April 29, 2016

Ref: 57201.08

Mr. Tim Clear
Watershed Management Division
Vermont Department of Environmental Conservation
One National Life Drive, Main 2
Montpelier, VT 05620-3522

RE: Jay Peak Resort
Water Quality Remediation Plan ("WQRP")
2016 Update

Dear Tim:

In accordance with the *Jay Peak Resort Watershed Study and Water Quality Remediation Plan* (January 2015) ("WQRP"), VHB prepared an annual report summarizing water quality monitoring activities conducted during 2015. The report contains monitoring data and analysis of water quality conditions within the Jay Branch and South Mountain Branch watersheds during the monitoring period. As required, Jay Peak has updated certain sections of the WQRP as noted below. These updates are attached to this letter and are also include in Appendix 7 to the Jay Peak Water Quality Monitoring Plan ("WQMP") 2015 Performance Report. They are provided for public review and comment in accordance with the DEC's "Procedure for Water Quality Remediation Plans."

WQRP Updates:

- Post Construction Soil Depth and Quality Plan (DEC 2015, draft). This document provides construction specifications for soil depth and quality associated with sediment offset projects that involve the conversion of existing impervious surfaces to vegetated, pervious surfaces. The North Village Road Revegetation sediment offset project that was completed in the fall of 2015 was completed in accordance with these specifications.
- Sediment Offset Project Calculation Sheets and Summary. These calculation worksheets provide specific information regarding the size, location, and description of completed sediment offset projects. Pre- and Post-construction photographs are included to document the work that was performed. A summary worksheet identifies the total amount of sediment offsets in pounds per

Engineers | Scientists | Planners | Designers

40 IDX Drive, Building 100
Suite 200
South Burlington, Vermont 05403
P 802.497.6100
F 802.495.5130

year that have been generated by the completed projects within each of the three subject watersheds (Jay Branch, Tributary 9 to Jay Branch, and South Mountain Branch). In future years, construction projects requiring sediment offsets will be shown in a similar manner and the required sediment load will be deducted from the summation worksheet.

- Proposed 2016 Small- and Medium-Scale Sediment Reduction BMPs. The BMPs identified in this attachment have been selected in accordance with the requirements of the WQRP because the interim biocriteria targets were not met at monitoring stations in the Jay Branch, Tributary 9 to Jay Branch, and South Mountain Branch watersheds. The purpose of these BMPs is to further reduce sediment loading within these watersheds to assist with the recovery of aquatic macroinvertebrate populations.

Following our call on April 28, 2016, this cover letter has been revised with additional information to provide context for the components of the WQRP update; the remainder of the information in this update remains unchanged from the submittal that was made on April 19, 2016. If you have any questions or require further information please do not hesitate to call me directly at (802) 497-6164 or email rwildey@vhb.com.

Very truly yours,

Robert Wildey, CPESC
Water Resources Consultant

RAW/jkw
Enclosure
cc: Steven Fiske (electronic copy only)
Rachel Stevens (VLS) (electronic copy only)
Jamie Fidel (VNRC) (electronic copy only)
Walter Elander (JPR) (electronic copy only)

Post-Construction Soil Depth and Quality (v.2.0, 2/26/2015)

Naturally occurring (undisturbed) soil and vegetation provide important stormwater functions including: water infiltration; nutrient, sediment, and pollutant adsorption; sediment and pollutant biofiltration; water interflow storage and transmission; and pollutant decomposition. These functions are largely lost when development strips away native soil and vegetation and replaces it with minimal topsoil and sod. Not only are these important stormwater functions diminished, but such landscapes may themselves become pollution generating pervious surfaces due to increased use of pesticides, fertilizers and other landscaping and household/industrial chemicals, the concentration of pet wastes, and pollutants that accompany roadside litter.

Establishing soil quality and depth regains greater stormwater functions in the post development landscape, provides increased treatment of pollutants and sediments that result from development and habitation, and minimizes the need for some landscaping chemicals, thus reducing pollution through prevention.

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Design Summary

Criteria	Element	Requirements
Feasibility	Slope	Less than 33%
	Contributing Drainage Area	Applies to all site areas not covered by impervious surface, incorporated into a structural stormwater treatment practice, or engineered as structural fill or slope
Conveyance		Not applicable
Pre-Treatment		Not applicable
Treatment	Soil Retention	Retain duff layer and native topsoil undisturbed to the maximum extent practicable. Where grading required, duff layer and topsoil shall be removed and stockpiled on site and reapplied to other portions of the site
	Soil Quality	Topsoil layer with minimum organic matter content 10% dry weight in planting beds, and 5% organic matter content in turf areas, and pH of 6.0 - 8.0 or matching pH of undisturbed soil. Topsoil layer minimum depth of 8 inches except where tree roots limit amendment incorporation. Subsoils below topsoil scarified at least 4 inches, with incorporation of upper material. Mulch planting beds with 2 inches of organic material. Compost and other materials shall meet organic content and contaminant limit requirements of the Vermont Solid Waste Management Rules §6-11 and this practice standard. The resulting soil shall be conducive to the type of vegetation to be established.
	Credit Towards Standards	Site areas meeting these required elements may be entered into runoff models as "Open Space in Good Condition" rather than "Lawn."
Other	Vegetation and Landscaping	Site specific plan for soil management during construction must be provided. Dense and vigorous vegetative cover shall be established over turf areas. Planting beds shall be covered with 2 inches of organic mulch.
	Construction Sequence	Soil preparation options shall be implemented that best suit each area of the site, as identified on the site-specific soil management plan (Table XX). Post-construction inspection shall be completed prior to planting.
	Maintenance	General landscaping maintenance and annual inspections

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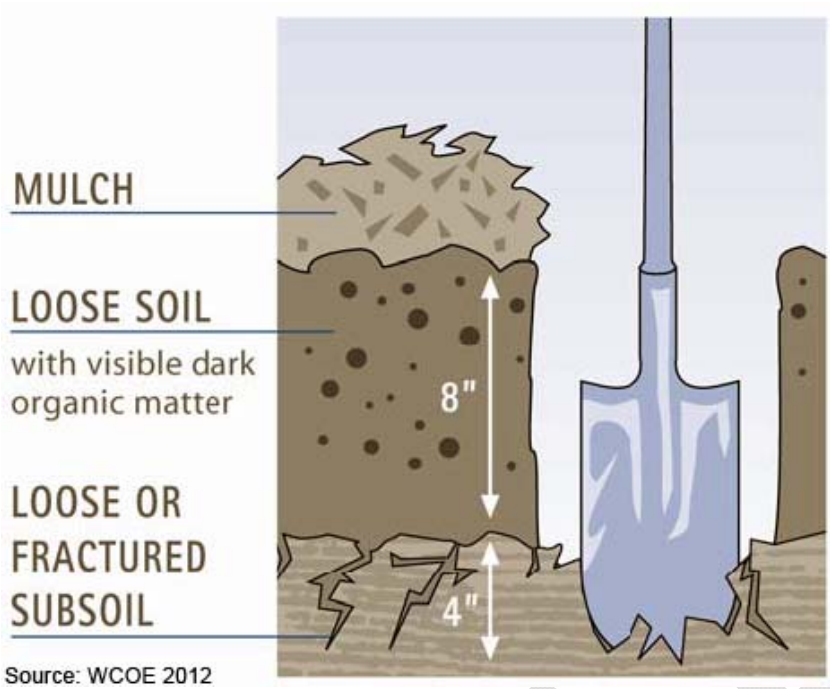

Figure XX-1. Typical Section, Verifying Post-Construction Soil Depth and Quality Using a Test Hole. Test holes should be about one foot deep (after first scraping away any mulch) and about one foot square.

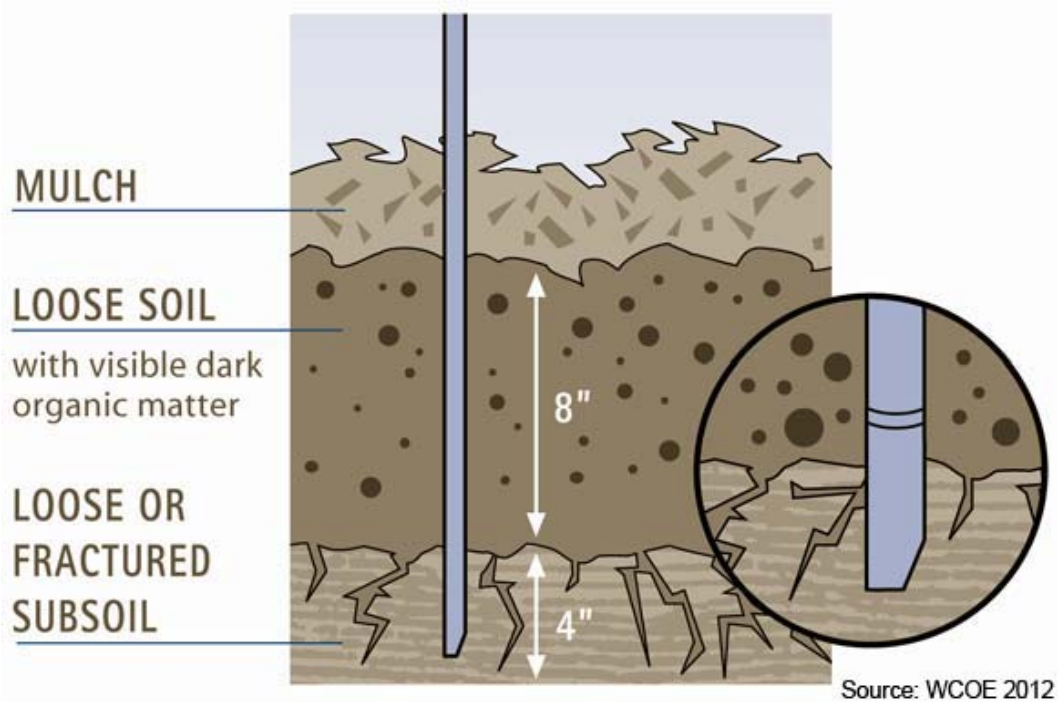

Figure XX-2. Typical Section, Verifying Post-Construction Soil Depth and Quality Using a Rod Penetrometer.

Post-Construction Soil Depth and Quality Feasibility

Required Elements

- Post-construction soil depth and quality requirements shall apply to all disturbed areas within the limits of the site which are not covered by an impervious surface, incorporated into a structural stormwater treatment practice, or engineered as structural fill or slope once development is complete.
- Undisturbed areas where the duff layer and native topsoil are retained meet the intent of this standard and shall not be subject to disturbance solely for the purpose of soil amendment.
- This practice shall not be applied on soil slopes greater than 33 percent.

Design Guidance

- Establishing a minimum soil quality and depth will provide improved on-site management of stormwater flow and water quality where soils are disturbed during construction activities. Meeting a minimum soil quality and depth standard is, however, not the same as preservation of naturally occurring soil and vegetation.
- Soil organic matter can be attained through numerous materials such as compost, composted woody material, biosolids, and forest product residuals. It is important that the materials used to meet the soil quality and depth standard be appropriate and beneficial to the plant cover to be established. Likewise, it is important that imported topsoils improve soil conditions and do not have an excessive percent of clay fines.

Post-Construction Soil Depth and Quality Conveyance

Required Elements

- Not applicable to this practice.

Post-Construction Soil Depth and Quality Pretreatment

Required Elements

- Not applicable to this practice.

Post-Construction Soil Depth and Quality Treatment

Required Elements

Soil retention. Retain, in an undisturbed state, the duff layer and native topsoil to the maximum extent practicable. In any areas requiring grading, the duff layer and topsoil shall be removed and stockpiled on site in a designated, controlled area, not adjacent to surface waters, wetlands, floodplains, or other critical resource areas, to be reapplied to other portions of the site where feasible.

Soil quality. All areas subject to clearing and grading that have not been covered by impervious surface, incorporated into a drainage facility or engineered as structural fill or slope shall, at project completion, demonstrate the following:

- A topsoil layer with a minimum organic matter content of 10% dry weight in planting beds, and 5% organic matter content in turf areas, and a pH from 6.0 to 8.0 or matching the pH of the undisturbed soil. The topsoil layer shall have a minimum depth of eight inches except where tree roots limit the depth of incorporation of amendments needed to meet the criteria. Subsoils below the topsoil layer shall be scarified at least 4 inches with some incorporation of the upper material to avoid stratified layers, where feasible.

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- Mulch planting beds with 2 inches of organic material.
- Compost and other materials shall be used that meet these organic content requirements:
    - The organic content for "pre-approved" amendment rates can be met only using compost that meets the definition of "compost" in the Vermont Solid Waste Management Rules §6-1102. This rule is available online at: http://www.anr.state.vt.us/dec/wastediv/solid/documents/SWRule.final.pdf.
        - The compost must also have an organic matter content of 40% to 65%, and a carbon to nitrogen ratio below 25:1.
    - Calculated amendment rates may be met through use of composted materials that meet the above requirement; or other organic materials amended to meet the carbon to nitrogen ratio requirements, and meeting the contaminant standards of the Vermont Solid Waste Management Rules §6-1104(g)(6-7), §6-1105(e)(8-9), and §6-1106(e)(8-9).
- The resulting soil shall be conducive to the type of vegetation to be established.
- Site areas meeting these required elements may be entered into runoff models as "Open Space in Good Condition" rather than "Lawn."

Design Guidance

- The soil quality requirements listed above can be met by using one of the following methods:
    - Option 1: Leave undisturbed native vegetation and soil, and protect from compaction during construction.
    - Option 2: Amend existing site topsoil or subsoil either at default "pre-approved" rates, or at custom calculated rates based on tests of the soil and amendment.
    - Option 3: Stockpile existing topsoil during grading, and replace it prior to planting. Stockpiled topsoil must also be amended if needed to meet the organic matter or depth requirements, either at a default "pre-approved" rate or at a custom calculated rate.
    - Option 4: Import topsoil mix of sufficient organic content and depth to meet the requirements.
- More than one method may be used on different portions of the same site. Soil that already meets the depth and organic matter quality standards, and is not compacted, does not need to be amended.

Post-Construction Soil Depth and Quality Vegetation and Landscaping

Required Elements

- A site specific plan for soil management must be provided, including:
    - A scale drawing identifying area where native soil and vegetation will be retained undisturbed, and which soil treatments will applied in landscape areas.
    - A completed worksheet identifying treatments and products to be used to meet the soil depth and organic content requirements for each site area.

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- Computations of compost or topsoil volumes to be imported (and/or site soil to be stockpiled) to meet "pre-approved" amendment rates; or calculations by a qualified professional to meet organic content requirements if using custom calculated rates.
- Copies of laboratory analyses for compost and topsoil products to be used, documenting organic matter contents and carbon to nitrogen ratios.

- A dense and vigorous vegetative cover shall be established over turf areas, and planting beds shall be covered with 2 inches of organic mulch.

Post-Construction Soil Depth and Quality Construction Sequencing

Required Elements

- Establish soil quality and depth toward the end of construction and once established, protect from compaction, such as from large machinery use, and from erosion.
- Soil preparation options shall be implemented that best suit each area of the site, as identified on the site-specific soil management plan. Construction steps for each option are outlined in Table XX.
- A post-construction inspection shall be completed, preferably prior to planting, so that omissions can easily be corrected:
  - Verify that compost, mulch, topsoil and amendment delivery tickets match volumes, types and sources approved in the site specific plan. If materials other than those approved in the plan were delivered, submissions by the supplier should verify that they are equivalent to approved products.
  - Check soil for compaction, scarification and amendment incorporation by digging at least one 12 inch deep test hole per acre for turf and at least one per acre for planting beds. Test holes must be excavated using only a garden spade driven solely by inspector's weight.
  - Test 10 locations per landscaped acre (10 locations minimum) for compaction, using a simple "rod penetrometer" (a 4 foot long 3/8th inch diameter stainless steel rod, with and a 30 degree bevel cut into the side at that goes in 1/8 inch at the tip). Rod must penetrate to 12" depth driven solely by inspector's weight (see Figure XX).
  - Verify placement of two inches of organic mulch material on all planting beds.
- If inspection indicates that an installation does not fulfill the soil depth and quality standard, the permit holder shall be notified of what steps are needed to comply, and those steps shall be completed before planting is completed and construction is certified. When results are unclear or disputed, an independent consultant should conduct sampling for analytical testing of organic matter as described in the project specifications.
- Plant vegetation and mulch the amended soil areas after installation is complete and inspection verifies the standard is met.

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Table XX. Construction Sequence Options for Meeting the Post Construction Soil Depth and Quality Standards

Option	Construction Sequence	
OPTION 1: Leave native vegetation and soil undisturbed, and protect from compaction during construction.		
	Identify areas of the site that will not be stripped, logged, graded or driven on, and fence off those areas to prevent impacts during construction. If neither soils nor vegetation are disturbed, these areas do not require amendment.	
OPTION 2: Amend existing site topsoil or subsoil either at default "pre-approved" rates, or at custom calculated rates based on designer's tests of the soil and amendment.		
	Scarification. Scarify or till subgrade to 8 inches depth (or to depth needed to achieve a total depth of 12 inches of uncompacted soil after calculated amount of amendment is added). Entire surface should be disturbed by scarification. Do not scarify within drip line of existing trees to be retained. Amend soil to meet required organic content.	
	A. Planting Beds 1. PRE-APPROVED RATE: Place 3 inches of composted material and rototill into 5 inches of soil (a total amended depth of about 9.5 inches, for a settled depth of 8 inches). 2. CALCULATED RATE: Place calculated amount of composted material or approved organic material and rototill into depth of soil needed to achieve 8 inches of settled soil at 10% organic content. Rake beds to smooth and remove surface rocks larger than 2 inches diameter. Mulch planting beds with 2 inches of organic mulch.	**B. Turf Areas** 1. PRE-APPROVED RATE: Place 1.75 inches of composted material and rototill into 6.25 inches of soil (a total amended depth of about 9.5 inches, for a settled depth of 8 inches). 2. CALCULATED RATE: Place calculated amount of composted material or approved organic material and rototill into depth of soil needed to achieve 8 inches of settled soil at 5% organic content. Water or roll to compact to 85% of maximum dry density. Rake to level, and remove surface woody debris and rocks larger than 1 inch diameter.
OPTION 3: Stockpile existing topsoil during grading. Replace it before planting. Stockpiled topsoil must also be amended if needed to meet the organic matter or depth requirements, either at a pre-approved default rate or at a custom calculated rate.		
	Scarification. If placed topsoil plus compost or other organic material will amount to less than 12 inches: Scarify or till subgrade to depth needed to achieve 12 inches of loosened soil after topsoil and amendment are placed. Entire surface should be disturbed by scarification. Do not scarify within drip line of existing trees to be retained. Stockpile and cover soil with weed barrier material that sheds moisture yet allows air transmission, in approved location, prior to grading. Replace stockpiled topsoil prior to planting. Amend if needed to meet required organic content.	
	A. Planting Beds 1. PRE-APPROVED RATE: Place 3 inches of composted material and rototill into 5 inches of replaced soil (a total amended depth of about 9.5 inches, for a settled depth of 8 inches). 2. CALCULATED RATE: Place calculated amount of composted material or approved organic material and rototill into depth of replaced soil needed to achieve 8 inches of settled soil at 10% organic content. Rake beds to smooth and remove surface rocks larger than 2 inches diameter. Mulch planting beds with 2 inches of organic mulch or stockpiled duff.	**B. Turf Areas** 1. PRE-APPROVED RATE: Place 1.75 inches of composted material and rototill into 6.25 inches of replaced soil (a total amended depth of about 9.5 inches, for a settled depth of 8 inches). 2. CALCULATED RATE: Place calculated amount of composted material or approved organic material and rototill into depth of replaced soil needed to achieve 8 inches of settled soil at 5% organic content. Water or roll to compact soil to 85% of maximum dry density. Rake to level, and remove surface rocks larger than 1 inch diameter.

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Option	Construction Sequence	
OPTION 4: Import topsoil mix of sufficient organic content and depth to meet the requirements.		
	Scarification. Scarify or till subgrade in two directions to 6 inches depth. Entire surface should be disturbed by scarification. Do not scarify within drip line of existing trees to be retained.	
	A. Planting Beds Use imported topsoil mix containing 10% organic matter (typically around 40% compost). Soil portion must be sand or sandy loam as defined by the USDA. Place 3 inches of imported topsoil mix on surface and till into 2 inches of soil. Place 3 inches of imported topsoil mix on surface and till into 2 inches of soil. Place second lift of 3 inches topsoil mix on surface. Rake beds to smooth, and remove surface rocks over 2 inches diameter. Mulch planting beds with 2 inches of organic mulch.	**B. Turf Areas** Use imported topsoil mix containing 5% organic matter (typically around 25% compost). Soil portion must be sand or sandy loam as defined by the USDA. Place 3 inches of imported topsoil mix on surface and till into 2 inches of soil. Place second lift of 3 inches topsoil mix on surface. Water or roll to compact soil to 85% of maximum dry density. Rake to level, and remove surface rocks larger than 1 inch diameter.

Post-Construction Soil Depth and Quality Maintenance – Year 1

Required Elements

- After construction, the site shall be inspected following the first two precipitation events of at least 1.0 inch to ensure that appropriate vegetative cover has been established and erosion is not occurring. Thereafter, inspections shall be conducted on an annual basis.

Post-Construction Soil Depth and Quality Maintenance – Annual

Required Elements

- Inspect practice for consistency with annotated design plan provided with permit, including any narrative inspection and maintenance requirements.

Design Guidance

- Leave grass clippings, plant debris or its equivalent on the soil surface to replenish organic matter.
- Reduce and adjust, where possible, the use of irrigation, fertilizers, herbicides and pesticides, to the minimum necessary needed to ensure robust vegetated cover.

Post-Construction Soil Depth and Quality References

Metro Water Services (Nashville, TN). 2012. Metropolitan Nashville – Davidson County Stormwater Management Manual Volume 5: Low Impact Development Stormwater Management Manual. Effective June 2012. Accessed at https://www.nashville.gov/portals/0/SiteContent/WaterServices/Stormwater/docs/SWMM/vol5/SWMM_Vol5LIDManual_2012.pdf on June 11, 2014.

New York Department of Environmental Conservation (NY DEC). August 2010. *New York State Stormwater Management Design Manual*. Accessed at http://www.dec.ny.gov/docs/water_pdf/swdm2010entire.pdf on August 7, 2014.

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Vermont Department of Environmental Conservation, Waste Management Division. 2012. Solid Waste Management Rules. Rule 11P-03, effective March 15, 2012. Accessed at http://www.anr.state.vt.us/dec/wastediv/solid/documents/SWRule.final.pdf on February 6, 2015.

Virginia Department of Conservation and Recreation (VA DCR). January 2013. *Virginia DCR Stormwater Design Specification No. 2, Sheetflow to Vegetated Filter Strip or Conserved Open Space, Version 2.0.* Accessed at http://www.deq.virginia.gov/fileshare/wps/2013_DRAFT_BMP_Specs/ on August 27, 2014.

Washington Organics Recycling Council. 2012. Guidelines and Resources for Implementing Soil Quality and Depth BMP T5.13 in WDOE Stormwater Management Manual for Western Washington. Third edition, released 2012. Accessed at http://www.soilsforsalmon.org/pdf/Soil_BMP_Manual.pdf on February 5, 2015.

Washington State Department of Ecology. 2014. 2012 Stormwater Management Manual for Western Washington, as amended December 2014. Accessed at http://www.ecy.wa.gov/programs/wq/stormwater/manual.html on February 5, 2015.

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Computations

Project:	**Jay Peak Sediment Offset Bank**	**Project #:**	**57201.09**
Location:	**Jay Peak Resort, Jay, Vermont**	**Sheet:**	
Calculated by:	**Robert Wildey**	**Date:**	**9/17/15**
Checked by:		**Date:**	
Site:	**Hell's Crossing Waterbar Gully Stabilization**		

This worksheet was developed from the EPA Region 5 STEPL Model document in the "Pollutants Controlled Calculation and Dcoumentation for Section 319 Watersheds Training Manual" (Michigan Department of Environmental Quality, June 1999).
Gully Erosion Equation ("GEE") = (Top Width + Bottom Width) / 2 * Depth * Length * Soil Weight / Number of Years

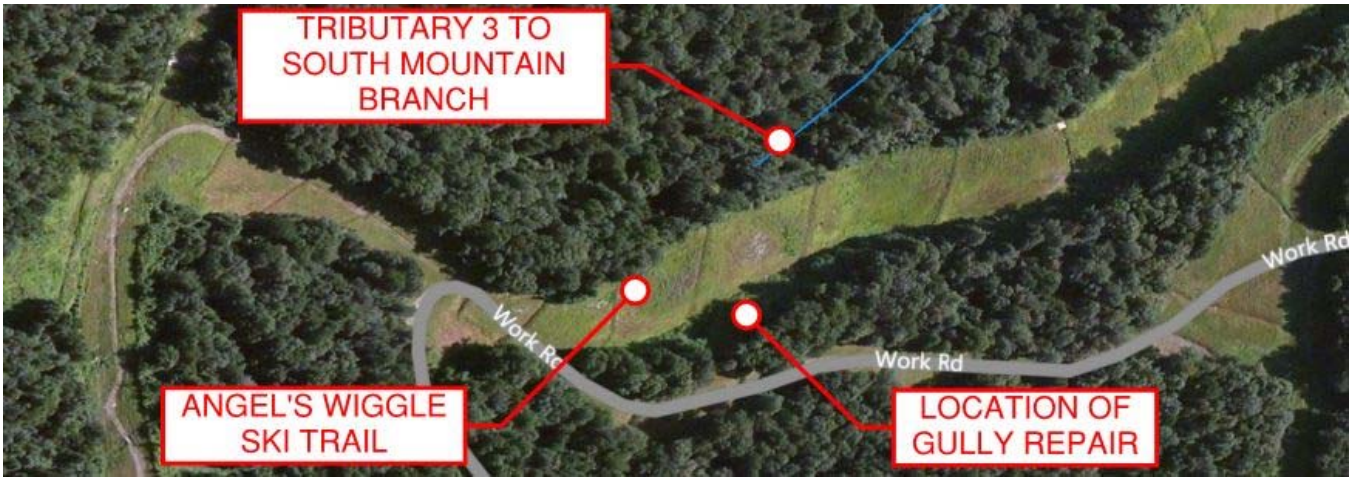
Site Characteristics	
Project Type	Ski Trail
Latitude	44.924842
Longitude	-72.513694
Watershed	South Mountain Branch
Date Work Started	6/23/2015
Date Work Completed	6/26/2015
Follow-up Inspection Date	7/21/2015
Follow-up Inspection Notes: Large boulders installed to create grade control, 6-12 inch riprap used on surface of channel. Some flow visible	

Calculation - Gully Erosion Equation		
Description: Eroded channel between Hell's Crossing and Angel's Wiggle was stabilized using boulders and riprap to prevent further downcutting and widening. Bank height was measured from the average of three locations between the headcut and the culvert inlet.		
Mapped Soil Unit	Tunbridge-Dixfield complex, 35 to 60 % slopes, very stony	
Soil Type (NRCS)	Loams, sandy clay loams, sandy clay	
Dry Density (tons/ft^3)	0.045	
Number of Years	20	(duration of gully development)
Length (ft)	66	(overall length of restoration)
Depth (ft)	5.3	(average of 3 measurements)
Top Width (ft)	19	(average of 3 measurements)
Bottom Width (ft)	16	(average of 3 measurements)
	Sediment Reduction (pounds/yr)	**27,280**

Pre-construction 22-Jun-15

Post-construction 21-Jul-15

Map



Computations

Project:	**Jay Peak Sediment Offset Bank**	**Project #:**	**57201.09**
Location:	**Jay Peak Resort, Jay, Vermont**	**Sheet:**	
Calculated by:	**Robert Wildey**	**Date:**	**9/17/15**
Checked by:		**Date:**	
Site:	**Angels Wiggle Waterbar Outlet Stabilization**		

This worksheet was developed from the EPA Region 5 STEPL Model document in the "Pollutants Controlled Calculation and Dcoumentation for Section 319 Watersheds Training Manual" (Michigan Department of Environmental Quality, June 1999).
Channel Erosion Equation ("CEE") = Length * Height * Lateral Recession Rate (LRR) * Soil Weight

Site Characteristics	
Project Type	Ski Trail
Latitude	44.92463
Longitude	-72.513800
Watershed	South Mountain Branch
Date Work Started	6/23/2015
Date Work Completed	6/26/2015
Follow-up Inspection Date	7/21/2015

Follow-up Inspection Notes: Rock installed within waterbar and partway down slope within wooded area to provide transition.

Calculation - Channel Erosion Equation

Description: Outlet from a waterbar on the Angel's Wiggle Ski Trail was stabilized using boulders and riprap to prevent further downcutting or widening. Trail bridge and failed culvert at downstream end of waterbar were removed.

Mapped Soil Unit	Tunbridge-Dixfield complex, 35 to 60 % slopes, very stony	
Soil Type (NRCS)	Loams, sandy clay loams, sandy clay	
Dry Density (tons/ft^3)	0.045	(per STEPL model documentation)
Lateral Recession Rate (ft/yr)	0.13	(see LRR Rate Description Table)

Bank 1		**Bank 2** (use only if both slopes treated)	
Length (ft)	18.5	Length (ft)	18.5
Height (ft)	1.7	Height (ft)	1.7
Load (pounds/yr)	368	Load (pounds/yr)	368
		Sediment Reduction (pounds/yr)	**736**

Pre-construction 23-Jun-15

Post-construction 21-Jul-15

Map

Computations

Project:	**Jay Peak Sediment Offset Bank**	**Project #:**	**57201.09**
Location:	**Jay Peak Resort, Jay, Vermont**	**Sheet:**	
Calculated by:	**Robert Wildey**	**Date:**	**10/12/15**
Checked by:		**Date:**	
Site:	**North Village Road Revegetation**		

Simple Method - Annual Load = P * Pj * C * A * Rv * 0.226

P = Yearly Rainfall Depth (inches); Pj = Fraction of rainfall events producing runoff; C = Flow weighted mean concentration of sediment; A = Area of contributing watershed (acres); Rv = 0.05+0.009*(site imperviousness) or accepted value; 0.226 = Simple Method Coefficient

Site Characteristics	
Project Type	Revegetation
Latitude	44.93674
Longitude	-72.50022
Watershed	Trib. 9 to Jay Branch
Date Work Started	9/14/2015
Date Work Completed	11/9/2015
Follow-up Inspection Date	TBD
Follow-up Inspection Notes:	

Calculation - Simple Method Conversion of Gravel Road to Lawn

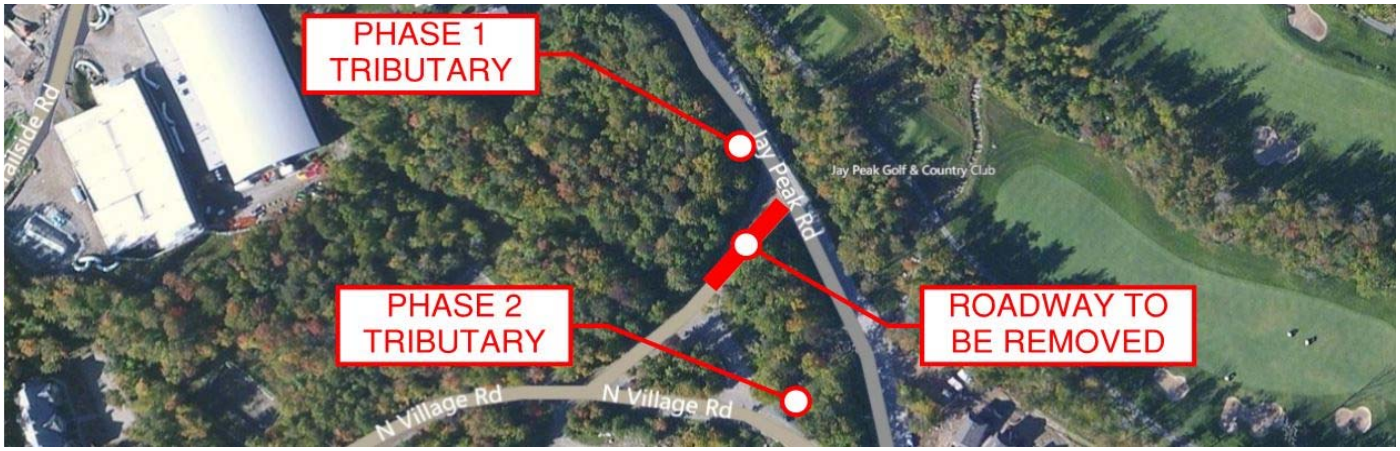
Abandon existing gravel road and convert to vegetated surface to reduce runoff and sediment load. Area to be revegated is 24 feet in width by 350 feet in length.

Conditions (Existing)			Conditions (Proposed)		
P =	64		P =	64	
Pj =	0.9		Pj =	0.9	
C =	1100	(gravel road)	C =	80	(lawn)
A =	0.193	(acres)	A =	0.193	(acres)
% Imper.=	100		% Imper.=	0	
Rv =	0.95		Rv =	0.05	
Load (EX)	2,623	(pounds/year)	Load (PR)	10	(pounds/year)
			Sediment Reduction (pounds/yr)	**2,613**	

Pre-construction 7-Aug-14

Post-construction (Date)

Map



Computations

Project:	Jay Peak Sediment Offset Bank	Project #:	57201.09
Location:	Jay Peak Resort, Jay, Vermont	Sheet:	
Calculated by:	Robert Wildey	Date:	1/15/16
Checked by:		Date:	
Title:	Summary of Offset Projects		

South Mountain Branch Watershed

Project Site Description	Sediment Reduction (pounds/year)	Date Completed
Hell's Crossing Gully	27,280	6/26/2015
Angel's Wiggle Waterbar	736	6/26/2015
Total	**28,016**	

Tributary 9 to Jay Branch Watershed

Project Site Description	Sediment Reduction (pounds/year)	Date Completed
North Village Road Revegetation	2,613	42,317
Total	**2,613**	

Jay Branch Watershed

Project Site Description	Sediment Reduction (pounds/year)	Date Completed
Total	**0**	

Jay Peak Resort - Proposed 2016 Sediment Reduction BMPs

In accordance with the terms of the Revised 2014 Water Quality Remediation Plan, additional sediment control BMPs will be implemented in 2016 because Jay Branch, Tributary 9 to Jay Branch and Tributary 3 to South Mountain Branch did not meet their interim targets. Table 1 identifies the small- and medium-scale BMPs that are proposed to be implemented in 2016. The map on the following page shows the locations of these proposed BMPs.

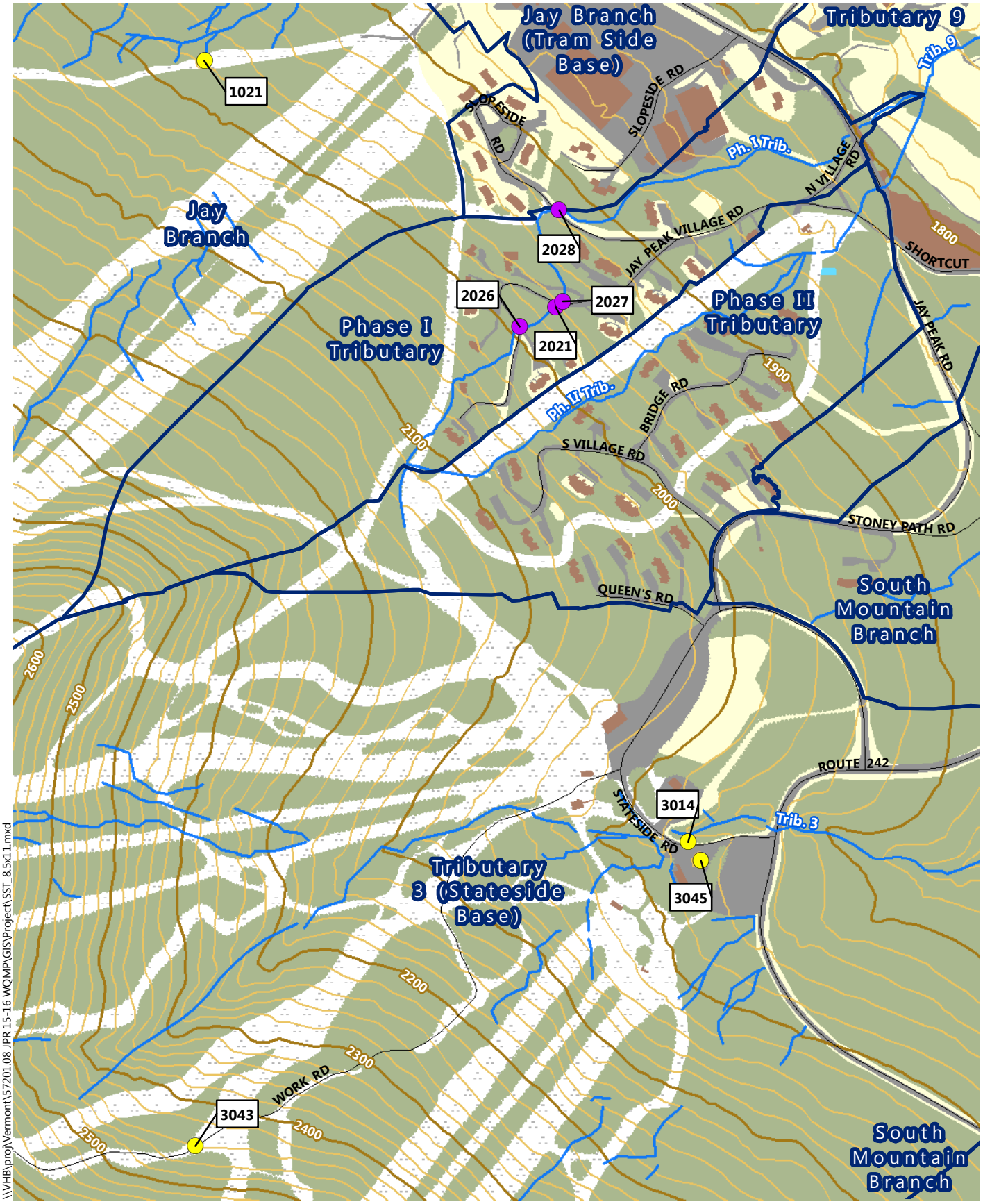
Table 1. Proposed 2016 Sediment Reduction BMPs

Watershed	ID	Location	Description
Jay Branch	1021	Lower Ullr's (Tramside ski trail)	Improve culverts / waterbars that cross Lower Ullr's ski trail
Tributary 9 to Jay Branch	2021	North Village Road at Phase 1 Tributary	Stabilize stream bank upstream of culvert crossing
	2026	Phase 1 Tributary culvert crossing of North Village Road (upper crossing)	Replace culvert to improve alignment with channel and minimize scour at downstream end.
	2027	Phase 1 Tributary culvert crossing of North Village Road (lower crossing)	Install headwalls and/or extend culvert to provide vegetated shoulder between road and stream.
	2028	Phase 1 Tributary culvert crossing of Slopeside Road	Stabilize downgradient end of culvert to minimize scour.
South Mountain Branch	3014 / 3030	Stateside Road	Lower Stateside Road was paved in 2015. Continue to improve roadway shoulder and ditches.
	3043	Waterbar along Lower Can Am	Stabilize Waterbar to minimize erosion
	3045	Stateside Maintenance Area	Surround sand pile with waste block wall and filter fabric to further contain and reduce sediment transport.

JAY PEAK VERMONT

vhb

DRAFT: March 25, 2016



\\VHB\proj\Vermont\57201.08 JPR 15-16 WQMP\GIS\Project\SST_8.5x11.mxd

0 300 600 1200 Feet

Jay Peak Resort WQRP | Jay, Vermont

Sediment Source Tracking (VHB)
- 2016 Medium Scale BMP
- 2016 Small Scale BMP
- Watershed Boundary (VHB)

2012 Landuse/Landcover (VHB)
- Building
- Forest
- Open
- Ski Trails
- Transportation
- Water
- Stream (VHB/VCGI)
- Road (VTrans)
- 100 ft. Contour
- 20 ft. Contour

2016 Small- & Medium-Scale BMPs

Sources:
VCGI (Vermont Center for Geographic Information - Various Dates)
VTrans (Vermont Department of Transportation - 2015)
VHB - 2011-2016