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To: Mount Snow Master Plan File

Date: October 28, 2010
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Project No.: 57371.00

From: Joshua Sky and Jeffrey Nelson

Re: Mount Snow Water Quality Remediation
Plan Framework

Background

Vanasse Hangen Brustlin, Inc. (VHB), in coordination with Mount Snow Resort (MSR) has prepared this document to define the framework for a water quality remediation plan (WQRP) to address the management of stormwater runoff from lands owned or controlled by MSR within the stormwater impaired portion of the North Branch of the Deerfield River (NBDR) watershed. This document is intended to address conformance of the MSR master plan with Criterion 1(E) of Act 250, and will provide baseline information about the NBDR watershed including causes of impairment and provide a summary of planned improvements to address said impairments. Supporting materials include models of sediment loading under existing and proposed conditions; site-specific mapping of existing and proposed conditions; and specific and general water quality remediation actions. Water quality improvements proposed herein would take place in conjunction with planned improvements associated with the implementation of the MSR Master Plan. Page 1 of the Attachment provides a Site Location Map showing MSR and the NBDR watershed.

Currently the NBDR is identified as impaired for aquatic life support (ALS) and aesthetics from Tannery Brook Road to a point 0.2 miles above Snow Lake pursuant to the 2010 *State of Vermont Section 303(d) List of Waters Part A – Impaired Surface Waters in Need of a TMDL* hereafter “303(d) List”. The Vermont Department of Environmental Conservation (VTDEC) also lists sources of impairment in the 2008 report titled, *Biological and Aquatic Life Use Attainment Assessment of the North Branch of the Deerfield River, and Tributaries in the Upper Reaches of the Watershed*, hereafter referenced as “VTDEC ALS Report”. The VTDEC ALS Report identifies the following potential sources of impairment in the watershed:

- Sediment from stormwater runoff and construction related erosion in the reach above Snow Lake;
- Temperature below Snow Lake; and

- High levels of iron from land disturbance in Iron Stream (so-called).

The *Phase 1 and 2 Stream Geomorphic Assessment for the North Branch of the Deerfield River Watershed* by Blazewicz and others in 2006, hereafter “SGA Report”, states that a “Lack of riparian buffers, floodplain encroachment, and channel straightening were identified as primary factors influencing the geomorphic condition of the main stem. In addition, stormwater runoff and the influence of Snow Lake have both altered the hydrology and sediment regime of the watershed.”

The impairment determinant for the NBDR is based on biological assessments of macroinvertebrate populations. There are eight biocriteria parameters calculated from the macroinvertebrate composition and each parameter has to pass a threshold level in order for a station to meet the VT DEC Class B aquatic life support criteria. Assessments of “Excellent”, “Very Good” and “Good” support class B criteria, while “Fair” and “Poor” are non-support classifications for class B aquatic life support criteria. Starting in 1986 the macroinvertebrate population has been sampled at five sites (8.9, 11.0, 12.0, 12.1 and 12.6) in the North Branch of the Deerfield River and in three tributaries: Jacks Brook (0.3), Iron Stream (0.2) and Baselodge Tributary (0.1). The numbering of the site corresponds to the river mile that it is located at (e.g., monitoring site 12.0 is at river mile (RM) 12.0 on the North Branch of the Deerfield River, or 12 miles above the mouth of the river). Sites NBDR RM 11.0, NBDR RM 12.0, and NBDR RM 12.1, Jacks Brook 0.3, Iron Stream 0.2 and Baselodge Tributary 0.1 are within the drainage area or directly on the impaired reach of the NBDR from Tannery Brook Road to 0.2 miles above Snow Lake and are shown on the site location map on page 1 of the Attachment. Station NBDR RM 8.9 is located downstream of the impaired reach of the NBDR and is not shown on the site location map.

Recent results for stations located in the impaired portion of the NBDR watershed show that biocriteria have been met at four out of seven stations, including three stations (RM 11.0, 12.0 and 12.6) on the main stem of NBDR. The results indicate that overall water quality in the NBDR is not causing an undue adverse effect on macroinvertebrate populations at most locations in the main stem of the NBDR as well as Jack’s Brook. Results for Iron Stream and Baselodge Tributary, where biocriteria are not met, indicate that overall water quality is negatively affecting the macroinvertebrate populations. The most recent biocriteria results, between 2002 and 2005, are shown for all stations listed above are shown on page 2 of the Attachment.

Site Description and Existing Conditions Summary

Originating at an elevation of approximately 2,700 feet near a forested ridge, NBDR runs down through the base area of MSR and other residential/commercial development areas, and through Snow Lake, which is an on-stream reservoir. The impaired segment of NBDR – and the limit of this investigation – ends at the crossing of Tannery Road. The impaired portion of the NBDR watershed is approximately 2,555 acres in size consists of several different land use types that include: the Mount Snow ski area with associated lodges, hotels, ski trails, parking

lots, lifts and the Snow Lake reservoir; other developments not owned or controlled by Mount Snow consisting of seasonal and permanent housing and associated parking; Vermont Route 100, a major transportation corridor with some associated commercial development; and large tracts of undeveloped forested land. Based on analysis of aerial photographs and site plans, conducted by VHB, Mount Snow owns or controls approximately 68 acres out 193 acres of existing impervious surface within the watershed. Significant portions of MSR, and privately held developments within the NBDR watershed were developed prior to the implementation of current VTDEC stormwater rules and requirements and, as a result, a significant areas of impervious surfaces within the NBDR watershed currently have inadequate or non-existent stormwater treatment facilities. In fact, only 50 out of 193 acres (26 percent) of existing impervious surface within the WQRP study area receives some degree of stormwater treatment. As a result, untreated or insufficiently treated stormwater runoff is carrying excess sediment into and altering the hydrology of NBDR.

Snow Lake, a 15.2 million gallon reservoir was constructed in the 1960s, is currently used as a snowmaking water source for MSR and is located on the NBDR channel at the Mount Snow base area (see Page 1 of Attachment 1). Based on VTDEC studies, Snow Lake has been found to cause increases to the water temperature of the NBDR of 3 to 4°C (VTDEC 2008) and also to impact the hydrologic and sediment transport regime, as flows are artificially slowed and fine and coarse sediments settle out within the lake. The sediment deposition in Snow Lake is exacerbated by stormwater runoff from untreated impervious surfaces in its drainage area within the NBDR watershed. Due to this chronic deposition, Mount Snow must periodically dredge the sediment to maintain the lake. The river section downstream of the Snow Lake Dam is likely to be “starved” of in-stream sediment resulting in streambed degradation and eroding streambanks.

Based on the 303(d) list, VTDEC ALS report, the SGA report, and our evaluation of these data, VHB believes that the primary cause of impairment in the NBDR is excess sediment washoff carried by stormwater runoff into the receiving waters. In order to quantify the amount of sediment emanating from the particular watersheds VHB conducted a pollutant loading model. Sediment loads from various land uses within the project area have been determined using the “Simple Method” of Schueler (Schueler, 1987). This method is cited as the appropriate pollutant loading method consistent with the procedure dated May 5, 2004 titled, *VTDEC Procedure for Evaluation of Stormwater Discharges and Offsets in Stormwater Impaired Watersheds*. The analysis takes into consideration the existing land use, impervious surfaces, precipitation amounts and treatment practices to estimate sediment loads. The Existing Conditions Simple Method model is shown on pages 3 to 14 of the Attachment. The results of the Simple Method analysis are used to determine existing sediment loads and are displayed visually in the Existing Conditions Sediment Chart and Map (pages 13 and 14 of the Attachment). Existing conditions sediment loading for the entire NBDR watershed is approximately 16 pounds per acre per year with all Mount Snow areas contributing an average of 321 pounds per acre per year. The relationship between developed areas with little or no stormwater treatment is evident by noting the areas of significantly high sediment loading (red) on the Existing Conditions Sediment map.

Water Quality Improvement Measures

MSR intends to implement significant water quality improvement measures, summarized in the WQRP, in concert with the implementation of its resort/base area master plan. Since much of the base area will be redeveloped through the proposed master plan, stormwater related improvements are integral to the planning and design for these areas. Under the WQRP and master plan, MSR will incorporate VTDEC compliant operational stormwater treatment practices for existing, redeveloped and new impervious surface under its control, thus significantly reducing the sediment loading from these areas (see Post-Development map on page 26 of the Attachment). Treatment practices will be designed using the most recent VTDEC standard, currently the Stormwater Management Manual (VT, 2002). Treatment will increase between existing conditions and proposed conditions on MSR controlled impervious surface from 21 out of 68 acres (existing) to 50 out of 69 acres (proposed). The effective level of treatment will also be increased as prior permitted MSR systems are upgraded to current VTDEC standards.

Additional WQRP actions proposed by Mount Snow will have a beneficial effect on NBDR water quality but cannot be simulated within the framework of the Simple Method model. These include the:

- Removal of Snow Lake and restoration of the NBDR stream channel, thus reducing thermal loading and restoring the natural hydrologic and sediment transport regime
- Implementation of the iron seep prevention and control plans (see pages 27 to 28 of the attachment)
- Remediation of undersized, improperly sited, or degraded culverts to restore the hydrologic regime
- Implementation of on-mountain BMPs for waterbars, work roads, storage areas, and etc. to help control runoff
- Expand upon prior watershed assessments to identify point sources of sediment loading and confirm existing water quality stressors identified in the 2006 SGA for the purpose of identifying remediation projects
- Transfer of the existing salt and sand storage area adjacent to existing parking lots to a covered facility at the proposed maintenance building to minimize potential runoff
- Adherence to VTDEC construction stormwater permit requirements and the US Forest Service (USFS) Special Use Permit (on USFS lands) soil stabilization and revegetation requirements to minimize the effects of excessive sediment washoff associated with areas of earth disturbance

Mount Snow Master Plan development phases will be designed according to the “net zero” provisions of Act 140 ensuring that, as a result of a single phase of development, sediment loads would not increase beyond current levels. As a result of adherence to Act 140 requirements during Master Plan implementation, the actual instream effect of “net zero” will be a reduction in stormwater runoff and associated sediment loading. The water quality

improvements actions proposed herein represent the implementation of the Act 140 provisions for reducing runoff from Mount Snow lands. As each phase of development of the MSR master plan occurs, conformance with the WQRP and applicable VTDEC stormwater permitting criteria will be necessary. Initially, this will take the form of designing each phase so that the total sediment loading will not exceed the natural baseline condition (aka “net zero” standard).

In order to achieve net zero, it is anticipated that for the early phases, that offset projects located on or off of Mount Snow controlled lands. Offset projects could include such measures as land use conversion such as the replanting of unused work road segments, and construction of stormwater treatment systems for areas which are not currently permitted. Offset projects would be tied to individual phases of Master Plan development and would be identified specifically with the context of individual stormwater permit requirements associated with that particular project phase.

In order to quantify the effect on NBDR sediment loading associated with MSR Master Plan implementation, a Simple Method model of proposed development conditions was built. The model is based on the full build-out of the Mount Snow master plan. The plan incorporates changes to the existing development on Mount Snow lands and also models planned STPs associated with the development. Proposed STPs would meet or exceed current VTDEC design criteria allowing them to remove approximately 80% of the washoff sediment load. The proposed conditions model results does not incorporate significant water quality improvement measures listed above nor does it include potential offset projects. The proposed development scenario used also assumes no water quality improvement activities would take place at developed areas within the watershed that are not under the ownership or control of MSR. The proposed conditions Simple Method model results are shown on pages 15 to 25 of the Attachment. Overall watershed sediment loading for the proposed condition is 123 pounds per acre per year, a reduction of 26.7 percent from current conditions. A graph of loads by subwatershed for proposed conditions is located on page 24 the Attachment.

Water Quality Targets

Attainment of Vermont Water Quality Standards (VWQS) in NBDR will ultimately be judged by compliance with Class B biocriteria for small high gradient (SHG) streams, for a period of two consecutive years, based on current VTDEC protocol. In order to meet the biocriteria results this WQRP has proposed a framework for managing stormwater runoff from impervious surfaces and providing treatment to reduce pollutant loading, particularly sediment inputs. To quantify this objective, a sediment target has been established, through use of a nearby stream known to meet the SHG biocriteria (“attainment stream”). The Simple Method model has been used to establish a sediment target based on sediment loading to the attainment stream, Cold Brook, which is located directly south of MSR. This sediment target, of 100 pounds per acre per year, is based on the known attainment of SHG biocriteria in Cold Brook, thus documenting that this level of sediment loading is not adversely affecting the macroinvertebrate populations. Therefore, reducing sediment loads in the NBDR watershed to similar levels would result in the same outcome.

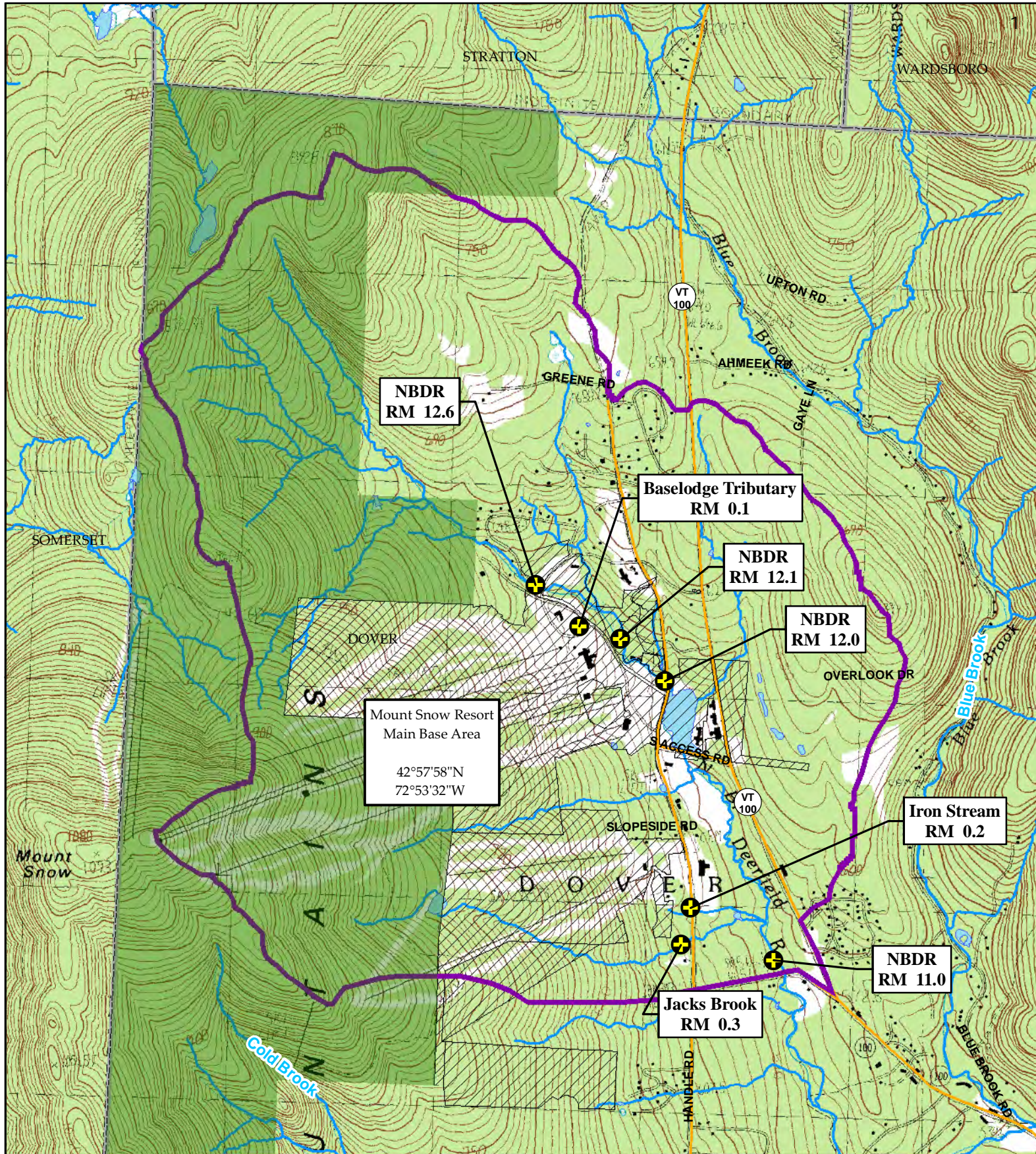
As stated above the proposed conditions scenario for the MSR master plan buildout would reduce sediment loads to 123 pounds per acre per year. This sediment reduction, along with the other measures listed above, will improve water quality conditions significantly in the NBDR. However, sediment loads will not be reduced to the accepted target level unless stormwater runoff from lands outside of the control of MSR is captured and treated. Therefore, it is anticipated that in addition to the efforts described herein to be accomplished by MSR, that stormwater treatment upgrades by other developments within the NBDR watershed will be necessary, as determined appropriate by VTDEC.









Summary

As a component of planning associated with the MSR base area Master Plan, Mount Snow has developed this framework for the completion of water quality remediation activities within the Section 303(d) listed North Branch of the Deerfield River. Under existing conditions approximately 21 acres, out of 68 total acres of impervious surface, owned or controlled by Mount Snow receives some degree of stormwater treatment. The Master Plan calls for implementing stormwater treatment practices (STPs) on Mount Snow lands so that 50 out of 69 acres (72 percent) of impervious surface would receive current VTDEC standard treatment. Most of the remaining MSR impervious surface is associated with disconnected impervious such as mountain work roads, lift terminals and on-mountain facilities. This represents an increase of 42 percent of impervious surface treated from existing conditions (where most STPs do not meet the 2002 standard). Simple Method modeling of the plan indicates that sediment loads in the impaired portion of NBDR would be reduced by 45 pounds per acre per year, from 168 to 123 pounds per acre per year. In addition to the reduction in sediment loads other important water quality remediation actions (summarized above) would be implemented in order to address current stressors to water quality. The implementation of water quality improvements outlined herein would significantly reduce Mount Snow's contribution to water quality impairment in NBDR. However, based on the establishment of a target sediment load of 100 pounds per acre per year, it is anticipated that stormwater treatment upgrades will be necessary on properties beyond MSR ownership or control. This responsibility will fall to VTDEC.

A water quality monitoring plan (WQMP) to track water quality in NBDR would be developed in association with the as the Master Plan WQRP is implemented. The WQMP would be tied to Master Plan development phases and would consist of biological monitoring to track overall stream health. In addition, chemical and sediment modeling may be instituted to refine the monitoring results and to identify particular areas of concern. Any WQMP developed would incorporate input from VTDEC staff. Monitoring results, including progress assessments and additional water quality remediation project recommendations would be summarized in a report reviewed by Mount Snow and the VTDEC.

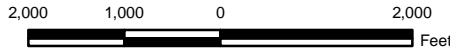
Attachment



-  North Branch of the Deerfield River Watershed
-  Biomonitor Station (2008)
-  US Forest Service Property
-  Mt. Snow Owned Parcels
-  Stream
-  Waterbody
-  Town Boundary
-  State Named Highway


**Mount Snow Resort
Dover, Vermont
Site Location Map**

October 21, 2010



2,000 1,000 0 2,000
Feet

Sources: Town and County Boundaries (2004) Roads (2008) provided by VCGI (2009); USGS Topo West Dover and Mount Snow (1997); 303d watershed and Biomonitor Stations Digitized by VHB (2010).

 **Vanasse Hangen Brustlin, Inc.**

Prepared by: SEM
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Summary of Biological and Aquatic Life Use Attainment Assessment of The North Branch of the Deerfield River and Tributaries in the upper reaches of watershed Class B2-3 (SHG)												
Location	Station (RM)	Date Sampled	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT +C	% PPCS-FG	Outcome/ Biological Integrity	
											Class B2-3	≥ 300
North Branch of Deerfield River (NBDR)	8.9	9/16/2002	1268	49	19	77	3.96	1.9	0.69	50	Biocriteria Met/Good	
	11	9/29/2004	807.3	50	24	86	3.87	0	0.88	42	Biocriteria Met/Good	
	12	9/16/2002	770.7	45	17	82	3.73	1.0	0.79	60	Biocriteria Met/Good	
	12.1	9/21/2005	168.5	43	23.5	81	2.94	2.3	0.82	65	Biocriteria are Not Met/Fair	
	12.6	9/21/2005	1056	51	25	81	2.24	2.0	0.8	80	Biocriteria Met/Excellent	
Jacks Brook	0.3	9/29/2004	789.3	34	16	71	2.77	0.3	0.57	72	Biocriteria are Met/Very Good	
Iron Stream	0.2	9/29/2004	64.0	23	8	47	3.35	1.6	0.61	27	Biocriteria are Not Met/Poor	
Baselodge Trib.	0.1	9/29/2004	109	31	16	78	2.53	0.9	0.83	71	Biocriteria are Not Met/Fair	
Full Support (Pass)			>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%		
Above Threshold (+)			≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%		
Below Threshold (-)			<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%		
Non-Support (Fail)												

*Metric Values from *Biological and Aquatic Life Use Attainment Assessment Of The North Branch of the Deerfield River, and Tribs in the upper reaches of the watershed updated draft dated April 24, 2008*

Mt Snow WQRP
 Simple Method for Pollutant Loading
 VHB
 Date: 2/17/2011

$$\text{Annual Load} = P * P_j * C * A * R_v * 0.226$$

Where: P = Yearly rainfall depth
 P_j = Fraction of rainfall events producing runoff (0.90)
 C = Flow weighted mean concentration of pollutant
 A = Area of contributing watershed
 R_v = 0.05 + 0.009 * (site imperviousness) or accepted value
 0.226 = Simple Method Coefficient

P = 57.4 (PRISM climatological data, downloaded from VCGI)
 P_j = 0.9
 Coefficient = 0.226

Table 1: Sediment Concentration Values

Land Use	TSS (mg/L)	Sources
Commercial	77	NYS DEC Draft Manual (2001)
Commercial Lodging	97	NYS DEC Draft Manual (2001)
Forest	51	NYS DEC Draft Manual (2001)
Meadow/Open	51	NYS DEC Draft Manual (2001)
Residential	70	NYS DEC Draft Manual (2001)
Ski Trail	100	Pioneer Judgement (2006)
Transportation Gravel	374	Clinton & Vose - WQ Report (2003)
Transportation Paved	142	NYS SMDM (2001)
Water	0	Pioneer Judgement (2006)

Mt. Snow WQRP
 Area Summary by Landuse (acres) - Existing Conditions
 VHB
 Date: 2/17/2011

Landuse (acres)	Subwatershed Areas (acres)												
	A01	A02	A03	A04	A05	A06	Snow Vidda Dev. - A07	A08	A09	A10	A11	Snow Vidda Dev. - A12	
COMMERCIAL	-	-	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	47	27	15	13	25	29	19	22	39	28	7.5	11	-
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	-
OPEN	-	-	-	-	-	-	-	-	-	-	-	-	1.0
RESIDENTIAL	-	-	-	-	-	-	1.5	-	-	-	-	-	0.4
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	-	-	-	-	-	0.5	-	-	0.0	0.1	0.2	-
TRANSPORTATION PAVED	-	-	-	-	-	-	0.2	-	-	-	-	0.3	-
WATER	-	-	-	-	-	-	0.1	-	-	-	-	-	-
Grand Total	47	27	15	13	25	29	21	22	39	28	8	13	1
Impervious (acres)	0	0	0	0	0	0	1	0	0	0	0	0	1
% Impervious	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	1%	0%	6%

Landuse (acres)	Subwatershed Areas (acres)												
	Ski Trail Area - A13	Deer Creek Condos - A14	A15	Snow Mt. Village - A16	A17	A18	A19	A20	A21	A22	A23	A24	
COMMERCIAL	0.1	-	-	-	-	-	-	-	-	-	-	-	
COMMERCIAL LODGING	16	0.4	74	1.3	1.3	3.0	33	43	12	3.7	8.5	30	
FOREST	-	-	-	0.4	-	-	1.9	-	-	-	-	-	
MEADOW	-	0.0	-	-	0.0	-	-	-	-	-	-	-	
OPEN	-	1.6	-	4.9	-	-	-	-	-	-	-	-	
RESIDENTIAL	-	-	-	-	-	-	-	-	-	-	-	-	
SKI TRAIL	2.9	-	-	-	-	-	-	-	-	-	0.5	-	
TRANSPORTATION GRAVEL	0.5	-	-	0.0	-	-	-	0.0	0.1	0.1	0.1	-	
TRANSPORTATION PAVED	-	0.8	-	0.5	0.2	-	-	-	-	-	-	-	
WATER	-	-	-	-	-	-	-	-	-	-	-	-	
Grand Total	19	3	74	7	2	3	35	43	12	4	9	30	
Impervious (acres)	1	1	0	3	0	0	0	0	0	0	0	0	
% Impervious	3%	43%	0%	48%	13%	0%	0%	0%	1%	1%	1%	0%	

Landuse (acres)	Subwatershed Areas (acres)												
	A25	A26	Snow Lake - A27	A28	A29_a	A29_b	Ski Trail Area A30	Seasons - A31	Ski Shop - A32	Ski Trail Area A33	Ski Trail Area - A34	Carinthia - A35	
COMMERCIAL	-	0.2	1.8	3.1	-	-	0.2	-	0.2	0.0	-	-	
COMMERCIAL LODGING	-	49	0.9	0.7	0.5	0.1	48	0.2	0.4	184	42	0.3	
FOREST	54	14	-	-	-	-	-	-	-	-	-	-	
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	
OPEN	-	-	2.4	1.9	0.7	1.7	0.8	0.2	2.1	1.0	0.5	1.6	
RESIDENTIAL	-	0.1	-	-	-	-	1.1	1.7	0.1	0.8	0.1	1.9	
SKI TRAIL	-	-	-	0	-	-	38	-	-	32	19	0.1	
TRANSPORTATION GRAVEL	-	-	0.5	1.9	1.2	4.7	1.6	0.2	0.5	2.6	0.3	4.1	
TRANSPORTATION PAVED	-	0.2	2.9	0.5	0.2	0.5	0.1	0.3	0.2	0.2	-	0.7	
WATER	-	-	8.9	-	-	-	0.8	-	0.2	1.3	-	-	
Grand Total	54	64	17	8	3	7	90	3	4	223	61	15	
Impervious (acres)	0	0	4	4	1	5	2	1	1	3	0	5	
% Impervious	0%	1%	24%	56%	53%	74%	3%	48%	24%	1%	1%	34%	

Mt. Snow WQRP
 Area Summary by Landuse (acres) - Existing Conditions
 VHB
 Date: 2/17/2011

Landuse (acres)	Subwatershed Areas (acres)											
	A36	A37	Timber Creek - A38	Snowtree Condos - A39	Timber Creek - A40	Timber Creek - A41	Timber Creek - A42	A43	Greenspring - A44	Greenspring - A45	Greenspring - A46	Greenspring - A47
COMMERCIAL	-	0.3	-	0.1	1.7	1.0	-	0.2	-	0.1	-	-
COMMERCIAL LODGING	0.3	0.3	-	-	-	-	0.5	-	-	-	-	-
FOREST	14	27	2.3	6.2	31	8.0	9.2	0.3	6.7	5.0	0.0	0.0
MEADOW	-	-	-	-	0.8	0.2	-	-	0.9	0.1	-	-
OPEN	-	3.4	-	1.5	-	-	1	-	0.2	-	-	-
RESIDENTIAL	0.1	1.0	3.3	3.4	3.6	0.1	0	0.8	4.7	11	2.4	-
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	0.9	-	-	0.1	-	0.6	-	-	-	-	-
TRANSPORTATION PAVED	0.3	0.7	1.4	3.0	3.3	1.1	1.0	0.5	1.6	3.8	0.6	0.6
WATER	0.0	0.7	-	-	0.2	-	-	-	0	0	0	0
Grand Total	14	34	7	14	41	10	13	2	14	20	3	3
Impervious (acres)	0	2	4	5	7	2	2	1	3	7	1	1
% Impervious	3%	5%	50%	33%	16%	21%	18%	54%	21%	33%	27%	27%

Landuse (acres)	Subwatershed Areas (acres)											
	A48	A49	A50	A51	Snow Vida Lot - A52	Seasons - A53	Seasons - A54	Seasons - A55	Ski Trail Area - A56	Snow Vidda Dev. - A57	A58_a	Stables Lot - A58_b
COMMERCIAL	9	-	-	-	-	-	0.1	-	0.6	-	-	-
COMMERCIAL LODGING	2	-	-	-	-	-	-	-	-	-	-	-
FOREST	131	28	248	27	0.2	0.5	2.0	125	53	28	4.7	0.4
MEADOW	8.3	-	6.4	0.4	-	-	-	-	-	-	-	-
OPEN	10	1.1	0.7	-	3.8	-	1.3	-	1.7	1.6	0.1	0.6
RESIDENTIAL	5.6	2.4	0.8	5.8	0.0	3.1	1.0	0.1	1.1	1.1	0.2	-
SKI TRAIL	-	-	-	-	-	0.1	0.0	70	23	-	-	-
TRANSPORTATION GRAVEL	0.2	0.9	0.1	1.6	1.9	0.1	0.0	2.4	1.8	1.1	0.0	3.1
TRANSPORTATION PAVED	6.7	0.6	0.9	1.0	0.2	1.5	0.7	-	1.1	1.3	0.5	0.4
WATER	1.7	0.6	-	-	-	-	-	-	-	-	-	-
Grand Total	173	34	257	36	6	5	5	198	82	33	5	4
Impervious (acres)	18	2	1	5	2	3	2	3	4	3	0	3
% Impervious	11%	6%	0%	14%	35%	51%	34%	1%	4%	10%	8%	78%

Landuse (acres)	Subwatershed Areas (acres)												
	Maintenance - A59	Outlook - A60_a	A60_b	A60_c	A61_a	GS Hotel - A61_b	Ski Trail Area - A61_c	Sundance - A62	Ski Trail Area - A63	Seasons - A64	A65	A66	A67
COMMERCIAL	2.2	-	0.0	0.0	0.3	1.4	-	0.9	0.1	0.2	-	-	0.1
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-	0.1
FOREST	0.7	1.7	16	1.1	1.6	0.5	0.7	0.4	58	1.9	24	25	47
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	0.5
OPEN	2.4	-	1.5	0.5	0.3	2.6	3.4	0.4	0.3	0.8	-	-	1.0
RESIDENTIAL	-	3.0	0	-	-	-	-	-	-	1.9	3.2	1.7	5.8
SKI TRAIL	0.0	-	-	-	-	0.0	-	1.1	59	-	-	-	-
TRANSPORTATION GRAVEL	5.4	0.0	0.9	3.4	0.0	0.0	0.3	2.2	2.2	0.0	1.2	0.2	2.2
TRANSPORTATION PAVED	2.3	1.0	0.0	1.4	0.1	1.4	0.5	0.0	-	1.5	2.1	1.3	4.6
WATER	-	-	-	-	-	0.0	-	-	-	0.2	-	-	-
Grand Total	13	6	18	6	2	6	5	5	120	6	30	28	61
Impervious (acres)	9	2	1	5	0	3	1	3	2	3	5	2	10
% Impervious	68%	27%	5%	75%	20%	47%	16%	55%	2%	47%	18%	8%	17%

Mt. Snow WQRP
 Area Summary by Landuse (acres) - Existing Conditions
 VHB
 Date: 2/17/2011

Landuse (acres)	Subwatershed Areas (acres)											Grand Total	
	Timber Creek - A68	Timber Creek - A69	A70	Greenspring - A71	Ironstone - A72	Greenspring - A73	Ski Trail Area A74_a	Ski Trail Area A74_b	Carinthia - A75	Mountaineer Inn - A76	Stugger 17 - A77		Butterfield Common - A78
COMMERCIAL	-	-	0.8	-	2.8	0.1	-	0.0	-	-	-	-	27
COMMERCIAL LODGING	-	-	0.6	-	-	-	-	-	2.2	0.6	-	1.1	8
FOREST	10	10	20	10	2.1	5.0	4.4	2.4	15	1.3	3.0	1.5	1916
MEADOW	-	-	0.0	0.2	-	-	-	-	-	-	-	-	34
OPEN	-	-	0.0	-	-	-	0.0	0.8	2.7	1.3	1.8	2.2	62
RESIDENTIAL	4.8	2.8	1.9	4.8	-	2.6	-	-	2.9	0.3	0.6	-	104
SKI TRAIL	-	-	-	-	-	-	3	12	2.5	-	0.1	-	263
TRANSPORTATION GRAVEL	-	-	-	0.0	0.0	-	0.2	0.9	3	0	0.5	0.1	57
TRANSPORTATION PAVED	2.7	2.1	1.5	2.0	1.0	1.1	0.0	0.0	0.4	0.2	0.4	0.9	69
WATER	-	-	-	0.1	-	-	-	-	0.0	0.0	-	-	16
Grand Total	17	15	25	17	6	9	7	16	29	4	6	6	2555
Impervious (acres)	6	3	3	3	3	2	0	1	4	1	2	2	193
% Impervious	34%	23%	14%	18%	45%	20%	3%	6%	15%	33%	24%	27%	8%

Mt. Snow WQRP
 RV for Each Subwatershed's Landuse - Existing Conditions
 VHB
 Date: 2/17/2011

Landuse	Subwatershed RV											
	A01	A02	A03	A04	A05	A06	Snow Vidda Dev. - A07	A08	A09	A10	A11	Snow Vidda Dev. - A12
COMMERCIAL	-	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-
OPEN	-	-	-	-	-	-	-	-	-	-	-	0.05
RESIDENTIAL	-	-	-	-	-	-	0.24	-	-	-	-	0.81
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	-	-	-	-	-	0.95	-	-	0.95	0.95	0.95
TRANSPORTATION PAVED	-	-	-	-	-	-	0.95	-	-	0.95	-	0.95
WATER	-	-	-	-	-	-	0.05	-	-	-	-	-

Landuse	Subwatershed RV											
	Ski Trail Area A13	Deer Creek Condos - A14	A15	Snow Mt. Village - A16	A17	A18	A19	A20	A21	A22	A23	A24
COMMERCIAL	0.95	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	-	-	0.05	-	-	-	-	-	-	-	-
OPEN	-	0.05	-	-	0.05	-	-	-	-	-	-	-
RESIDENTIAL	-	0.28	-	0.58	-	-	-	-	-	-	-	-
SKI TRAIL	0.05	-	-	-	-	-	-	-	-	-	0.05	-
TRANSPORTATION GRAVEL	0.95	-	-	0.95	-	-	-	0.95	0.95	0.95	0.95	-
TRANSPORTATION PAVED	-	0.95	-	0.95	0.95	-	-	-	-	-	-	-
WATER	-	-	-	-	-	-	-	-	-	-	-	-

Landuse	Subwatershed RV											
	A25	A26	Snow Lake - A27	A28	A29_a	A29_b	Ski Trail Area A30	Seasons - A31	Ski Shop - A32	Ski Trail Area A33	Ski Trail Area A34	Carinthia - A35
COMMERCIAL	-	0.95	0.49	0.66	-	-	0.95	-	0.95	0.95	-	0.95
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	0.05	-	-	-	-	-	-	-	-	-	-
OPEN	-	0.76	-	-	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
RESIDENTIAL	-	-	-	0.05	-	-	0.30	0.44	0.05	0.16	0.44	0.16
SKI TRAIL	-	-	0.95	0.95	0.95	0.95	0.05	-	-	0.05	0.05	0.05
TRANSPORTATION GRAVEL	-	-	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
TRANSPORTATION PAVED	-	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	-	0.95
WATER	-	-	0.05	-	-	-	0.05	-	0.05	0.05	-	-

Landuse	Subwatershed RV											
	A36	A37	Timber Creek A38	Snowtree Condos - A39	Timber Creek A40	Timber Creek A41	Timber Creek A42	A43	Greenspring - A44	Greenspring - A45	Greenspring - A46	Greenspring - A47
COMMERCIAL	-	-	-	0.95	0.88	0.92	-	0.05	0.05	0.95	-	-
COMMERCIAL LODGING	0.05	0.05	-	-	0.05	-	-	0.95	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	-	-	-	0.05	0.05	-	-	-	-	-	-
OPEN	-	0.05	-	0.05	0.42	0.95	0.49	0.05	0.45	0.05	0.29	0.16
RESIDENTIAL	0.41	0.25	0.63	0.48	-	-	-	-	-	-	-	-
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	0.95	-	-	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
TRANSPORTATION PAVED	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
WATER	0.05	0.05	-	-	0.05	-	-	-	-	0.05	0.05	0.05

Mt. Snow WQRP
 RV for Each Subwatershed's Landuse - Existing Conditions
 VHB
 Date: 2/17/2011

Subwatershed RV												
Landuse	A48	A49	A50	A51	Snow Vlda Lot - A52	Seasons - A53	Seasons - A54	Ski Trail Area A55	Ski Trail Area A56	Snow Vidda Dev. - A57	A58_a	Stables Lot - A58_b
COMMERCIAL	0.95	-	-	-	-	-	0.95	0.95	0.21	-	-	-
COMMERCIAL LODGING	0.40	-	-	-	-	-	-	-	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	-	-	0.05	0.05	0.05	0.05	0.05
MEADOW	0.05	-	0.05	0.05	-	-	-	-	-	-	-	-
OPEN	0.05	0.05	0.05	-	0.05	-	0.05	-	0.05	0.05	0.05	0.05
RESIDENTIAL	0.40	0.19	0.25	0.44	0.95	0.38	0.80	0.22	0.56	0.69	0.05	-
SKI TRAIL	-	-	-	-	-	0.05	0.05	0.05	0.05	-	-	-
TRANSPORTATION GRAVEL	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
TRANSPORTATION PAVED	0.95	0.95	0.95	0.95	0.95	0.95	0.95	-	0.95	0.95	0.95	0.95
WATER	0.05	0.05	-	-	-	-	-	-	-	-	-	-

Subwatershed RV													
Landuse	Maintenance - A59	Outlook - A60_a	A60_b	A60_c	A61_a	GS Hotel - A61_b	Ski Trail Area A61_c	Sundance - A62	Ski Trail Area A63	Seasons - A64	A65	A66	A67
COMMERCIAL	0.51	-	0.95	0.95	0.95	0.95	-	0.54	0.95	0.95	-	-	0.21
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-	0.95
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	-	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	0.05
OPEN	0.05	-	0.05	0.05	0.05	0.05	-	0.05	0.05	0.05	-	-	0.05
RESIDENTIAL	-	0.22	0.09	-	-	-	-	-	-	0.69	0.63	0.46	0.56
SKI TRAIL	0.05	-	-	-	-	0.05	-	0.05	0.05	-	-	-	-
TRANSPORTATION GRAVEL	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
TRANSPORTATION PAVED	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	-	0.95	0.95	0.95	0.95
WATER	-	-	-	-	-	0.05	-	-	-	0.05	-	-	-

Subwatershed RV													
Landuse	Timber Creek A68	Timber Creek A69	A70	Greenspring A71	Ironstone A72	Greenspring A73	Ski Trail Area A74_a	Ski Trail Area A74_b	Carinthia - A75	Mountaineer Inn - A76	Stugger 17 - A77	Butterfield Common - A78	Grand Total
COMMERCIAL	-	-	0.42	-	0.58	0.70	-	0.95	-	-	-	-	-
COMMERCIAL LODGING	-	-	0.95	-	-	-	-	-	0.19	0.91	-	0.50	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-
MEADOW	-	-	0.05	0.05	-	-	-	-	-	-	-	-	-
OPEN	-	-	0.05	-	-	-	0.05	0.05	0.05	0.05	0.05	0.05	-
RESIDENTIAL	0.62	0.47	0.50	0.25	-	0.27	-	-	0.32	0.95	-	-	-
SKI TRAIL	-	-	-	-	-	-	0.05	0.05	0.05	-	0.05	-	-
TRANSPORTATION GRAVEL	-	-	-	0.95	0.95	-	0.95	0.95	0.95	0.95	0.95	0.95	-
TRANSPORTATION PAVED	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	-

Mount Snow WQRP
Existing Permits
VHB

Date: 2/17/2011

Permit	Permittee	WSID	STP	Active/Expired	Sediment % Removal		Existing Impervious Area (acres)
					Existing		
4141-INDS	Snow Vidda Development	A07, A12, A57	stone lined swale to pond, grass/stone lined swale to oil/grit separator and surface sand filter	Active	80%		4.9
1-0493	Deer Creek Condominiums	A14	detention pond	Expired	40%		1.2
2-0160	Snow Mt. Village, Mt Snow Village Association Inc.	A16	natural swale	Expired	30%		3.4
1-1282	Grand Summit Resort Properties, inc and Mt Snow Ltd	A52 (Snow Vida Lot), A61_b (Grand Summit Hotel), A58_b (Stables Lot)	detention basin	Expired	40%		8.5
1-0821	Sundance Condos Seasons on Mount Snow Condominium Owner's Association Inc.	A62, A29_b	grass/stone lined swales to Snow Lake	Expired	40%		8.0
2-0880	Snowtree Condominiums, Mt Snow	A39	detention pond	Expired	30%		4.8
1-0645	Greenspring at Mt Snow Homeowner's Association inc	A44, A45, A46, A47, A71, A73	retention ponds	Expired	40%		16.5
1-0499	Stugger 17 Lot Subdivision	A77	grass/stone lined swales	Expired	35%		1.5
3623-INDS	Butterfield Common	A78	grass lined and/or dry swales to sub-surface detention pipes	Active	80%		1.5
Shaded cells signify Mount Snow Owned							
Subtotal: Impervious Areas Mount Snow Owned/Controlled (acres):							21
Subtotal: Impervious Areas Privately Owned/Controlled (acres):							29
Total Impervious Area (acres):							50

Mt. Snow WQRP
 Sediment Loading (lbs/year) - Existing Conditions
 VHB
 Date: 2/17/2011

Landuse	Subwatershed Loading by Landuse (lbs/acre)														
	A01	A02	A03	A04	A05	A06	Snow Vidda Dev. - A07	A08	A09	A10	A11	Snow Vidda Dev. - A12			
COMMERCIAL	-	-	-	-	-	-	-	-	-	-	-	-			
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-			
FOREST	1380	799	454	379	731	867	111	655	1149	838	223	68			
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-			
OPEN	-	-	-	-	-	-	-	-	-	-	-	6.0			
RESIDENTIAL	-	-	-	-	-	-	59	-	-	-	-	49			
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-			
TRANSPORTATION GRAVEL	-	-	-	-	-	-	403	-	-	18	308	168			
TRANSPORTATION PAVED	-	-	-	-	-	-	59	-	-	-	-	92			
WATER	-	-	-	-	-	-	-	-	-	-	-	-			
Grand Total	1380	799	454	379	731	867	631	655	1149	857	531	383			
Unitized Load (lbs/acre/year)	30	30	30	30	30	30	30	30	30	30	70	29			

Landuse	Subwatershed Loading by Landuse (lbs/acre)														
	Ski Trail Area - A13	Deer Creek Condos - A14	A15	Snow Mt. Village - A16	A17	A18	A19	A20	A21	A22	A23	A24			
COMMERCIAL	63	-	-	-	-	-	-	-	-	-	-	-			
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-			
FOREST	466	7.2	2188	27	39	88	985	1274	354	111	252	905			
MEADOW	-	-	-	8.1	-	-	57	-	-	-	-	-			
OPEN	-	0.3	-	-	0.2	-	-	-	-	-	-	-			
RESIDENTIAL	-	221	-	1619	-	-	-	-	-	-	-	-			
SKI TRAIL	171	-	-	-	-	-	-	-	-	-	26	-			
TRANSPORTATION GRAVEL	2196	-	-	0.9	-	-	-	149	545	228	556	-			
TRANSPORTATION PAVED	-	722	-	554	309	-	-	-	-	-	-	-			
WATER	-	-	-	-	-	-	-	-	-	-	-	-			
Grand Total	2897	950	2188	3107	348	88	1041	1422	900	339	834	905			
Unitized Load (lbs/acre/year)	151	343	30	438	230	30	30	33	75	89	92	30			

Landuse	Subwatershed Loading by Landuse (lbs/acre)														
	A25	A26	Snow Lake - A27	A28	A29_a	A29_b	Ski Trail Area A30	Seasons - A31	Ski Shop - A32	Ski Trail Area A33	Ski Trail Area - A34	Carinthia - A35			
COMMERCIAL	-	146	780	1809	-	-	212	-	143	15	-	-			
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-			
FOREST	1618	1463	27	21	16	1.7	1423	5.3	12	5487	1235	200			
MEADOW	-	420	-	-	-	-	-	-	-	-	-	-			
OPEN	-	-	71	56	21	31	24	6.7	61	31	15	47			
RESIDENTIAL	-	66	-	-	-	-	280	597	5.8	112	43	248			
SKI TRAIL	-	-	-	0.9	-	-	2349	-	-	1870	1096	5.8			
TRANSPORTATION GRAVEL	-	-	2105	7741	4974	11791	6522	1014	2226	10890	1248	16967			
TRANSPORTATION PAVED	-	251	4498	854	298	474	82	487	303	372	-	1113			
WATER	-	-	-	-	-	-	-	-	-	-	-	-			
Grand Total	1618	2619	7399	6861	5132	11365	10560	2110	2476	18433	3340	14107			
Unitized Load (lbs/acre/year)	30	41	427	854	1965	1612	117	803	664	83	55	913			

Mt. Snow WQRP
Sediment Loading (lbs/year) - Existing Conditions
VHB
Date: 2/17/2011

Landuse	Subwatershed Loading by Landuse (lbs/acre)													
	A36	A37	A38	Timber Creek - A40	Timber Creek - A41	Timber Creek - A42	A43	Greenspring - A44	Greenspring - A45	Greenspring - A46	Greenspring - A47	Timber Creek - A48	Timber Creek - A49	Timber Creek - A50
COMMERCIAL	-	-	-	1336	823	-	10	-	-	-	-	-	-	-
COMMERCIAL LODGING	17	15	-	-	-	-	580	-	-	-	-	-	-	-
FOREST	405	797	70	930	239	77	275	5.1	120	90	0.1	-	-	-
MEADOW	-	-	-	23	4.7	-	-	-	16	1.7	-	-	-	-
OPEN	-	100	-	-	-	-	17	-	2.8	-	-	-	-	-
RESIDENTIAL	45	215	1664	1244	65	384	144	182	693	1601	190	-	-	-
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	3689	-	590	-	-	2328	-	-	-	-	-	-	-
TRANSPORTATION PAVED	503	1043	2235	5219	1776	1116	1619	491	1474	3568	576	-	-	-
WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	969	3552	4216	7944	2865	1881	2583	678	2308	5260	766	-	-	-
Unitized Load (lbs/acre/year)	68	105	600	194	275	443	204	413	163	258	227	-	-	-

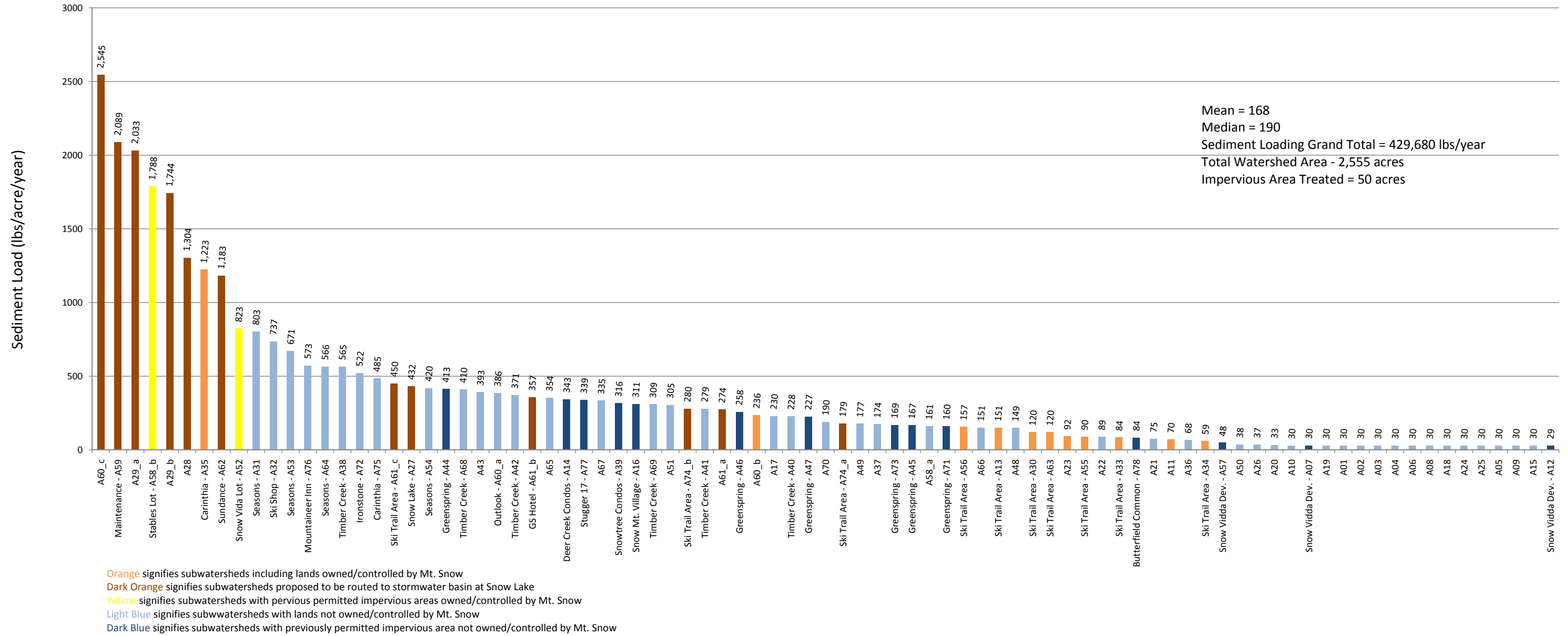
Landuse	Subwatershed Loading by Landuse (lbs/acre)													
	A48	A49	A50	A51	Snow Vidda Lot - A52	Seasons - A53	Seasons - A54	Ski Trail Area - A55	Ski Trail Area - A56	Snow Vidda Dev. - A57	A58_a	A58_b	Stables Lot - A58_c	A59
COMMERCIAL	7409	-	-	-	-	-	120	148	120	-	-	-	-	-
COMMERCIAL LODGING	740	-	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	3882	839	7368	808	3.7	16	58	3728	1581	164	140	140	7.7	-
MEADOW	246	-	190	11	-	-	-	-	-	-	-	-	-	-
OPEN	296	32	21	-	69	-	37	-	51	10	3.0	10	-	-
RESIDENTIAL	1865	374	161	2065	1.4	980	628	14	519	126	7.4	-	-	-
SKI TRAIL	-	-	-	-	-	5	0.1	4088	1336	-	-	-	-	-
TRANSPORTATION GRAVEL	874	3749	561	6500	4845	228	120	9809	7607	881	4	7608	-	-
TRANSPORTATION PAVED	10555	985	1352	1521	181	2304	1166	-	1708	398	721	399	-	-
WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	25867	2925	11563	6903	5289	3533	1897	17647	11318	1135	787	7620	-	-
Unitized Load (lbs/acre/year)	149	87	45	193	853	671	374	89	137	35	145	1698	-	-

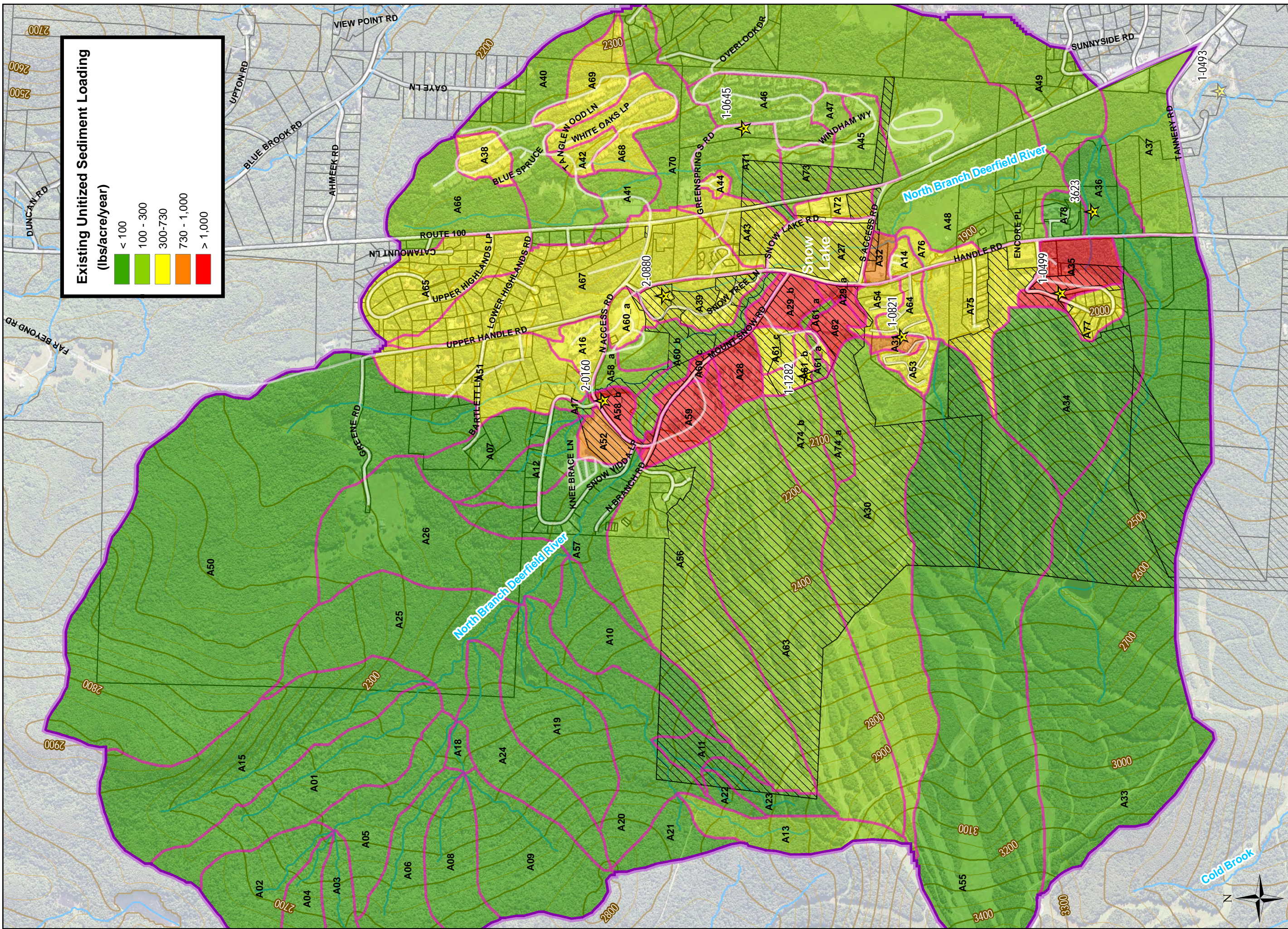
Landuse	Subwatershed Loading by Landuse (lbs/acre)													
	Maintenance - A59	Outlook - A60_a	A60_b	A60_c	A61_a	GS Hotel - A61_b	Ski Trail Area - A61_c	Sundance - A62	Ski Trail Area - A63	Seasons - A64	A65	A66	A67	Stables Lot - A58_b
COMMERCIAL	1020	-	41	31	277	733	-	259	65	149	-	-	-	-
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	20	52	468	32	48	8.3	21	6.3	1729	56	706	744	1393	-
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	-	-
OPEN	70	-	43	16	10	46	101	6.6	8.3	22	-	-	29	-
RESIDENTIAL	-	546	18	-	-	-	-	-	-	1045	1677	627	2646	-
SKI TRAIL	1.0	-	-	-	-	0.9	-	38	3436	-	-	-	-	-
TRANSPORTATION GRAVEL	22499	79	3741	14164	124	24	1339	5530	9079	3.6	5001	781	9013	-
TRANSPORTATION PAVED	3616	1530	34	2145	211	1324	745	46	-	2308	3336	2105	7220	-
WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	27227	6426	1192	14145	712	3308	2094	9501	14741	3583	7703	3108	15359	-
Unitized Load (lbs/acre/year)	2089	1125	65	2197	291	552	428	1910	123	566	254	110	252	-

Mt. Snow WQRP
 Sediment Loading (lbs/year) - Existing Conditions
 VHB
 Date: 2/17/2011

Landuse	Subwatershed Loading by Landuse (lbs/acre)													Grand Total
	Timber Creek - A68	Timber Creek - A69	A70	Greenspring - A71	Ironstone - A72	Greenspring - A73	Ski Trail Area - A74_a	Ski Trail Area - A74_b	Carrithia - A75	Mountaineer Inn - A76	Stugger 17 - A77	Butterfield Common - A78	Grand Total	
COMMERCIAL	-	-	298	-	1480	46	-	0.1	-	-	-	-	17659	
COMMERCIAL LODGING	-	-	645	-	-	-	-	-	465	607	-	121	3577	
FOREST	285	301	584	171	64	90	130	72	456	38	58	8.9	55141	
MEADOW	-	-	1.0	4.2	-	-	-	-	-	-	-	-	997	
OPEN	-	-	0	-	-	-	0.5	23	81	40	35	13	1595	
RESIDENTIAL	2436	1089	791	586	-	353	-	-	746	210	308	-	30478	
SKI TRAIL	-	-	-	-	-	-	161	683	147	-	5.1	-	15421	
TRANSPORTATION GRAVEL	-	-	-	7.1	7.3	-	1032	3601	11400	1031	1382	46	209327	
TRANSPORTATION PAVED	4295	3250	2337	1920	1570	1009	3.3	39	675	347	410	291	95486	
WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	
Grand Total	7016	4566	4895	2882	6631	1540	1352	4449	8834	2893	1763	374	429680	
Unitized Load (lbs/acre/year)	410	304	200	160	1109	174	183	282	307	729	272	65	168	

Simple Method Results for Sediment Loading in the North Branch of the Deerfield River Existing Conditions





Existing Unitized Sediment Loading
(lbs/acre/year)

- < 100
- 100 - 300
- 300-730
- 730 - 1,000
- > 1,000

- North Branch of the Deerfield River Watershed
- Subwatershed Boundary
- Road
- Stormwater Permit
- Stream
- Mt. Snow Owned Parcels
- Parcel Boundary
- 50' Contour
- 100' Contour

Mount Snow Resort
Dover, Vermont
North Branch of the Deerfield River
Subwatershed Map

February 17, 2011



Sources: Background: NAIP Photography (2009); Road data downloaded from VCGI (2009); Watersheds and unitized loads prepared by VHB (2010); VHD Streams downloaded from VCGI (2008); contours generated using VT HydroDEM layer downloaded from VCGI (2007).

VHB Vanasse Hangen Brustlin, Inc.

Prepared by: SEM

Mt. Snow WQRP
 Summary of Subwatershed Areas (acres) - Post WQRP
 VHB
 2/17/2011

Summary of Landuse Area (acres)												
Landuse	A01	A02	A03	A04	A05	A06	Snow Vidda Dev. - A07	A08	A09	A10	A11	Snow Vidda Dev. - A12
COMMERCIAL	-	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	47	27	15	13	25	29	19	22	39	28	7.5	11
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-
OPEN	-	-	-	-	-	-	-	-	-	-	-	1.0
RESIDENTIAL	-	-	-	-	-	-	1.5	-	-	-	-	0.4
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	-	-	-	-	-	0.5	-	-	0.0	0.1	0.2
TRANSPORTATION PAVED	-	-	-	-	-	-	0.2	-	-	-	-	0.3
WATER	-	-	-	-	-	-	0.1	-	-	-	-	-
Grand Total	47	27	15	13	25	29	21	22	39	28	8	13
Impervious (acres)	0	0	0	0	0	0	1	0	0	0	0	1
% Impervious	0%	0%	0%	0%	0%	0%	5%	0%	0%	0%	1%	6%

Summary of Landuse Area (acres)												
Landuse	Ski Trail Area - A13	Deer Creek Condos - A14	A15	Snow Mt. Village - A16	A17	A18	A19	A20	A21	A22	A23	A24
COMMERCIAL	0.1	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	16	0.4	74	1.3	1.3	3.0	33	43	12	3.7	8.5	30
FOREST	-	-	-	0.4	-	-	1.9	-	-	-	-	-
MEADOW	-	0.0	-	-	0.0	-	-	-	-	-	-	-
OPEN	-	1.6	-	4.9	-	-	-	-	-	-	-	-
RESIDENTIAL	2.9	-	-	-	-	-	-	-	-	-	0.5	-
SKI TRAIL	0.5	-	-	0.0	-	-	-	0.0	0.1	0.1	0.1	-
TRANSPORTATION GRAVEL	-	0.8	-	0.5	0.2	-	-	-	-	-	-	-
TRANSPORTATION PAVED	-	-	-	-	-	-	-	-	-	-	-	-
WATER	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	19	3	74	7	2	3	35	43	12	4	9	30
Impervious (acres)	1	1	0	3	0	0	0	0	0	0	0	0
% Impervious	3%	43%	0%	48%	13%	0%	0%	0%	1%	1%	1%	0%

Summary of Landuse Area (acres)												
Landuse	A25	A26	Snow Lake - A27	A28	A29_a	A29_b	Ski Trail Area - A30	Seasons - A31	Ski Shop - A32	Ski Trail Area - A33	Ski Trail Area - A34	Carinthia - A35
COMMERCIAL	-	0.2	1.0	1.9	0.0	0.5	0.3	0.1	0.2	0.0	0.0	0.7
COMMERCIAL LODGING	-	-	1.6	2.1	0.6	0.9	-	-	-	-	0.0	0.7
FOREST	54	49	0.0	-	0.2	0.1	48	0.2	0.4	184	42	6.5
MEADOW	-	14	-	-	-	-	-	-	-	-	-	-
OPEN	-	0.1	8.7	2.9	1.6	4.2	0.8	0.2	2.1	1.0	0.5	2.0
RESIDENTIAL	-	-	-	-	-	-	-	1.6	0.1	0.8	0.1	1.8
SKI TRAIL	-	-	-	0.0	-	-	38	-	-	32	19	0.1
TRANSPORTATION GRAVEL	-	-	0.0	0.1	0.0	0.1	1.5	0.1	0.5	2.6	0.3	3.4
TRANSPORTATION PAVED	-	0.2	3.7	1.0	0.2	1.2	0.1	0.3	0.2	0.2	-	0.2
WATER	-	-	2.4	-	-	-	0.8	-	0.2	1.3	-	-
Grand Total	54	64	17	8	3	7	90	3	4	223	61	15
Impervious (acres)	0	0	5	4	1	2	2	1	1	3	0	5
% Impervious	0%	1%	31%	49%	30%	31%	3%	44%	24%	1%	1%	30%

Summary of Landuse Area (acres)												
Landuse	A36	A37	Timber Creek - A38	Snowtree Condos - A39	Timber Creek - A40	Timber Creek - A41	Timber Creek - A42	A43	Greenspring - A44	Greenspring - A45	Greenspring - A46	Greenspring - A47
COMMERCIAL	-	-	-	0.1	1.7	1.0	-	0.4	-	0.1	-	-
COMMERCIAL LODGING	0.3	0.3	-	0.2	-	-	-	1.2	-	-	-	-
FOREST	14	27	2.3	5.7	31	8.0	2.6	6.5	0.3	6.0	5.0	0.0
MEADOW	-	-	-	-	0.8	0.2	-	-	-	0.9	0.1	-
OPEN	-	3.4	-	2.0	-	-	-	1.6	-	0.2	-	-
RESIDENTIAL	0.1	1.0	3.3	3.4	3.6	0.1	1.0	0.5	0.8	4.7	11	2.4
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	0.9	-	-	0.1	-	-	1.3	-	-	-	-
TRANSPORTATION PAVED	0.3	0.7	1.4	2.8	3.3	1.1	0.7	1.2	0.5	2.2	3.8	0.6
WATER	0.0	0.7	-	0.2	-	-	-	-	-	0.0	0.4	0.4
Grand Total	14	34	7	14	41	10	4	13	2	14	20	3
Impervious (acres)	0	2	4	5	7	2	1	4	1	4	7	1
% Impervious	3%	5%	50%	33%	16%	21%	28%	30%	54%	26%	33%	27%

Summary of Landuse Area (acres)												
Landuse	A48	A49	A50	A51	Snow Vidda - A52	Seasons - A53	Seasons - A54	Ski Trail Area - A55	Ski Trail Area - A56	Snow Vidda Dev. - A57	A58_a	Stables Lot - A58_b
COMMERCIAL	8.7	-	-	-	-	0.0	0.2	0.2	0.6	-	0.0	0.1
COMMERCIAL LODGING	1.6	-	-	-	-	-	0.1	-	-	-	-	-
FOREST	131	28	248	27	0.2	0.5	1.6	125	53	28	4.7	0.4
MEADOW	8.3	-	6.4	0.4	-	-	-	-	-	-	-	-
OPEN	10	1.1	0.7	-	3.2	-	1.5	-	2.2	1.6	-	0.6
RESIDENTIAL	5.6	2.4	0.8	5.8	0.0	3.1	0.9	0.1	1.1	1.1	0.2	-
SKI TRAIL	-	-	-	-	-	0.1	-	70	23	-	-	-
TRANSPORTATION GRAVEL	0.2	0.9	0.1	1.6	2.7	0.0	0.0	2.4	1.4	1.1	0.0	3.3
TRANSPORTATION PAVED	6.7	0.6	0.9	1.0	0.1	1.5	0.7	-	1.1	1.3	0.5	0.1
WATER	1.7	0.6	-	-	-	-	-	-	-	-	-	-
Grand Total	173	34	257	36	6	5	5	198	82	33	5	4
Impervious (acres)	18	2	1	5	3	3	2	3	3	3	0	3
% Impervious	11%	6%	0%	14%	45%	50%	34%	1%	4%	10%	8%	76%

Summary of Landuse Area (acres)													
Landuse	Maintenance - A59	Outlook - A60_a	A60_b	A60_c	A61_a	GS Hotel - A61_b	Ski Trail Area - A61_c	Sundance - A62	Ski Trail Area - A63	Seasons - A64	A65	A66	A67
COMMERCIAL	1.7	-	0.1	0.3	0.4	1.6	0.1	1.3	0.1	0.2	-	-	0.1
COMMERCIAL LODGING	2.5	-	0.6	1.2	0.0	0.4	1.5	0.6	-	-	-	-	0.1
FOREST	0.0	1.7	15	0.8	1.6	0.5	0.1	0.3	58	1.9	24	25	47
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	0.5
OPEN	6.2	-	2.0	2.1	0.3	2.0	2.6	0.4	0.3	0.7	-	-	1.0
RESIDENTIAL	-	3.0	0.3	-	-	-	-	-	-	1.8	3.2	1.7	5.8
SKI TRAIL	0.0	-	-	-	-	0.0	-	1.0	59	-	-	-	-
TRANSPORTATION GRAVEL	1.0	0.0	0.8	0.8	-	0.0	-	0.3	2.2	0.0	1.2	0.2	2.2
TRANSPORTATION PAVED	1.6	1.0	0.1	1.2	0.1	1.4	0.6	1.1	-	1.4	2.1	1.3	4.6
WATER	-	-	-	-	-	0.0	-	-	-	0.2	-	-	-
Grand Total	13	6	18	6	2	6	5	5	120	6	30	28	61
Impervious (acres)	5	2	2	3	0	3	2	2	2	3	5	2	10
% Impervious	42%	27%	8%	50%	19%	54%	41%	50%	2%	46%	18%	8%	17%

Mt. Snow WQRP
 Summary of Subwatershed Areas (acres) - Post WQRP
 VHB
 2/17/2011

Landuse	Summary of Landuse Area (acres)											Grand Total	
	Timber Creek - A68	Timber Creek - A69	A70	Greenspring - A71	Ironstone - A72	Greenspring - A73	Ski Trail Area - A74_a	Ski Trail Area - A74_b	Carinthia - A75	Mountaineer Inn - A76	Stugger 17 - A77		Butterfield Common - A78
COMMERCIAL	-	-	0.8	-	2.8	0.1	-	0.0	0.7	-	-	-	27
COMMERCIAL LODGING	-	-	0.6	-	0.3	-	-	-	3.0	0.6	-	1.1	22
FOREST	10	10	20	9.1	1.8	3.8	4.4	2.4	14	1.3	3.0	1.5	1903
MEADOW	-	-	0.0	0.2	-	-	-	-	-	-	-	-	34
OPEN	-	-	0.0	0.1	0.2	0.2	0	0.8	3.1	1.3	1.8	2.2	77
RESIDENTIAL	4.8	2.8	1.9	4.8	-	2.6	-	-	2.3	0.3	0.6	-	101
SKI TRAIL	-	-	-	-	-	-	2.8	11.7	2.5	-	0.1	-	262
TRANSPORTATION GRAVEL	-	-	-	0.0	0.0	-	0.2	0.9	2.7	0.2	0.5	0.1	47
TRANSPORTATION PAVED	2.7	2.1	1.5	2.4	1.0	2.2	0.0	0.0	0.2	0.2	0.4	0.9	72
WATER	-	-	-	0.1	-	-	-	-	0.0	0.0	-	-	9
Grand Total	17	15	25	17	6	9	7	16	29	4	6	6	2555
Impervious (acres)	6	3	3	3	3	3	0	1	5	1	2	2	191
% Impervious	34%	23%	14%	21%	48%	33%	3%	6%	17%	33%	24%	27%	7%

Landuse	Subwatershed RV											
	A01	A02	A03	A04	A05	A06	Snow Vidda Dev. - A07	A08	A09	A10	A11	Snow Vidda Dev. - A12
COMMERCIAL	-	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-
OPEN	-	-	-	-	-	-	-	-	-	-	-	0.05
RESIDENTIAL	-	-	-	-	-	-	0.24	-	-	-	-	0.81
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	-	-	-	-	-	0.95	-	-	0.95	0.95	0.95
TRANSPORTATION PAVED	-	-	-	-	-	-	0.95	-	-	0.95	-	0.95
WATER	-	-	-	-	-	-	0.05	-	-	-	-	-

Landuse	Subwatershed RV											
	Ski Trail Area A13	Deer Creek Condos - A14	A15	Snow Mt. Village - A16	A17	A18	A19	A20	A21	A22	A23	A24
COMMERCIAL	0.95	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
FOREST	-	-	-	0.05	-	-	-	-	-	-	-	-
MEADOW	-	-	-	0.05	-	-	-	-	-	-	-	-
OPEN	-	0.05	-	0.05	-	-	-	-	-	-	-	-
RESIDENTIAL	-	0.28	-	0.58	-	-	-	-	-	-	-	-
SKI TRAIL	0.05	-	-	-	-	-	-	-	-	-	0.05	-
TRANSPORTATION GRAVEL	0.95	-	-	0.95	-	-	-	0.95	0.95	0.95	0.95	-
TRANSPORTATION PAVED	-	0.95	-	0.95	0.95	-	-	-	-	-	-	-
WATER	-	-	-	-	-	-	-	-	-	-	-	-

Landuse	Subwatershed RV											
	A25	A26	Snow Lake - A27	A28	A29_a	A29_b	Ski Trail Area A30	Seasons - A31	Ski Shop - A32	Ski Trail Area A33	Ski Trail Area A34	Carinthia - A35
COMMERCIAL	0.05	-	-	-	-	-	-	-	-	-	-	-
COMMERCIAL LODGING	0.05	0.05	-	-	-	-	0.05	0.05	0.05	0.05	-	-
FOREST	-	-	-	0.05	-	-	-	-	-	-	-	-
MEADOW	0.05	-	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
OPEN	0.05	0.05	-	-	-	-	-	-	-	-	-	-
RESIDENTIAL	0.05	-	0.05	0.05	0.05	0.05	-	-	-	-	-	-
SKI TRAIL	0.05	0.05	0.05	-	0.05	0.05	-	0.05	0.05	-	-	-
TRANSPORTATION GRAVEL	0.95	0.95	-	-	0.05	-	-	-	-	-	-	-
TRANSPORTATION PAVED	0.95	-	-	-	-	-	-	-	-	-	0.95	-
WATER	0.05	0.05	-	0.05	0.05	0.05	-	0.05	-	-	0.05	0.05

Landuse	Subwatershed RV											
	A36	A37	Timber Creek A38	Snowtree Condos - A39	Timber Creek A40	Timber Creek A41	Timber Creek A42	A43	Greenspring A44	Greenspring A45	Greenspring A46	Greenspring A47
COMMERCIAL	-	-	-	0.05	0.88	0.92	-	0.05	-	0.95	-	-
COMMERCIAL LODGING	0.05	0.05	-	0.95	-	-	-	0.95	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	-	-	-	0.05	0.05	-	-	-	-	-	-
OPEN	-	0.05	-	0.05	0.42	0.95	0.49	0.05	-	0.05	-	-
RESIDENTIAL	0.41	0.25	0.63	0.48	-	-	-	0.36	0.45	0.30	0.29	0.16
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-
TRANSPORTATION GRAVEL	-	0.95	0.95	-	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
TRANSPORTATION PAVED	0.95	0.05	-	-	0.05	-	-	-	-	0.05	0.05	0.05
WATER	0.05	0.05	-	-	-	-	-	-	-	-	-	-

Mt. Snow WORP
 Post-Development - RV for Each Subwatershed's Landuse
 V/HB
 02/17/11

Landuse	Subwatershed RV											
	A48	A49	A50	A51	Snow Vida Lot - A52	Seasons - A53	Seasons - A54	Ski Trail Area - A55	Ski Trail Area - A56	Snow Vidda Dev. - A57	A58_a	Stables Lot - A58_b
COMMERCIAL	0.95	-	-	-	-	0.05	0.65	0.87	0.21	-	0.05	0.05
COMMERCIAL LODGING	0.40	-	-	-	-	-	0.95	-	-	-	-	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	0.05	-	0.05	0.05	-	-	-	-	-	-	-	-
OPEN	0.05	0.05	0.05	-	0.05	-	0.05	-	0.05	0.05	0.05	0.05
RESIDENTIAL	0.40	0.19	0.25	0.44	0.95	0.38	0.83	0.22	0.56	0.69	0.05	-
SKI TRAIL	-	-	-	-	-	0.05	-	0.05	0.05	-	-	-
TRANSPORTATION GRAVEL	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
TRANSPORTATION PAVED	0.95	0.95	0.95	0.95	0.95	0.95	0.95	-	0.95	0.95	0.95	0.95
WATER	0.05	0.05	-	-	-	-	-	-	-	-	-	-

Landuse	Subwatershed RV												
	Maintenance - A59	Outlook - A60_a	A60_b	A60_c	A61_a	GS Hotel - A61_b	Ski Trail Area - A61_c	Sundance - A62	Ski Trail Area - A63	Seasons - A64	A65	A66	A67
COMMERCIAL	0.21	-	0.12	0.05	0.86	0.85	0.05	0.35	0.95	0.74	-	-	0.21
COMMERCIAL LODGING	0.95	-	0.95	0.95	0.95	0.95	0.95	0.95	-	-	-	-	0.95
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	0.05
OPEN	0.05	-	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-	-	0.05
RESIDENTIAL	-	0.22	0.09	-	-	-	-	-	-	0.70	0.63	0.46	0.56
SKI TRAIL	0.05	-	-	-	-	0.05	-	0.05	0.05	-	-	-	-
TRANSPORTATION GRAVEL	0.95	0.95	0.95	0.95	-	0.95	-	0.95	0.95	0.95	0.95	0.95	0.95
TRANSPORTATION PAVED	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	-	0.95	0.95	0.95	0.95
WATER	-	-	-	-	-	0.05	-	-	-	0.05	-	-	-

Landuse	Subwatershed RV												
	Timber Creek - A68	Timber Creek - A69	A70	Greenspring - A71	Ironstone - A72	Greenspring - A73	Ski Trail Area - A74_a	Ski Trail Area - A74_b	Carinthia - A75	Mountaineer Inn - A76	Stugger 17 - A77	Butterfield Common - A78	Grand Total
COMMERCIAL	-	-	0.42	-	0.59	0.70	-	0.95	0.05	-	-	-	-
COMMERCIAL LODGING	-	-	0.95	-	0.95	-	-	-	0.43	0.91	-	0.50	-
FOREST	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-
MEADOW	-	-	0.05	0.05	-	-	-	-	-	-	-	-	-
OPEN	-	-	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	-
RESIDENTIAL	0.62	0.47	0.50	0.25	-	0.27	-	-	0.39	0.95	0.95	-	-
SKI TRAIL	-	-	-	-	-	-	0.05	0.05	0.05	-	0.05	-	-
TRANSPORTATION GRAVEL	-	-	-	0.95	0.95	-	0.95	0.95	0.95	0.95	0.95	0.95	-
TRANSPORTATION PAVED	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	-
WATER	-	-	-	0.05	-	-	-	-	0.05	0.05	-	-	-

Mount Snow WQRP
 Summary Of Treatments (% Removal) Post-Development
 VHB
 2/17/2011

Permit	Permittee	WSID	STP	Active/Expired	Proposed Treatment (% Removal) Applied	Impervious Area (acres)
4141-INDS	Snow Vidda Development	A07, A12, A57	stone lined swale to pond, grass/stone lined swale to oil/grit separator and surface sand filter	Active	80%	4.9
1-0493	Deer Creek Condominiums	A14	detention pond	Expired	40%	1.2
2-0160	Snow Mt. Village, Mt Snow Village Association Inc.	A16	natural swale	Expired	30%	3.4
1-1282	Grand Summit Resort Properties, inc and Mt Snow Ltd	A52 (Snow Vida Lot), A61_b (Grand Summit Hotel), A58_b (Stables Lot)	detention basin	Expired	80%	9.4
1-0821	Sundance Condos Seasons on Mount Snow Condominium Owner's Association Inc.	A62, A29_b	grass/stone lined swales to Snow Lake	Expired	80%	4.7
2-0880	Snowtree Condominiums, Mt Snow	A39	detention pond	Expired	80%	4.6
1-0645	Greenspring at Mt Snow Homeowner's Association inc	A44, A45, A46, A47, A71, A73	retention ponds	Expired	40%	18.6
1-0499	Stugger 17 Lot Subdivision	A77	grass/stone lined swales	Expired	35%	1.5
3623-INDS	Butterfield Common	A78	grass lined and/or dry swales to sub-surface detention pipes	Active	80%	1.5

Scenario	WSID	% Removal Applied	Impervious Area (acres)
Additional Proposed Treatment Post-Development to Mount Snow Owned/Controlled Impervious Surfaces			
Post-Development	A27, A28, A29_a, A34, A35, A43, A45, A48, A54, A57, A58_a, A59, A60_b, A60_c, A61_a, A61_c, A67, A71, A72, A73, A75, A77	80%	31
Shaded cells signify Mount Snow Owned			
Subtotal: Impervious Areas Mount Snow Owned/Controlled (acres):			50
Subtotal: Impervious Areas Privately Owned/Controlled (acres):			31
Total Impervious Area (acres):			81

Mount Snow WQRP
 Sediment Loading (lbs/year) - Post WQRP
 VHB
 Date: 2/17/2011

Landuse	Subwatershed Loading by Landuse (lbs/acre)															
	A01	A02	A03	A04	A05	A06	Snow Vidda Dev. - A07	A08	A09	A10	A11	Snow Vidda Dev. - A12				
COMMERCIAL	-	-	-	-	-	-	-	-	-	-	-	-				
COMMERCIAL LODGING	-	-	-	-	-	-	-	-	-	-	-	-				
FOREST	1,390	799	454	379	731	867	111	655	1,149	838	223	68				
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-				
OPEN	-	-	-	-	-	-	-	-	-	-	-	6				
RESIDENTIAL	-	-	-	-	-	-	59	-	-	-	-	49				
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-				
TRANSPORTATION GRAVEL	-	-	-	-	-	-	403	-	-	18	308	168				
TRANSPORTATION PAVED	-	-	-	-	-	-	59	-	-	-	-	92				
WATER	-	-	-	-	-	-	-	-	-	-	-	-				
Grand Total	1,390	799	454	379	731	867	631	655	1,149	857	531	383				
Unitized Load (lbs/acre/year)	30	30	30	30	30	30	30	30	30	30	70	29				

Landuse	Subwatershed Loading by Landuse (lbs/acre)															
	Ski Trail Area - A13	Deer Creek Condos - A14	A15	Snow Mt. Village - A16	A17	A18	A19	A20	A21	A22	A23	A24				
COMMERCIAL	63	-	-	-	-	-	-	-	-	-	-	-				
COMMERCIAL LODGING	466	7.2	2,188	27	39	88	985	1,274	354	111	252	905				
FOREST	-	-	-	-	-	-	-	-	-	-	-	-				
MEADOW	-	-	-	8.1	-	-	57	-	-	-	-	-				
OPEN	-	0.3	-	-	0.2	-	-	-	-	-	-	-				
RESIDENTIAL	-	221	-	1,619	-	-	-	-	-	-	-	-				
SKI TRAIL	171	-	-	-	-	-	-	-	-	-	26	-				
TRANSPORTATION GRAVEL	2,196	-	-	0.9	-	-	-	149	545	228	556	-				
TRANSPORTATION PAVED	-	722	-	554	309	-	-	-	-	-	-	-				
WATER	-	-	-	-	-	-	-	-	-	-	-	-				
Grand Total	2,897	950	2,188	2,209	348	88	1,042	1,422	900	339	834	905				
Unitized Load (lbs/acre/year)	151	343	30	311	230	30	30	33	75	89	92	30				

Landuse	Subwatershed Loading by Landuse (lbs/acre)															
	A25	A26	Snow Lake - A27	A28	A29_a	A29_b	Ski Trail Area A30	Seasons - A31	Ski Shop - A32	Ski Trail Area A33	Ski Trail Area A34	Carinthia - A35				
COMMERCIAL	-	146	45	461	1.7	4.9	216	6.3	143	15	1.8	30				
COMMERCIAL LODGING	-	-	343	441	120	202	-	-	-	-	2.9	158				
FOREST	1,618	1,463	0.0	-	4.9	0.6	1,423	5.3	12	5,487	1,235	194				
MEADOW	-	420	-	-	-	-	-	-	-	-	-	-				
OPEN	-	-	259	87	48	25	24	6.8	61	31	15	60				
RESIDENTIAL	-	66	-	-	-	-	280	595	5.8	112	42	243				
SKI TRAIL	-	-	-	0.9	-	-	2,347	-	-	1,870	1,096	5.8				
TRANSPORTATION GRAVEL	-	-	16	249	0.0	49	6,039	157	2,214	10,890	1,035	3,573				
TRANSPORTATION PAVED	-	251	1,178	318	77	373	82	472	302	372	345	-				
WATER	-	-	-	-	-	-	-	-	-	-	-	-				
Grand Total	1,618	2,346	1,841	1,557	252	654	10,411	1,243	2,738	18,777	3,428	4,609				
Unitized Load (lbs/acre/year)	30	37	106	194	96	93	115	473	734	84	56	298				

Mount Snow WQRP
 Sediment Loading (lbs/year) - Post WQRP
 VHB
 Date: 2/17/2011

Landuse	Subwatershed Loading by Landuse (lbs/acre)													
	A36	A37	Timber Creek A38	Snowtree Condos - A39	Timber Creek A40	Timber Creek A41	Timber Creek A42	A43	Greenspring A44	Greenspring A45	Greenspring A46	Greenspring A47		
COMMERCIAL	-	-	-	1.0	1,336	823	-	20	-	54	-	-		
COMMERCIAL LODGING	17	15	-	34	-	-	-	638	-	-	-	-		
FOREST	405	797	70	34	930	239	77	194	5.1	106	90	0.1		
MEADOW	-	-	-	-	23	4.7	-	-	-	16.3	1.7	-		
OPEN	-	100	-	12	-	-	-	48	-	4.2	-	-		
RESIDENTIAL	45	215	1,664	267	1,244	65	384	144	182	693	1,601	190		
SKI TRAIL	-	-	-	-	-	-	-	-	-	-	-	-		
TRANSPORTATION GRAVEL	-	3,689	-	-	590	-	-	1,049	-	-	-	-		
TRANSPORTATION PAVED	503	1,043	2,235	896	5,219	1,776	1,116	1,627	491	1,686	3,568	576		
WATER	-	-	-	-	-	-	-	-	-	-	-	-		
Grand Total	969	5,859	3,969	1,244	9,341	2,909	1,577	3,720	678	2,560	5,260	766		
Unitized Load (lbs/acre/year)	68	174	565	88	228	279	371	294	413	181	258	227		

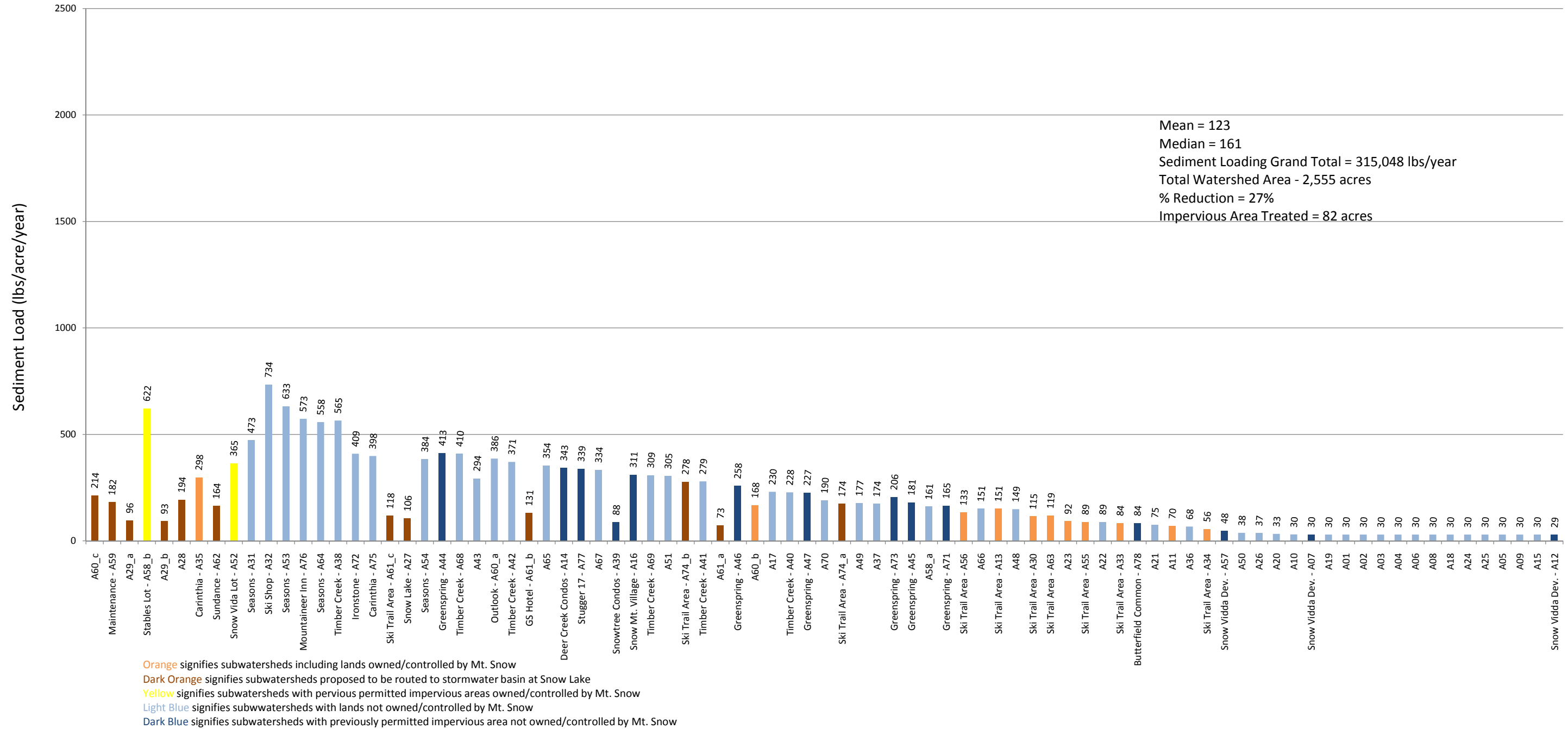
Landuse	Subwatershed Loading by Landuse (lbs/acre)													
	A48	A49	A50	A51	Snow Vidda - A52	Seasons - A53	Seasons - A54	Seasons - A55	Ski Trail Area A56	Snow Vidda Dev. - A57	A58_a	Stables Lot - A58_b		
COMMERCIAL	7,409	-	-	-	-	1.4	124	148	103	-	0.2	0.6		
COMMERCIAL LODGING	740	-	-	-	-	-	12	-	-	-	-	-		
FOREST	3,882	839	7,368	808	1.2	16	48	3,728	1,580	164	140	2.3		
MEADOW	246	-	190	11	-	-	-	-	-	-	-	-		
OPEN	296	32	21	-	19	-	46	-	64	10	2.9	3.8		
RESIDENTIAL	1,865	374	161	2,065	0.5	980	619	14	519	126	7.4	-		
SKI TRAIL	-	-	-	-	-	5	-	4,088	1,336	-	-	-		
TRANSPORTATION GRAVEL	874	3,749	561	6,500	2,198	57	0.2	9,733	5,748	882	3.7	2,769		
TRANSPORTATION PAVED	10,521	985	1,352	1,521	40	2,275	1,099	-	1,654	396	721	18		
WATER	-	-	-	-	-	-	-	-	-	-	-	-		
Grand Total	25,832	5,979	9,652	10,905	2,260	3,335	1,947	17,712	11,005	1,579	876	2,793		
Unitized Load (lbs/acre/year)	149	177	38	305	365	633	384	89	133	48	161	622		

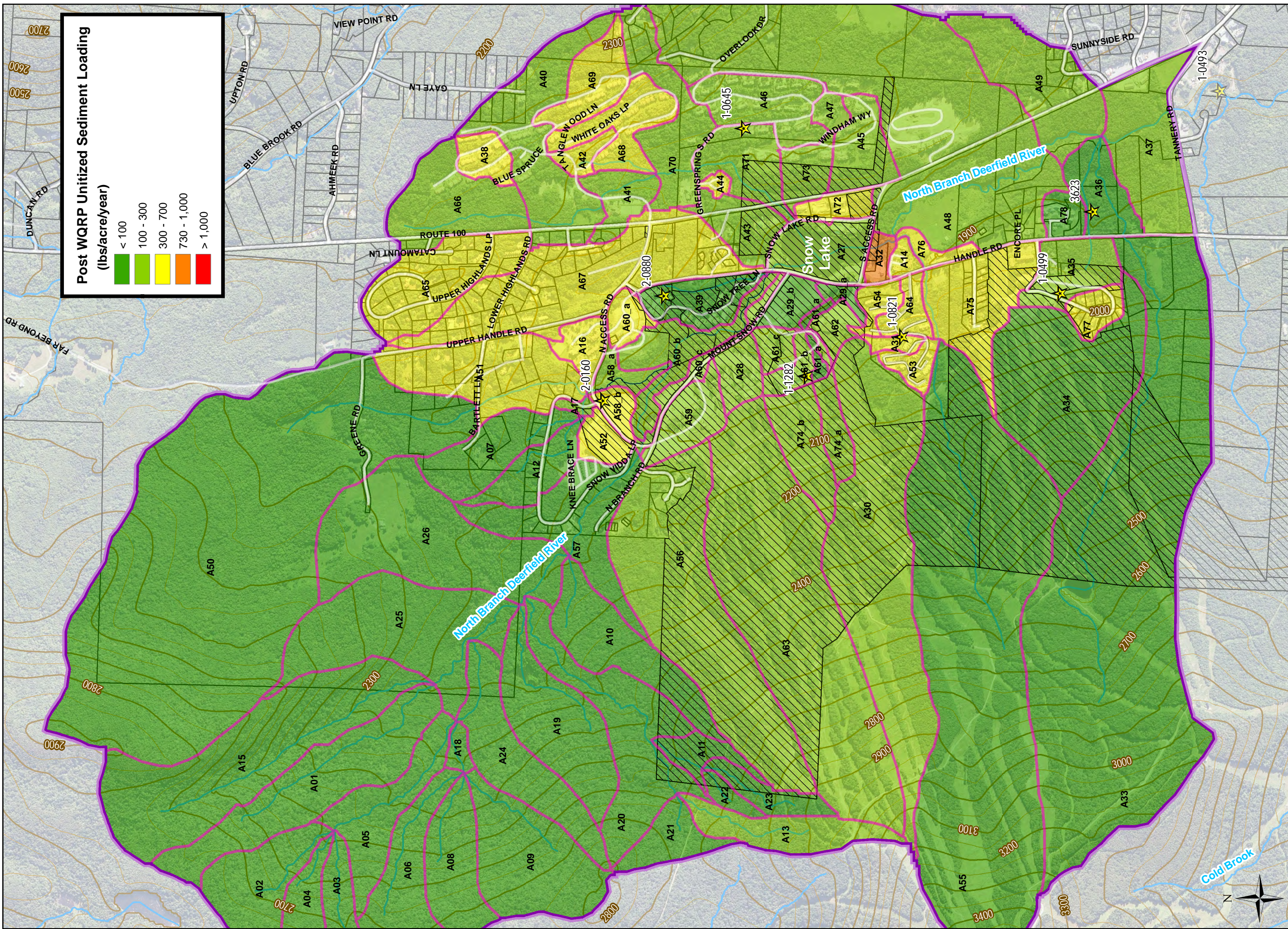
Landuse	Subwatershed Loading by Landuse (lbs/acre)													
	Maintenance - A59	Outlook - A60_a	A60_b	A60_c	A61_a	GS Hotel - A61_b	Ski Trail Area A61_c	Sundance - A62	Ski Trail Area A63	Seasons - A64	A65	A66	A67	
COMMERCIAL	271	-	6.1	16	79	246	6.4	82	30	151	-	-	17	
COMMERCIAL LODGING	548	-	132	259	0.2	94	316	139	-	-	-	-	77	
FOREST	0.5	52	432	25	48	2.8	3.1	1.9	1,729	56	706	744	1,392	
MEADOW	-	-	-	-	-	-	-	-	-	-	-	-	-	
OPEN	184	-	61	61	10	12	78	2.1	8.3	22	-	-	16	
RESIDENTIAL	-	546	18	-	-	-	-	-	-	1,044	1,677	627	2,646	
SKI TRAIL	1.0	-	-	-	-	0	-	11	3,436	-	-	-	-	
TRANSPORTATION GRAVEL	877	79	2,393	628	-	6	-	222	8,979	0.5	5,001	781	9,013	
TRANSPORTATION PAVED	489	1,530	46	388	42	427	175	358	-	2,260	3,336	2,105	7,172	
WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	
Grand Total	2,369	2,206	3,088	1,376	179	787	579	816	14,181	3,533	10,720	4,257	20,360	
Unitized Load (lbs/acre/year)	182	386	168	214	73	131	118	164	119	558	354	151	334	

Mount Snow WQRP
 Sediment Loading (lbs/year) - Post WQRP
 VHB
 Date: 2/17/2011

Landuse	Subwatershed Loading by Landuse (lbs/acre)													Grand Total
	Timber Creek - A68	Timber Creek - A69	A70	Greenspring - A71	Ironstone - A72	Greenspring - A73	Ski Trail Area - A74_a	Ski Trail Area - A74_b	Carinthia - A75	Mountaineer Inn - A76	Stugger 17 - A77	Butterfield Common - A78	Grand Total	
COMMERCIAL	-	-	298	-	1,478	46	-	0.1	33	-	-	-	13,910	
COMMERCIAL LODGING	-	-	645	-	57	-	-	-	1,077	607	-	121	6,794	
FOREST	285	301	584	163	53	67	130	72	424	38	58	8.9	54,702	
MEADOW	-	-	1.0	4.2	-	-	-	-	-	-	-	-	997	
OPEN	-	-	0.4	1.6	5.6	3.3	0.5	23	93	40	35	13	1,964	
RESIDENTIAL	2,436	1,089	791	586	-	353	-	-	721	210	308	-	29,766	
SKI TRAIL	-	-	-	-	-	-	161	683	147	-	5.1	-	15,391	
TRANSPORTATION GRAVEL	-	-	-	2.4	1.5	-	997	3,601	8,629	1,031	1,397	46	110,883	
TRANSPORTATION PAVED	4,295	3,250	2,337	2,015	853	1,351	0.7	7.9	346	347	396	291	80,641	
WATER	-	-	-	-	-	-	-	-	-	-	-	-	-	
Grand Total	7,016	4,640	4,656	2,772	2,448	1,819	1,289	4,387	11,472	2,273	2,199	480	315,048	
Unitized Load (lbs/acre/year)	410	309	190	165	409	206	174	278	398	573	339	84	123	

Simple Method Results for Sediment Loading in the North Branch of the Deerfield River Post WQRP Implementation





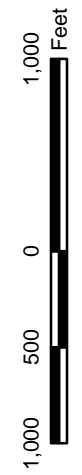
Post WQRP Unitized Sediment Loading
(lbs/acre/year)

- < 100
- 100 - 300
- 300 - 700
- 730 - 1,000
- > 1,000

- North Branch of the Deerfield River Watershed
- Subwatershed Boundary
- Road
- Stormwater Permit
- Stream
- Mt. Snow Owned Parcels
- Parcel Boundary
- 50' Contour
- 100' Contour

Mount Snow Resort
Dover, Vermont
North Branch of the Deerfield River
Subwatershed Map

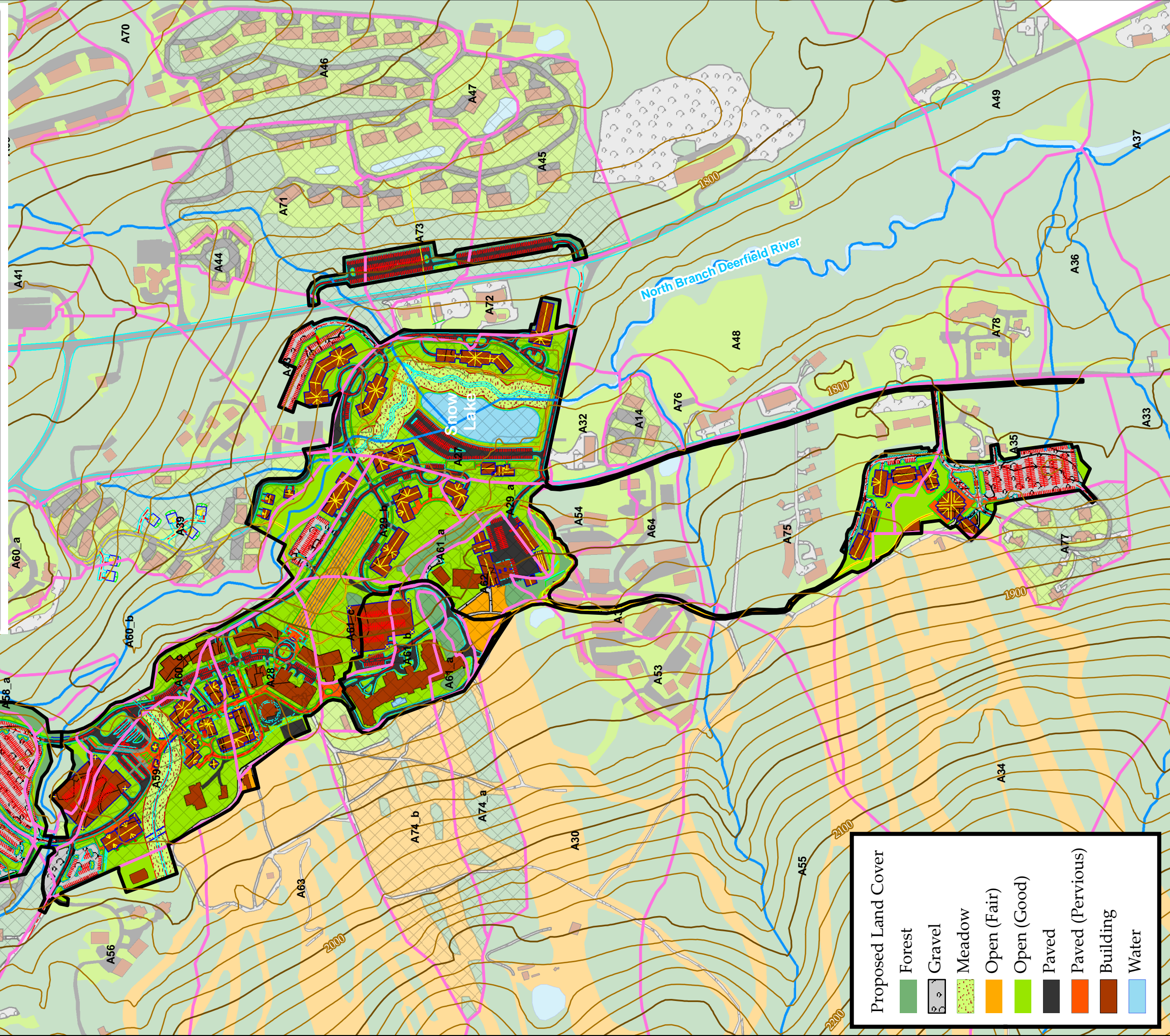
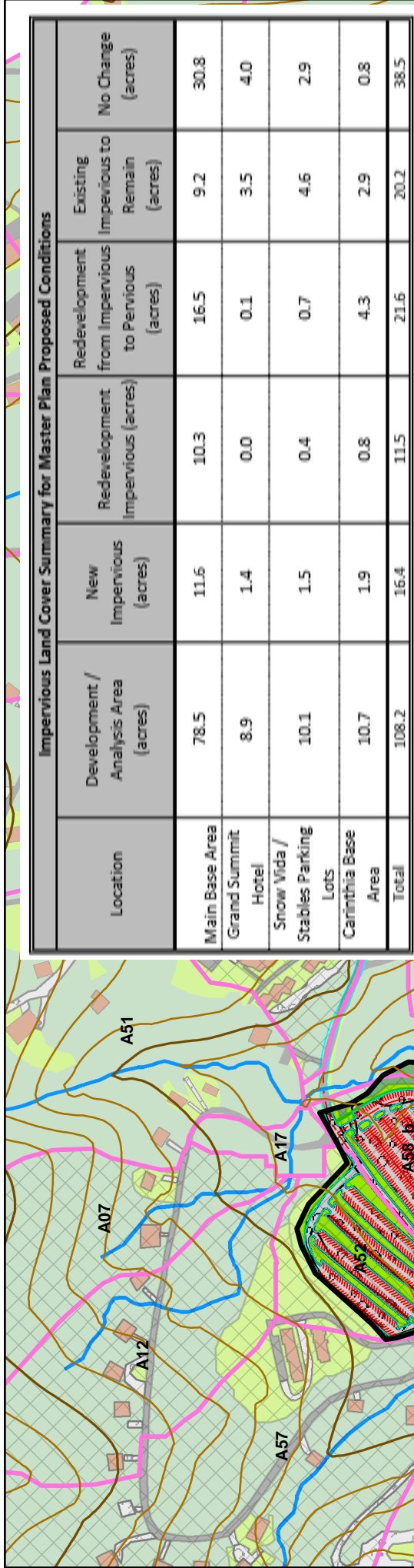
February 17, 2011



Sources: Background: NAIP Photography (2009); Road data downloaded from VCGI (2009); Watersheds and unitized loads prepared by VHB (2010); VHD Streams and unitized loads from VCGI (2008); contours generated using VT HydroDEM layer downloaded from VCGI (2007).

VHB Vanasse Hangen Brustlin, Inc.

Prepared by: SEM



Impervious Land Cover Summary for Master Plan Proposed Conditions

Location	Development / Analysis Area (acres)	New Impervious (acres)	Redevelopment Impervious (acres)	Redevelopment from Impervious to Pervious (acres)	Existing Impervious to Remain (acres)	No Change (acres)
Main Base Area	78.5	11.6	10.3	16.5	9.2	30.8
Grand Summit Hotel	8.9	1.4	0.0	0.1	3.5	4.0
Snow Vida / Stables Parking Lots	10.1	1.5	0.4	0.7	4.6	2.9
Carinthia Base Area	10.7	1.9	0.8	4.3	2.9	0.8
Total	108.2	16.4	11.5	21.6	20.2	38.5

Proposed Land Cover

- Forest
- Gravel
- Meadow
- Open (Fair)
- Open (Good)
- Paved
- Paved (Pervious)
- Building
- Water

Legend

- Proposed Post WQRP Treated Areas
- Subwatershed Boundary
- Development Areas
- Stream
- 20' Contour
- 100' Contour

Prepared by: SEMI

**Mount Snow Master Plan/Base Area Redevelopment
West Dover, Vermont
Post Development Map**

February 17, 2011

Feet

Sources: Background Existing Land Cover by VHB (2008, 2010 update); VHD Streams provided by VCGI (2008); Development Areas, Treated Areas, and Proposed Land Cover by VHB (2010) based on VHB October 2010 plans.



48 Green Street, Suite 2
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Vergennes, Vermont 05491
802.877.1380
FAX 802.877.1385

Memorandum

To: Mount Snow Act 250 Permitting
Project File

Date: March 28, 2008

Project No.: 57138

From: Jeffrey A. Nelson

Re: Iron Seep Prevention and
Control Plan

On behalf of Mount Snow Resort (Mount Snow) VHB Pioneer Environmental Associates (VHB Pioneer) has prepared the following sequence as a guideline to minimize the risk of iron seeps occurring during project construction activities. To avoid the occurrence of iron seeps, resulting from disturbance, reworking, or fill placement in areas of saturated soils, the following measures should be implemented as an integral part of construction operations for the West Lake project. The most important premise is that low-pH, iron-rich glacial till soils must not be used as fill materials that are placed in direct contact with soils where saturated ground conditions are to be regularly expected.

The proposed implementation of the Iron Seep Prevention and Control Plan is as follows:

1. At risk areas will be identified in the field prior to construction and as construction proceeds within each specific development area. Generally, these areas will include locations of wet soils, seeps and springs, and areas of water ponding where the placement of fill or significant reworking/disturbance of soils is proposed.
2. Following identification of these areas, confirmation of the necessity and extent of special fill treatment will be made with project engineer/erosion control specialist.
3. Within each of these areas, native topsoil materials will be removed to a depth of at least 2 feet below native ground surface.
4. These zones will then be backfilled with unwashed crushed limestone of 3/4 inch or smaller size to original ground surface elevation.
5. As needed, provisions will be made for the drainage of groundwater within the soil replacement area. This will be determined on a case-by-case basis and may include a gravel pad, additional crushed limestone, or drainage pipe downslope of the treatment area.

Mount Snow Act 250 Permitting

Date: March 28, 2008

Page 2

Project No.: 57138

6. A continuous layer of geotextile fabric will then be placed over the limestone materials throughout each treatment area.
7. Common fill material will then be placed to achieve grades as specified by proposed site plans.

The implementation of this plan will ensure the avoidance of the key element which leads to the occurrence of iron seeps, namely the placement of low-pH, iron-rich fill materials below the water table where iron transformations and release can occur.