske

Date: November 7, 1997

Subject: Biological Assessment of Streams on Golf Course at Stratton Mt Ski Area

Two tributary streams that enter the Stratton Golf course pond were assessed on October 1, 1997. The tributary streams were walked with Ralph Rawson from Stratton Mountain Ski Area, Kim Kendall from VNRC, Jessica Rykker from the VtDEC, and myself. Macroinvertebrate samples were collected at one point on each stream as indicated on the attached map. Sampling methods followed the VtDEC kick net method for sampling small wadeable streams. In addition to the biological sampling a stream habitat assessment was done and water samples collected for pH, alkalinity and conductivity analysis. The biometrics from this assessment for the two streams as well as the median value from the VtDEC reference stream database from similar streams is presented in tables 1-3. A summary of the important habitat and chemical variables from each stream site is presented in table 4.

The overall conclusion from the biological assessment and habitat evaluation done on tributary #1 is that the biological integrity is poor, and does not meet the minimum Class B biological criteria presently applied by the VtDEC. The community biometrics indicate that the community is being impaired by both habitat degradation from sand/silt, and nutrient enrichment. The habitat evaluation from the stream indicates that there is a high sediment bedload (both sand and silt), the substrate embeddedness rating is fair (50-75%), and filamentous algae is prolific.

The biological assessment and habitat evaluation for tributary #2 is that the stream community integrity is still good but has been moderately changed from its natural condition. The community present more closely resembles that of a moderately enriched larger sized stream, atypical for its stream type, but of good biological integrity. The habitat assessment indicates the stream also contains considerable amounts of sediment, but less so than tributary #1, the embeddedness rating is good 25-50%, and the periphyton community has considerably less filamentous algae present.

The following paragraphs detail how the macroinvertebrate community assemblage of each tributary deviates from that of reference quality streams of similar type. Included in each table 1-3 below is a column that shows the median value for each of the macroinvertebrate community attributes from the VtDEC reference database for streams of similar type to the tributary streams assessed. The reference stream type can be described as small, high elevation, high gradient, canopied streams; that are usually relatively low in alkalinity and pH, but not so critically low as to be limiting to the aquatic biota.

Tributary #1 is low in density (299), and EPT richness (11) compared to the reference stream database, which shows that densities typically average about 800+ and EPT richness about 23.5. It appears that both silt and algae tolerant *Diptera* and *Oligocheata* taxa have become the dominant macroinvertebrates in the stream. This dominance of the more pollution tolerant taxa is seen in the ratio between the EPT/richness metric (.27) and in the # of EPT/EPT&c (.20). The median value for these ratios is .58 and .88 respectively for this stream type. The Bio Index value is a measure of the overall nutrient enrichment tolerance of a community based on an average of the tolerance rating for each species and their abundance in the community. The Bio Index value for tributary #1 is very high at 2.76, compared to the reference stream database 1.29. The dominant taxa in the stream *Cricotopus spp* typifies the stream conditions. It is an algae shredder that is also tolerant of silt and sand.

The percent composition of the dominant orders and functional groups also illustrates how tributary #1 has been severely altered from that found in a natural stream of its type. Normally this type of stream is more dominated by *Plecoptera* and *Trichoptera* species that process leaf litter and are functionally classified as shredders. In tributary #1 we see relatively low percentages of these species and a high percentage of *Diptera* and *Oligocheata* species. The species from these orders represented in tributary #1 function as either generalist collector gatherers or shredders of filamentous algae.

The habitat assessment performed at the time of sampling tends to support the above stream community impacts are due to habitat degradation, and enrichment of the stream water. Habitat problems that need to be corrected are: **1- a high level of sand and silt in the substrate**, which is causing the cobble substrate to be embedded, thus eliminating biologically critical crevice habitat. **2-The lack of stream canopy, and riparian zone** has caused a loss of leaf litter in the stream, resulting in a dramatic decrease in the shredder species typical for this stream type. It has also probably contributed to the increase in algal growth observed due to a decrease in stream shading that often results in an increase in stream temperature, and available nutrients in the water column. This type of non-point stream habitat degradation is usually caused by poor riparian zone and storm water runoff management.

Tributary #2 is not as degraded as tributary # 1; however the composition of the macroinvertebrate community has been substantially changed to look like that of a moderately enriched larger river. The biometrics most effected in this case are density, the Bio Index value, and the EPT/richness ratio. The density of the community is very high (3672) and the Bio Index value is 2.57, indicating that the stream is being moderately enriched. Reference quality streams average about 878 animals per sample unit, and a Bio Index value of 1.29. The EPT/richness

ratio is 0.44, just below the present Class B criteria indicating that more tolerant taxa are beginning to outnumber the intolerant EPT taxa. The EPT/EPT&c ratio is 0.74 showing that the EPT taxa are still numerically dominating the community. Finally the dominant taxa at tributary # 2 makes up a typical 24% of the community composition. The taxa however is *Fossaria sp.* a snail that is classified as an algae scraper. It is highly unusual to find a snail dominating the community of this type stream.

Once again the percent composition of the dominant macroinvertebrate orders and functional groups can help reveal how the community has been modified from its reference condition. In this case the percentage of *Plecoptera* has been reduced in the community primarily by the unusual high percentage of *Gastropoda*. This has resulted in a functional shift in the community from one with a dominance of leaf shredders to a high percentage of scrappers compared to a reference stream community.

The habitat assessment again points toward a loss of canopy, and an increase in the sand load and embeddedness of tributary # 2, compared to a natural reference stream of this type. The observed amount of filamentous algae however indicates that nutrient enrichment may not be as much of a factor in stream #2. Again to correct the biological impairments identified here both riparian zone, and storm water management should be of high priority in the watershed.

In summary both the tributary streams sampled in this assessment have been impaired from non-point sources of sediment and the lack of riparian zone management. Tributary # 1 is in poor condition and does not meet the present Class B biocriteria as applied to all streams in Vermont. The community is reduced in density, and EPT richness, has an unacceptable high Bio Index value, and ratios between intolerant taxa and tolerant taxa. Tributary # 2 has been moderately enriched to the point where it is barely meeting the present minimum Class B biocriteria. Compared to a reference data set specific to small stream types the community has been highly modified to look like that of an enriched river, with shifts in the functional composition and order level composition of the community. Many of the species now present are more typically found in larger rivers that are moderately enriched.

Table 1: The macroinvertebrate community biometrics for two tributary streams from the Stratton Mt Ski Area Golf course, and the median, and 25-75 percentile values from the Vt DEC ecoregional reference database for similar type streams, and the current Class B biocriteria being applied by the DEC.

Biometric	Tributary #1	Tributary #2	Ref Median Str Type 2 (25-75 %)	Present Class B
Density	299	3672	878 (681-1473)	>500
Richness	41	48	40 (35-44)	>30
EPT	11	21	23.5 (20-24)	>18
EPT/Rich	.27	.44	.58 (.53-.59)	>.45
Bio.Index	2.76	2.57	1.29 (1.08-1.51)	<2.75
EPT/EPT&c	.20	.74	.88 (.82-.93)	>.45
%Hydrop	4.35	16.2	5.7 (2-10)	
%Dom	21 Cricotopus	24 Fossaria	20 (18-25)	<40

Table 2: The percent composition of the major macroinvertebrate Orders for two tributary streams from the Stratton Mt Ski Area Golf course, and the median, and 25-75 percentile values from the Vt DEC ecoregional reference database for similar type streams.

	Trib #1	Trib #2	Ref Median Str Type 2 (25-75 %)
%Coleoptera	1	2	4 (0.8-6.0)
%Diptera	57	24	16 (12-21)
%Ephemeroptera	2	26	20 (14-32)
%Trichoptera	6	21	29 (21-44)
%Plecoptera	3	2	18 (14-29)
%Oligocheata	31	1	<1 (0-0.3)
%Other (Gastropoda)	1	24	<1 (0.1-0.5)

Table 3 : The percent composition of the Functional Groups within the macroinvertebrate community for two tributary streams from the Stratton Mt Ski area Golf course, and the median, and 25-75 percentile values from the Vt DEC ecoregional reference database for similar type streams.

	Trib #1	Trib #2	Ref Median Str Type 2 (25-75 %)
Collector Gatherer	49	35	26 (21-42)
Collector Filterer	8	19	18 (13-26)
Predator	18	11	20 (13-27)
Shrd-Detritus	3	1	14 (10-16)
Shrd-Herb.	22	2	<1 (0-2)
Scraper	1	30	8 (4-15)

Table 4: Selected important habitat and water chemistry variables as observed or measured for two tributary streams from the Stratton Mt Ski area Golf course.

	Trib # 1	Trib # 2
pH units	7.56	7.45
Alkalinity mg/l	44.8	48.7
% Sand	20	10
Embeddedness	>75	50-75
% Canopy	40	10
% Fila. Algae	50	10

cc ~ Doug Burnham VtDEC
 Dan Maxon VtDEC
 Brian Kooiker VtDEC
 Kim Kendall VNRC
 Michele Grenier Stratton Resort
 Ralph Rawson Stratton Resort

Appendix B

Act 250 Hearing Information and the 10 Criteria

**Act 250 Notice Application and Hearing concerning
Stratton Master Plan and Water Quality Remediation Plan**

STATE OF VERMONT
ENVIRONMENTAL BOARD - DISTRICT COMMISSIONS

ACT 250 - Hearing Information and the 10 Criteria

The following general information is provided to assist participants and observers at Act 250 hearings in following and understanding what is taking place. In all cases when specific information about Act 250 is required, you should refer to 10 V.S.A. Chapter 151 and the Environmental Board Rules.

The Act 250 hearing is conducted by a three-member District Environmental Commission. Each Commission also has two alternate Commissioners. The Commissioners are appointed by the Governor of the State of Vermont. Their responsibility is to consider evidence presented by legally designated parties and to evaluate each application for a subdivision or development permit in accordance with the ten criteria below. The so-called statutory parties are: the applicant; the municipal planning commission; the municipality, represented by either the selectman, alderman, or trustees; the regional planning commission; and affected State agencies. The District Commission may also grant party status to adjoining property owners who have requested a hearing or appeared at the first hearing and other persons or groups found to be appropriate parties under Environmental Board Rule 14(B). The District Coordinator's role is to assist the District Commission in the procedural aspects of the application review, as well as to provide advice to the applicant and the various parties.

In order for an adjoining property owner to be admitted as a party, the property owner or his representative must show how the proposed project will have a direct effect on his property in relation to the 10 criteria outlined below.

Individuals or organizations seeking party status under Environmental Board Rule 14 (B) must make their request on or before the first day of the hearing; must state the details of their interest in the proceedings, including whether their position is in support of or in opposition to the order sought, if known; must in the case of a petition by an organization, describe the organization, its membership and its purposes; and must show either (a) that the project may affect their interests under the 10 criteria, or (b) that their participation will materially assist the Commission in its review of the project by providing testimony or other evidence relevant to the 10 criteria.

10 CRITERIA

Before granting a permit, the District Commission must ensure that the development or subdivision meets the following criteria:

- (1) Will not result in undue water or air pollution.

This criterion deals with water and air pollution potential generally and such specific matters relating to water pollution as:

(A) Headwaters; (B) Waste disposal; (C) Water Conservation; (D) Floodways; (E) Streams; (F) Shorelines; and (G) Wetlands

streams, (F) shorelines, and (G) wetlands.

- (2) Has sufficient water available for the needs of the subdivision or development.
- (3) Will not unreasonably burden any existing water supply.
- (4) Will not cause unreasonable soil erosion or affect the capacity of the land to hold water.
- (5) Will not cause unreasonably dangerous or congested conditions with respect to highways or other means of transportation.
- (6) Will not create an unreasonable burden on the educational facilities of the municipality.
- (7) Will not create an unreasonable burden on the municipality in providing governmental services.
- (8) Will not have an undue adverse effect on aesthetics, scenic beauty, historic sites or natural area, and 8(A) will not imperil necessary wildlife habitat or endangered species in the immediate area.
- (9) Conforms with the Capability and Development Plan which includes the following considerations:
 - (A) The impact the project will have on the growth of the town or region; (B) Primary agricultural soils; (C) Forest and secondary agricultural soils; (D) Earth resources; (E) Extraction of earth resources; (F) Energy Conservation; (G) Private utility services; (H) Costs of scattered developments; (J) Public Utility services; (K) Development affecting public investments; and (L) Rural growth areas.
- (10) Is in conformance with any local or regional plan or capital facilities program.

The burden of proof is on the applicant for Criteria 1, 2, 3, 4, 9, and 10. The burden of proof is on the opposition for Criteria 5, 6, 7, 8, and often 9(A). A permit can be conditioned but not denied under Criteria 5, 6, and 7. Regardless of the burden of proof, the Commission must have enough information to make findings under all the criteria.

At the conclusion of the hearing, the District Commission will either adjourn the hearing or declare a recess sometimes to a latter date to allow additional information to be presented. If the hearing is adjourned, the Commission will issue a decision in the form of findings of fact and conclusions of law, and, if appropriate, a Land Use Permit, within twenty days.

Any of the parties may appeal a decision issued by the District Environmental Commission. The appeal from a District Commission is to the State Environmental Board. A decision of the Environmental Board may be appealed to the Vermont Supreme Court by the applicant, the State, the regional and municipal planning commission and the municipality.

Act 250 permits do not supersede or replace the requirements of other local or state permits. For additional information about Act 250 and its relationship to local or state land use laws, contact the Environmental Board, Montpelier, Vermont (802-828-3309) or the

Coordinator at any of these locations:

Environmental Comm.
Districts #1 & 8
440 Asa Bloomer Bldg.
Rutland, VT 05701-5903
(Tel. 786-5920)

Environmental Comm.
Districts #4, 6, and 9
111 West St.
Essex Jct., VT 05452
(Tel. 879-5614)

Environmental Comm.
District #7
1229 Portland St., Suite 201
St. Johnsbury, VT 05819
(Tel. 751-0120)

Environmental Comm.
Districts #2 and 3
100 Mineral Street, Suite 305
Springfield, VT 05150
(Tel. 885-8855)

Environmental Comm.
District #5
324 North Main Street
Barre, VT 05641
(Tel. 476-0185)

Page 1

**ACT 250 NOTICE
APPLICATION AND HEARING
10 V.S.A., SECTIONS 6083-6086**

Notice is hereby given that on February 11, 1997, Application #2W0519-10 was filed by the Stratton Corporation, RR 1, Box 145, Stratton Mountain, VT 05155, pursuant to Environmental Board Rule 21 Order of Evidence - Partial Review, for a Master Plan for the Stratton Resort. The plan calls for 724 lodging rooms, restaurants, shops, a theater, redeveloped golf clubhouse and base lodge, ice skating rink, 574 additional housing units, 21 single-family estate lots, improved pedestrian and vehicular circulation, expansion to the Sports Center, including a large outdoor pool and other amenities. The project also calls for replacement of existing lifts with high speed technology and installation of additional lifts (total of 15 lifts at build-out), ski trail expansion of 220 acres all to have snowmaking, construction of 32,000 square feet of additional base lodge facilities in the Sun Bowl and renovations to the Village Base Lodge, construction of a new Welcome Center, and expanded day skier parking in the Sun Bowl and at the new Welcome Center. The project is located in the Towns of Stratton and Winhall.

Pursuant to is jurisdiction and authority under 10 V.S.A., Sections 6001(3) and 6085, the District Environmental Commission will hold a public hearing:

March 19, 1997 - Site Visit 9:00 a.m. - Meet at the Sun Bowl Base Lodge parking lot at Stratton Mountain and transportation to the site will be provided. The Hearing will be held immediately after the site visit at the Stratton Town Office.

The following people or organizations may participate in this hearing:

1. Statutory parties: The municipality, the municipal planning commission, the regional planning commission, any adjacent municipality, municipal planning commission or regional planning commission if the project lands are located on a town boundary, and affected state agencies.
2. Adjoining property owners: May participate to the extent the proposals will have a direct effect on their properties under the ten criteria.
3. Other persons or organizations: May participate pursuant to Environmental Board Rule 14(B) at the discretion of the District Environmental Commission.

If you wish further information regarding participation in this hearing, please contact the coordinator at the address below before the first hearing date. If you have a disability for which you are going to need accommodation, please notify this office at least seven days prior to the above hearing date.

Plans for this project are available for review at the municipal office, the regional planning and development commission, and the District Regional Office in North Springfield.

Prior to issuance of a land use permit for this project the District Environmental Commission must find that the project is in conformance with the ten criteria of 10 V.S.A., Section 6086(A) and that it is not detrimental to the public health, safety, and welfare.

Dated at North Springfield, Vermont on February 26, 1997.

By: 

April Hensel, District 2 Coordinator
RR 1, Box 33

No. Springfield, VT 05150 (Tel: 886-2215)

CERTIFICATE OF SERVICE

#2W0519-10

I, April Hensel, hereby certify that I sent a copy of the foregoing Hearing Notice on February 26, 1997, by U.S. Mail, postage prepaid, to the following:

The Stratton Corporation
Mr. Dana C. Severy
RR 1, Box 145
Stratton Mountain, VT 05155

Stratton Bd. of Selectmen
Albert Dupell
P.O. Box 146
W. Wardsboro, VT 05360

Stratton Town Planning
Rona Hicks
P.O. Box 166
W. Wardsboro, VT 05360

Windham Regional Commission
139 Main St., Suite 505
Brattleboro, VT 05301

Winhall Bd. of Selectmen
Theodor Friedman
P.O. Box 40A
Bondville, VT 05340

Winhall Town Planning
Marcel Gisquet
Bondville, VT 05340

Land Use Attorney
Agency of Natural Resources
103 South Main Street
Waterbury, VT 05676

FOR INFORMATION ONLY

District 2 Environmental Commission
RR #1, Box 33
North Springfield, VT 05150

Stratton Town Clerk
Patricia F. Coolidge
P.O. Box 166
W. Wardsboro, VT 05360

Winhall Town Clerk, Ms. Marion Jenks
Box 19A
Bondville, VT 05340

Stuart Slote
Public Service Department
State Office Building
Montpelier, VT 05602

James McMenemy
District Fisheries Biologist
RR #1, Box 33
No. Springfield, VT 05150

Forrest Hammond
District Wildlife Biologist
RR #1, Box 33
No. Springfield, VT 05150

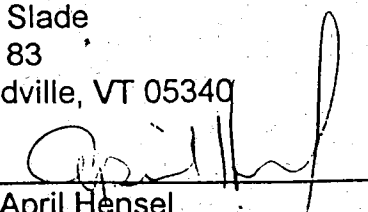
Jay Maciejowski
District Forestry Manager
RR #1, Box 33
No. Springfield, VT 05150

Ms. Sue Wolters
Office of Administration
109 State Street
Montpelier, VT 05609

M. Audrey Campbell
David W. Campbell
P. O. Box 186
Blackcherry Ridge Road
Bondville, VT 05340

Joyce Ameden
P. O. Box 32
Bondville, VT 05340

Will Slade
Box 83
Bondville, VT 05340

By: 
April Hensel
District 2 Coordinator

**STATE OF VERMONT
ENVIRONMENTAL BOARD
DISTRICT ENVIRONMENTAL COMMISSION #2**

RE: The Stratton Corporation
RR 1, Box 145
Stratton Mountain, VT 05155

Hearing Recess Order #2W0519-10
and Notice of Hearing
Stratton Master Plan
10 V.S.A., §§ 6001 - 6092 (Act 250)

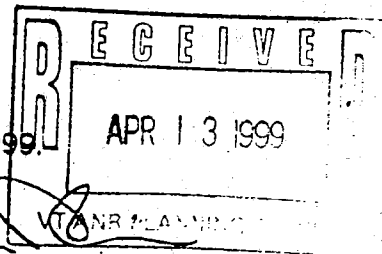
We have reviewed all filings by the parties with respect to the above-referenced project. As a result of our review and deliberation, we have decided that in order to determine whether the project complies with Criterion 1 and the Vermont Water Quality Standards it is essential for us to review a specific plan for correcting impaired stream segments and achieving compliance with the Vermont Water Quality Standards. The plan will need to incorporate the points outlined in the February 1, 1999 Memorandum submitted by the Agency of Natural Resources, entitled "Agency of Natural Resources' Response to July 16, 1998 Recess Memorandum." Prior to submission of the plan to the District Environmental Commission and the parties, we request that the Agency of Natural Resources review and approve the plan and set quantifiable benchmarks by which to judge the effectiveness of the remediation strategy. These quantifiable benchmarks of improved water quality, in turn, should be linked with a development timetable which allows for incremental build-out of the master plan. Such a plan will allow for greater certainty with respect to conformance with the Vermont Water Quality Regulations within a specified time period.

We request that the Agency of Natural Resources complete its review of the plan and establishment of benchmarks no later than May 17, 1999. The Applicant will provide copies of the plan and benchmarks to the District Environmental Commission and all parties immediately thereafter. A hearing on the plan shall be held:

Date: June 1, 1999
Time: 9:30 a.m.
Place: Stratton Gold Card Room

Dated at Springfield, Vermont on April 9, 1999.

By: 
Thomas S. Durkin, Chairman
District 2 Environmental Commission
Environmental Board



Others participating in this decision:

Susan S. Spaulding

CERTIFICATE OF SERVICE

#2W0519-10

I hereby certify that I sent a copy of the foregoing Hearing Recess Order and Notice of Hearing on April 9, 1999, by U.S. Mail, postage prepaid, to the following:

The Stratton Corporation
Mr. Justin Smart, V.P.
RR 1, Box 145
Stratton Mountain, VT 05155

Stratton Bd. of Selectmen
Albert Dupell
P.O. Box 146
W. Wardsboro, VT 05360

Stratton Town Planning
Rona Hicks
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Windham Regional Commission
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Brattleboro, VT 05301

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Bondville, VT 05340

Lawrin Crispe, Esq.
Crispe & Crispe
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Brattleboro, VT 05301

Bennington County Reg. Commission
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Bondville, VT 05340

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Chapel of the Snows and Chalet Apts.
c/o Rick Hube
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Bondville, VT 05340

John Lingley
Box 197
Bondville, VT 05340

Joyce Ameden
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Stratton/Winhall Fire District
William Simmers
P. O. 617
Stratton, VT 05155

A. Jay Kenlan, Esq.
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Rutland, VT 05702

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Lift Dev. Corp.
63 Commercial Ave.
Garden City, NY 11530

Julie Spurling
Vermont Natural Resources Council
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Manchester Village, VT 05254

Christopher Kilian, Esq.
VT Natural Res. Council
9 Bailey Avenue
Montpelier, VT 05602

Peter Keibel
Water Quality
103 So. Main St., 10 No.
Waterbury, VT 05676

Londonderry Rescue Squad
P.O. Box 911
Londonderry, VT 05148

Richard and Susan Pallan
13 Norwood Street
Winchester, MA 01890

Jon Groveman
Land Use Attorney
Agency of Natural Resources
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Waterbury, VT 05676

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Springfield, VT 05156

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Winhall Town Clerk
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Bondville, VT 05340

M. Audrey & David W. Campbell
P. O. Box 186
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Waterbury, VT 05676

Brian Fitzgerald
DEC - Air Pollution
103 So. Main St./2 South
Waterbury, VT 05676

William Groht
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Bondville, VT 05340

Susan Smallheer
c/o Rutland Herald
56 Main Street/Suite 202
Springfield, VT 05156

Stratton Mountain Inn, C.O.A.
c/o Tom Churma
Stratton Mountain, VT 05155

Alan Fisher
c/o Emergency Medical District 3
Box 614
Stratton Mountain, VT 05155

Green Mountain Club
RR 1, Box 650
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