April 15, 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 Monitoring Plan ("WQMP")
2015 Performance Report

Dear Tim:

In accordance with the latest *Jay Peak Resort Watershed Study and Water Quality Remediation Plan* ("Revised 2014 WQRP") (January 2015), VHB has prepared the enclosed 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.

Water quality monitoring was performed in accordance with the *Jay Peak Resort Quality Assurance Project Plan* (August 2012). As had been previously discussed with DEC, the suite of parameters that was sampled was modified slightly from the QAPP in that alkalinity, total suspended solids, and chloride are no longer being analyzed directly during all sampling events. It is anticipated that the QAPP will be revised and submitted for review and comment in the coming year to reflect these previously agreed-upon revisions.

Results indicate that aquatic life use standards for macroinvertebrates were met at the reference station (JB-T13-0.2) and the farthest upgradient station on the Jay Branch (JB-9.1). Results for the two downstream monitoring stations on Jay Branch (JB-8.3 and JB-7.3) showed improvement from 2014 and met all of the aquatic life use standards for macroinvertebrates except for percent Oligochaetes. The remaining stations did not meet aquatic life use standards for macroinvertebrates, including Tributary 9 to Jay Branch (JB-T9-0.1) and the three stations within the South Mountain Branch watershed (SMB-T3-0.5, SMB-T3-0.1, and SMB-1.2).

The Interim Targets established in the Revised 2014 WQRP for JB-T9-0.1 and SMB-T3-0.1 were not met due to lower than acceptable density, richness, EPT and/or higher than acceptable percent Oligochaeta values. The Interim Targets established in the Revised 2014 WQRP for JB-8.3 were not fully met because the percent Oligochaeta did not meet the interim target, although the Density, Richness, and EPT results were all above (i.e. meeting) threshold values. In accordance with the Revised 2014 WQRP, small-scale BMPs will be

www.vhb.com
Engineers | Scientists | Planners | Designers
40 IDX Drive, Building 100
Suite 200
South Burlington, Vermont 05403
P 802.497.6100
F 802.495.5130

deployed in the Jay Branch and South Mountain Branch watersheds and medium-scale BMPs will be deployed in the Tributary 9 to Jay Branch watershed during 2016.

The WQMP also includes proposed updates to the WQRP which are provided for public review and comment in accordance with the DEC's "Procedure for Water Quality Remediation Plans" (July 8, 2015). These updates are compiled into Appendix 7 of the WQMP, which includes a list of the additional sediment reduction BMPs that are proposed due to the interim targets not being met, calculations for the sediment offset projects completed in 2015 along with the current accounting of the sediment offset bank, and the draft *Post Construction Soil Depth and Quality* practice standard (DEC 2/26/2015).

It is anticipated that the Sediment Source Tracking reporting will be updated later this year, once the snow melt has occurred and the sites identified as sediment sources can be re-inspected.

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)
Jamey Fidel (VNRC) (electronic copy only)
Rachel Stevens (VLS) (electronic copy only)
Walter Elander (JPR) (electronic copy only)

Water Quality Monitoring Plan
2015 Performance Report

JAY PEAK RESORT

Jay, Vermont

Prepared for **Jay Peak Resort**
4850 VT Route 242
Jay, Vermont 05859

Prepared by **VHB**
40 IDX Drive
Building 100, Suite 200
South Burlington, Vermont 05403

April 15, 2016

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Appendices

1.0 Introduction

On behalf of Jay Peak Resort ("JPR" or the "Resort"), VHB has prepared this annual "Water Quality Monitoring Plan Performance Report" ("WQMP"). The WQMP was prepared pursuant to the JPR "Water Quality Remediation Plan" ("WQRP") and includes a record, analysis, and an evaluation of water quality monitoring data collected during the 2015 monitoring season. This data was collected in conformance with the "Water Quality Monitoring Plan, Quality Assurance Project Plan" ("QAPP") (VHB, 2012).

The WQRP was most recently updated on January 16, 2015 and was approved by the Vermont Department of Environmental Conservation ("DEC") on February 2, 2015. Updated materials proposed for incorporation into the WQRP are included in Appendix 7 of the WQMP for review and approval by the DEC and are discussed in more detail in Section 6.0.

2.0 Background

Since 2004, an annual WQMP Performance Report has been prepared and submitted to the DEC that describes water quality within portions of the Jay Branch watershed in the vicinity of the Resort. Concurrent with the WQMP program and in conjunction with the WQRP recommendations, JPR has implemented stormwater runoff remediation measures, as well as ongoing stream and wetland restoration and mitigation efforts. Continued monitoring and reporting serve to chart the progress of existing remediation efforts and guide the implementation of future water quality improvements in an adaptive management scenario, with the goal of attainment of Vermont Water Quality Standards ("WQS") criteria in the subject waters.

JPR has implemented a series of measures, as outlined in the WQRP, aimed at improving stormwater management and reducing releases of sediment in order to reduce in-stream impacts. Remedial actions have included the capture and treatment of stormwater runoff from existing impervious surfaces, culvert

improvements, revegetation, and drainage infrastructure improvements as well as on-the-ground and model-based assessments of the Jay Branch Watershed.

In 2014, the Resort implemented a snow management plan that includes specific instructions for plow operators in designated areas to direct snowmelt into swales with checkdams or snow storage basins and away from streams and wetlands. Existing basins were expanded and several new snow storage basins were completed in 2015.

Under the terms of the Settlement Agreement reached between DEC, JPR and the Vermont Natural Resources Council (February 12, 2015), interim aquatic biota targets were established in the Revised 2014 WQRP (VHB 2015) to track the success of remedial measures and provide a comprehensive overall assessment of water quality trends in the impaired watersheds. Interim targets were set to demonstrate incremental improvements in biological metrics each year until attainment of thresholds established by DEC demonstrating compliance with WQS, or to continue meeting WQS for criteria that are already being met. 'Attainment' is represented by two years of compliance with the biocriteria thresholds for all four of the interim aquatic biota metrics that have been inconsistently met in previous years (density, richness, EPT and percent Oligochaeta). In accordance with the Settlement Agreement and the Revised 2014 WQRP, the results of the 2015 biomonitoring are discussed in Section 5.6 and Appendix 6. In addition to the interim biocriteria targets, the Settlement Agreement also required the creation of a sediment offset bank that would be used to offset sediment discharges associated with future construction activities. Projects completed in 2015 in support of the sediment offset bank are described in Section 6.0 and Appendix 7.

3.0 Study Area

JPR is located in the town of Jay in northern Vermont, approximately 5.5 miles south of the Canadian border (see Sampling Locations included on page 1 of Appendix 1). The Resort is situated on the eastern slope of Jay Mountain, as part of the northern section of the Green Mountains. All waters in the vicinity of JPR are within the Jay Branch Watershed, which is part of the larger Missisquoi River drainage basin, which drains to Lake Champlain. Jay Branch originates from a series of smaller tributaries on the north

side of Jay Mountain. The stream flows generally easterly through the Resort, and runs along or through the JPR Golf Course for much of this distance. The principal tributaries associated with Jay Branch within the vicinity of JPR include: Phase 1 Tributary, Phase 2 Tributary, Tributary 9 to Jay Branch ("Tributary 9"), South Mountain Branch and Tributary 3 to South Mountain Branch ("Tributary 3"), all of which are Class B waters below 2,500 feet in elevation. The Phase 1 and Phase 2 tributaries join downslope of Jay Peak Road to form Tributary 9. The following is a description of these major tributaries, which are also shown on the Sampling Locations Map on page 1 of Appendix 1.

- Phase 1 Tributary is a small perennial stream that flows northeast from its headwaters on the mountain slope through areas with ski trails and work roads, then through the Village development area. Downslope of the Village Phase 1 residential community, Phase 1 Tributary flows through a wooded area and then through an existing town culvert under the Jay Peak Road, where it joins with Phase 2 Tributary within the golf course to become Tributary 9 to Jay Branch.

- Phase 2 Tributary is a small perennial stream that flows northeast from its headwaters on the mountain slope through areas with ski trails and work roads then adjacent to the Village Phase 2 residential area. Downslope of the Village Phase 2 area, the Phase 2 Tributary flows through a wooded area and then through a culvert under Jay Peak Road to its confluence with Phase 1 Tributary within the golf course to become Tributary 9.

- Tributary 9 flows through the golf course (Practice Hole and Holes 3, 8, and 9) and converges with Jay Branch downslope of Hole 3. At the confluence of the Phase 1 and 2 tributaries, the total drainage area of the stream is 0.34 square miles.

- South Mountain Branch (Tributary 7 to Jay Branch), which flows northeasterly, is bisected by VT Route 242 before converging with Jay Branch. The area north and west of VT Route 242 includes much of the existing Stateside Hotel and Base Lodge and trail area at JPR, while south and east is largely undeveloped forested area.

- Tributary 3 originates upgradient from the Stateside Hotel and Base Lodge area and flows east, converging with the South Mountain Branch east of the VT Route 242 crossing. The majority of the Resort's activities within the South Mountain Branch watershed is within the Tributary 3 subwatershed.

4.0 Monitoring Network Design

As outlined in the QAPP, water quality monitoring activities and analyses that are to be conducted on an annual basis include:

- Baseflow Water Chemistry
- Event Flow Water Chemistry
- Winter Melt Water Chemistry
- Substrate Assessment
- Aquatic Biota Habitat Assessment (Macroinvertebrates)

A supplemental turbidity monitoring program undertaken by Resort staff was added in 2014 and continued in 2015 in an effort to identify potential sources of sediment within the smaller tributaries to the Jay Branch that may have been impacted by development at the Resort. The intent of this data collection is to identify where supplemental best management practices ("BMPs") may be needed, in the context of the adaptive management approach

The water quality monitoring network at JPR is designed to examine water quality and stream habitat conditions within the major tributaries of the Resort's watershed. Monitoring stations have been chosen to assess in-stream water quality conditions that reflect discharges of managed stormwater runoff associated with Resort development. Ongoing monitoring and evaluation of data that has occurred since the implementation of the WQRP has resulted in various modifications to the sampling protocol, with regard to water quality monitoring station locations, sampling activities, and frequency. Sampling activities conducted in 2015 followed the protocols that are outlined in the QAPP. Table 1 summarizes water quality data collected during the 2015 sampling period. In accordance with a recommendation

from DEC, the water quality monitoring stations have been renamed using a naming convention that includes the stream name and river mile as identifiers. A Sampling Locations Map, included on page 1 of Appendix 1, identifies the locations of these stations and cross-references the prior station designation.

Table 1: Jay Peak Resort Water Quality 2015 Monitoring Station Locations, Activities, and Frequency

Stream	Water Quality Monitoring Station Name	Water Chemistry						Substrate	Biomonitoring
		Winter Melt*		Baseflow		Event Flow		10/2/15 and 10/5/15	
		4/10/15	4/15/15	8/27/15	9/23/14	8/21/15	9/14/15		
Jay Branch	JB-T13-0.2	X	X	X	X	X	X	X	X
	JB-9.1	X	X	X	X	X	X	X	X
	JB-8.3	X	X	X	X	X	X	X	X
	JB-7.3	X	X	X	X	X	X	X	X
Phase I Trib.	JB-T9-P1-0.1	X	X	X	X	X	X	X	
Phase II Trib.	JB-T9-P2-0.1	X	X	X	X	X	X	X	
Trib. 9	JB-T9-0.1	X	X	X	X	X	X	X	X
South Mountain Branch	SMB-T3-0.5	X	X	X	X	X	X	X	X
	SMB-T3-0.1			X	X	X	X	X	X
	SMB-1.8			X	X	X	X	X	
	SMB-1.2	X	X	X	X	X	X	X	X

Dry = streambed was dry, little to no flow
*Field Parameters Only – Temperature, Conductivity, pH, and Turbidity

As indicated in Table 1, in 2015 the 11 water quality monitoring ("WQM") stations were monitored for water chemistry during Baseflow conditions and Event Flow conditions. Following approval by DEC via email on July 13, 2015, chloride, alkalinity, and total suspended solids ("TSS") are not included in the suite of parameters analyzed during sampling events. For water quality samples collected after July 2015, estimated chloride concentrations are calculated from field-measured conductivity values and the site-specific regression equation that was developed using the analytical results from prior years (0.2239 * Conductivity - 7.9519, $R^2 = 0.82$). If field-measured conductivity at a site is greater than 500 umho/cm, a sample will be collected for laboratory analysis. Nine stations were monitored during winter melt conditions for field parameters. Substrate characteristics were monitored at all 11 stations in 2015. Eight stations were sampled for aquatic biota ("biomonitoring"). Although only five stations were initially identified for biomonitoring in the WQRP, three additional stations (JB-9.1, SMB-T3-0.5 and SMB-T3-0.1) were sampled in order to present a more detailed view of biological data throughout the Resort area.

The West Bowl baseline stations (JB-10.2, JB-9.7, JB-9.4 and JB-T12-0.2) were established in 2012 to provide baseline water quality data for development planned in that area as part of the JPR Master Plan. Sampling at these locations will resume once a construction schedule for the West Bowl development has been determined.

The following is a general description of the location of each monitoring station:

Upper Jay Branch Watershed

- JB-T13-0.2 (formerly WQM 4-1) is located on Tributary 13 to Jay Branch, upstream of existing development and golf course Hole 13, therefore representing water quality conditions of a reference reach. This station corresponds to DEC station 427813000002.

Jay Branch Watershed

- JB-9.1 (formerly WQM 4-2a) is located on the main stem of Jay Branch just upstream of the cart path crossing from Hole 18 to Hole 10 of the golf course. Prior to 2013, this station was sampled farther downstream, near the cart path crossing between Hole 7 and Hole 8. Starting in 2013, the sampling location was moved to the current site and was sampled in 2014 as part of a paired sampling effort conducted alongside DEC biologists. This station receives drainage from the JPR Tram base area and a significant portion of the golf course. This station corresponds to DEC station 427800000091.
- JB-8.3 (formerly WQM 4-3) is located on the main stem of Jay Branch just below the confluence with Tributary 9, therefore reflecting in-stream water quality conditions downstream of the Tram base area, residential development areas and golf course. This station corresponds to DEC station 427800000083.
- JB-7.3 (formerly WQM 4-4a) is located on the main stem of Jay Branch downstream of all Resort development, upstream from the VT Route 242 Bridge. This station corresponds to DEC station 427800000073.

Tributary 9 Watershed

- JB-T9-P1-0.1 (formerly WQM 1-2) is located on Phase 1 Tributary downstream of the Village Phase I development area and associated stormwater management system infrastructure,

therefore representing in-stream water quality conditions including both the Village development area and upslope on-mountain activities.

- JB-T9-P2-0.1 (formerly WQM 2-3) is located on the Phase 2 Tributary downstream of the Village development area and associated stormwater management system infrastructure, therefore representing in-stream water quality conditions including both the Village development area and upslope on-mountain activities.
- JB-T9-0.1 (formerly WQM 3-1) is located on Tributary 9, below the confluence of Phase 1 and Phase 2 Tributaries and downstream of the golf course area near the confluence with Jay Branch therefore representing conditions within the golf course area, residential development areas and areas and upslope on-mountain activities. This station corresponds to DEC station 427809000001.

South Mountain Branch Watershed

- SMB-T3-0.5 (formerly WQM 108) is located on Tributary 3, immediately up-gradient from the VT Route 242 culvert and represents the majority of the Resort's contribution to Tributary 3. This station corresponds to DEC Station 427807030005.
- SMB-T3-0.1 (formerly WQM 106) is located on Tributary 3, downslope of VT Route 242 and represents the conditions within Tributary 3 downstream of the Resort and VT Route 242. This station corresponds to DEC station 427807030001.
- SMB-1.8 (formerly WQM 105) is located on the main stem of the South Mountain Branch approximately 530 feet downstream of the Old Jay-Montgomery Road crossing. This location integrates flows from the Resort, VT Route 242, and headwater contributions to South Mountain Branch. This station corresponds to DEC station 427807000018.
- SMB-1.2 (formerly WQM 107) is located on the main stem of South Mountain Branch, upstream of the Shallow Brook Road crossing. This station fully integrates all of the Resort's contributions to South Mountain Branch as well as a significantly greater length of VT Route 242 and nearby developed areas. This station corresponds to DEC station 427807000012.

5.0 Monitoring Results

5.1 Baseflow Water Chemistry Analysis

Baseflow water chemistry samples were collected on August 27 and September 23, 2015 in the Jay Branch, Upper Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9, Tributary 3, and South Mountain Branch. Water quality monitoring samples were collected from 11 monitoring stations in 2015.

The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2004 to 2015. The box represents the 1st to 3rd quartile of the total data set. The whiskers represent the minimum and maximum values of the data set and the 'x' represents the 2015 data points. A complete summary of 2004 through 2015 Baseflow water chemistry results for each monitoring station and the laboratory reports for each sampling event are included in Appendix 1. Alkalinity, chloride and total suspended solids were not sampled during 2015, as described in Section 4.0, above.

Water quality monitoring results were evaluated to determine compliance with relevant narrative and numerical criteria of the WQS. The USEPA Guidance Value ("EPA–GV") for certain parameters is provided, in the absence of a corresponding WQS criterion. However, the use of EPA-GVs, which represent suggested values for good water quality, does not carry any regulatory significance with regard to the WQS.

5.1.1 Conductivity & Chloride

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton PCS Testr 35 meter. Figure 1 displays the results for conductivity measurements at each respective station.

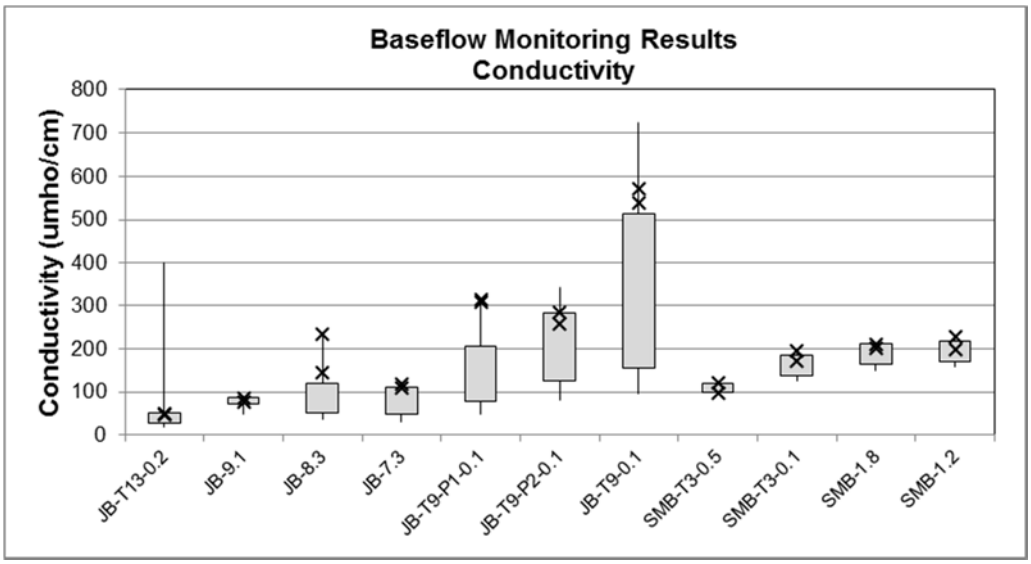

Figure 1: Baseflow Monitoring Results for Conductivity

Baseflow conductivity values measured in 2015 were generally high in comparison to the period of record which includes up to 12-years from 2004 to 2015 JB-8.3 and JB-7.3 exhibited maximum conductivity values on August 27, 2015 and SMB-T3-0.5, SMB-T3-0.1 and SMB-1.2 exhibited maximum conductivity values on September 23, 2015. As has been the case in the past, stations within the more developed Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) exhibited the highest conductivity values on the respective sampling dates as compared to other stations within the Jay Branch watershed. During 2015, conductivity values at JB-8.3 were also elevated, presumably because this station is located on the Jay Branch just downgradient from the confluence with Tributary 9.

As has been the case in the past, conductivity values observed at stations on Tributary 3 and the South Mountain Branch that are located downgradient of VT Route 242 (SMB-T3-0.1, SMB-1.8 and SMB-1.2) were higher than conductivity values observed upgradient of VT Route 242 (SMB-T3-0.5). This is indicative of the effects of roadways and development in the lower portions of this watershed.

As noted previously, chloride concentrations are no longer analyzed in the laboratory as of July 2015. However, chloride concentrations in Baseflow samples that were calculated from field

measurements of conductivity and the site-specific regression equation indicate that chloride concentrations were well below the WQS maximum and EPA chronic criteria value of 230 mg/L.

5.1.2 pH

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton 30 pH -meter. Baseflow pH values in 2015 were within the acceptable WQS range of 6.5 to 8.5 standard units ("s.u.").

5.1.3 Turbidity

Water quality monitoring samples were field analyzed for turbidity using a HF Scientific MicroTPW portable turbidity meter. Figure 2 displays the results for turbidity.

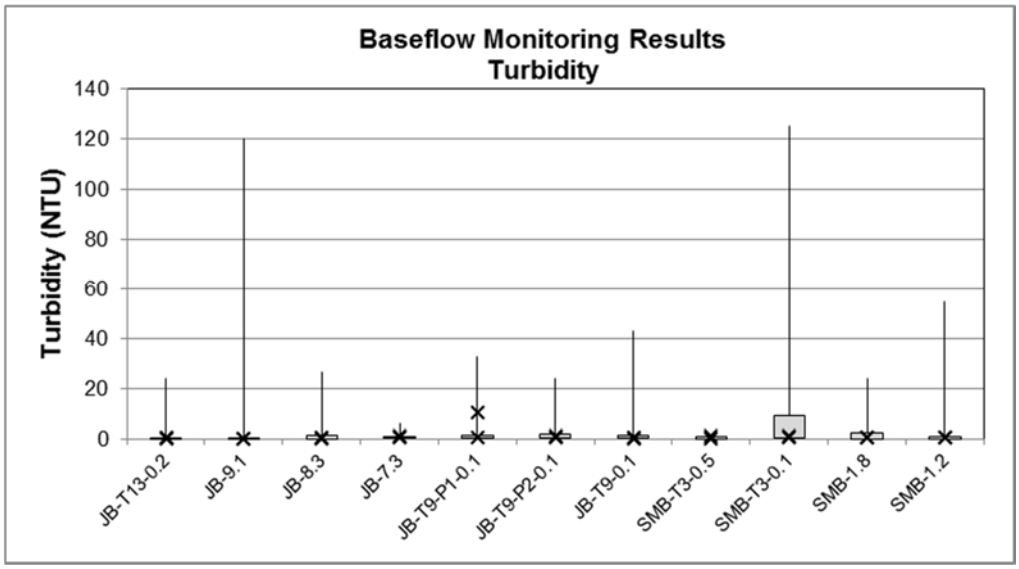

Figure 2: Baseflow Monitoring Results for Turbidity

Baseflow turbidity results for 2015 were within ranges from the period of record for all stations. The maximum sampled value for turbidity in 2015 was 10.30 nephelometric turbidity units ("NTU") from all sampled stations. This indicates that in 2015, sediment runoff was minimal during Baseflow conditions.

5.1.4 Iron

Iron was in compliance with the WQS of 1 mg/L with the exception of JB-T9-P1-0.1 and SMB-T3-0.1 on August 27, 2015 which exceeded the standard (1.70 mg/L and 1.20 mg/L, respectively) and the concentrations reported were the highest, to date at both stations. No visible iron staining was observed during sample collection during the August 27, 2015 sampling date. Iron concentrations were below the WQS on the September 23, 2015 sampling date at both of these stations.

Baseflow Summary

In 2015 and over the period of record, stations within the Tributary 9 watershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) have exhibited relatively high conductivity values, indicating that these streams receive a higher percentage of their surface runoff from developed areas. In 2015, conductivity values were also elevated in the Jay Branch watershed downstream of the confluence with the Tributary 9 watershed, representing the downstream impacts to runoff occurring higher in the watershed.

Additionally, conductivity concentrations from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 were higher than stations located upgradient of VT Route 242 indicating the effects of roadways and non-resort development in the lower portions of this watershed. Conductivity will continue to be monitored to determine if measures are required to mitigate the effects of chloride-based deicers in these areas.

In 2015, turbidity values were relatively low at all stations and pH values were within the acceptable WQS range during Baseflow conditions.

Iron exceeded the WQS at JB-T9-P1-0.1 and SMB-T3-0.1 on August 27, 2015 but was in compliance with the standard at all stations on September 23, 2015. No visible iron staining was observed during sample collection during the August 27, 2015 sampling date at either JB-T9-P1-0.1 or SMB-T3-0.1. Iron concentrations will continue to be monitored in the future to discern any trends regarding this constituent.

5.2 Event Flow Water Chemistry Analysis

Event Flow water chemistry samples were collected during rainfall events on August 21 and September 14, 2015, representing conditions in Jay Branch, Upper Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9, Tributary 3, and South Mountain Branch. The box and whisker plots below provide a summary of Event Flow water chemistry parameters at each monitoring station from 2005 to 2015. The box represents the 1st to 3rd quartile of the total data set. The whiskers represent the minimum and maximum values of the data set and the 'x' represent the 2015 data points. A complete summary of 2005 through 2015 Event Flow water chemistry results for each monitoring station and laboratory reports for each sampling event are included in Appendix 2. Water quality monitoring samples were collected from the 11 monitoring stations in 2015. Alkalinity, chloride and total suspended solids were not sampled during 2015, as described is Section 4.0, above.

Rainfall observed at the Jay Peak Coop Station (Station ID USC00434189), as reported to the National Climatic Data Center, totaled 0.54 inches on August 21, 2015 and 1.14 inches on September 14, 2015. Leading up to the August 21, 2015 event flow sampling, the on-site rain gage indicated that rainfall began at 3:00AM and continued until 9:00AM, with the most intense rainfall occurring between 5:00AM and 6:00AM (0.23 inches per hour), with a total rainfall depth of 0.5 inches recorded at the site gage. Samples were collected between 9:30AM and 1:00PM. Leading up to the September 14, 2015 event flow sampling, the on-site rain gage indicated that several small bursts had occurred during the preceding day. The event began in earnest on the evening of September 13, 2015, with 0.41 inches falling between 10:30PM and 2:30AM. The rainfall continued into the following day and samples were collected between 9:30AM and 12:00PM. A total rainfall depth of 2.07 inches was recorded during the entire event, 1.16 inches of which fell prior to or during sample collection.

5.2.1 Conductivity & Chloride

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton PCS Testr 35 meter. Figure 3 displays the results for conductivity measurements at each respective station.

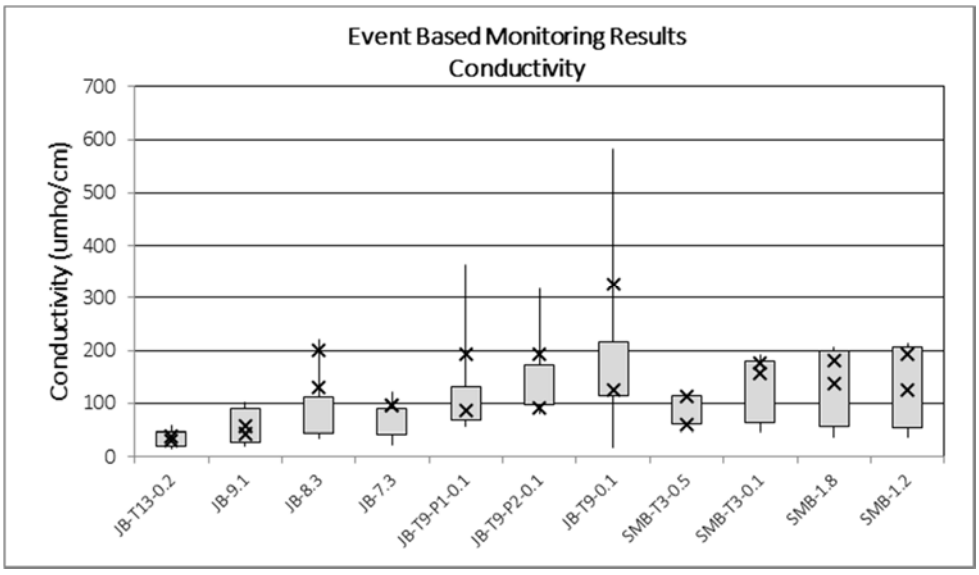

Figure 3: Event Flow Monitoring Results for Conductivity

Event Flow conductivity values measured in 2015 were elevated in comparison to the period of record. In 2015, conductivity values were higher during the August 21 sampling event when 0.54 inches of precipitation was reported when compared to the September 14 sampling event when 1.14 inches of precipitation was reported. This trend is indicative of the effect of dilution within the larger quantity of runoff and the reduction in source materials later in the season.

As has been the case in the past, stations within the more developed Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) exhibited the highest conductivity values on the respective sampling dates as compared to other stations within the Jay Branch watershed. During 2015, conductivity values at JB-8.3 were also elevated, presumably because this station is located on the Jay Branch just downgradient from the confluence with the Tributary 9 watershed.

In addition, conductivity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (SMB-T3-0.1, SMB-1.8 and SMB-1.2) were higher than stations of Tributary 3 located upgradient of VT Route 242 (SMB-T3-0.5) indicating the effects of roadways and development in the lower portions of this watershed.

As noted previously, chloride concentrations are no longer analyzed in the laboratory as of July 2015. However, chloride concentrations in Event Flow samples that were calculated from field measurements of conductivity and the site-specific regression equation indicate that chloride concentrations were well below the WQS maximum and EPA chronic criteria value of 230 mg/L.

5.2.2 pH

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton 30 pH meter. Event Flow pH values in 2015 were within the acceptable WQS range of 6.5 to 8.5 s.u.

5.2.3 Turbidity

Water quality monitoring samples were field analyzed for turbidity using a HF Scientific MicroTPW portable turbidity meter. Figure 4 displays the results for turbidity.

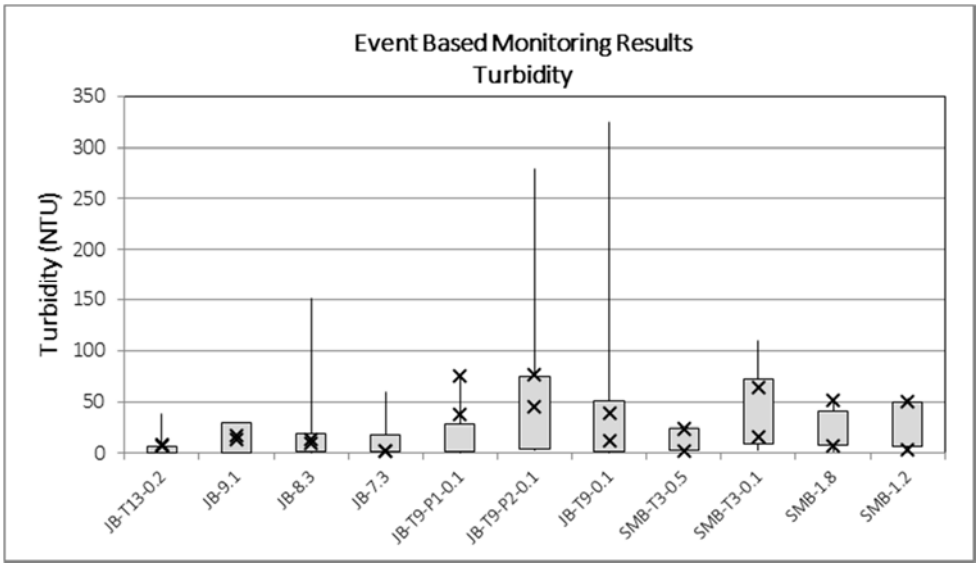

Figure 4: Event Flow Monitoring Results for Turbidity

Event Flow turbidity results for 2015 were within ranges from the period of record with the exception of JB-T9-P1-0.1 which exhibited a maximum concentration on September 14, 2015. In 2015, turbidity values were generally elevated during the September 14 sampling event when 1.14 inches of precipitation was reported in comparison to the August 21 sampling event when

0.54 inches of precipitation was reported. This trend is indicative of the effect of larger rain events mobilizing sediment within the watersheds.

In 2015, stations along the Phase 1 and Phase 2 tributaries of the Tributary 9 watershed (JB-T9-P1-0.1, JB-T9-P2-0.1, respectively) exhibited the highest turbidity values on the respective sampling dates as compared to other stations within the Jay Branch watershed.

In addition, turbidity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (SMB-T3-0.1, SMB-1.8 and SMB-1.2) were higher than stations of Tributary 3 located upgradient of VT Route 242 (SMB-T3-0.5) indicating the effects of roadways and development in the lower portions of this watershed.

5.2.4 Iron

Iron concentrations exceeded the WQS chronic concentration of 1 mg/L on the September 14, 2015 sampling date at all stations except the background station JB-T13-0.2. There is no acute concentration or event-based standard for this element, so this one-time observation does not constitute an exceedance of the WQS. No visible iron was observed at any of these locations during sampling. At all stations iron concentrations were below the WQS on the August 21, 2015 sampling date.

Event Flow Summary

In 2015, Event Flow conductivity values for all stations were elevated during the relatively small precipitation event (August 21, 2015, 0.54 inches of precipitation) and turbidity values were generally elevated during the relatively larger precipitation event (September 14, 2015, 1.14 inches of precipitation). The conductivity trend indicated the effect of dilution within the watersheds and the turbidity trend indicate the effect of stream power to move sediment within the watersheds during larger rain events.

In 2015 and over the period of record, stations within the more developed Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) have exhibited relatively high conductivity and turbidity values, indicating that these streams receive a higher proportion of surface runoff from developed areas.

In 2015, conductivity values were also elevated in the Jay Branch watershed downstream of the confluence with the Tributary 9 watershed, representing the downstream impacts of runoff occurring higher in the watershed.

Additionally, conductivity and turbidity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 were higher than stations of Tributary 3 located upgradient of VT Route 242 indicating the effects of roadways and development in this area.

In 2015, pH values were within the acceptable WQS range during Event Flow conditions.

Iron exceeded the WQS at all sampling stations on September 14, 2015 with the exception of the background station JB-T13-0.2. Iron concentrations were in compliance with the WQS at all stations on August 21, 2015. The WQS for iron of 1 mg/L is a chronic criterion for the protection of aquatic life. If water quality samples are not filtered in the field, iron floc and iron-rich soil particles that may be present in streams with adjacent iron-rich soils may be captured in the sample. When analyzed in the laboratory, such particles may over-estimate the concentration of dissolved iron in the stream. No visible iron staining was observed during the September 12, 2015 sample collection and excess iron has not been an issue during previous sampling events. Iron concentrations will continue to be monitored in the future to discern any trends regarding this parameter.

5.3 Winter Melt Chemistry Analysis

Winter Melt water chemistry samples were collected on April 10 and April 15, 2015; representing conditions in the Jay Branch, Upper Jay Branch (reference), Phase 1 Tributary, Phase 2 Tributary, Tributary 9, Tributary 3, and South Mountain Branch watersheds. Field parameters (conductivity, turbidity, pH, dissolved oxygen and water temperature) were measured at the nine water quality monitoring stations. Chloride was also sampled at these stations on April 10, 2015. The box and whisker plots below provide a summary of water chemistry parameters at each monitoring station from 2008 to 2015. The box represents the 1st to 3rd quartile of the total data set. The whiskers represent the minimum and maximum values of the data set and the 'x' represent the 2015 data points. A complete

summary of 2008 through 2015 Winter Melt water chemistry results for each monitoring station is included in Appendix 3.

5.3.1 Conductivity

Water quality monitoring samples were field measured for conductivity using a pre-calibrated Oakton PCS Testr 35 meter. Figure 5 displays the results for conductivity measurements at each respective station.

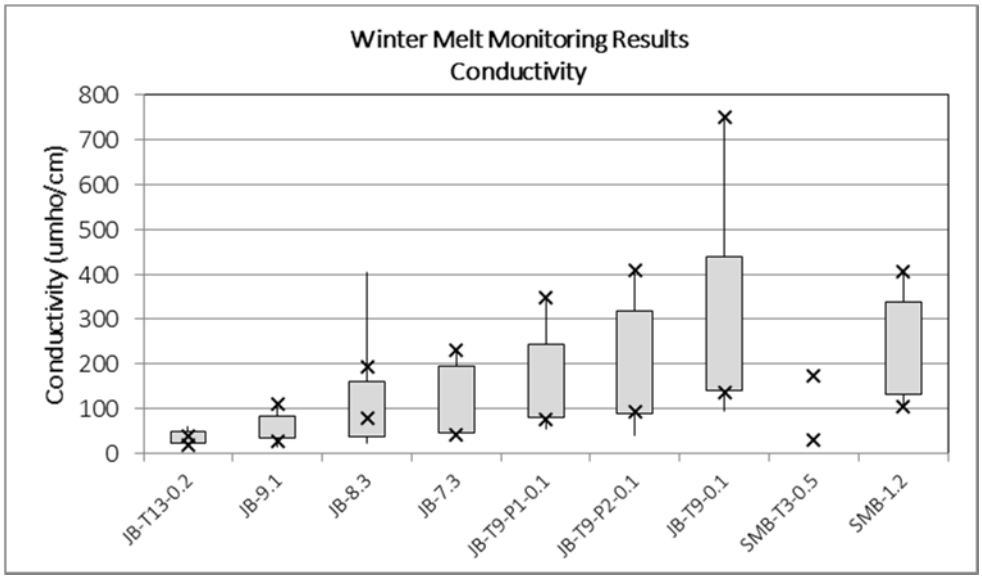

Figure 5: Winter Melt Monitoring Results for Conductivity

Conductivity values during the April 15, 2015 sampling event were within the period of record; however, stations JB-9.1, JB-7.3, JB-T9-P1-0.1, JB-T9-P2-0.1, JB-T9-0.1 and SMB-1.2 exhibited maximum conductivity values on April 10, 2015.

As has been the case in the past, stations within the more developed Tributary 9 subwatershed (JB-T9-P1-0.1, JB-T9-P2-0.1, and JB-T9-0.1) and within the lower South Mountain Branch watershed (SMB-1.2) exhibited the highest conductivity values on the respective sampling dates as compared to other stations.

5.3.2 pH

Water quality monitoring samples were collected from the Winter Melt monitoring stations and were field measured for pH using a pre-calibrated Oakton 30 pH meter. Winter Melt pH values in 2015 were within the acceptable WQS range of 6.5 to 8.5 s.u.

5.3.3 Turbidity

Water quality monitoring samples were field analyzed for turbidity using a HF Scientific MicroTPW portable turbidity meter. Figure 6 displays the results for turbidity at each respective station.

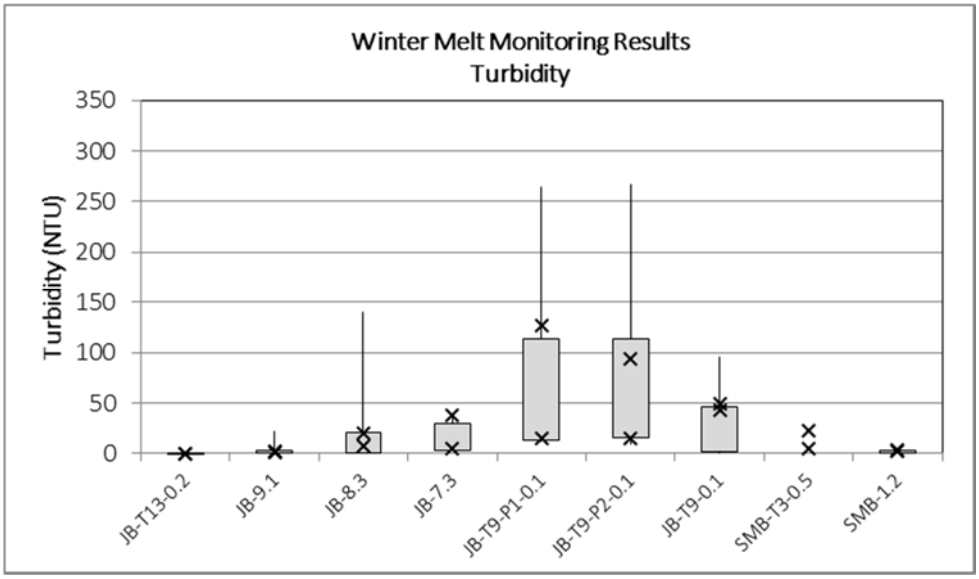

Figure 6: Winter Melt Monitoring Results for Turbidity

Winter Melt turbidity results for 2015 were within ranges from the period of record with the exception of JB-7.3 which exhibited a maximum value on April 10, 2015. In 2015, stations within the Tributary 9 watershed (JB-T9-P1-0.1, JB-T9-P2-0.1 and JB-T9-0.1) exhibited the highest turbidity values on the respective sampling dates as compared to other stations. Turbidity values within the South Mountain Branch watershed remained relatively low at both sampled stations.

Winter Melt Summary

In 2015 and over the period of record, stations within the more developed Tributary 9 subwatershed (stations JB-T9-P1-0.1, JB-T9-P2-0.1, JB-T9-0.1) exhibited relatively high conductivity and turbidity values as compared to other stations, indicating that these streams receive a higher percentage of surface runoff from developed areas. In addition, the station within the South Mountain Branch located downgradient of VT Route 242 exhibited relatively high conductivity values but low turbidity values in comparison to the station located on Tributary 3 upgradient of VT Route 242, indicating the effects of roadways and development in this area.

In 2015, pH values were within the acceptable WQS range during Winter Melt conditions.

5.4 Supplemental Turbidity Monitoring

Supplemental turbidity monitoring was completed at multiple locations within the target watersheds between June and September of 2015 (see the map included on page 1 of Appendix 4 for location information). This monitoring was completed in addition to the WQRP required monitoring. This monitoring was done to provide feedback on the success of the remedial activities that have been completed in the targeted watersheds and also to identify other potential sources of sediment that require treatment, consistent with the adaptive management approach of the WQRP. Monitoring was completed by JRP staff and in accordance with the wet weather monitoring protocols detailed in the QAPP.

There are 21 turbidity stations; two located on an unnamed tributary to Jay Branch (JBT-01 and JBT-02), six located on the Phase 1 Tributary (P1-01 through P1-06) upgradient of Jay Peak Road, seven located on the Phase 2 Tributary (P2-01 through P2-07) upgradient of Jay Peak Road, three located on Tributary 9 (T9-01 through T9-03) and three located on Tributary 3 (T3-01 through T3-03). See the map included on page 1 of Appendix 4 for turbidity station location information.

Eleven supplemental turbidity monitoring events were completed between June and September 2015. Four of the events had less than 0.5 inches of precipitation (July 15, July 20, August 13 and August 27), three of the events averaged approximately 0.5 inches of precipitation (August 4, August 5 and August

21) and four events had at least 1.0 inches of precipitation (June 29, July 1, August 11 and September 14). Graphs depicting the turbidity results are included in Appendix 4.

For each sampling station, there is a wide range of turbidity levels throughout the sampling events. There is no apparent correlation of turbidity levels with the amount of precipitation (which would indicate general sediment input from multiple sources) or to any single station (which would indicate a single point source of sediment). Monitoring will continue in 2016 as part of the on-going effort to identify localized sediment sources within the Tributary 9 watershed.

5.5 Substrate Analysis

In 2015, streambed substrate composition analyses was conducted at the reference station on Upper Jay Branch (JB-T13-0.2), the Jay Branch (JB-9.1, JB-8.3 and JB-7.3), Tributary 9 (JB-T9-0.1), the Phase 1 Tributary (JB-T9-P1-0.1), the Phase 2 Tributary (JB-T9-P2-0.1), Tributary 3 (SMB-T3-0.5 and SMB-T3-0.1) and the South Mountain Branch (SMB-1.8 and SMB-1.2). Substrate analysis was completed to evaluate stream bed material composition. A summary of the substrate data for each station is provided in Appendix 5.

5.5.1 Embeddedness

The percentage of substrate embeddedness was observed at the 11 monitored stations using Bovee's (1986) quartile estimate guidelines and is recorded in accordance with the DEC Lotic Benthos Field Sheet (2014 edition). Substrate embeddedness is evaluated because it is a key factor in the success of macroinvertebrate populations, with lower degrees of embeddedness typically corresponding to higher macroinvertebrate populations and vice-versa. Embeddedness ratios below 50 percent are desirable, with ratios between 0 and 5 percent considered excellent, between 25 and 50 percent considered good, between 50 and 75 percent considered fair and above 75 percent considered poor. Substrate embeddedness was very good (5-25 percent) at SMB-1.8, was good (25-50 percent) at JB-T13-0.2, JB-9.1, JB-8.3 and JB-T9-P1-0.1 and was fair (50-75 percent) at JB-7.3, JB-T9-P2-0.1, JB-T9-0.1, SMB-T3-0.5, SMB-T3-0.1 and SMB-1.2.

With the exception of SMB-1.8, embeddedness ranges increased or remained the same at all stations in 2015. The reach where SMB-1.8 is located is relatively steep and isolated from

development activity. The sediment supply that is evident at upstream stations may disperse prior to reaching this area or may be transported through the reach without settling out.

5.5.2 Channel Materials

The Wolman Pebble Count Procedure (Harrelson, et al. 1994) provided data that were used to calculate the D50 particle size (i.e., median particle), the percentage of sands and fines (materials finer than 2 millimeters), and the percentage of fines (silts, clays, and organic materials less than 0.062 millimeters) at each substrate monitoring station. These three parameters provide a broad understanding of the major channel material, and the proportion of coarser materials (i.e., cobbles, boulders) compared to finer materials (i.e., organic material, sand, pebbles). Table 2 below displays the substrate metrics for 2015. Detailed substrate monitoring results for each location is shown graphically for each station in Appendix 5, along with the distribution of each stations' substrate particle size for 2015 and a comparison to historic averages from 2007 to 2015.

Table 2: 2015 Summary of Channel Materials in Jay Branch and Select Tributaries

Station	Percent < 2 mm (sands and fines)	D50 Particle Size
JB-T13-0.2	2	coarse gravel
JB-9.1	2	coarse gravel
JB-8.3	6	coarse gravel
JB-7.3	3	coarse gravel
JB-T9-P1-0.1	8	coarse gravel
JB-T9-P2-0.1	5	coarse gravel
JB-T9-0.1	9	coarse gravel
SMB-T3-0.5	6	coarse gravel
SMB-T3-0.1	6	coarse gravel
SMB-1.8	0	cobble
SMB-1.2	4	coarse gravel

Since 2014, the median particle size decreased at five stations, including the reference station (JB-T13-0.2) and remained the same at the remaining stations. The median particle size observed in 2015 was coarse gravel (16 to 64 mm) at all of the sampling stations except for SMB-1.8, which continues to have a median particle size of cobble (64 to 256 mm).

Substrate Summary

Substrate embeddedness increased at all stations with the exception of SMB-1.8 where conditions improved slightly in 2015. The overall median particle size at most sites have remained consistent or decreased in 2015. In 2015, the most common median particle size for the sampling stations is coarse gravel. The percentage of fine particles has generally decreased or remained the same with the exception of JB-9.1, JB-8.3 and JB-T9-0.1 where the percentage of small particles increased since 2014. The results throughout the Resort area indicate that the substrate at most of the water quality stations appear to be less coarse when compared with conditions observed in 2014.

Mobility of fine sediments continues to be a concern in these watersheds. Excess sediment from washoff loads and/or bank erosion may still be entering the streams during storm events or sediment that was previously discharged to the streams may continue to be making its way through the sampling areas. Because a fining of median particle size was also observed at the reference station (JB-T13-0.2), it is also possible that the trend toward smaller particle sizes observed in 2015 may have been associated with the particular rainfall pattern of the year rather than with development activities.

5.6 Biomonitoring

On October 5, 2015, aquatic biota sampling and kick net sampling was conducted by VHB in accordance with the DEC protocol (DEC 2004). Biomonitoring occurred at eight locations in 2015: three stations on Jay Branch (JB-9.1, JB-8.3, and JB-7.3), the reference station on Upper Jay Branch (JB-T13-0.2), one station on Tributary 9 to Jay Branch (JB-T9-0.1), one station on South Mountain Branch (SMB-1.2) and two stations on Tributary 3 (SMB-T3-0.5 and SMB-T3-0.1). All sampling locations are shown on the Water Quality Monitoring Sampling Locations map on page 1 of Appendix 1.

Biomonitoring data from 2015 was analyzed for aquatic life support ("ALS") use attainment in comparison to the DEC scoring guidelines for small-size high gradient ("SHG") Class B waters. Results are also compared to the Interim targets set in the Revised 2014 WQRP for stations JB-8.3, JB-7.3, JB-T9-0.1, and SMB-T3-0.1. Results for each station are discussed in detail below and the complete data set is included in Appendix 6.

JB-T13-0.2 (Upper Jay Branch)

As the uppermost station located away from actively-managed areas of the Resort, JB-T13-0.2 (formerly WQM 4-1) represents water quality conditions within an undeveloped reference setting. Table 3 below displays the bio metrics for JB-T13-0.2 over time. Charts and graphs of all bio metrics evaluated at JB-T13-0.2 are provided in Appendix 6.

Table 3: Biomonitoring Results
Jay Branch – JB-T13-0.2

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT / EPT+C	% PPCS- FG	Outcome / Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2008	469	32	21.5	63.0	1.22	0.860	0.943	55.8	Meets Class B Criteria
2009	625	34	23.0	73.0	1.34	0.000	0.930	59.0	Meets Class B Criteria
2010	642	40	24.5	78.4	1.71	0.360	0.889	56.4	Meets Class B Criteria
2011	421	35	23	70.0	0.849	0.110	0.931	46.0	Meets Class B Criteria
2012	883	36.0	24.5	75.4	1.13	0.000	0.947	44.2	Meets Class B Criteria
2013	872	33.0	21.0	69.9	0.935	0.000	0.922	60.8	Meets Class B Criteria
2014	781	35.5	23.5	74.4	1.24	0.000	0.919	65.4	Meets Class B Criteria
2015	914	34	21	70	1.03	0.46	0.94	55	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Shading denotes metric did not meet the Class B Threshold Criteria

Results for all eight bio metrics were within the established thresholds for meeting Class B criteria as has been the case in the past, indicating continued excellent water quality conditions at the reference station.

JB-9.1 (Jay Branch)

This station (formerly WQM 4-2a) is located on the Jay Branch, upstream of the confluence with Tributaries 9 and 10. Table 4 below displays the bio metrics for JB-9.1 over time. Charts and graphs of all bio metrics evaluated at JB-9.1 are provided in Appendix 6.

Table 4: Biomonitoring Results
Jay Branch – JB-9.1

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT / EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B [1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2005	923	40	23	74	1.96	**24.3**	0.94	64	Does Not Meet Class B Criteria
2007	1872	39	22	62	1.50	**20.5**	0.95	52	Does Not Meet Class B Criteria
2008	1162	37	23	76	1.97	6.36	0.96	71	Meets Class B Criteria
2009	1892	46	25	76	1.88	**16.9**	0.92	66	Does Not Meet Class B Criteria
2010	1516	42	25	68	2.29	5.99	0.97	65	Meets Class B Criteria
2011	**238**	40	24	66	1.64	**17.7**	0.94	60	Meets Class B Criteria
2012	**172**	**25**	17	64	0.58	3.23	0.95	46	Does Not Meet Class B Criteria
2013	828	39	24	80	1.09	7.54	0.95	53	Meets Class B Criteria
2014 [2]	1071	40	24	68	1.95	**17**	0.93	50	Does Not Meet Class B Criteria
2015	525	37	26	68	1.40	11	0.95	63	Meets Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
[2] Combined results of VHB and DEC QA/QC Replicate Samples
Shading denotes metric did not meet Class B Criteria

Results for all eight bio metrics during 2015 were within the established thresholds for meeting Class B criteria as has been the case intermittently in the past, indicating generally high water quality conditions at JB-9.1. The results from the 2014 monitoring were initially reported as "Meets Class B Criteria" following the preliminary review of the sample that was analyzed by VHB's biologist. This site is used as the Quality Control check and two samples which were concurrently collected by DEC biologists were evaluated and found to contain higher numbers of Oligochaetes. This additional data caused the 2014 results for this station to be restated as "Does Not Meet Class B Criteria." The 2015 results represent two replicate samples collected by VHB's biologist and analyzed in accordance with the QAPP.

JB-8.3 (Jay Branch)

This station (formerly WQM 4-3) is located on the Jay Branch, downstream of the confluence with Tributaries 9 and 10. Table 5 below displays the bio metrics for JB-8.3 over time. Charts and graphs of all bio metrics evaluated at JB-8.3 are provided in Appendix 6.

Table 5: Biomonitoring Results Jay Branch – JB-8.3									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2004	324	27.0	17.5	59.6	1.96	7.20	0.980	56.0	Meets Class B Criteria
2005	849	49.0	23.0	69.0	2.65	**20.8**	0.870	60.0	Does Not Meet Class B Criteria
2006	851	33.5	20.5	57.9	2.68	0.295	0.953	**34.0**	Does Not Meet Class B Criteria
2007	363	32.0	21.5	72.0	1.12	8.30	0.960	60.0	Meets Class B Criteria
2008	311	30.5	19.0	70.0	1.41	**14.8**	0.980	50.0	Does Not Meet Class B Criteria
2009	374	31.5	23.5	70.9	1.55	9.90	0.977	61.0	Meets Class B Criteria
2010	361	31.0	25.0	57.0	1.36	5.70	0.992	54.7	Meets Class B Criteria
2011	**117**	**21.5**	15.0	58.0	1.10	**17.8**	0.972	54.0	Does Not Meet Class B Criteria
2012	**230**	**24.0**	16.5	71.1	1.15	6.94	0.976	56.3	Does Not Meet Class B Criteria
2013	**238**	30.0	21.5	79.9	1.13	10.1	0.950	57.0	Does Not Meet Class B Criteria
2014	403	34.0	22.5	63.2	0.988	**26.0**	0.973	**38.6**	Does Not Meet Class B Criteria
2015	347	35	24	63	1.18	**13**	0.97	51	Indeterminate

[1]ANR macroinvertebrate thresholds (2/10/04)
Shading denotes metric did not meet Class B Criteria

Station JB-8.3 met 7 of the 8 Class B criteria in 2015, and only failed to meet the threshold value for percent Oligochaeta. Although density was lower than in 2014, it remained slightly above the Class B threshold value. EPT and Richness continue to show an improving trend since 2011 and have been meeting their respective Class B thresholds for three years in a row. Percent Oligochaeta was lower than in 2014 and was only one percent above the Class B maximum threshold value. The percent PPCS-FG criteria was met in 2015, after a single year of not meeting in 2014. The results at this station meet

the interim biocriteria targets that were established in the Revised 2014 WQRP with the exception of percent Oligochaeta which slightly exceeded the interim target of 12 percent (i.e., above threshold).

JB-7.3 (Jay Branch)

This station (formerly WQM 4-4a) is the farthest downstream location sampled on the Jay Branch and is located upstream from the VT Route 242 crossing. Table 6 below displays the bio metrics for JB-7.3 over time. Charts and graphs of all bio metrics evaluated at JB-7.3 are provided in Appendix 6.

Table 6: Biomonitoring Results
Jay Branch – JB-7.3

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT / EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2004	**222**	**26.0**	19.5	60.8	1.54	4.40	0.980	54.0	Does Not Meet Class B Criteria
2005	458	40.0	21.0	62.0	2.34	8.10	0.880	**38.0**	Does Not Meet Class B Criteria
2006	1276	**24.5**	**14.0**	55.0	2.85	0.772	0.938	**23.0**	Does Not Meet Class B Criteria
2007	423	27.0	19.0	73.0	1.24	1.40	0.950	58.0	Meets Class B Criteria
2008	568	33.0	21.5	72.2	0.943	2.40	0.969	49.0	Meets Class B Criteria
2009	429	33.5	25.0	76.0	1.26	6.10	0.992	67.0	Meets Class B Criteria
2010	344	31.0	23.0	55.0	1.11	1.30	1.00	54.0	Meets Class B Criteria
2011	**97.5**	**16.5**	**10.5**	71.0	0.940	3.70	0.993	44.0	Does Not Meet Class B Criteria
2012	**176**	28.0	20.0	67.0	1.24	9	0.96	48	Does Not Meet Class B Criteria
2013	327	28.0	21.0	73.8	0.790	9	0.96	62	Meets Class B Criteria
2014	340	34.0	26.0	66.0	1.17	9	0.98	63	Meets Class B Criteria
2015	378	35.0	24.0	68.0	0.95	**14.0**	0.97	45	Indeterminate

Table 6: Biomonitoring Results Jay Branch – JB-7.3									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	

[1]ANR macroinvertebrate thresholds (2/10/04)
Shading denotes metric did not meet Class B Criteria

In 2015, station JB-7.3 met 7 of the 8 the Class B biocriteria and only failed to meet the threshold value for percent Oligochaeta. Density, richness and EPT have shown appreciable improvements since 2011 and have all been in compliance with the respective Class B minimum threshold values since 2013. Percent Oligochaeta was higher than in 2014 and was two percent above the Class B threshold value but did not exceed the non-support level of 14.5 percent. This metric is therefore scored as "I-." The biocriteria guidelines specify that a site with an "I-" but with all other metrics passing receives an "Indeterminate" outcome. The results at this station meet the interim biocriteria targets that were established in the Revised 2014 WQRP with the exception of percent Oligochaeta. The interim target for this site had been set at 9 percent, i.e., the same as the full support value because this station had not previously exhibited elevated percent Oligochaeta.

JB-T9-0.1 (Tributary 9)

This station (formerly WQM 3-1) is located near the golf course on Tributary 9 and downstream of the confluence of the Phase 1 and Phase 2 tributaries. Table 7 below displays the bio metrics for JB-T9-0.1 over time. Charts and graphs of all bio metrics evaluated at JB-T9-0.1 are provided in Appendix 6.

Table 7: Biomonitoring Results Tributary 9 – JB-T9-0.1									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT / EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B[1] Criteria	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004	**200**	**24.0**	**14.0**	**43.8**	**4.61**	0.200	**0.310**	42.0	Does Not Meet Class B Criteria
2005	309	41.0	17.0	70.0	4.23	**16.8**	0.820	53.0	Does Not Meet Class B Criteria
2006	320	35.7	16.0	54.5	**5.12**	0.970	0.878	**29.0**	Does Not Meet Class B Criteria
2007	484	37.0	24.0	63.0	1.22	1.90	0.950	**39.0**	Meets Class B Criteria
2008	492	28.0	17.0	69.6	1.18	0.00	0.916	42.0	Meets Class B Criteria
2009	**252**	28.0	**15.5**	879.7	1.72	7.80	0.952	61.0	Indeterminate
2010	**176**	**22.0**	**16.0**	63.4	2.13	**23.0**	0.980	53.4	Does Not Meet Class B Criteria
2011	**77**	**22.5**	**15.0**	66.0	1.47	8.70	0.989	55.0	Does not Meet Class B Criteria
2012	**95**	**25.5**	**15.5**	68.8	1.96	**21.2**	0.927	54.5	Does Not Meet Class B Criteria
2013	**157**	30.0	19.5	74.4	2.07	**13.6**	0.913	57.9	Does Not Meet Class B Criteria
2014	**168**	27.0	**15.0**	62.9	1.49	**15.5**	0.957	53.9	Does Not Meet Class B Criteria
2015	**209**	32.0	16.0	64.0	3.33	**27**	0.92	67.0	Does Not Meet Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Shading denotes metric did not meet Class B Criteria

Station JB-T9-0.1 met 6 of the 8 Class B biocriteria in 2015, and did not meet the Class B criteria for density or percent Oligochaeta. Although density has shown an improving trend since 2011, the 2015 value remained below the minimum threshold value as well as the interim target of 250 organisms established in the Revised 2014 WQRP. In addition, percent Oligochaeta has increased since 2014 and remained above the maximum threshold value and the interim target of 12 percent established in the

Revised 2014 WQRP. The EPT criteria was at the threshold value of 16 distinct taxa in 2015 but did not meet the full support value of 17 distinct taxa. The interim target for this site had been set at 17 distinct taxa, i.e., the same as the full support value, because this station had met the full support criterion for EPT in 2013. The results at this station do not meet the interim biocriteria targets that were established in the Revised 2014 WQRP. Additional medium-scale sediment reduction BMPs will be implemented within this watershed during 2016, as outlined in the pre-attainment flow chart (Appendix 4 of the Revised 2014 WQRP). The required sediment reduction BMPs are described in Section 6.0.

SMB-T3-0.5 (Tributary 3)

This station (formerly WQM 108) is located on Tributary 3, upstream of VT Route 242 and downstream of the Stateside Hotel and Base Lodge area of the Resort. Table 8 below displays the bio metrics for SMB-T3-0.5, which was sampled for the first time in 2014. Charts and graphs of all bio metrics evaluated at SMB-T3-0.5 are provided in Appendix 6.

Table 8: Biomonitoring Results
South Mountain Branch – SMB-T3-0.5

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2014	403	27.0	18.0	65.6	2.00	8.11	0.951	57.2	Meets Class B Criteria
2015	**248**	**26.0**	16.0	48	0.72	**19**	0.95	45	Does Not Meet Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Shaded denotes metric did not meet the Class B Threshold Criteria

Station SMB-T3-0.5 met 5 of the 8 Class B biocriteria in 2015, and did not meet the Class B criteria for density, richness or percent Oligochaeta. No interim targets had been set at this site because it had not been sampled prior to 2014. These results suggest that additional investigation of potential sediment sources upgradient from this site is warranted.

SMB-T3-0.1 (Tributary 3)

This station (formerly WQM 106) is located on Tributary 3, downstream of VT Route 242 and the Stateside Hotel and Base Lodge area of the Resort. Table 9 below displays the bio metrics for SMB-T3-0.1 over time. Charts and graphs of all bio metrics evaluated at SMB-T3-0.1 are provided in Appendix 6.

Table 9: Biomonitoring Results
South Mountain Branch – SMB-T3-0.1

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2012	**259**	34.5	22.0	67.4	0.930	**20.7**	0.927	57.0	Does Not Meet Class B Criteria/Fair-Poor
2013	**133**	**21.5**	**15.0**	58.3	1.04	**29.6**	0.930	50.0	Does Not Meet Class B Criteria
2014	361	**26.5**	19.0	57.8	0.707	**18.5**	0.958	45.8	Does Not Meet Class B Criteria
2015	**218**	**21**	**14**	46	0.71	**37**	0.98	42	Does Not Meet Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Shading denotes metric did not meet the Class B Threshold Criteria

Station SMB-T3-0.5 met 4 of the 8 Class B biocriteria in 2015, and did not meet the remaining four. Density, richness, and EPT all decreased since 2014 and percent Oligochaeta increased. These results do not meet the 3 of the 4 interim biocriteria targets that were established for this station in the Revised 2014 WQRP. Small-scale sediment reduction BMPs will be implemented within this watershed during 2016, as outlined in the pre-attainment flow chart (Appendix 4 of the Revised 2014 WQRP). The required sediment reduction BMPs are described in Section 6.0.

SMB-1.2 (South Mountain Branch)

This station (formerly WQM 107) is located on the main stem of South Mountain Branch, downstream of the confluence with Tributary 3 and upstream of the Shallow Brook Road crossing. Table 10 below displays the bio metrics for SMB-1.2 over time. Charts and graphs of all bio metrics evaluated at SMB-1.2 are provided in Appendix 6.

Table 10: Biomonitoring Results
South Mountain Branch – Station SMB-1.2

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B[1] Criteria	**≥ 300**	**≥ 27**	**≥ 16**	**≥ 45**	**≤ 4.50**	**≤ 12**	**≥ 0.45**	**≥ 40**	
2012	**234**	27.5	19.3	70.5	0.890	**12.1**	0.980	58.0	Does Not Meet Class B Criteria/Fair
2013	**239**	**26.0**	17.5	61.0	0.805	**22**.6	0.960	49.1	Does Not Meet Class B Criteria/Fair
2014	354	27.0	20.0	71.0	0.713	**13.3**	0.986	63.1	Indeterminate
2015	339	27.0	18.0	54.0	0.62	**17**	0.96	44.0	Does Not Meet Class B Criteria

[1]ANR macroinvertebrate thresholds (2/10/04)
Shaded denotes metric did not meet the Class B Threshold Criteria

SMB-1.2 met 7 of the 8 Class B biocriteria in 2015 but did not meet the percent Oligochaeta, which has been a persistent concern at this site. Because the percent Oligochaeta was above the "non-support" level of 14.5 percent, this metric is scored as a "failed." Although the other biocriteria are all at or above the full support level, the biocriteria guidelines specify that the outcome for the site is found to be "not meeting" if any indicators are scored as "failed." Because this station is well outside of the Resort boundary and receives inputs from other sources, no interim biocriteria targets that were established in the Revised 2014 WQRP.

Biomonitoring Summary

A summary of biomonitoring results, is included in Table 11 below and in Appendix 6.

Table 11: Biomonitoring Summary
Kick Net Monitoring Results Compliance with Class B Criteria

Stream	Station	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15
Upper Jay Branch	JB-T13-0.2	-	-	-	-	**P**	**P**	**P**	**P**	**P**	**P**	**P**	**P**
Jay Branch	JB-9.1	**-**	F	-	F	**P**	F	**P**	F	F	**P**	F	**P**
	JB-8.3	**P**	F	F	**P**	F	**P**	**P**	F	F	F	F	I
	JB-7.3	F	F	F	**P**	**P**	**P**	**P**	F	F	**P**	**P**	I
Tributary 9	JB-T9-01	F	F	F	**P**	**P**	I	F	F	F	F	F	F
South Mountain Branch	SMB-T3-0.5	-	-	-	**-**	**-**	-	-	-	-	-	**P**	F
	SMB-T3-0.1	-	-	-	**-**	**-**	-	-	-	F	F	F	F
	SMB-1.2	-	-	-	**-**	**-**	-	-	-	F	F	I	F

P = Pass, I = Indeterminate, F = Fail, - = Not sampled, Shaded Cells = Reference Reach

In 2015 JB-T13-0.2 (reference), JB-9.1 and SMB-T3-0.5 met the Class B biocriteria. JB-8.3 and JB-7.3 had indeterminate results. The remaining four stations (JB-T9-0.1, SMB-T3-0.5, SMB-T3-0.1, and SMB-1.2) did not meet the Class B biocriteria and exhibited lower than acceptable density, richness, EPT and/or higher than acceptable percent Oligochaeta values. One factor that may have contributed to these overall results was a major rainfall event (approximately 3.5 inches in 48 hours) which occurred between September 28 and September 30, 2015, one week prior to the biomonitoring. An event of this magnitude would have resulted in scouring flows that may have negatively impacted the counts of certain macroinvertebrate taxa that are sensitive to water quality (e.g. Ephemeroptera, Trichoptera, and Plecoptera) while increasing the percentage of the less-sensitive Oligochaeta that would have been sampled. Oligochaetes (worms) are somewhat better at burrowing in the stream substrate, and therefore remaining in-place during a scouring event than other taxa.

6.0 Sediment Offset Projects and BMPs

Under the terms of the Settlement Agreement and as incorporated in the Revised 2014 WQRP, Sediment Offset Projects are required to be implemented prior to or concurrent with certain new construction projects that may result in construction-period sediment discharges. A Sediment Offset Bank has been established to manage credits contributed to the bank by such offset projects and debits against the bank that result from construction projects that are not specifically excluded in the Settlement Agreement. In addition, JPR must implement small, medium, or large-scale BMPs following years where the streams have not met the interim targets or WQS values for biomonitoring results. The following sections describe the offset projects and BMPs completed during 2015 and the proposed offset projects and BMPs that would be implemented during 2016. In accordance with the DEC's "Procedure for Water Quality Remediation Plans," (July 8, 2015) the material included in Appendix 7 is provided for review and approval by the DEC and is subject to public notice and comment.

6.1 Completed 2015 Sediment Offset Projects and BMPs

Three sediment offset projects were constructed during 2015. A suite of offset projects was initially presented at the public meeting which was held at Jay Peak on September 22, 2015. Following that meeting, additional discussions between VNRC and JPR were held which resulted in agreement on a construction specification approach that would be followed when roadway revegetation projects were proposed as sediment offsets. This construction specification is based on the DEC Stormwater Program's draft "Post Construction Soil Management Plan." A copy of this plan is included in Appendix 7.

The North Village Road revegetation project was completed in the fall of 2015 in accordance with this methodology. This project is within the Tributary 9 to Jay Branch watershed. The Shortcut Road revegetation project was not completed in 2015 and the proposed credits that this project would generate have been removed from the Sediment Offset Bank. Two other sediment offset projects were completed in 2015: a gully repair near the Hell's Crossing ski trail and the stabilization of a water bar on the Angel's Wiggle ski trail. Both of these projects are within the Tributary 3 to South Mountain Branch watershed. Calculation sheets for these offset projects and the summary of the credits that have been

deposited in the Sediment Offset Bank are provided in Appendix 7. Table 12 summarizes the sediment offset credits that were generated by the three projects that were completed in 2015. No projects were constructed during 2015 that required offset credits.

Table 12: 2015 Sediment Offset Projects

Watershed	Type	Description	Offset (lbs/year)
Tributary 9 to Jay Branch	Credit	North Village Road Revegetation	2,613
South Mountain Branch	Credit	Hell's Crossing Gully Repair	27,280
	Credit	Angel's Wiggle Waterbar Repair	736
Offset Bank Summary			
Jay Branch			-
Tributary 9 to Jay Branch			2,613
South Mountain Branch			28,016

Table 13 provides a list of the BMPs that were implemented in each of the watersheds that did not meet the interim biocriteria targets in 2014.

Table 13: 2015 Small-Scale Sediment Reduction BMPs			
Watershed	**ID**	**Location**	**Description**
Tributary 9 to Jay Branch	2020	Work road crossing of Phase 1 Tributary near Treatment System 1	Stabilize or eliminate work road crossing and restore impacted section of stream channel.
	2022	Phase 1 Tributary at Slopeside Road	Add this area to snow management plan to minimize sediment discharge to stream. Plowing to be directed away from culvert crossing and side of road where stream runs parallel to channel.
	2024	Work Road between Slopeside Road and Queens Highway	Install stone protection at downstream end of Queen's Highway culvert crossing; install check dams in ditchline to slow runoff.

6.2 Proposed 2016 Sediment Offset Projects and BMPs

No new sediment offset projects are anticipated to be constructed in 2016 and no projects are anticipated to be constructed that would require the use of offset credits. The sites identified in the Sediment Source Assessment were addressed in 2015. These sites will be revisited following the 2016 spring melt and the Sediment Source Assessment report will be revised with the updated status of each site.

In accordance with the terms of the Settlement Agreement, 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 14 identifies the small- and medium-scale BMPs that are proposed to be implemented in 2016.

Table 14: 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.

7.0 Conclusions

In Baseflow, Event Flow and Winter Melt conditions in 2015 and over the period of record, stations within the Tributary 9 watershed (JB-T9-P1-0.1, JB-T9-P2-0.1, and JB-T9-0.1) have exhibited relatively higher conductivity and turbidity values in comparison to other stations within the Jay Branch watershed, indicating that these streams receive a higher percentage of their surface runoff from developed areas. In addition, conductivity values from stations on Tributary 3 and the South Mountain Branch located downgradient of VT Route 242 (SMB-T3-0.1, SMB 1.8, and SMB-1.2) were higher than stations of Tributary 3 located upgradient of VT Route 242 (SMB-T3-0.5), similarly indicating the effects of roadways and development in this area. Chloride concentrations, as estimated using the site-specific conductivity regression equation, were within regulatory limits in 2015. In general, turbidity values have been relatively low at all stations in 2015.

Substrate results throughout the Resort area indicate that most streams have the same or finer median particle sizes in the channel. Only station SMB-1.8 was observed to have median particle size of cobble during 2015. The relatively higher concentration of finer particle sizes is consistent with the increased embeddedness that was also observed in 2015. These results are indicative of scouring processes and sediment sources within these watersheds.

Given that the reference reach JB-T13-0.2 exhibited evidence of increased sediment in 2015, some of these results may be attributed to the intense storm event that the Resort experienced one week before the substrate and biocriteria monitoring. This major rainfall event (approximately 3.5 inches in 48 hours) would have resulted in scouring and sediment mobilization which would not have cleared from the streams during the intervening period.

In 2015 JB-T13-0.2 (reference) and JB-9.1 met the Class B biocriteria. Stations JB-8.3 and JB-7.3 had indeterminate results and would have met the Class B biocriteria except for the percent Oligochaeta being above the threshold value. The Jay Branch stations (JB-T9-0.1, JB-9.1, JB-8.3 and JB-7.3) have all continued to show improvement in water quality indices since 2011. The remaining four stations (JB-T9-0.1, SMB-T3-0.5, SMB-T3-0.1, and SMB-1.2) did not meet the Class B biocriteria and exhibited lower than acceptable density, richness, EPT and/or higher than acceptable percent Oligochaeta values. As with the substrate median particle size and embeddedness results, some of the macroinvertebrate results may have been negatively affected by the antecedent rainfall event. The South Mountain Branch stations, which have been monitored for fewer years, exhibit more variability in the 2015 results and indicate that additional investigation of sediment sources within the watershed is warranted.

References

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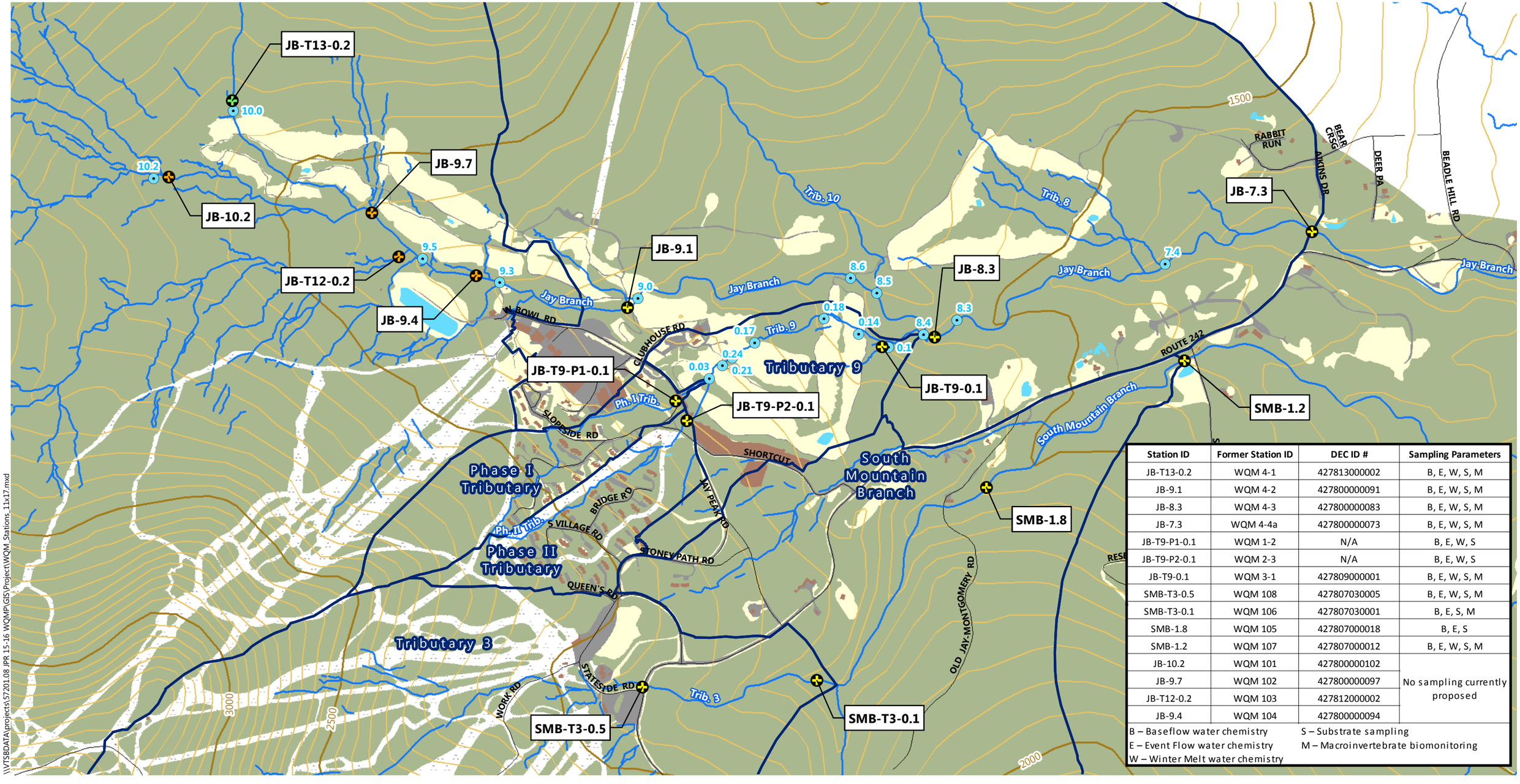
Water Resources Board 2006. January 25, 2006. Vermont Water Quality Standards (Effective February 9, 2006). National Life Records Center. Montpelier, Vermont. 58 pages plus appendices.

APPENDIX 1

JAY PEAK VERMONT

vhb

January 22, 2016



Station ID	Former Station ID	DEC ID #	Sampling Parameters
JB-T13-0.2	WQM 4-1	427813000002	B, E, W, S, M
JB-9.1	WQM 4-2	427800000091	B, E, W, S, M
JB-8.3	WQM 4-3	427800000083	B, E, W, S, M
JB-7.3	WQM 4-4a	427800000073	B, E, W, S, M
JB-T9-P1-0.1	WQM 1-2	N/A	B, E, W, S
JB-T9-P2-0.1	WQM 2-3	N/A	B, E, W, S
JB-T9-0.1	WQM 3-1	427809000001	B, E, W, S, M
SMB-T3-0.5	WQM 108	427807030005	B, E, W, S, M
SMB-T3-0.1	WQM 106	427807030001	B, E, S, M
SMB-1.8	WQM 105	427807000018	B, E, S
SMB-1.2	WQM 107	427807000012	B, E, W, S, M
JB-10.2	WQM 101	427800000102	No sampling currently proposed
JB-9.7	WQM 102	427800000097	
JB-T12-0.2	WQM 103	427812000002	
JB-9.4	WQM 104	427800000094	

B – Baseflow water chemistry
E – Event Flow water chemistry
W – Winter Melt water chemistry
S – Substrate sampling
M – Macroinvertebrate biomonitoring

1000 500 0 1000 Feet

Water Quality Monitoring Station (VHB)
- Water Quality Monitoring Station
- Benchmark Station
- Reference Station
- River Mile (VHB)
- Watershed Boundary (VHB)

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

Jay Peak Resort Water Quality Monitoring | Jay, Vermont

Water Quality Monitoring Station Location Map

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

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Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch

(formerly WQM 4-1)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	12:06 PM							0.200		
10/26/2004	12:35 PM							0.050		
11/24/2004	12:12 PM	32.2	4.70		7.20	7.40	< 2.50	0.110		
9/29/2005		402			56.0	8.00	< 2.50	0.290		
10/22/2005		157			27.0	6.81		0.150		< 2.00
11/3/2006		32.4			5.33	6.87	< 2.50	0.260		< 2.00
9/7/2007	11:05 AM	49.1	16.6		17.0	7.02	< 2.50	3.50		< 2.00
10/31/2007	1:00 PM	19.3	8.10		8.60	7.01	< 2.50	0.780		< 2.00
11/26/2007	11:57 AM	25.3	4.16		10.0	7.28	< 2.50	1.29		< 2.00
10/27/2008	12:35 PM	23.0	9.55		24.0	7.28	< 2.50	0.500		< 2.00
11/4/2008	11:21 AM	17.4	8.39		5.60	6.96	< 2.50	0.500		< 2.00
4/17/2009	9:06 AM	19.8	4.40			7.18	< 2.50	0.000		< 2.00
8/17/2009	11:50 AM	50.6	15.5		21.0	6.91	< 2.50	0.500		< 2.00
9/9/2009	9:23 AM	63.8	11.3		18.0	7.94	< 2.50	0.500		< 2.00
10/20/2009	12:23 PM	42.1	6.80		12.0	7.32	< 2.50	0.500		< 2.00
9/14/2010	9:43 AM	38.0	18.5		19.0	7.14	< 2.50	0.500		< 2.00
9/22/2010	9:20 AM	44.7	18.9		19.0	7.76	< 2.50	0.500		< 2.00
10/10/2011	3:40 PM	29.0	12.3	100	28.0	7.27	< 2.50	0.01		< 2.00
10/20/2011	3:53 PM	19.6	10.4	101	26.0	6.92	< 2.50	0.00		< 2.00
8/23/2012	12:01 PM	42.5	13.4	88.0	22.0	7.07	< 2.50	24.00	< 0.020	< 2.00
10/9/2012	1:30 PM	35.0	8.50	94.0	8.30	8.10	< 2.50	4.20	< 0.020	< 2.00
8/22/2013	9:50 AM	51.0	14.1	85.0	5.30	8.00	< 2.50	0.09	< 0.020	< 2.50
9/5/2013	4:10 PM	45.0	11.0	84.7	2.90	7.90	< 2.50	0.01	< 0.046	< 2.50
8/29/2014	12:16 PM	52.0	12.0	80.0	19.0	8.40	< 2.50	0.00	< 0.020	< 1.00
9/29/2014	10:36 AM	51.0	12.1	78.5	24.0	8.60	< 2.50	0.05	< 0.020	< 1.00
8/27/2015	12:40 PM	47.0	12.5	83.2		8.50	2.57	0.15	0.340	
9/23/2015	10:11 AM	50.0	10.9	88.4		8.50	3.24	0.51	< 0.020	
2015 STATISTICS										
Mean	***	48.5	11.7	85.8		8.50	2.91	0.33	0.180	
2004 - 2015 STATISTICS										
Mean	***	57.6	11.1	88.3	17.5	7.22	2.53	1.45	0.063	< 1.95
Min	***	17.4	4.16	78.5	2.90	6.81	2.50	0.000	0.020	< 1.00
Max	***	402	18.9	101	56.0	8.60	3.24	24.0	0.340	< 2.50
n	***	25	22	10	22	25	24	27	8	21

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
(formerly WQM 4-2a)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	3:03 PM	86.7	15.5	95.0	37.0	7.49	6.00	0.04	0.100	< 2.00
10/9/2012	1:00 PM	49.0	8.00	97.3	12.0	7.90	< 2.50	120.00	0.047	< 2.00
8/22/2013	10:05 AM	83.0	15.6	83.7	3.70	8.00	5.20	0.30	0.093	< 3.00
9/5/2013	4:30 PM	72.0	12.1	89.1	2.30	7.80	< 3.30	0.36	0.170	< 2.00
8/29/2014	12:40 PM	88.0	13.5	83.7	32.0	8.40	5.10	0.43	0.092	< 1.00
9/29/2014	10:52 AM	89.0	13.0	78.3	24.0	8.60	5.50	0.05	0.092	< 1.00
8/27/2015	12:51 PM	78.0	13.9	91.5		8.40	9.51	0.00	0.410	
9/23/2015	10:29 AM	86.0	11.1	90.9		8.00	11.3	0.01	0.085	
2015 STATISTICS										
Mean	***	82.0	12.5	91.2		8.20	10.4	0.01	0.248	
2012 - 2015 STATISTICS										
Mean	***	79.0	12.8	88.7	18.5	7.89	6.05	15.1	0.136	1.83
Min	***	49.0	8.00	78.3	2.30	7.49	2.50	0.000	0.047	1.00
Max	***	89.0	15.6	97.3	37.0	8.60	11.30	120	0.410	3.00
n	***	8	8	8	6	8	8	8	8	6

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch

(formerly WQM 4-3)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
10/29/2004	9:35 AM							0.120		
11/24/2004	9:58 AM	61.2	4.50		16.0	7.50	4.16	0.610		
10/3/2005		124			23.0	7.53	6.15	1.34		< 2.00
10/21/2005		41.0			8.60	6.71		1.19		< 2.00
11/3/2006		48.4			7.79	8.61	7.98	0.520		< 2.00
9/7/2007	9:45 AM	103	14.6		36.0	7.03	5.49	0.150		< 2.00
10/31/2007	10:06 AM	38.0	5.30		29.0	7.66	6.00	0.330		< 2.00
11/26/2007	11:15 AM	55.0	3.16		16.0	7.33	5.80	0.520		< 2.00
10/27/2008	11:35 AM	52.0	9.28		24.0	7.51	5.60	4.06		< 2.00
11/4/2008	9:50 AM	37.2	7.78		9.20	7.22	4.20	1.26		< 2.00
4/17/2009	8:04 AM	60.0	3.70			7.23	4.30	0.000		< 2.00
8/17/2009	10:24 AM	93.4	16.9		26.0	7.65	7.10	< 0.50		< 2.00
9/9/2009	9:53 AM	120	12.4		29.0	7.85	11.0	< 0.50		< 2.00
10/20/2009	10:59 AM		5.80		23.0	6.87	6.90	< 0.50		< 2.00
9/14/2010	9:06 AM	81.7	11.3		22.0	7.02	5.90	< 1.80		< 2.00
9/22/2010	8:36 AM	96.0	11.5		32.0	7.91	7.80	< 0.50		< 2.00
10/10/2011	2:40 PM	64.3	12.7	106	27.0	7.21	6.50	< 0.55		< 2.00
10/20/2011	2:53 PM	41.2	10.6	106	22.0	6.28	4.90	< 26.42		14.0
8/23/2012	10:32 AM	98.8	14.8	89.0	38.0		12.0	< 0.05	< 0.020	< 2.00
10/9/2012	11:45 AM	75.0	7.70	97.0	16.0	8.10	5.90	< 4.80	0.044	3.00
8/22/2013	9:10 AM	103	16.0	90.0	4.80	8.30	10.0	0.55	< 0.029	< 2.50
9/22/2013	2:00 PM	116	12.6	89.5	5.90	8.10	12.0	0.01	0.059	2.00
8/29/2014	11:46 AM	127	13.5	85.0	31.00	8.50	16.0	0.00	< 0.029	< 1.00
9/29/2014	11:09 AM	220	13.3	76.5	32.00	8.30	16.0	0.00	0.03	1.00
8/27/2015	12:18 PM	233	14.8	92.7		8.30	44.2	0.62	0.046	
9/23/2015	11:02 AM	145	11.4	96.4		8.00	24.5	0.19	0.055	
2015 STATISTICS										
Mean	***	189	13.1	94.6		8.15	34.4	0.41	0.051	
2004 - 2015 STATISTICS										
Mean	***	93.1	10.6	92.8	21.7	7.21	10.02	1.81	0.039	2.52
Min	***	37.2	3.16	76.5	4.80	6.28	4.16	0.000	0.020	1.00
Max	***	233	16.9	106	38.0	8.61	44.2	26.4	0.059	14.0
n	***	24	22	10	22	24	24	26	8	22

Notes:

Blank cell indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
(formerly WQM 4-4 a/b)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	3:15 PM							0.130		
10/26/2004	7:55 AM							0.530		
10/3/2005		78.0			20.0	6.17	5.19	2.28		4.00
10/21/2005		47.0			12.0	6.95		0.770		< 2.00
11/3/2006		48.0			8.61	8.25	2.65	0.930		< 2.00
9/7/2007	2:50 PM	94.1	17.4		24.0	7.22	7.16	0.170		< 2.00
10/31/2007	1:23 PM	41.2	6.70		13.0	7.28	< 2.00	0.330		< 2.00
11/26/2007	12:34 PM	45.9	3.05		14.0	7.35	4.70	0.630		< 2.00
10/27/2008	12:55 PM	48.8	8.89		20.0	7.27	4.80	6.29		< 2.00
11/4/2008	11:50 AM	32.0	8.50		10.0	7.18	2.90	1.67		2.00
4/17/2009	9:40 AM	37.0	5.20			6.71	3.40	0.000		< 2.00
8/17/2009	12:56 PM	91.0	19.4		26.0	7.37	7.10	< 0.500		< 2.00
9/9/2009	11:41 AM	112	13.0		27.0	6.67	9.50	< 0.500		< 2.00
10/20/2009	12:58 PM	79.9	6.90		23.0	6.90	6.20	< 0.500		< 2.00
9/14/2010	10:10 AM	77.0	11.9		23.0	7.07	5.10	1.17		< 2.00
9/22/2010	9:54 AM	95.2	12.1		29.0	7.59	7.40	0.50		< 2.00
10/10/2011	1:53 PM	64.2	13.1	115	25.0	6.52	5.90	0.37		< 2.00
10/20/2011	4:40 PM	42.6	11.0	105	22.0	7.20	4.20	2.15		4.00
8/23/2012	3:42 PM	110	16.4	91.0	40.0	7.33	12.0	0.02	0.024	< 2.00
10/9/2012	9:30 AM	72.0	6.70	99.0	15.0	8.10	5.30	0.42	0.035	< 2.00
8/22/2013	11:00 AM	115	17.1	88.8	9.00	8.10	12.0	0.13	0.500	5.00
9/5/2013	9:30 AM	104	13.1	91.0	3.60	8.10	9.30	0.18	0.068	< 2.00
8/29/2014	3:46 PM	123	15.8	83.3	27.00	8.10	12.0	0.87	0.025	1.00
9/29/2014	12:25PM	121	14.2	80.7	30.00	8.50	12.0	0.30	< 0.020	< 1.00
8/27/2015	2:15 PM	109	15.8	95.5		8.00	16.5	0.48	0.130	
9/23/2015	11:53 AM	119	12.2	87.0		8.30	18.7	1.05	0.029	
2015 STATISTICS										
Mean	***	114	14.0	91.2		8.15	17.6	0.77	0.080	
2004 - 2015 STATISTICS										
Mean	***	79.5	11.8	93.6	20.1	7.02	7.65	0.88	0.116	2.23
Min	***	32.0	3.05	80.7	3.60	6.17	2.00	0.000	0.024	1.00
Max	***	123	19.4	115	40.0	8.50	18.7	6.29	0.500	5.00
n	***	24	21	10	21	24	23	26	7	22

Notes:

Blank cell indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
(formerly WQM 1-2)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	1:35 PM							0.110		
10/26/2004	1:05 PM							0.590		
9/30/2005		172			54.0	6.75	14.3	0.910		2.00
10/22/2005		84.0			25.0	7.45		1.07		< 2.00
11/3/2006		64.2			15.6	8.12	3.43	0.850		< 2.00
9/7/2007	9:05 AM	169	15.1		48.0	6.98	14.8	0.420		< 2.00
10/31/2007	9:35 AM	78.0	11.6		22.0	7.72	8.60	0.580		< 2.00
11/26/2007	12:22 PM	65.7	4.00		19.0	7.18	8.60	0.500		< 2.00
10/27/2008	11:20 AM	79.3	12.2		28.0	7.36	12.0	2.78		< 2.00
11/4/2008	11:22 AM	49.0	7.89		11.0	7.23	5.90	2.25		< 2.00
4/17/2009	7:31 AM	55.1	3.60			7.17	9.50	0.150		5.00
8/17/2009	9:28 AM	177	18.7		36.0	7.25	21.0	< 0.500		< 2.00
9/9/2009	11:06 AM	286	14.3		46.0	7.40	40.0	< 0.500		< 2.00
10/20/2009	10:03 AM	169	10.2		29.0	6.87	21.0	0.740		< 2.00
9/14/2010	8:41 AM	180	12.1		38.0	6.74	29.0	6.01		< 2.00
9/22/2010	8:15 AM	206	12.1		37.0	7.65	30.0	< 0.500		< 2.00
10/10/2011	4:08 PM	172	13.5	96.0	32.0	7.37	38.0	0.160		< 2.00
10/20/2011	4:20 PM	90.0	11.5	100	25.0	7.00	20.0	1.30		2.00
8/23/2012	3:20 AM									
10/9/2012	4:00 PM	205	9.10	90.5	32.0	7.80	35.0	33.00	0.038	< 2.00
9/5/2013	4:45 PM	276	12.8	76.3	6.80	7.90	44.0	0.28	0.190	< 2.00
8/29/2014										
9/29/2014										
8/27/2015	10:42 AM	315	15.6	89.3		8.20	62.6	10.30	1.70	
9/23/2015	2:18 PM	309	13.5	79.1		8.20	61.2	0.76	0.049	
2015 STATISTICS										
Mean	***	312	14.6	84.2		8.20	61.9	5.53	0.875	
2004 - 2015 STATISTICS										
Mean	***	160	11.6	88.5	29.7	7.18	25.2	2.92	0.494	2.17
Min	***	49.0	3.60	76.3	6.80	6.74	3.43	0.110	0.038	2.00
Max	***	315	18.7	100	54.0	8.20	62.6	33.0	1.700	5.00
n	***	20	17	6	17	20	19	22	4	18

Notes:
Blank cells indicates no data available
*** indicates not applicable
2005 and 2006 data from ESI
2004 data from Pioneer Environmental Associates
WQM 1-2 was dry during both basedflow events in 2014
pH statistics based on Hydrogen Ion concentration
Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
(formerly WQM 2-3)

Date Sampled in Field	Time Sampled in Field	Conductivity (umho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**>70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	1:40 PM							0.390		
10/26/2004	1:08 PM							0.980		
9/30/2005		196			71.0	7.36	9.09	1.05		3.00
10/22/2005		159			57.8	7.07		1.93		< 2.00
11/3/2006		122			34.9	7.60	7.26	11.2		2.00
9/7/2007	9:15 AM	218	15.8		76.0	7.45	13.6	0.340		< 2.00
10/31/2007	9:38 AM	179	6.70		62.0	7.68	11.0	1.64		< 2.00
11/26/2007	12:26 PM	107	4.17		42.0	7.26	11.0	2.42		< 2.00
10/27/2008	11:25 AM	125	9.17		44.0	7.49	16.0	2.34		2.00
11/4/2008	9:30 AM	109	8.06		24.0	7.18	9.50	2.05		4.00
4/17/2009	7:39 AM	81.9	3.20			7.18	14.0	3.00		6.00
8/17/2009	9:29 AM	219	17.8		59.0	7.59	23.0	0.580		< 2.00
9/9/2009	11:16 AM	271	14.0		74.0	7.73	25.0	1.23		7.00
10/20/2009	10:14 AM	210	7.90		48.0	6.96	23.0	< 0.500		< 2.00
8/23/2012	3:23 PM									
10/9/2012	4:20 PM	283	10.3	85.0	54.0	7.70	45.0	24.0	0.034	< 3.00
8/22/2013	10:40 AM	323	17.5	78.0	80.0	8.00	37.0	0.300	0.027	< 2.50
9/5/2013	4:55 PM	293	13.3	84.1	6.60	8.00	42.0	0.45	0.044	< 1.00
8/29/2014	1:20 PM	340	17.4	67.3	72.0	8.20	46.0	0.00	0.042	< 1.00
9/29/2014	11:55 AM	341	14.2	60.5	61.00	8.10	49.0	0.00	0.042	< 1.00
8/27/2015	10:46 AM	256	16.0	95.5		8.10	49.4	1.06	0.220	
9/23/2015	2:05 PM	284	17.6	97.5		8.00	55.6	0.64	0.081	
2015 STATISTICS										
Mean	***	270	16.8	96.5		8.05	52.5	0.85	0.151	
2004 - 2015 STATISTICS										
Mean	***	217	12.1	81.1	54.1	7.63	27.0	2.67	0.070	2.62
Min	***	81.9	3.20	60.5	6.60	6.96	7.26	0.000	0.027	1.00
Max	***	341	17.8	97.5	80.0	8.20	55.6	24.0	0.220	7.00
n	***	19	16	7	16	19	18	21	7	17

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
(formerly WQM 3-1)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
9/28/2004	2:30 PM							9.42		
10/26/2004	10:20 AM							1.11		
11/24/2004	9:47 AM	244	5.00		26.0	7.56	46.9	1.89		
10/4/2005		402			46.5	7.64	78.7	1.23		< 2.00
10/21/2005		157			28.0	6.77		2.45		< 2.00
11/3/2006		177			26.2	8.07	26.9	1.07		< 2.00
9/7/2007	9:30 AM	97.7	16.3		14.0	7.20	14.4	0.230		< 2.00
10/31/2007	9:52 AM	95.5	6.30		45.0	7.63	32.0	1.37		3.00
11/26/2007	11:00 AM	155	3.38		46.0	7.42	36.0	1.47		< 2.00
10/27/2008	11:30 AM	159	9.50		28.0	7.53	37.0	1.11		< 2.00
11/4/2008	9:45 AM	109	8.06		16.0	7.23	24.0	1.42		< 2.00
4/17/2009	7:56 AM	123	4.00			7.23	30.0	0.300		< 2.00
8/17/2009	10:05 AM	355	18.9		46.0	7.65	68.0	< 0.500		< 2.00
9/9/2009	9:46 AM	485	13.0		44.0	7.94	100	< 0.500		< 2.00
10/20/2009	10:46 AM	317	6.50		44.0	7.13	60.0	0.970		< 2.00
9/14/2010	9:00 AM	279	12.3		42.0	6.82	48.0	1.16		< 2.00
9/22/2010	8:48 AM	415	12.8		51.0	7.77	79.0	< 0.500		< 2.00
10/10/2011	2:49 PM	324	14.7	104	52.0	7.46	80.0	0.170		< 2.00
10/20/2011	3:10 PM	116	11.9	107	36.0	6.83	41.0	2.42		< 2.00
8/23/2012	10:54 AM	560	15.9	88.0	65.0		160	0.220	0.063	< 2.00
10/9/2012	12:15 PM	330	9.30	90.3	43.0	8.10	63.0	43.00	0.038	< 2.00
8/22/2013	9:00 AM	723	17.0	85.0	14.0	8.20	160	0.16	0.046	< 2.50
9/5/2013	2:10 PM	567	13.9	84.4	9.00	8.10	120	0.24	0.059	< 2.00
8/29/2014	11:09 AM	479	14.4	79.5	46.0	8.50	100	0.20	0.13	< 1.00
9/29/2014	11:21 AM	636	13.9	72.5	56.00	8.30	150	0.20	0.044	< 1.00
8/27/2015	12:12 PM	572	16.2	88.5		8.10	130	0.49	0.280	
9/23/2015	11:11 AM	540	12.7	94.8		7.80	120	0.250	0.061	
2015 STATISTICS										
Mean	***	556	14.5	91.6		7.95	125	0.370	0.171	
2004 - 2015 STATISTICS										
Mean	***	337	11.6	89.4	37.4	7.47	75.2	2.74	0.090	1.98
Min	***	95.5	3.38	72.5	9.00	6.77	14.4	0.160	0.038	1.00
Max	***	723	18.9	107	65.0	8.50	160	43.0	0.280	3.00
n	***	25	22	10	22	24	24	27	8	22

Notes:

Blank cells indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

2004 data from Pioneer Environmental Associates

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch
(formerly WQM 108)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/29/2014	1:35 PM	105	12.8	85.7	23.0	8.40	14.0	0.92	0.044	< 1.00
9/29/2014	1:55 PM	113	12.9	75.6	20.0	8.20	16.0	0.00	0.053	< 1.00
8/27/2015	1:24 PM	98.0	13.3	95.0		8.10	14.0	0.10	0.059	
9/23/2015	1:45 PM	121	12.0	89.9		8.20	19.1	1.14	0.100	
2015 STATISTICS										
Mean	***	110	12.7	92.5		8.15	16.6	0.62	0.080	
2014 - 2015 STATISTICS										
Mean	***	109	12.8	86.6	21.5	8.31	15.8	0.540	0.064	1.00
Min	***	98	12.0	75.6	20.0	8.10	14.0	0.000	0.044	1.00
Max	***	121	13.3	95.0	23.0	8.40	19.1	1.140	0.100	1.00
n	***	2	2	2	2	2	2	2	2	2

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station SMB-T3-0.1, Tributary 3 to South Mountain Branch
(formerly WQM 106)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	4:41 PM	128	14.9	95.0	31.0	7.61	26.0	0.010	< 0.020	< 2.00
10/9/2012	11:00 AM	125	7.20	95.1	13.0	8.10	22.0	125	0.031	< 2.00
8/22/2013	12:00 PM	179	16.1	87.6	7.90	8.10	30.0	1.31	0.072	< 2.50
9/5/2013	1:55 PM	185	12.0	89.5	4.20	8.00	32.0	11.5	0.590	< 2.00
8/29/2014	2:35 PM	181	13.4	81.0	24.0	8.40	31.0	0.53	0.045	< 1.00
9/29/2014	1:38 PM	186	13.1	79.8	28.0	8.30	33.0	0.10	0.021	< 1.00
8/27/2015	1:41 PM	171	14.2	94.7		8.20	30.3	1.21	1.20	
9/23/2015	12:55 PM	196	11.7	94.2		8.10	35.9	0.77	0.028	

2015 STATISTICS										
Mean	***	184	13.0	94.5		8.15	33.1	0.99	0.614	
2012- 2015 STATISTICS										
Mean	***	169	12.8	89.6	18.0	7.82	30.0	17.5	0.251	1.75
Min	***	125	7.20	79.8	4.20	7.61	22.0	0.010	0.020	1.00
Max	***	196	16.1	95.1	31.0	8.40	35.9	125	1.200	2.50
n	***	8	8	8	6	8	8	8	8	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station SMB-1.8, South Mountain Branch
(formerly WQM 105)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	4:15 PM	148	13.5	95.0	38.0	7.50	34.0	0.01	< 0.020	< 2.00
10/9/2012	10:45 AM	155	6.90	95.5	16.0	8.20	28.0	24.00	< 0.020	< 2.00
8/22/2013	11:40 AM	199	14.3	88.0	6.90	7.90	31.0	0.97	< 0.080	< 2.50
9/5/2013	12:55 PM	188	11.0	90.7	5.30	8.10	36.0	3.25	< 0.100	< 2.00
8/29/2014	2:50 PM	213	12.5	77.3	28.00	8.30	36.0	0.00	< 0.020	< 1.00
9/29/2014	1:20 PM	214	12.0	76.5	34.00	8.30	39.0	0.05	< 0.029	< 1.00
8/27/2015	1:56 PM	201	13.0	96.5		7.90	37.1	0.46	0.088	
9/23/2015	1:24 PM	210	11.1	90.3		8.10	39.1	0.77	< 0.039	
2015 STATISTICS										
Mean	***	206	12.1	93.4		8.00	38.1	0.62	0.064	
2012 - 2015 STATISTICS										
Mean	***	191	11.8	88.7	21.4	7.82	35.0	3.69	0.054	1.75
Min	***	148	6.90	76.5	5.30	7.50	28.0	0.000	0.020	1.00
Max	***	214	14.3	96.5	38.0	8.30	39.1	24.0	0.100	2.50
n	***	8	8	8	6	8	8	8	7	6

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch
(formerly WQM 107)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**	**≤ 10**	**< 1**	
8/23/2012	3:56 PM	161	14.2	95.0	32.0	7.49	36.0	0.04	< 0.020	< 2.00
10/9/2012	10:30 AM	157	6.80	93.1	17.0	8.30	29.0	55.00	< 0.020	< 2.00
8/22/2013	11:15 AM	209	14.7	87.0	10.0	7.90	35.0	0.46	< 0.080	< 2.50
9/5/2013	11:55 AM	203	11.2	89.2	4.80	8.20	9.30	1.04	< 0.068	< 2.00
8/29/2014	3:26 PM	217	12.9	83.7	31.0	8.40	38.0	0.16	0.047	2.00
9/29/2014	12:36 PM	219	12.2	77.2	39.0	8.40	39.0	0.00	< 0.020	< 1.00
8/27/2015	2:10 PM	197	13.4	97.1		8.00	36.2	0.63	0.058	
9/23/2015	12:25 PM	227	10.8	99.0		8.10	42.9	0.85	0.025	
2015 STATISTICS										
Mean	***	212	12.1	98.1		8.05	39.5	0.74	0.042	
2012 - 2015 STATISTICS										
Mean	***	199	12.0	90.2	22.3	7.89	33.2	7.27	0.045	1.92
Min	***	157	6.80	77.2	4.80	7.49	9.30	0.000	0.020	1.00
Max	***	227	14.7	99.0	39.0	8.40	42.9	55.0	0.080	2.50
n	***	8	8	8	6	8	8	8	7	6

Notes:

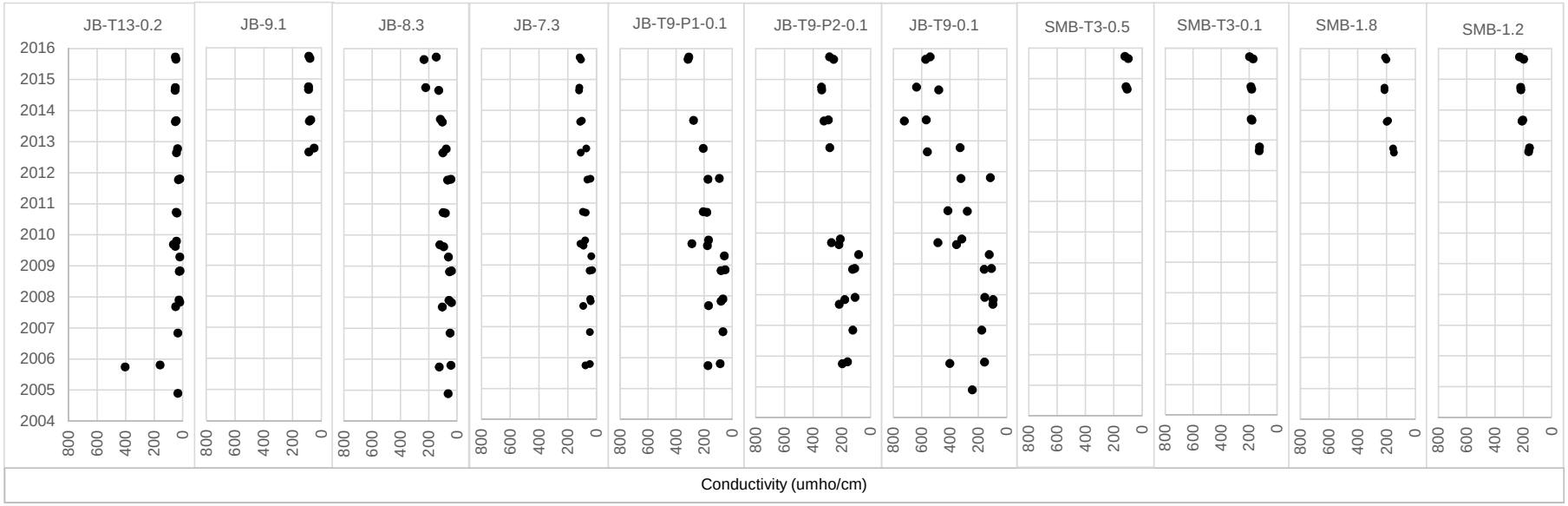
Blank cells indicates no data available

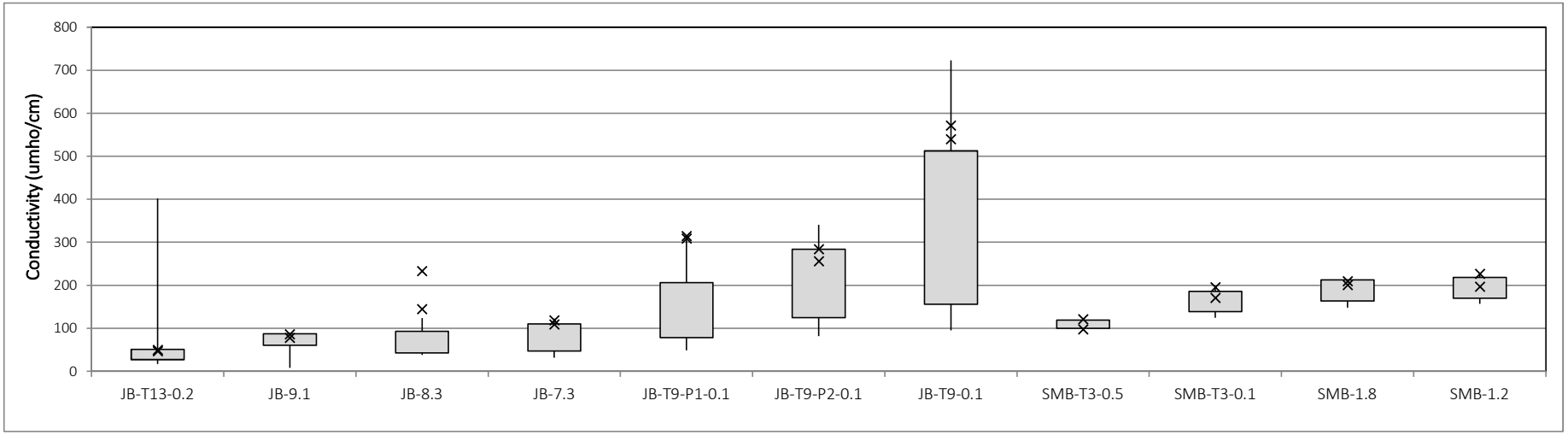
*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

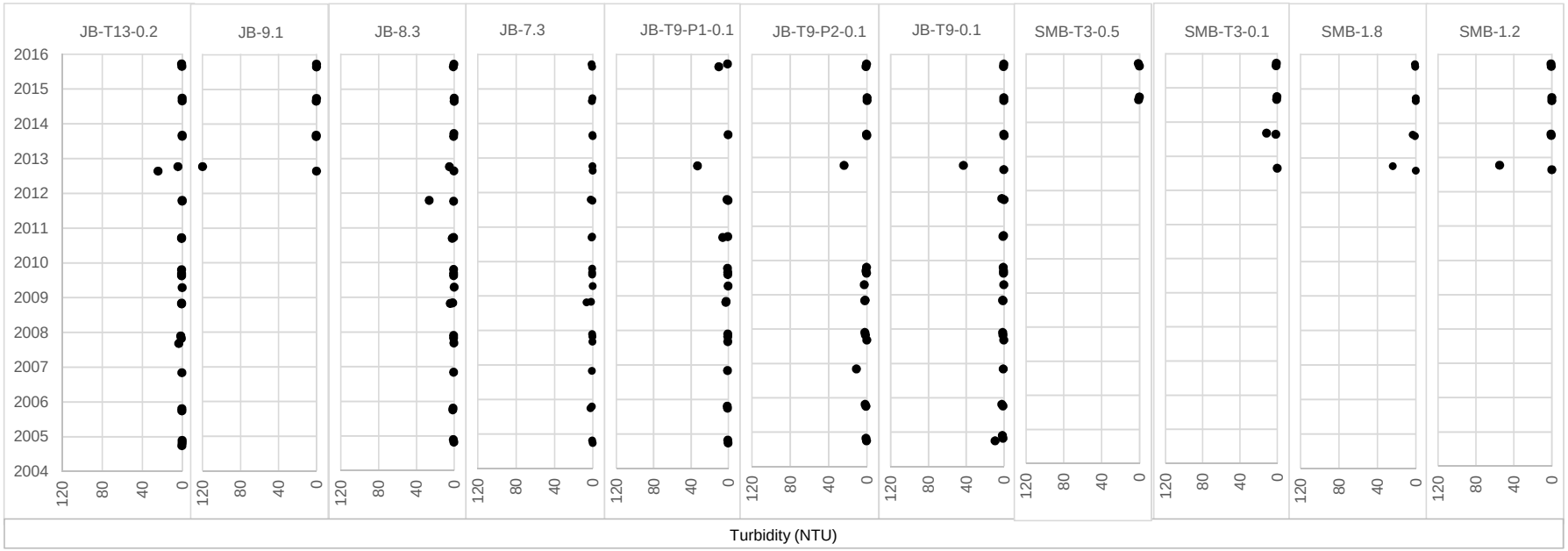
Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

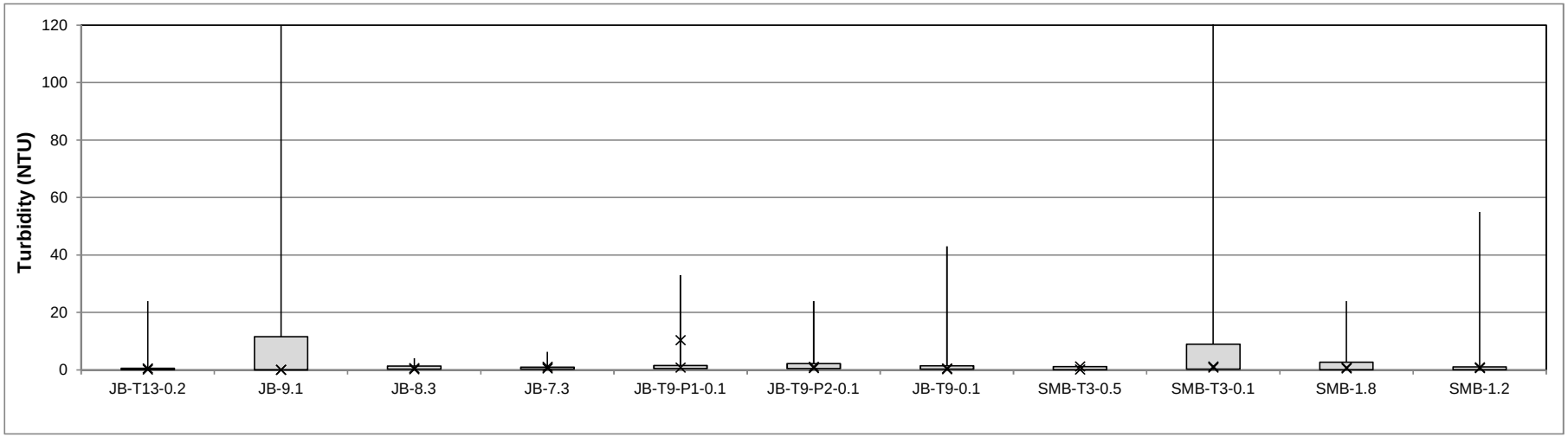
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry
Conductivity (umho/cm)





Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Baseflow Water Chemistry
Turbidity (NTU)





ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 200, Suite 200	
South Burlington, VT 05403	
Atten: R. Wildey	

PROJECT: Jay Peak WQM 57201.08
WORK ORDER: **1508-18286**
DATE RECEIVED: August 27, 2015
DATE REPORTED: September 04, 2015
SAMPLER: R. Wildey

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and “N” the Plattsburgh, NY lab under certification ELAP 11892. “Sub” indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. “A” indicates the referenced laboratory is NELAC accredited for the parameter reported. “N” indicates the laboratory is not accredited. “U” indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an “A” meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 09/04/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1508-18286**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 08/27/2015

001 Site: JB-7.3 Date Sampled: 8/27/15 Time: 14:15

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.13	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

002 Site: JB-T9-.01 Date Sampled: 8/27/15 Time: 12:12

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.28	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

003 Site: JB-T9-P2-0.1 Date Sampled: 8/27/15 Time: 10:42

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.22	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

This sample was collected at JB-T9-0.1 not at JB-T9-P1-0.1

004 Site: JB -T9-P1-0.1 Date Sampled: 8/27/15 Time: 10:42

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Chloride	130	mg/L	EPA 300.0	8/27/15	W CM	A	
Iron, Total	1.7	mg/L	EPA 200.7	9/2/15	W MGT	A	

005 Site: SMB-T3-0.1 Date Sampled: 8/27/15 Time: 13:41

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	1.2	mg/L	EPA 200.7	9/2/15	W MGT	A	

006 Site: SMB-1.8 Date Sampled: 8/27/15 Time: 13:56

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.088	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

This sample was collected at SMB-1.2 not at SMB-T3-0.1

007 Site: SMB-T3-0.1 Date Sampled: 8/27/15 Time: 14:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.058	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

008 Site: SMB-T3-0.5 Date Sampled: 8/27/15 Time: 13:24

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.059	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

009 Site: JB-T13-0.2 Date Sampled: 8/27/15 Time: 12:40

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.34	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

010 Site: JB-8.3 Date Sampled: 8/27/15 Time: 12:18

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.046	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

Laboratory Report DATE REPORTED: 09/04/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1508-18286**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 08/27/2015

011 Site: JB-9.1 Date Sampled: 8/27/15 Time: 12:51

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.41	mg/L	EPA 200.7	9/2/15	W MGT	A	LRB+

Report Summary of Qualifiers and Notes

LRB+: The digested Laboratory Reagent Blank recovery for this element was greater than the reporting limit, indicating that the sample result may be biased high.

Jay Peak WQM 57201.08

Endyne Inc. COC

Prepared: 8/17/15

Lab Use WO#: 1508-18286

Customer # 090395

JAYPEAKWQRP

W-90395JWQ

Bill to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
Ph: 802-497-6137

Report to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
jwilson@vhb.com; ~~mperry@vhb.com~~ rwildey@vhb.com

Location: JB-7.3 Sampled Date/Time: 8/27/15 @ 14:15 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: JB-T9.01 Sampled Date/Time: 8/27/15 @ 12:12 Sampler: RW

✓ ~~Chloride~~ YES | 1 - 2 oz Plastic | <6C
✓ Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: JB-T9-P2-0.1 Sampled Date/Time: 8/27/15 @ 10:42 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: JB-T9-P1-0.1 Sampled Date/Time: 8/27/15 @ 10:42 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: SMB-T3-0.1 Sampled Date/Time: 8/27/15 @ 13:41 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: SMB-1.8 Sampled Date/Time: 8/27/15 @ 13:56 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: SMB-T3-0.1 Sampled Date/Time: 8/27/15 @ 14:10 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: SMB-T3-0.5 Sampled Date/Time: 8/27/15 @ 13:24 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: JB-T13-0.2 Sampled Date/Time: 8/27/15 @ 12:40 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: JB-8.3 Sampled Date/Time: 8/27/15 @ 12:18 Sampler: RW

~~Chloride~~ | 1 - 2 oz Plastic | <6C
Metals Furnace Digestion | 1 - 8 oz Plastic Total Metals | HNO3 pH< 2 ____
Iron, Total

Location: TB-911 Sampled Date/Time: 8/27/15 @ 12:51 Sampler: RW

Chloride	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Relinquished by: [signature] 8/27/15 16:30 Date Time Accepted by: [signature] Date Time

Relinquished by: ____ Date Time Received by: [signature] 8/27/15 1630 Date Time

Sites/Parameters correct as listed. Client Initials ____

Client Authorization to use Subcontract lab Client Initials ____

Sample origin: VT [X] NH [ ] NY [ ] Other [ ]

Special reporting instructions: (PO#) ____

Requested Turnaround Time: Routine: Rush Due Date ____

Lab use Only	
Delv:	Clint
Temp C:	1.1°C
Comment:	
Tmpl Ck	
Log by	

ENDYNE Inc.
www.endynelabs.com

160 James Brown Dr.
Williston, VT 05495
Ph 802-879-4333
Fax 802-879-7103

56 Etna Road
Lebanon, NH 03766
Ph 603-678-4891
Fax 603-678-4893

315 New York Rd.
Plattsburgh, NY 12903
Ph 518-563-1720
Fax 518-563-0052

ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 200, Suite 200	
South Burlington, VT 05403	
Atten: Owen McEnroe	

PROJECT: Jay Peak WQM 57201.08
WORK ORDER: **1509-20681**
DATE RECEIVED: September 23, 2015
DATE REPORTED: October 07, 2015
SAMPLER: Owen

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 10/07/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1509-20681**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 09/23/2015

001 Site: JB-T13-0.2 Date Sampled: 9/23/15 Time: 10:11

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	< 0.020	mg/L	EPA 200.7	10/6/15	W DXP	A	

005 Site: JB-9.1 Date Sampled: 9/23/15 Time: 10:29

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.085	mg/L	EPA 200.7	10/6/15	W DXP	A	

006 Site: JB-T9-0.1 Date Sampled: 9/23/15 Time: 11:11

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Chloride	120	mg/L	EPA 300.0	9/24/15	W CM	A	
Iron, Total	0.061	mg/L	EPA 200.7	10/6/15	W DXP	A	

007 Site: JB-8.3 Date Sampled: 9/23/15 Time: 11:02

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.055	mg/L	EPA 200.7	10/6/15	W DXP	A	

008 Site: JB-7.3 Date Sampled: 9/23/15 Time: 11:53

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.029	mg/L	EPA 200.7	10/6/15	W DXP	A	

009 Site: SMB-1.2 Date Sampled: 9/23/15 Time: 12:25

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.025	mg/L	EPA 200.7	10/6/15	W DXP	A	

010 Site: SMB-T3-0.1 Date Sampled: 9/23/15 Time: 12:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.028	mg/L	EPA 200.7	10/6/15	W DXP	A	LRB+

011 Site: SMB-1.8 Date Sampled: 9/23/15 Time: 13:24

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.039	mg/L	EPA 200.7	10/6/15	W DXP	A	LRB+

012 Site: SMB-T3-0.5 Date Sampled: 9/23/15 Time: 13:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.10	mg/L	EPA 200.7	10/6/15	W DXP	A	LRB+

013 Site: JB-T9-P2-0.1 Date Sampled: 9/23/15 Time: 14:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.081	mg/L	EPA 200.7	10/6/15	W DXP	A	LRB+

Laboratory Report DATE REPORTED: 10/07/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1509-20681**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 09/23/2015

014 Site: JB-T9-P1-0.1 Date Sampled: 9/23/15 Time: 14:18

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.049	mg/L	EPA 200.7	10/6/15	W DXP	A	LRB+

Report Summary of Qualifiers and Notes

LRB+: The digested Laboratory Reagent Blank recovery for this element was greater than the reporting limit, indicating that the sample result may be biased high.

Jay Peak WQM 57201.08

Endyne Inc. COC

Prepared: 8/17/15

Lab Use WO#: 1509-20681

Customer # 090395

JAYPEAKWQRP

W-90395JWQ

Bill to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
Ph: 802-497-6137

Report to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
jwilson@vhb.com;mperry@vhb.com

Location: JB-T13-0.2 Sampled Date/Time: 9/23/15@1011 Sampler: OWM

Chloride - Not Sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: JB-9.1 Sampled Date/Time: 9/23/15@1029 Sampler: OWM

Chloride - Not Sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: JB-T9-0.1 Sampled Date/Time: 9/23/15@11:11 Sampler: OWM

Chloride	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: JB-8.3 Sampled Date/Time: 9/23/15@1102 Sampler: OWM

Chloride - not sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: JB-7.3 Sampled Date/Time: 9/23/15@1153 Sampler: OWM

Chloride - Not sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: SMB-1.2 Sampled Date/Time: 9/23/15@1225 Sampler: OWM

Chloride - not sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: SMB-T3-0.1 Sampled Date/Time: 9/23/15@1255 Sampler: OWM

Chloride - not sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: SMB-1.8 Sampled Date/Time: 9/23/15@1324 Sampler: OWM

Chloride - not sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: SMB-T3-0.5 Sampled Date/Time: 9/23/15@1345 Sampler: OWM

Chloride - not sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: JB-T9-P2-0.1 Sampled Date/Time: 9/23/15@1405 Sampler: OWM

Chloride - not sampled	1 - 2 oz Plastic	<6C
Metals Furnace Digestion	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 ____
Iron, Total		

Location: JB-T9-P1-0.1 Sampled Date/Time: 9/23/15 @ 1418 Sampler: OWM

Chloride -not sampled.	1 - 2 oz	Plastic	<6C
Metals Furnace Digestion	1 - 8 oz	Plastic Total Metals	HNO3 pH< 2 _____
Iron, Total			

Relinquished by: Oliver McEnroe 9/23/15 1650 Date Time Accepted by: ______ Date Time

Relinquished by: ______ Date Time Received by: M Farrand 9/23/15 1650 Date Time

Sites/Parameters correct as listed. Client Initials _______

Client Authorization to use Subcontract lab Client Initials _______

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) ______

Requested Turnaround Time: Routine: Rush Due Date ______

Delv: Client
Temp C: 0.9°C
Comment:
Tmpl Ck
Log by
Lab use Only

ENDYNE Inc.
www.endynelabs.com

160 James Brown Dr.
Williston, VT 05495
Ph 802-879-4333
Fax 802-879-7103

56 Etna Road
Lebanon, NH 03766
Ph 603-678-4891
Fax 603-678-4893

315 New York Rd.
Plattsburgh, NY 12903
Ph 518-563-1720
Fax 518-563-0052

APPENDIX 2

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
(formerly WQM 4-1)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
10/8/2005	***	59.3			5.30	7.18	< 2.50	0.410		< 2.00
10/28/2006	---	30.2			4.51	7.15	< 2.50	0.510		< 2.00
8/30/2007	1:35 PM	45.9	13.0		8.00	7.29	< 2.50	0.230		< 2.00
9/28/2007	9:10 AM				< 20.0	7.00	< 1.00	0.530		< 1.00
10/10/2008	11:55 AM	20.7	5.78			7.22	< 2.50	< 0.500		< 2.00
11/17/2008	9:36 AM	21.0	6.33			7.00	< 2.50	< 0.500		< 2.00
10/1/2009	11:32 AM	36.0	8.00		20.0	6.89	< 2.50	< 0.500		< 2.00
11/20/2009	10:30 AM	25.5	7.30		7.07	7.34	< 2.50	0.900		3.00
8/3/2010	3:39 PM	23.4	14.8		14.0	7.00	< 2.50	1.30		3.00
8/23/2010	3:40 PM	58.2	12.8		22.0	7.73	< 2.50	< 0.500		< 2.00
10/25/2011	9:53 AM	19.0	7.00			6.47		0.500		< 1.00
11/30/2011	10:56 AM	22.0	7.10			6.31		0.000		< 1.00
9/5/2012	1:50 PM	16.0	14.6	91.0	4.80		< 2.50	38.0	0.028	< 2.00
9/19/2012	2:30 PM	17.8	10.7	89.3	4.80	7.05	< 2.50	35.0	0.027	< 2.00
9/12/2013	4:15 PM	28.0	14.5	97.1	< 2.00	7.60	< 2.50	0.810	0.053	< 1.00
9/22/2013	3:50 PM	26.0	10.9	99.0	5.20	7.60	< 2.50	0.400	0.067	2.00
8/13/2014	2:24 PM	49.0	13.3	72.2	12.0	8.30	< 2.50	14.5	0.071	3.00
9/11/2014	12:30 PM	50.0	12.8	78.1	30.0	8.50	< 2.50	5.70	0.110	1.00
8/21/2015	10:30 AM	37.0	14.5	93.5		8.10	0.332	8.75	0.037	
9/14/2015	10:24 AM	30.0	12.4	91.9		7.50	-1.23	7.04	0.62	
2015 STATISTICS										
Mean	***	33.5	13.5	92.7		7.70	-0.5	7.90	0.329	
2005- 2015 STATISTICS										
Mean	***	32.4	10.9	89.0	11.4	7.03	2.09	5.83	0.127	1.89
Min	***	16.0	5.78	72.2	2.00	6.31	-1.23	0.000	0.027	1.00
Max	***	59.3	14.8	99.0	30.0	8.50	2.50	38.0	0.620	3.00
n	***	19	17	8	14	19	18	20	8	18

Notes:

--- indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
(formerly WQM 4-2a)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	1:10 PM	20.5	14.9	92.0	4.30		< 2.50	133	0.420	8.00
9/19/2012	1:00 PM	24.2	10.8	90.5	3.70	7.20	< 2.50	33.0	0.210	4.00
9/12/2013	12:00 PM	35.0	15.4	102	< 2.00	7.50	< 2.50	1.71	0.180	5.00
9/22/2013	3:50 PM	33.0	11.2	100	6.20	7.80	< 2.50	0.850	0.170	3.00
8/13/2014	2:41 PM	103	14.3	80.0	31.0	8.40	< 8.50	0.000	0.140	2.00
9/11/2014	12:45 PM	101	13.5	78.5	17.0	8.60	8.00	10.2	0.110	2.00
8/21/2015	10:45 AM	57.0	15.9	95.3		7.80	4.81	13.28	0.170	
9/14/2015	9:07 AM	44.0	13.0	98.1		7.60	1.90	17.7	5.50	
2015 STATISTICS										
Mean	***	50.5	14.5	96.7		7.69	3.36	15.5	2.84	
2012 - 2014 STATISTICS										
Mean	***	52.2	13.6	92.1	10.7	7.65	4.15	26.2	0.863	4.00
Min	***	20.5	10.8	78.5	2.00	7.20	1.90	0.000	0.110	2.00
Max	***	103	15.9	102	31.0	8.60	8.50	133	5.500	8.00
n	***	8	8	8	6	7	8	8	8	6

Notes:

--- indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
(formerly WQM 4-3)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005		44.3			7.00	6.41	3.15	151.0		626
10/28/2006		52.0			9.84	7.22	< 4.41	18.3		86.0
8/30/2007	12:25 PM	111	15.9		18.0	7.50	< 2.50	1.6		3.00
9/28/2007	8:20 AM				22.0	7.30	5.00	1.4		3.00
10/10/2008	10:45 AM	56.0	5.56			7.33	12.0	1.5		< 2.00
11/17/2008	8:10 AM	50.0	5.56			7.47	6.00	2.1		< 2.00
10/1/2009	10:18 AM	51.8	8.10		24.0	6.87	3.50	1.8		2.00
11/20/2009	11:15 AM	84.8	7.30		13.9	7.25	19.0	86.1		66.0
8/3/2010	2:35 PM	42.0	16.3		14.1	7.74	3.50	20.0		26.0
8/23/2010	2:35 PM	97.1	14.6		30.0	7.66	7.80	0.5		< 2.00
10/25/2011	10:33 AM	43.0	7.20			6.94		1.4		1.00
11/30/2011	9:45 AM	55.0	7.90			6.81		0.0		< 4.00
9/5/2012	11:50 AM	34.0	15.3	92.0	6.40	6.73	4.00	108.0	3.30	67.0
9/19/2012	12:15 PM	40.6	11.3	89.5	7.30	7.48	4.70	44.0	0.500	9.00
9/12/2013	2:45 PM	65.0	16.1	103	< 2.00	7.80	5.70	7.3	0.530	7.00
9/22/2013	3:05 PM	69.0	12.0	99.0	9.90	8.00	6.20	16.0	0.260	5.00
8/13/2014	1:51 PM	135	15.1	82.9	33.0	8.50	19.0	0.0	0.068	< 1.00
9/11/2014	12:05 PM	220	14.0	80.0	29.0	8.60	15.0	5.5	0.075	< 1.00
8/21/2015	10:05 AM	200	17.0	95.5		8.00	36.8	13.5	0.280	
9/14/2015	9:52 AM	131	13.8	92.0		6.60	21.4	9.7	1.20	
2015 STATISTICS										
Mean	***	166	15.4	93.8		6.88	29.1	11.6	0.740	
2005 - 2015 STATISTICS										
Mean	***	83.2	11.9	91.7	16.2	7.09	9.98	24.5	0.777	50.7
Min	***	34.0	5.56	80.0	2.00	6.41	2.50	0.000	0.068	1.00
Max	***	220	17.0	103	33.0	8.60	36.8	151	3.30	626
n	***	19	17	8	14	20	18	20	8	18

Notes:

--- indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
(formerly WQM 4-4 a/b)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005		70.9			7.00	7.07	3.20	12.3		58.0
10/28/2006		42.2			9.43	7.09	2.92	20.1		71.0
8/30/2007	2:05 PM	89.4	16.8		12.0	6.86	8.33	8.06		21.0
9/28/2007	9:30 AM				23.0	7.00	5.00	0.960		1.00
10/10/2008	12:10 PM	40.9	6.28			7.18	4.10	1.44		< 2.00
11/17/2008	10:00 AM	43.7	6.50			7.13	3.70	1.65		< 2.00
10/1/2009	11:59 AM	52.9	8.70		20.0	6.89	3.50	3.42		< 2.00
11/20/2009	11:15 AM	53.5	7.50		11.3	7.22	3.90	45.8		39.0
8/3/2010	4:10 PM	42.1	16.9		8.90	7.00	3.00	17.8		41.0
8/23/2010	4:15 PM	94.1	15.8		28.0	7.71	7.20	< 0.500		< 2.00
10/25/2011	9:08 AM	41.3	7.40			6.83		2.03		3.00
11/30/2011	8:59 AM	56.0	8.40			6.90		1.91		9.00
9/5/2012	8:50 AM	23.0	15.5	95.0						
9/19/2012	10:00 AM	37.3	11.6	91.0	8.50	7.24	3.70	60.0	0.810	20.0
9/12/2013	12:00 PM	51.0	16.0	101	< 2.00	8.00	3.50	7.58	0.660	12.0
9/22/2013	1:10 PM	63.0	12.9	102	11.0	8.30	4.80	2.30	0.240	4.00
8/13/2014	3:18 PM	122	15.8	79.0	32.0	8.40	13.0	0.000	0.064	< 1.00
9/11/2014	1:45PM	119	15	80.7	29.00	8.60	12.00	4.8	0.037	1.0
8/21/2015	12:35 PM	95.0	17.5	98.0		7.80	13.3	2.12	0.170	
9/14/2015	11:55 AM	55.0	13.8	99.8		7.80	4.36	44.5	6.10	
2015 STATISTICS										
Mean	***	75.0	15.7	98.9		7.80	8.84	23.3	3.14	
2005 - 2015 STATISTICS										
Mean	***	62.8	12.5	93.3	15.5	7.12	5.85	12.5	1.154	17.0
Min	***	23.0	6.28	79.0	2.00	6.83	2.92	0.000	0.037	1.00
Max	***	122	17.5	102	32.0	8.60	13.3	60.0	6.100	71.0
n	***	19	17	8	13	19	17	19	7	17

Notes:

--- indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
(formerly WQM 1-2)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
10/28/2006		55.3			17.2	7.43	2.91	16.3		46.0
8/30/2007	11:45 AM	125	17.1		36.0	7.49	11.5	9.85		5.00
9/28/2007	7:36 AM				39.0	6.70	7.00	1.20		2.00
10/10/2008	10:12 AM	65.7	8.56			7.15	9.70	1.77		< 2.00
11/17/2008	7:28 AM	68.4	6.39			7.60	10.0	2.44		< 2.00
10/1/2009	9:43 AM	68.7	8.80		21.0	6.62	10.0	9.22		3.00
11/20/2009	8:37 AM	63.0	7.50		11.3	7.92	9.60	34.7		29.0
8/3/2010	2:10 PM	74.2	17.5		10.6	7.44	11.0	19.7		23.0
8/23/2010	1:55 AM	201	16.2		41.0	7.40	32.0	0.810		
10/25/2011	11:33 AM	87.1	7.30			6.94		4.43		2.00
11/30/2011	11:15 AM	81.0	7.10			6.71		1.10		3.00
9/5/2012	5:20	85.0	17.2	82.0	14.0		15.0	52.0	1.30	21.0
9/19/2012	3:45	92.3	12.5	86.6	27.0	7.47	19.0	26.0	0.680	7.00
9/12/2013	5:50	134	17.0	93.7	2.50	7.90	18.0	12.3	0.480	24.0
9/22/2013	5:45	131	12.4	97.0	25.0	7.70	7.00	11.5	0.300	7.00
8/13/2014	12:58	365	15.9	74.0	83.0	8.40	53.0	8.74	0.480	9.00
9/11/2014										
8/21/2015	11:05	194	17.7	84.9		7.50	35.5	37.5	0.300	
9/14/2015	10:51	87.0	13.8	94.1		7.60	11.5	75.7	7.30	
2015 STATISTICS										
Mean	***	141	15.8	89.5		7.55	23.5	56.6	3.80	
2006 - 2015 STATISTICS										
Mean	***	116	12.7	87.5	27.3	7.18	16.4	18.1	1.55	12.3
Min	***	55.3	6.39	74.0	2.50	6.62	2.91	0.810	0.300	2.00
Max	***	365	17.7	97.0	83.0	8.40	53.0	75.7	7.30	46.0
n	***	17	16	7	12	17	16	18	7	15

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
(formerly WQM 2-3)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**>70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
10/28/2006		81.3			28.7	7.39	4.32	279		673
8/30/2007	12:05 PM	165	16.8		60.0	7.55	12.0	9.65		4.00
9/28/2007	7:47 AM				56.0	7.50	7.00	3.30		5.00
10/10/2008	10:22 AM	100	5.56			7.19	13.0	44.4		13.0
11/17/2008	7:35 AM	98.5	5.56			7.60	12.0	4.04		9.00
10/1/2009	9:50 AM	137	8.30		32.0	6.32	14.0	3.31		2.00
11/20/2009	8:37 AM	91.4	7.10		18.8	7.65	8.60	60.1		122
9/5/2012	4:50 PM	101	17.0	88.0	6.70		17.0	190	1.50	17.0
9/19/2012	4:00 PM	129	14.7	83.0	31.0	7.66	25.0	75.0	0.500	8.00
9/12/2013	6:00 PM	165	17.6	91.2	3.00	8.10	23.0	7.28	0.460	8.00
9/22/2013	4:15 PM	164	12.9	98.0	33.0	7.90	24.0	5.38	0.470	8.00
8/13/2014	12:50 PM	310	15.7	73.1	70.0	8.00	43.0	11.25	0.310	5.00
9/11/2014	11:30 AM	318	15.1	70.5	64.0	8.40	44.0	2.87	0.029	2.00
8/21/2015	11:10 AM	192	18.5	96.0		7.90	35.0	45.4	0.620	
9/14/2015	10:55 AM	91.0	13.9	97.1		7.80	12.4	77.0	6.10	
2015 STATISTICS										
Mean	***	142	16.2	96.6		7.85	23.7	61.2	3.36	
2006 - 2015 STATISTICS										
Mean	***	153	13.0	87.1	36.7	7.26	19.6	54.5	1.249	67.4
Min	***	81.3	5.56	70.5	3.00	6.32	4.32	2.87	0.029	2.00
Max	***	318	18.5	98.0	70.0	8.40	44.0	279	6.10	673
n	***	14	13	8	11	14	15	15	8	13

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
(formerly WQM 3-1)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/30/2005	***	99.6			16.0	6.81	12.3	73.2		169
10/28/2006	***	86.4			13.5	6.99	11.5	72.3		256
8/30/2007	12:20 PM	209	17.8		48.0	7.62	36.8	5.77		4.00
9/28/2007	8:45 AM				36.0	7.40	18.0	1.90		4.00
10/10/2008	10.36 am	116	5.67			7.27	23.0	1.42		< 2.00
11/17/2008	7:55 AM	126	6.50			7.53	27.0	2.05		< 2.00
10/1/2009	10:08 AM	151	8.40		27.0	6.66	24.0	44.0		16.0
11/20/2009	9:04 AM	18.6	7.30		16.4	7.63	< 2.50	11.5		11.0
8/3/2010	2:27 PM	121	19.3		16.9	7.73	21.0	53.7		86.0
8/23/2010	2:50 PM	355	14.6		51.0	8.07	62.0	0.58		< 2.00
10/25/2011	11:01 AM	129	7.50			6.89		3.08		< 1.00
11/30/2011	10:02 AM	161	7.80			6.96		0.55		< 2.00
9/5/2012	11:30 AM	107	19.0	92.0	14.0	6.68	22.0	325	17.0	200
9/19/2012	11:45 AM	141	14.0	83.0	17.0	7.41	33.0	165	4.70	34.0
9/12/2013	7:55 PM	192	15.1	98.5	2.60	7.90	32.0	38.5	1.50	20.0
9/22/2013	3:25 PM	216	13.2	100	38.0	8.10	38.0	16.0	0.890	8.00
8/13/2014	1:40 PM	463	16.1	79.1	53.0	8.50	92.0	1.45	0.390	5.00
9/11/2014	11:55 AM	583	15	70	51.0	8.60	130.0	3.94	0.120	1.00
8/21/2015	9:55 AM	326	17.8	92.8		7.90	65.0	12.4	0.650	
9/14/2015	10:02 AM	125	14.2	17.8		7.40	20.0	38.9	3.60	
2015 STATISTICS										
Mean	***	226	16.0	55.3		7.58	42.5	25.6	2.13	
2005- 2015 STATISTICS										
Mean	***	196	12.9	79.1	28.6	7.21	37.2	43.6	3.61	45.7
Min	***	18.6	5.67	17.8	2.60	6.66	2.50	0.550	0.120	1.00
Max	***	583	19.3	100	53.0	8.60	130	325	17.0	256
n	***	19	17	8	14	20	18	20	8	18

Notes:

--- indicates no data available

*** indicates not applicable

2005 and 2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch
(formerly WQM 108)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
8/13/2014										
9/11/2014	11:00 AM	102	12.8	82.0	32.0	8.60	14.0	11.0	0.092	7.00
8/21/2015	11:30 AM	114	15.4	95.5		7.90	17.6	2.36	0.150	
9/14/2015	11:47 AM	61.0	12.7	94.5		7.90	5.71	24.2	3.10	
2015 STATISTICS										
Mean	***	87.5	14.1	95.0		7.90	11.6	13.3	1.63	
2015 STATISTICS										
Mean	***	92.3	13.6	90.7	32.0	8.03	12.4	12.5	1.114	7.00
Min	***	61.0	12.7	82.0	32.0	7.90	5.71	2.36	0.092	7.00
Max	***	114	15.4	95.5	32.0	8.60	17.6	24.2	3.100	7.00
n	***	3	3	3	1	3	3	3	3	1

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station SMB-T3-0.1, Tributary 3 to South Mountain Branch
(formerly WQM 106)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	10:30 AM	47.0	14.8	93.0	4.50	6.50	10.0	75.0	1.60	43.0
9/19/2012	11:15 AM	57.8	10.6	88.0	6.70	7.37	13.0	110	0.410	9.00
9/12/2013	2:10 PM	84.0	15.4	102	< 2.00	7.60	14.0	16.2	1.20	14.0
9/22/2013	2:15 PM	105	11.7	100	8.80	7.80	18.0	11.3	0.540	8.00
8/13/2014	11:53 AM	191	14.9	56.5	26.0	7.50	31.0	2.47	0.071	< 1.00
9/11/2014	11:15 AM	182	13.4	79.5	20.00	8.60	32.0	8.7	0.073	2.00
8/21/2015	11:55 AM	175	16.5	95.1		7.90	31.2	15.8	0.260	
9/14/2015	11:47 AM	156	12.9	97.8		7.80	27.0	64.1	4.50	
2013 STATISTICS										
Mean	***	166	14.7	96.5		7.85	29.1	39.9	2.38	
2012 - 2015 STATISTICS										
Mean	***	125	13.8	89.0	11.3	7.24	22.0	37.9	1.082	12.8
Min	***	47.0	10.6	56.5	2.00	6.50	10.0	2.47	0.071	1.00
Max	***	191	16.5	102	26.0	8.60	32.0	110	4.50	43.0
n	***	8	8	8	6	8	8	8	8	6

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station SMB-1.8, South Mountain Branch
(formerly WQM 105)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	9:40 AM	37.0	14.7	95.0	3.60	6.55	7.20	45.0	1.90	45.0
9/19/2012	10:45 AM	51.4	10.6	92.5	7.80	7.34	10.0	26.0	0.440	8.00
9/12/2013	1:50 PM	75.0	15.1	100	< 2.00	7.70	11.0	11.5	0.780	12.0
9/22/2013	1:45 PM	110	11.6	100	11.0	7.90	19.0	8.17	0.350	6.00
8/13/2014	12:30 PM	205	13.0	85.7	28.0	8.00	33.0	1.99	0.038	2.00
9/11/2014	2:15 PM	207	12.6	81.2	26.0	8.60	8.0	8.06	0.020	1.00
8/21/2015	12:10 PM	180	15.1	98.5		7.80	32.4	7.69	0.280	
9/14/2015	11:37 AM	137	12.8	96.1		7.80	22.7	51.8	4.80	
2015 STATISTICS										
Mean	***	159	14.0	97.3		7.80	27.5	29.8	2.54	
2012 - 2015 STATISTICS										
Mean	***	125	13.2	93.6	13.1	7.30	17.9	20.0	1.076	12.3
Min	***	37.0	10.6	81.2	2.00	6.55	7.20	1.99	0.020	1.00
Max	***	207.0	15.1	100	28.0	8.60	33.0	51.8	4.80	45.0
n	***	8	8	8	6	8	8	8	8	6

Notes:

--- indicates no data available

*** indicates not applicable

2006 data from ESI

pH statistics based on Hydrogen Ion concentration

Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch
(formerly WQM 107)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Iron (mg/L)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		**< 1**	
9/5/2012	9:15 AM	42.0	15.0	95.0	4.30	6.65	8.60	48.0	2.30	45.0
9/19/2012	10:25 AM	37.3	10.8	90.8	9.20	7.38	13.0	53.0	0.44	9.00
9/12/2013	12:30 PM	86.0	15.3	103	< 2.00	7.70	14.0	20.0	1.20	17.0
9/22/2013	1:30 PM	133	12.0	102	12.0	7.90	23.0	8.25	0.35	6.00
8/13/2014	3:05 PM	212	13.6	77.4	32.0	8.50	34.0	7.06	0.044	1.00
9/11/2014	2:27 PM	214	13.1	83.3	30.0	8.50	38.0	6.83	0.020	1.00
8/21/2015	12:25 PM	194	15.4	100		7.80	35.5	3.13	0.140	
9/14/2015	11:23 AM	126	13.2	97.6		7.70	20.3	49.9	6.10	
2015 STATISTICS										
Mean	***	160	14.3	98.8		7.75	27.9	26.5	3.12	
2012 - 2015 STATISTICS										
Mean	***	131	13.6	93.6	14.9	7.37	23.3	24.5	1.32	13.2
Min	***	37.3	10.8	77.4	2.00	6.65	8.60	3.13	< 0.020	1.00
Max	***	214	15.4	103	32.0	8.50	38.0	53.0	6.10	45.0
n	***	8	8	8	6	8	8	8	8	6

Notes:

--- indicates no data available

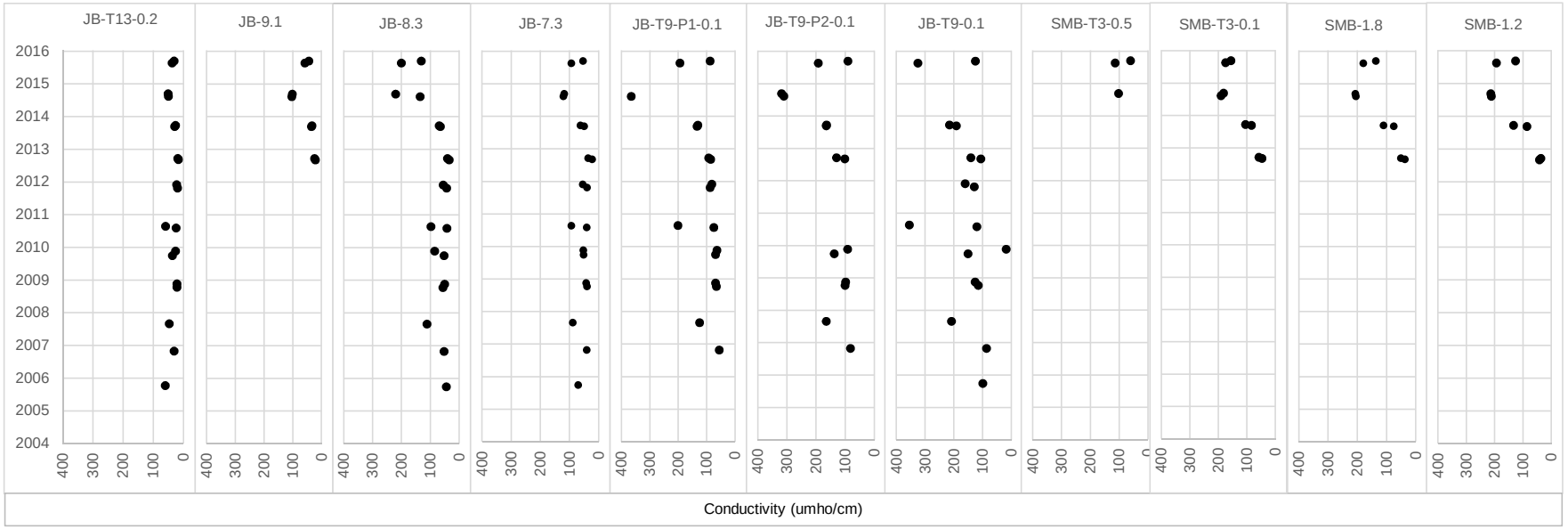
*** indicates not applicable

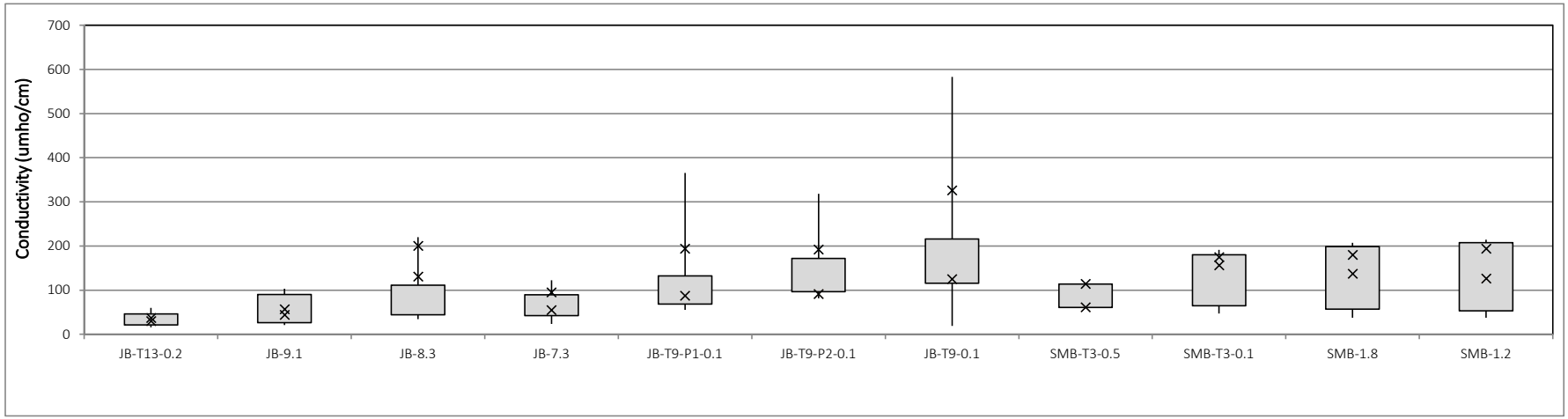
2006 data from ESI

pH statistics based on Hydrogen Ion concentration

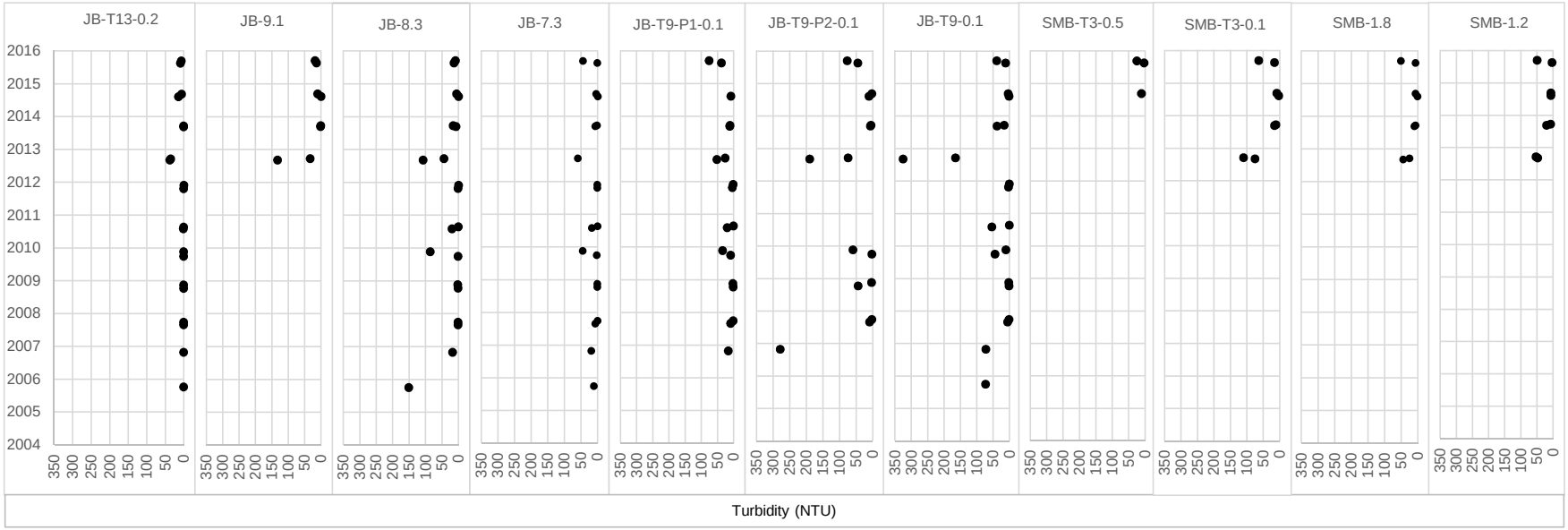
Chloride values after 7/13/15 based on site-specific regression equation using conductivity field data. Chloride samples are collected for laboratory analysis if field-measure conductivity is >500 umho/cm.

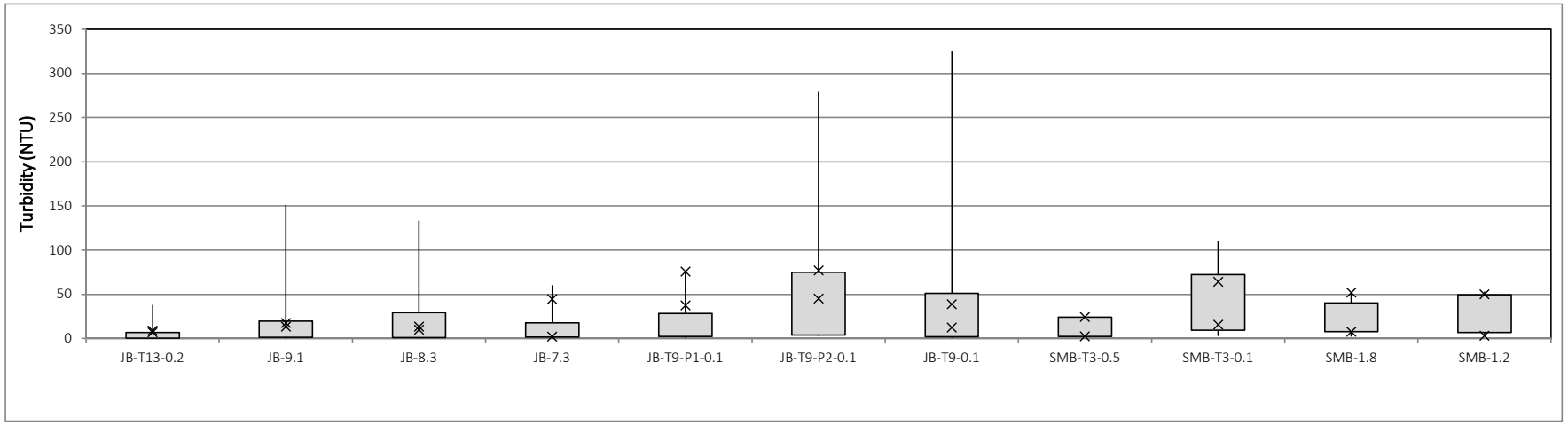
Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Flow Water Chemistry
Conductivity (umho/cm)





Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Event Flow Water Chemistry
Turbidity (NTU)





ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 200, Suite 200	
South Burlington, VT 05403	
Atten: R. Wildey	

PROJECT: Jay Peak WQM 57201.08
WORK ORDER: **1508-17758**
DATE RECEIVED: August 21, 2015
DATE REPORTED: September 04, 2015
SAMPLER: RW

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and "N" the Plattsburgh, NY lab under certification ELAP 11892. "Sub" indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. "A" indicates the referenced laboratory is NELAC accredited for the parameter reported. "N" indicates the laboratory is not accredited. "U" indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an "A" meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 09/04/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1508-17758**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 08/21/2015

001 Site: JB-T13-0.2 Date Sampled: 8/21/15 Time: 10:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.037	mg/L	EPA 200.7	9/3/15	W DXP	A	

002 Site: JB-9.1 Date Sampled: 8/21/15 Time: 10:45

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.17	mg/L	EPA 200.7	9/3/15	W DXP	A	

003 Site: JB-8.3 Date Sampled: 8/21/15 Time: 10:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.28	mg/L	EPA 200.7	9/3/15	W DXP	A	

004 Site: JB-7.3 Date Sampled: 8/21/15 Time: 12:35

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.17	mg/L	EPA 200.7	9/3/15	W DXP	A	

005 Site: JB-T9-P1.01 Date Sampled: 8/21/15 Time: 11:05

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.30	mg/L	EPA 200.7	9/3/15	W DXP	A	

006 Site: JB-T9-P2-0.1 Date Sampled: 8/21/15 Time: 11:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.62	mg/L	EPA 200.7	9/3/15	W DXP	A	

007 Site: JB-T9-0.1 Date Sampled: 8/21/15 Time: 9:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.65	mg/L	EPA 200.7	9/3/15	W DXP	A	

008 Site: SMB-1.8 Date Sampled: 8/21/15 Time: 12:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.28	mg/L	EPA 200.7	9/3/15	W DXP	A	

009 Site: SMB-T3-0.1 Date Sampled: 8/21/15 Time: 11:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.26	mg/L	EPA 200.7	9/3/15	W DXP	A	

010 Site: SMB-1.2 Date Sampled: 8/21/15 Time: 12:25

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.14	mg/L	EPA 200.7	9/3/15	W DXP	A	

011 Site: SMB-T3-0.5 Date Sampled: 8/21/15 Time: 11:30

Laboratory Report DATE REPORTED: 09/04/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1508-17758**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 08/21/2015

011 Site: SMB-T3-0.5 Date Sampled: 8/21/15 Time: 11:30

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.15	mg/L	EPA 200.7	9/3/15	W DXP	A	

Jay Peak WQM 57201.08

Endyne Inc. COC

Prepared: 8/17/15

Lab Use WO# 1508-17758 2.0-ST-8m2

Bill to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
Ph: 802-497-6137

Report to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
jwilson@vhb.com; ~~mperry@vhb.com~~ RWILDEY@VHB.com

Customer # 090395

JAYPEAKWQRP

W-90395JWQ

Location: JB-T13-0.2 Sampled Date/Time: 8/21/15@10:30 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: JB-9.1 Sampled Date/Time: 8/21/15@10:45 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: JB-8.3 Sampled Date/Time: 8/21/15@10:05 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: JB-7.3 Sampled Date/Time: 8/21/15@12:35 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: JB-T9-P1.01 Sampled Date/Time: 8/21/15@11:05 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: JB-T9-P2-0.1 Sampled Date/Time: 8/21/15@11:10 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: JB-T9-0.1 Sampled Date/Time: 8/21/15@9:55 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: SMB-1.8 Sampled Date/Time: 8/21/15@12:10 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: SMB-T3-0.1 Sampled Date/Time: 8/21/15@11:55 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

Location: SMB-1.2 Sampled Date/Time: 8/21/15@12:25 Sampler: RW

- X Chloride — 1 - 2 oz Plastic — <6C
- ✓ Metals Furnace Digestion Iron, Total — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 ____

cation: SMB-T3-0.5 Sampled Date/Time: 8/21/15 @ 11:30 Sampler: RW

X	Chloride	1 - 2 oz Plastic	<6C
✓	Metals Furnace Digestion Iron, Total	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 _____

linquished by: Ruth Wilcox 3:39 8/21/15 Date Time Accepted by: _____ Date Time

linquished by: _____ Date Time Received by: Lauren Fitzgerald 8/21/15 1540 Date Time

tes/Parameters correct as listed. Client Initials _____

ient Authorization to use Subcontract lab Client Initials _____

mple origin: VT ☐ NH ☐ NY ☐ Other ☐

ecial reporting instructions: (PO#) _____

quested Turnaround Time: Routine: Rush Due Date _____

Lab use Only	
Delv: Client	Tmpl Ck
Temp C: 0.5	Log by
Comment:	

ENDYNE Inc.
www.endynelabs.com

160 James Brown Dr.
Williston, VT 05495
Ph 802-879-4333
Fax 802-879-7103

56 Etna Road
Lebanon, NH 03766
Ph 603-678-4891
Fax 603-678-4893

315 New York Rd.
Plattsburgh, NY 12903
Ph 518-563-1720
Fax 518-563-0052

ENDYNE Inc.
Environmental Laboratories

Vanasse Hangen Brustlin, Inc.	
40 IDX Drive	090395
Building 200, Suite 200	
South Burlington, VT 05403	
Atten: R. Wildey	

PROJECT: Jay Peak WQM 57201.08
WORK ORDER: **1509-19680**
DATE RECEIVED: September 14, 2015
DATE REPORTED: September 29, 2015
SAMPLER: RW/JG

Laboratory Report

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. All required method quality control elements including instrument calibration were performed in accordance with method requirements and determined to be acceptable unless otherwise noted.

The column labeled Lab/Tech in the accompanying report denotes the laboratory facility where the testing was performed and the technician who conducted the assay. A "W" designates the Williston, VT lab under NELAC certification ELAP 11263; "R" designates the Lebanon, NH facility under certification NH 2037 and “N” the Plattsburgh, NY lab under certification ELAP 11892. “Sub” indicates the testing was performed by a subcontracted laboratory. The accreditation status of the subcontracted lab is referenced in the corresponding NELAC and Qual fields.

The NELAC column also denotes the accreditation status of each laboratory for each reported parameter. “A” indicates the referenced laboratory is NELAC accredited for the parameter reported. “N” indicates the laboratory is not accredited. “U” indicates that NELAC does not offer accreditation for that parameter in that specific matrix. Test results denoted with an “A” meet all National Environmental Laboratory Accreditation Program requirements except where denoted by pertinent data qualifiers. Test results are representative of the samples as they were received at the laboratory

Endyne, Inc. warrants, to the best of its knowledge and belief, the accuracy of the analytical test results contained in this report, but makes no other warranty, expressed or implied, especially no warranties of merchantability or fitness for a particular purpose.

Reviewed by:

Harry B. Locker, Ph.D.
Laboratory Director

Laboratory Report DATE REPORTED: 09/29/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1509-19680**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 09/14/2015

001 Site: JB-T13-0.1 Date Sampled: 9/14/15 Time: 10:24

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	0.62	mg/L	EPA 200.7	9/28/15	W DXP	A	

002 Site: JB-9.1 Date Sampled: 9/14/15 Time: 10:38

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	5.5	mg/L	EPA 200.7	9/28/15	W DXP	A	

003 Site: JB-8.3 Date Sampled: 9/14/15 Time: 9:52

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	1.2	mg/L	EPA 200.7	9/28/15	W DXP	A	

004 Site: JB-7.3 Date Sampled: 9/14/15 Time: 11:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	6.1	mg/L	EPA 200.7	9/28/15	W DXP	A	

005 Site: JB-T9-P1-0.1 Date Sampled: 9/14/15 Time: 10:51

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	7.3	mg/L	EPA 200.7	9/28/15	W DXP	A	

006 Site: JB-TP-P2-0.1 Date Sampled: 9/14/15 Time: 10:55

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	6.1	mg/L	EPA 200.7	9/28/15	W DXP	A	

007 Site: JB-T9-0.1 Date Sampled: 9/14/15 Time: 10:02

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	3.6	mg/L	EPA 200.7	9/28/15	W DXP	A	

008 Site: SMB-1.8 Date Sampled: 9/14/15 Time: 11:37

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	4.8	mg/L	EPA 200.7	9/28/15	W DXP	A	

009 Site: SMB-T3-0.1 Date Sampled: 9/14/15 Time: 11:23

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	4.5	mg/L	EPA 200.7	9/28/15	W DXP	A	

010 Site: SMB-1.2 Date Sampled: 9/14/15 Time: 11:47

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	6.1	mg/L	EPA 200.7	9/28/15	W DXP	A	

011 Site: SMB-T3-0.5 Date Sampled: 9/14/15 Time: 11:10

Laboratory Report DATE REPORTED: 09/29/2015

CLIENT: Vanasse Hangen Brustlin, Inc. WORK ORDER: **1509-19680**
PROJECT: Jay Peak WQM 57201.08 DATE RECEIVED 09/14/2015

011 Site: SMB-T3-0.5 Date Sampled: 9/14/15 Time: 11:10

Parameter	Result	Units	Method	Analysis Date/Time	Lab/Tech	NELAC	Qual.
Iron, Total	3.1	mg/L	EPA 200.7	9/28/15	W DXP	A	

Jay Peak WQM 57201.08

Endyne Inc. COC

Prepared: 8/17/15

Lab Use WO# 1509-19680

Customer # 090395

JAYPEAKWQRP

W-90395JWQ

Bill to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
Ph: 802-497-6137

Report to:

Vanasse Hangen Brustlin, Inc.
40 IDX Drive
South Burlington VT 05403
jwilson@vhb.com; ~~mperry@vhb.com~~
RWILDEY@VHB.COM

Location: JB-T13-0-1 | Sampled Date/Time: 9/14/15 @ 10:24 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: JB-9.1 | Sampled Date/Time: 9/14/15 @ 10:38 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: JB-8.3 | Sampled Date/Time: 9/14/15 @ 9:52 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: JB-7.3 | Sampled Date/Time: 9/14/15 @ 11:55 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: JB-T9-P1-0.1 | Sampled Date/Time: 9/14/15 @ 10:51 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: JB-T9-P2-0.1 | Sampled Date/Time: 9/14/15 @ 10:55 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: JB-T9-0.1 | Sampled Date/Time: 9/14/15 @ 10:02 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: SMB-1.8 | Sampled Date/Time: 9/14/15 @ 11:37 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 [illegible]

Iron, Total

Location: SMB-T3-0.1 | Sampled Date/Time: 9/14/15 @ 11:23 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: SMB-1.2 | Sampled Date/Time: 9/14/15 @ 11:47 | Sampler: RW/JG

~~Chloride~~ — 1 - 2 oz Plastic — <6C

✓ Metals Furnace Digestion — 1 - 8 oz Plastic Total Metals — HNO3 pH< 2 _____

Iron, Total

Location: SMB-T3-0.5 | Sampled Date/Time: 9/14/15 @ 11:10 | Sampler: RW / JG

~~Chloride~~	1 - 2 oz Plastic	<6C
✓ Metals Furnace Digestion Iron, Total	1 - 8 oz Plastic Total Metals	HNO3 pH< 2 _____

Relinquished by: Rob Wildey 9/14/15 1350 (Date Time) | Accepted by: Eileen Twomey 9/14/15 @ 1350 (Date Time)

Relinquished by: ______ Date Time | Received by: ______ Date Time

Sites/Parameters correct as listed. Client Initials _______

Client Authorization to use Subcontract lab Client Initials _______

Sample origin: VT ☐ NH ☐ NY ☐ Other ☐

Special reporting instructions: (PO#) ______

Requested Turnaround Time: Routine: Rush Due Date ______

Delv: Client
Temp C: 0.3
Comment:
Tmpl Ck
Log by
Lab use Only

ENDYNE Inc.
www.endynelabs.com

160 James Brown Dr.
Williston, VT 05495
Ph 802-879-4333
Fax 802-879-7103

56 Etna Road
Lebanon, NH 03766
Ph 603-678-4891
Fax 603-678-4893

315 New York Rd.
Plattsburgh, NY 12903
Ph 518-563-1720
Fax 518-563-0052

APPENDIX 3

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station JB-T13-0.2 (DEC Station 427813000002), Upper Jay Branch
(formerly WQM 4-1)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
2/11/2009	10:30 AM	54.8	2.20		18.0	6.78	3.50	0.00	<2.00
4/21/2009	12:01 PM	61.0	6.40		9.55	6.55	<2.50	0.00	
3/12/2013	12:46 PM	30.0	0.800	97.0		8.50		0.00	
4/27/2013	13:01 PM	22.0	5.80	130		6.70		0.880	
4/18/2014	11:45 AM	30.0	2.20	96.5		8.60		0.240	<2.00
4/28/2014	3:40 PM	27.0	3.70	97.9		7.70		0.200	
4/10/2015	9:40 AM	40.0	1.50	158		7.40	<2.50	0.010	
4/15/2015	11:28 AM	18.5	2.20	112		7.51		0.290	
2015 STATISTICS									
Mean	***	29.3	1.85	135		7.45	<2.50	0.150	
2009-2015 STATISTICS									
Mean	***	35.4	3.10	115	13.8	7.03	2.83	0.203	<2.00
Min	***	18.5	0.800	96.5	9.55	6.55	<2.50	0.000	<2.00
Max	***	61.0	6.40	158	18.0	8.60	3.50	0.880	<2.00
n	***	8	8	6	2	8	3	8	2

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen data based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station JB-9.1 (DEC Station 427800000091) Jay Branch
(formerly WQM 4-2a)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
2/27/2008	10:00 AM	44.7	2.00		37.0	7.03	3.00	0.370	<2.00
3/12/2010	12:44 PM	89.0	1.60		27.0	6.57	6.40	0.500	
3/18/2010	11:25 AM	78.4	2.10		28.0	6.70	6.00	1.68	
3/11/2011	11:58 AM	39.2	0.100		21.0	7.60	5.70	1.79	
3/18/2011	10:00 AM	37.6	0.020		26.0	6.65	8.30	11.5	
3/8/2012	1:02 PM	78.5	0.500		21.0	6.71	30.0	21.7	
3/22/2012	9:48 AM	16.3	4.70		21.0	6.51	2.50	2.16	
3/12/2013	12:02 AM	88.0	0.300	96.0		8.30		4.23	
4/27/2013	12:25 PM	33.0	5.70	125		6.85		0.210	
4/18/2014	12:15 PM	47.0	2.70	98.2		8.30		0.440	
4/28/2014	4:10 PM	39.0	4.10	98.0		7.70		1.95	
4/10/2015	10:17 AM	111	1.50	112		7.80	16.0	1.95	
4/15/2015	12:00 PM	28.3	2.80	130		6.90		1.10	
2015 Statistics									
Mean	***	69.7	2.15	121		7.15	16.0	1.53	
2008 - 2015 Statistics									
Mean	***	56.2	2.16	110	25.9	6.90	9.74	3.82	<2.00
Min	***	16.3	0.020	96.0	21.0	6.51	2.50	0.210	<2.00
Max	***	111	5.70	130	37.0	8.30	30.0	21.7	<2.00
n	***	13	13	6	7	13	8	13	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station JB-8.3 (DEC Station 427800000083), Jay Branch
(formerly WQM 4-3)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
1/30/2008	8:30 AM	37.4	2.10		13.0	7.07	2.70		
2/11/2009	10:30 AM	174	1.67		28.0	7.85	42.0	0.660	<2.00
4/21/2009	1:30 PM	25.1	5.60		10.0	6.66	3.20	0.000	
3/12/2010	11:12 AM	107	1.20			6.69	22.0	0.540	
3/18/2010	10:22 AM	114	1.40		23.0	6.47	18.0	1.85	
3/11/2011	11:00 AM	38.6	0.500		21.0	6.90	18.0	0.640	
3/18/2011	9:15 AM	73.5	0.100		28.0	6.65	23.0	35.6	
3/8/2012	11:27 AM	162	0.400		20.0	6.70	77.0	141	
3/22/2012	10:20 AM	28.4	5.70		24.0	6.73	5.10	3.34	
3/12/2013	11:05 AM	407	1.10	97.0		8.20		23.4	
4/27/2013	11:30 AM	33.0	5.10	133		7.05		0.800	
4/18/2014	1:10 PM	109	3.30	99.2		8.30		1.12	
4/28/2014	2:40 PM	80.0	4.70	95.4		8.60		2.70	
4/10/2015	11:13 AM	195	0.700	136		8.00	38.0	20.5	
4/15/2015	12:41 PM	80.4	3.50	119		7.13		7.680	
2015 STATISTICS									
Mean	***	138	2.10	127		7.38	38.0	14.1	
2008 - 2015 STATISTICS									
Mean	***	111	2.47	113	20.9	6.92	24.9	17.1	2.00
Min	***	25.1	0.100	95.4	10.0	6.47	2.70	0.000	2.00
Max	***	407	5.70	136	28.0	8.60	77.0	141	2.00
n	***	15	15	6	8	15	10	14	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station JB-7.3 (DEC Station 427800000073), Jay Branch
(formerly WQM 4-4 a/b)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/18/2014	5:00 PM	89.0	3.60	98.8		8.30		2.60	
4/28/2014	1:40 PM	67.0	5.00	98.7		8.90		2.65	
4/10/2015	12:46 PM	230	0.90	121		8.40	50.0	38.3	
4/15/2015	1:00 PM	41.8	4.00	114		6.95		5.42	
2015 STATISTICS									
Mean	***	136	2.45	118		7.24	50.0	21.9	
2008 - 2015 STATISTICS									
Mean	***	107	3.38	108		7.51		12.2	
Min	***	41.8	0.900	98.7		6.95		2.60	
Max	***	230	5.00	121		8.90		38.3	
n	***	4	4	4		4		4	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station JB-T9-P1-0.1, Phase I Tributary
(formerly WQM 1-2)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
3/8/2012	1:02 PM	136	0.400			6.37		265	
3/22/2012	10:54 AM	56.2	6.90			6.94		24.9	
3/12/2013	1:40 PM	263	0.800	67.0		8.30		77.1	
4/27/2013	1:47 PM	91.0	8.50	128		7.25		12.3	
4/18/2014	12:35 PM	184	2.50	95.2		8.30		11.6	
4/28/2014	3:10 PM	93.0	4.40	101		8.20		20.2	
4/10/2015	12:00 PM	347	2.80	91.0		8.20	82.0	126	
4/15/2015	12:12 PM	78.0	1.20	141		6.82		15.5	
2015 STATISTICS									
Mean	***	213	2.00	116		7.10	82.0	70.9	
2012-2015 STATISTICS									
Mean	***	156	3.44	104		7.02		69.1	
Min	***	56.2	0.400	67.0		6.37		11.580	
Max	***	347	8.50	141		8.30		265	
n	***	8	8	6		8		8	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station JB-T9-P2-0.1, Phase II Tributary
(formerly WQM 2-3)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
3/18/2011	10:33 AM	83.0	0.010			6.54		106	
3/8/2012	1:09 PM	160	0.400			6.63		268	
3/22/2012	11:01 AM	40.9	7.20			6.91		20.6	
3/12/2013	2:00 PM	342	1.40			8.40		120	
4/27/2013	1:55 PM	104	8.80	126		7.45		9.50	
4/18/2014	12:50 PM	295	3.30	94.6		7.80		29.6	
4/28/2014	3:00 PM	131	5.20	101		8.20		15.0	
4/10/2015	12:14 PM	412	0.90	92.8		7.80	100	93.2	
4/15/2015	12:20 PM	94.5	1.70	121		6.96		15.6	
2015 STATISTICS									
Mean	***	253	1.30	107		7.20	100	54.4	
2011 - 2015 STATISTICS									
Mean	***	185	3.21	107		7.03		75.253	
Min	***	40.9	0.010	92.8		6.54		9.50	
Max	***	412	8.80	126		8.40		268	
n	***	9	9	5		9		9	

Notes:

Blank cells indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station JB-T9-0.1 (DEC Station 427809000001), Tributary 9
(formerly WQM 3-1)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (°C)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
1/30/2008	8:47 AM	162	1.60		28.0	7.31	38.0		
2/8/2008	9:45 AM	194	2.10		29.0	7.27	54.0	0.590	3.00
3/12/2010	11:41 AM	545	1.50			6.37	130	1.72	
3/18/2010	10:41 AM	334	1.90		25.0	6.92	75.0	2.72	
3/11/2011	10:30 AM	409	1.00		41.0	6.84	180	1.39	
3/18/2011	9:28 AM	116	0.000		19.0	6.57	49.0	95.3	
3/8/2012	11:47 AM	232	0.400		21.0	6.36	110	78.0	
3/22/2012	10:30 AM	95.4	7.90		20.0	6.99	29.0	7.06	
3/12/2013	10:36 AM	530	0.000	96.9		8.00		28.7	
4/27/2013	11:46 AM	142	7.70	122		7.51		1.01	
4/18/2014	1:20 PM	409	4.00	95.4		7.70		3.12	
4/28/2014	2:25 PM	224	5.90	97.7		8.90		8.55	
4/10/2015	10:52 AM	751	0.70	135		8.40	200	50.0	
4/15/2015	12:34 PM	136	3.40	126		6.99		43.1	

2015 Statistics									
Mean	***	444	2.05	130		7.27	200	46.6	
2008-2015 Statistics									
Mean	***	306	2.72	112	26.1	6.90	96.1	24.7	3.00
Min	***	95.4	0.000	95.4	19.0	6.36	29.0	0.590	3.00
Max	***	751	7.90	135	41.0	8.90	200	95.3	3.00
n	***	14	14	0	7	14	9	13	1

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station SMB-T3-0.5, Tributary 3 to South Mountain Branch
(formerly WQM 108)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/10/2015	1:35 PM	174	2.80	96.9		8.40	31.0	22.3	
4/15/2015	1:17 PM	30.0	2.90	130		6.87		5.04	
2015 STATISTICS									
Mean	***	102	2.85	113		7.16	31.0	13.7	
2013 - 2015 STATISTICS									
Mean	***	102	2.85	113		7.16		13.7	
Min	***	30	2.80	96.9		6.87		5.04	
Max	***	174	2.90	130		8.40		22.3	
n	***	2	2	2		2		2	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

Jay Peak Resort, Jay, Vermont
Water Quality Monitoring Plan 2015
Winter Water Chemistry Sampling
Station SMB-1.2, South Mountain Branch
(formerly WQM 107)

Date Sampled in Field	Time Sampled in Field	Conductivity (µmho/cm)	Water Temp (ºC)	Dissolved Oxygen (%)	Alkalinity (mg/L)	pH (SU)	Chloride (mg/L)	Turbidity (NTU)	Total Suspended Solids (mg/L)
VWQS Threshold				**> 70%**		**≥ 6.5 and ≤ 8.5**	**≥ 230 mg/L**		
4/27/2013	2:07 PM	158	6.70	130		7.14		0.930	
4/18/2014	3:30 PM	270	4.20	98.0		8.40		1.20	
4/28/2014	2:00 PM	188	4.80	93.9		8.80		1.07	
4/10/2015	1:01 PM	408	3.60	171		7.90	99.0	2.82	
4/15/2015	1:08 PM	106	3.70	121		6.93		3.49	
2015 STATISTICS									
Mean	***	257	3.65	146		7.19	99.0	3.16	
2013 - 2015 STATISTICS									
Mean	***	226	4.60	123		7.38		1.90	
Min	***	106	3.60	93.9		6.93		0.930	
Max	***	408	6.70	171		8.80		3.49	
n	***	5	5	5		5		5	

Notes:

Blank cell indicates no data available

*** indicates not applicable

pH statistics based on Hydrogen Ion concentration

2015 percent saturation of Dissolved Oxygen based on mg/L data obtained in the field

APPENDIX 4

Jay Peak Resort
Jay, Vermont
Sediment Reduction Assessment
Supplemental Turbidity Monitoring Locations

Last Revised: June 30, 2014

500 250 0 500 1,000 Feet

Legend

- Culvert
- Stream (VHD)
- Stream Center (VHB)
- Stream (Historic VHB)
- Wetlands Delineated (VHB)
- Wetland Restoration/Creation
- Stormwater Treatment Practice
- Existing WQM Stations
- TurbidityStations

Sources:Background image OpenStreetMap (2014); Roads by VTrans (2009), VHD Streams (2008) modified by VHB (2012); VHB Streams and Wetlands, and watersheds by VHB (2009-2012)

VHB Vanasse Hangen Brustlin, Inc.

Site ID	Description
JBT-01	Harmony Lane at Ullr's Dream culvert
JBT-02	West Bowl Road downstream from Tram Haus Bridge
P1-01	Phase 1 trib at Queen's Highway culvert; behind 117-120
P1-02	Phase 1 trib at North Village Road culvert, opposite VSF4
P1-03	Phase 1 trib at Slopeside Road
P1-04	Phase 1 trib between 301-308 and parking garage
P1-05	Phase 1 trib upstream from Treatment System 3
P1-06	Phase 1 trib at Jay Peak Road
P2-01	Phase 2 trib at Queen's highway workroad crossing
P2-02	Phase 2 trib at Raccoon Run, behind 129-132
P2-03	Phase 2 trib at Raccon Run, behind 125-128
P2-04	Phase 2 trib at Raccon Run, behind 153-156
P2-05	Phase 2 trib, behind 351-358
P2-06	Phase 2 trib at Grammy Jay crossing
P2-07	Phase 2 trib at Jay Peak Road
T3-01	Trib 3 at Powerliner Trail bridge
T3-02	Trib 3 at work road to Jet Triple Lift
T3-03	Trib 3 at Rt. 242
T9-01	Trib 9 at GC Hole 9 bridge
T9-02	Trib 9 at GC Hole 3 bridge
T9-03	Downtream from GMS2 basin, upstream from Trib 9 confluence

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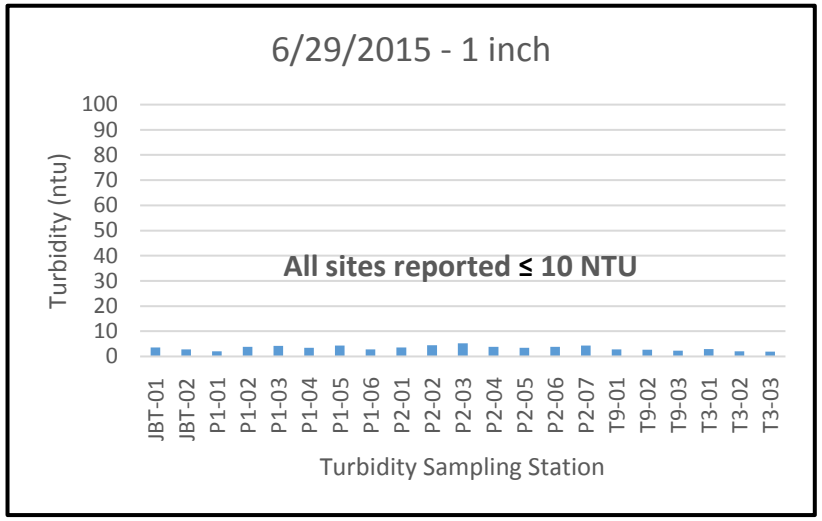
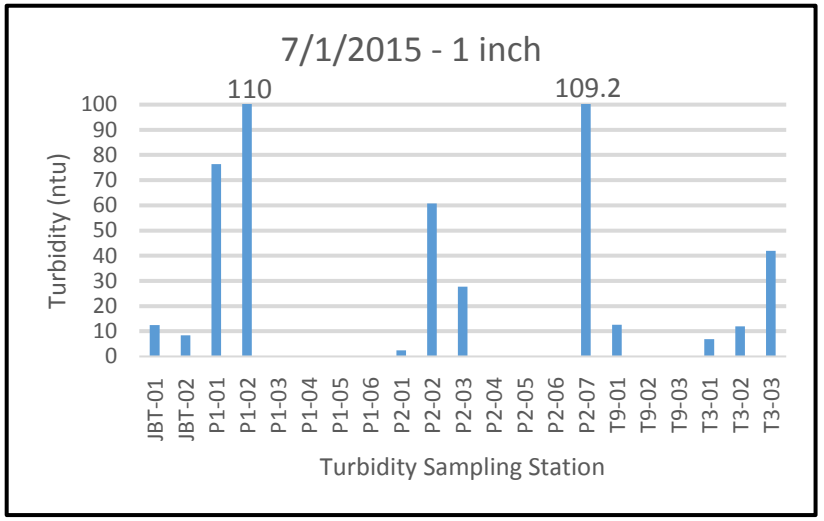
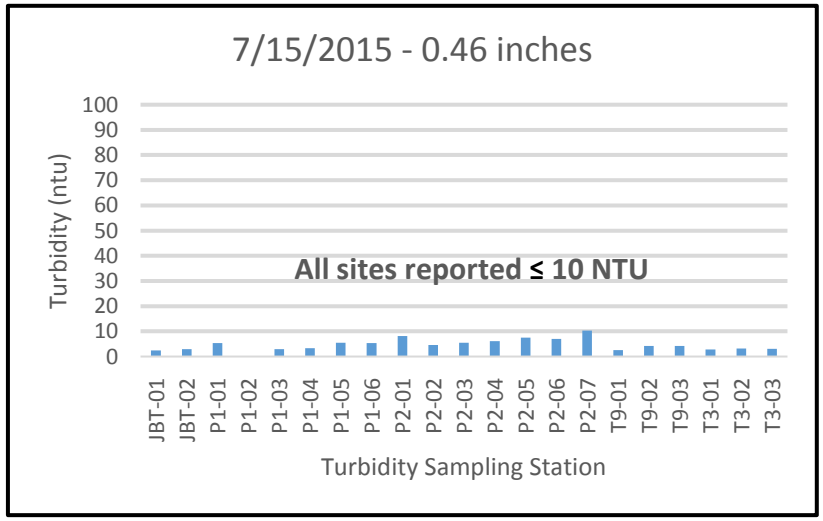
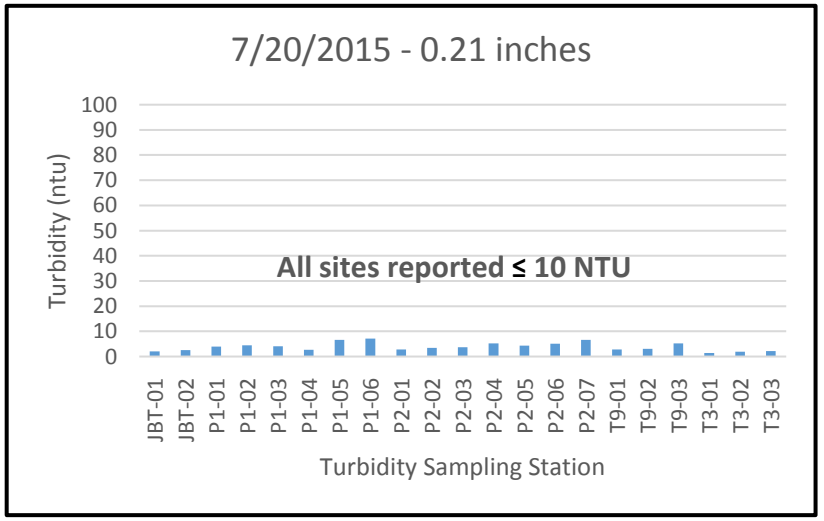
Jay Peak Resort
Supplemental Turbidity Monitoring Results
Spring / Summer 2015 Rainfall Events

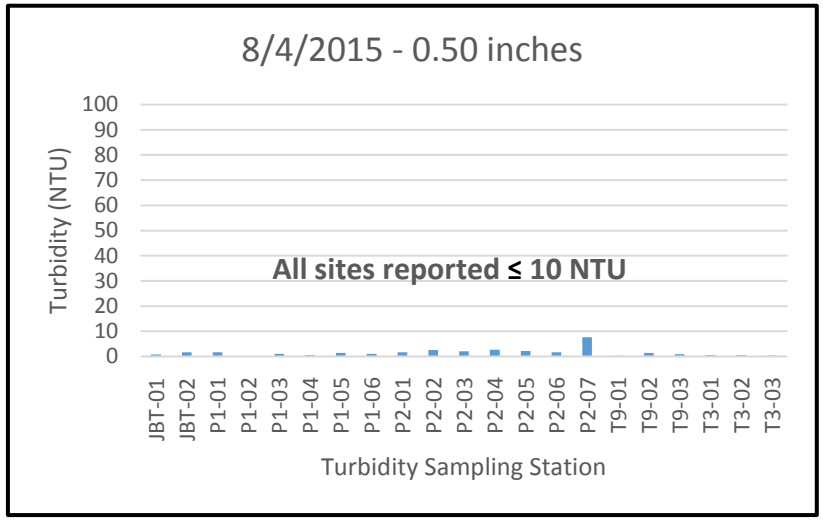


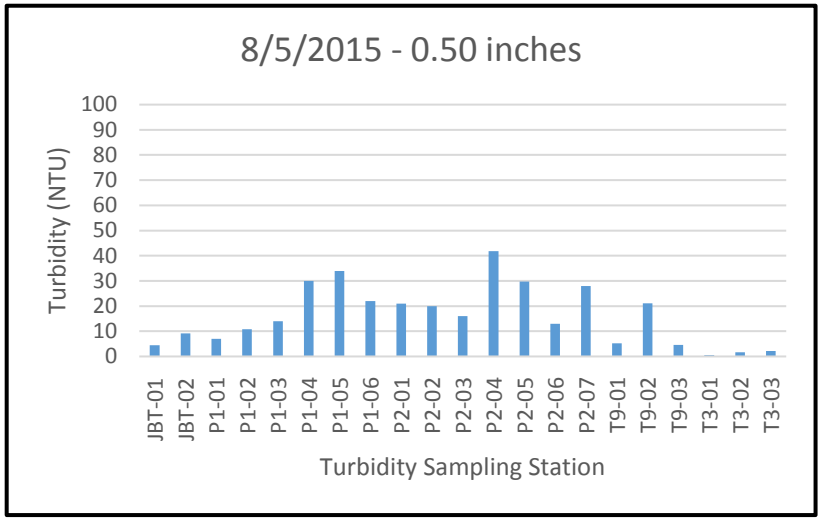


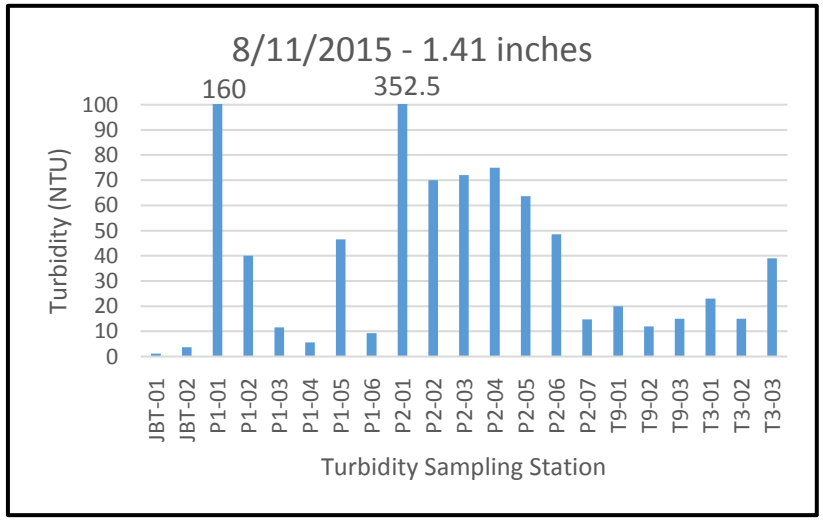


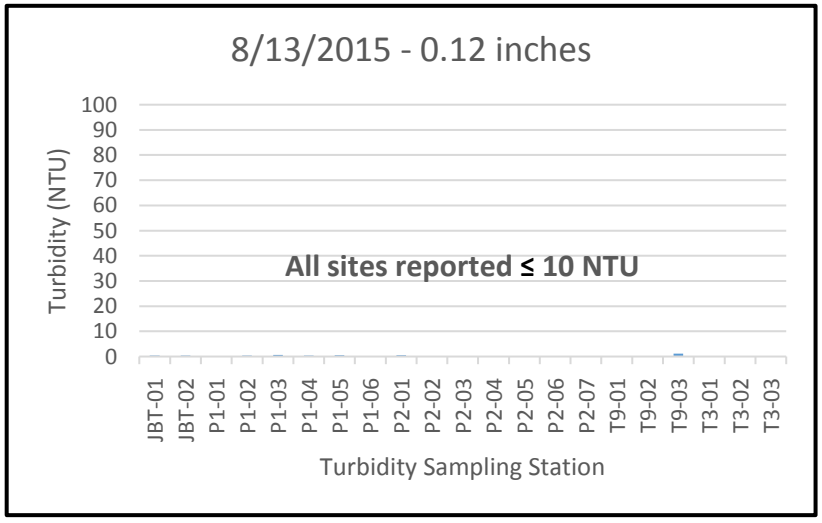


Jay Peak Resort
Supplemental Turbidity Monitoring Results
Spring / Summer 2015 Rainfall Events

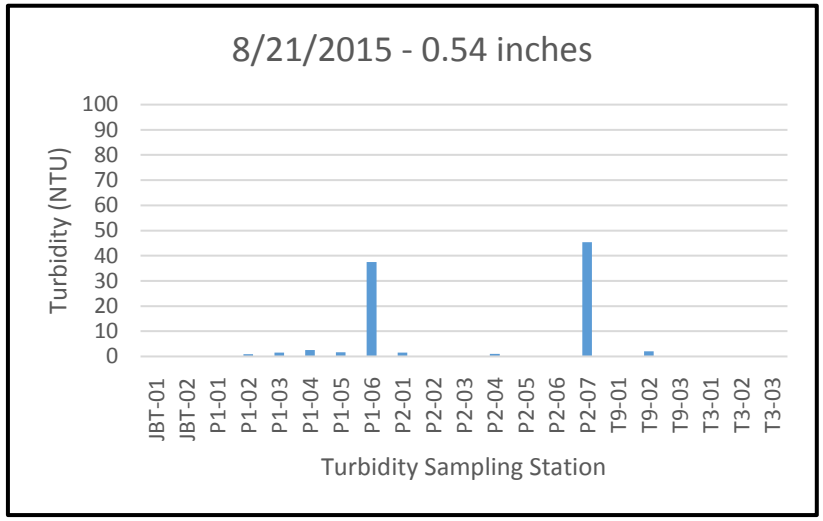


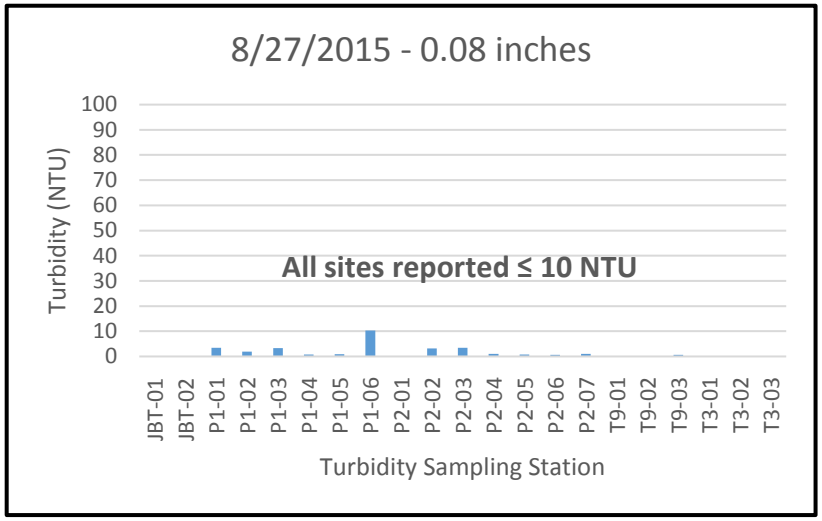


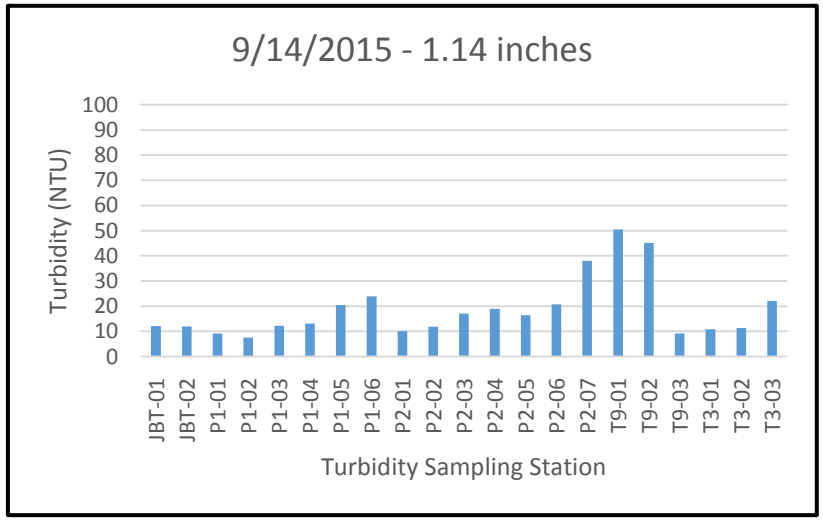




Jay Peak Resort
Supplemental Turbidity Monitoring Results
Spring / Summer 2015 Rainfall Events







APPENDIX 5

Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2015

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Upper Jay Branch	JB-T13-0.2 (former WQM 4-1)	2004	0-25%	2.7	***	64-90
		2005	---	***	***	16-64
		2006	---	***	***	16-64
		2007	25-50%	2.0	2.0	64-128
		2008	0-50%	3.0	2.3	64-129
		2009	5-20%	2.6	2.6	64-128
		2010	5-25%	4.0	4.0	36-64
		2011	5-25%	1.0	2.0	64-128
		2012	5-25%	3.0	3.0	64-256
		2013	25-50%	3.0	3.0	64-256
		2014	5-25%	2.0	2.0	64-256
		2015	25-50%	2.0	2.0	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-9.1 (former WQM 4-2a)	2012	5-25%	5.0	5.0	64-256
		2013	---	---	---	---
		2014	5-25%	1.0	1.0	64-256
		2015	25-50%	2.0	2.0	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-8.3 (former WQM 4-3)	2004	25-50%	4.3	***	90-128
		2005	---	***	***	64-256
		2006	---	***	***	64-256
		2007	25-50%	4.0	4.0	128-256
		2008	0-25%	4.7	4.7	63-128
		2009	25-30%	3.6	3.6	128-256
		2010	5-25%	4.0	4.0	16-32
		2011	25-50%	8.0	7.0	32-64
		2012	5-25%	8.0	8.0	64-256
		2013	25-50%	16	16	64-256
		2014	5-25%	3.0	3.0	16-64
		2015	25-50%	6.0	6.0	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Jay Branch	JB-7.3 (former WQM 4-4a/b)	2004	0-25%	5.9	***	64-90
		2005	---	***	***	64-256
		2006	---	***	***	64-256
		2007	25-50%	4.0	4.0	128-256
		2008	0-50%	4.1	4.1	64-128
		2009	15-30%	3.7	3.7	64-128
		2010	5-25%	5.0	5.0	32-64
		2011	20-30%	10	10	30-64
		2012	5-25%	13	11	16-64
		2013	25-50%	13	13	64-256
		2014	25-50%	20	20	16-64
		2015	50-75%	3	3	16-64

Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2015

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase I Tributary	JB-T9-P1-0.1 (former WQM 1-2)	2004	50-75%	14.4	***	32-64
		2005	---	***	***	16-64
		2006	---	---	---	---
		2007	50-75%	10.5	10.5	64-128
		2008	---	---	---	---
		2009	---	---	---	---
		2010	---	---	---	---
		2011	---	---	---	---
		2012	---	11	14	16-64
		2013	---	7	8	16-64
		2014	---	10	8	16-64
		2015	25-50%	8	8	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Phase II Tributary	JB-T9-P2-0.1 (former WQM 2-3)	2004	50-75%	25	***	8-16
		2005	---	***	***	2-16
		2006	---	---	---	---
		2007	25-50%	9.0	9.0	32-64
		2008	---	---	---	---
		2009	---	---	---	---
		2010	---	---	---	---
		2011	---	---	---	---
		2012	---	9.0	15	16-64
		2013	---	10	8.0	16-64
		2014	---	8	4	16-64
		2015	50-75%	5	5	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
Tributary 9	JB-T9-0.1 (former WQM 3-1)	2004	25-50%	7.6	***	32-64
		2005	---	***	***	16-64
		2006	---	***	***	16-64
		2007	50-75%	12	12	32-64
		2008	50-75%	10	9.9	32-65
		2009	40-60%	16	15	32-64
		2010	25-100%	14	14	8-16
		2011	25-75%	8	6	16-32
		2012	25-50%	16	16	2-16
		2013	25-50%	19	19	16-64
		2014	5-25%	2	2	16-64
		2015	50-75%	9	9	16-64

Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
VHB

Pebble Count and Sediment Monitoring Observations 2004-2015

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.5 (former WQM 108)	2014	5-25%	9	9	64-256
		2015	50-75%	6	6	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-T3-0.1 (former WQM 106)	2012	---	5	5	16-64
		2013	---	10	10	64-256
		2014	5-25%	8	8	64-256
		2015	50-75%	6	6	16-64

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-1.8 (former WQM 105)	2012	---	8	8	16-64
		2013	---	1	1	64-256
		2014	5-25%	0	0	64-256
		2015	5-25%	0	0	64-256

Stream	Station	Year Sampled	Estimated Embeddedness	% < 2 mm	% Sand	D50 Particle Size (mm)
South Mountain Branch	SMB-1.2 (former WQM 107)	2012	25-50 %	12	12	64-256
		2013	5-25%	9	9	64-256
		2014	5-25%	11	11	64-256
		2015	50-75%	4	4	16-64

--- no data available

*** no percentage due to size class variation

2004 data from Pioneer Environmental Associates LLC.

2005 and 2006 data from ESI

Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: JB-T13-0.2 (former WQM 4-1)
Sampling Date: October 5, 2015
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	50-60%
Embeddedness:	25-50%
Bank stability:	75-100%

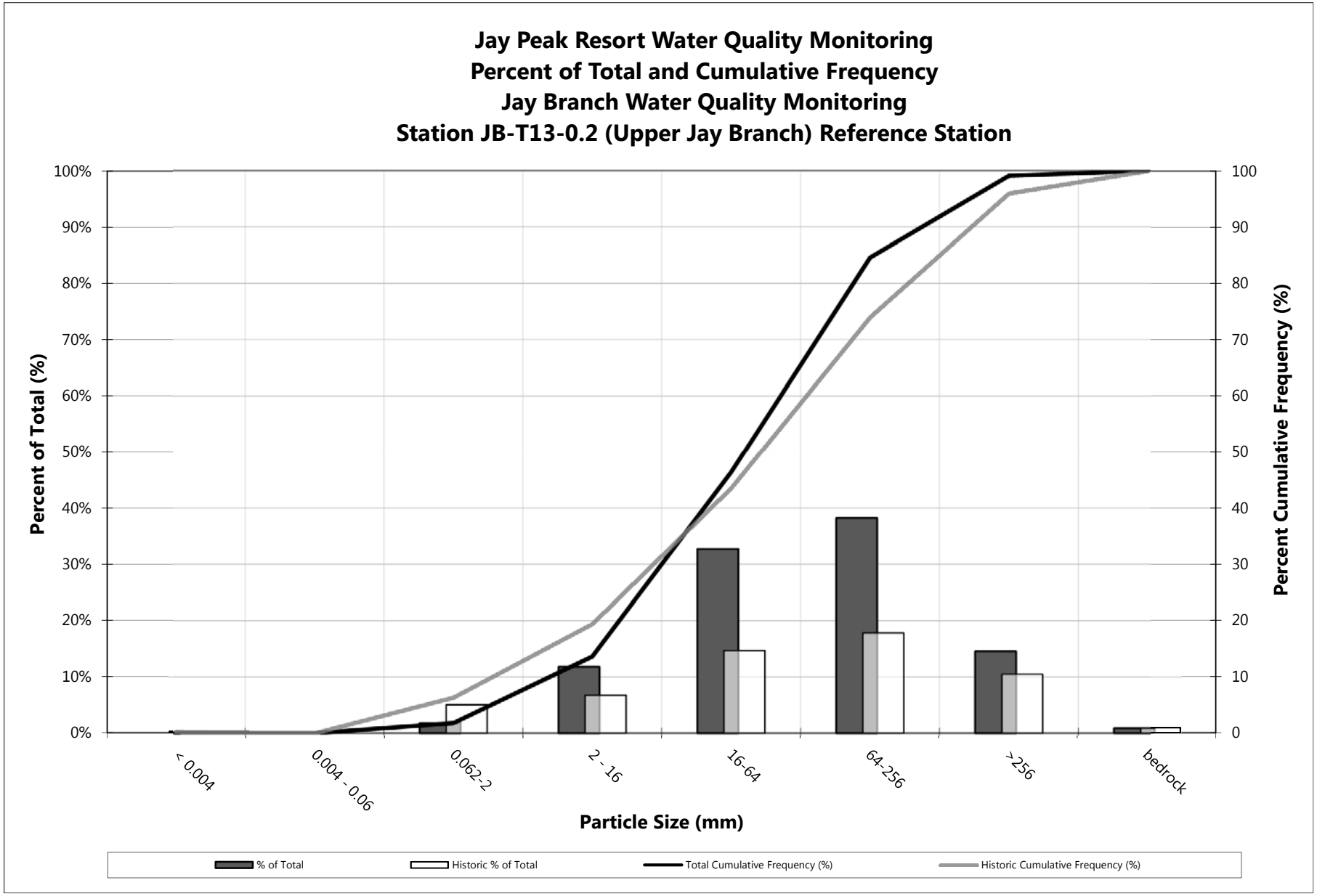
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	13	12%	15	14
Coarse gravel	16-64	36	33%	51	46
Cobble	64-256	42	38%	93	85
Boulder	>256	16	15%	109	99
Bedrock	bedrock	1	1%	110	100
	Sample Size (n)	110	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	2%
% Particles < 2 mm	2%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	17	9	7	11

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	44	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	9	35	-	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: JB-9.1 (former WQM 4-2a)
Sampling Date: October 5, 2015
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	50-60%
Embeddedness:	25-50%
Bank stability:	50-75%

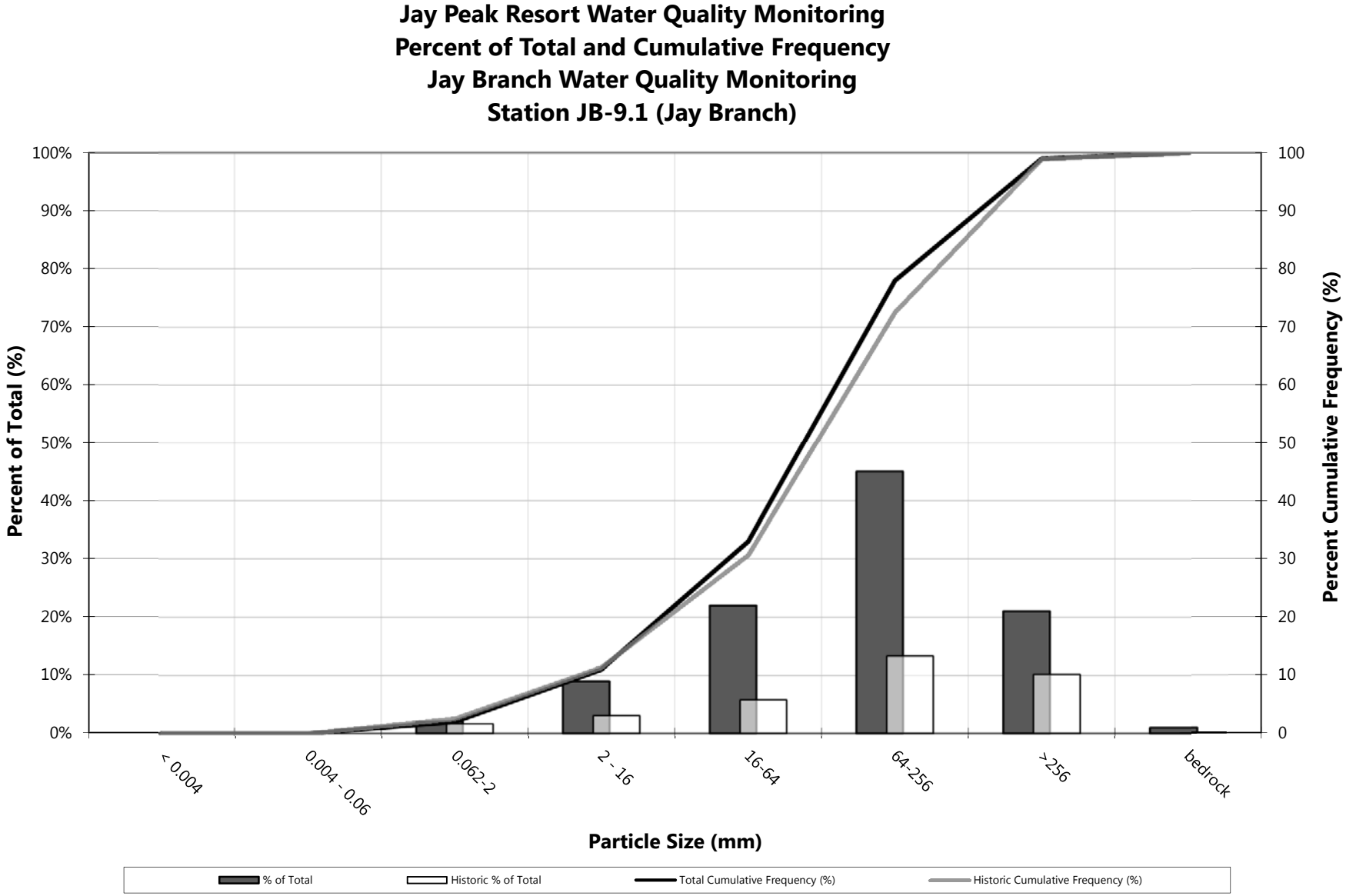
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	2	2%	2	2
Gravel	2 - 16	9	9%	11	11
Coarse gravel	16-64	22	22%	33	33
Cobble	64-256	45	45%	78	78
Boulder	>256	21	21%	99	99
Bedrock	bedrock	1	1%	100	100
	Sample Size (n)	100			
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	2%
% Particles < 2 mm	2%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	58	9	6	2

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	71	3	1	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	14	3	1	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: JB-8.3 (former WQM 4-3)
Sampling Date: October 5, 2015
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	**60%**
Embeddedness:	**25-50%**
Bank stability:	**75-100%**

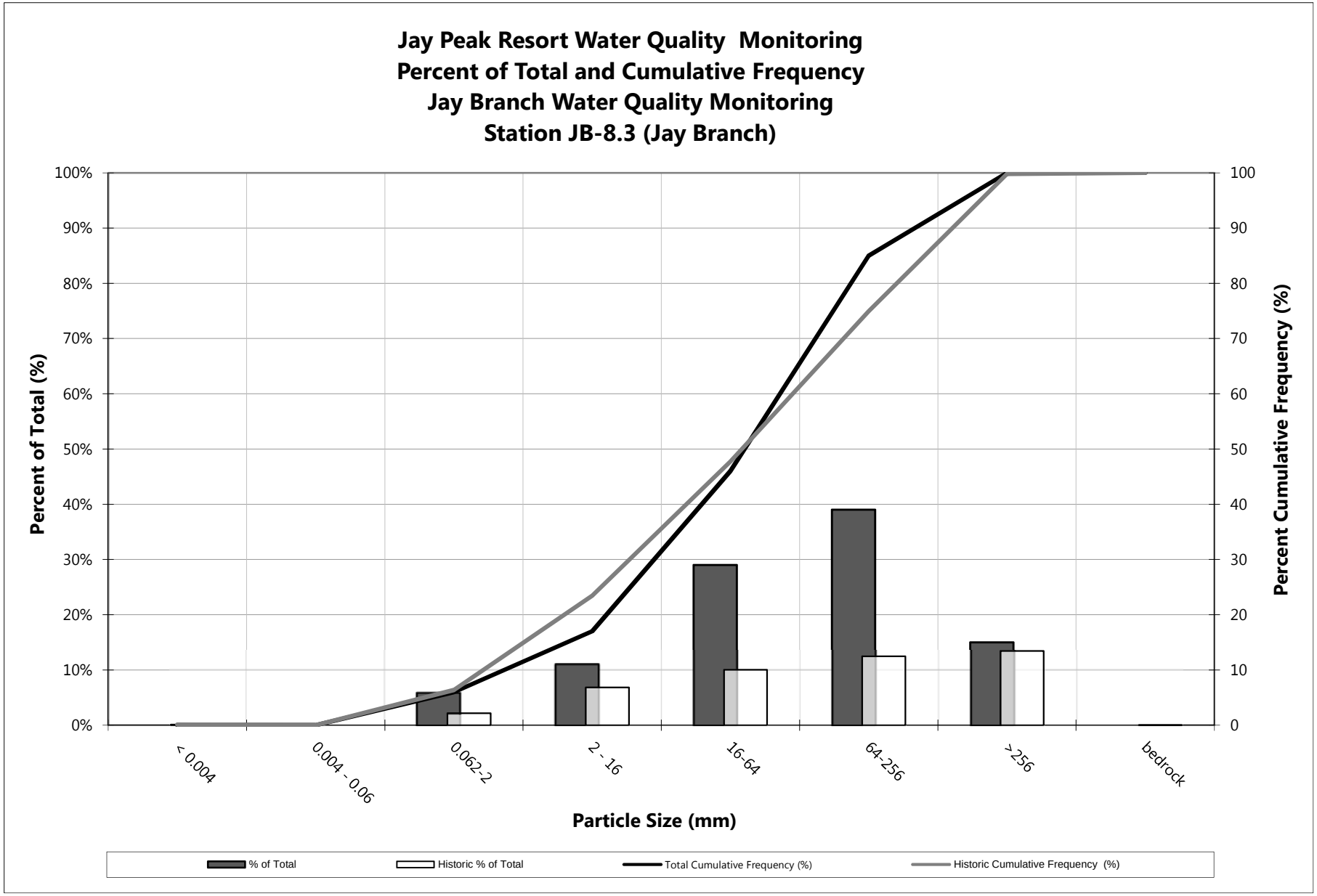
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	6	6%	6	6
Gravel	2 - 16	11	11%	17	17
Coarse gravel	16-64	29	29%	46	46
Cobble	64-256	39	39%	85	85
Boulder	>256	15	15%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100			
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	6%
% Particles < 2 mm	6%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	49	5	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	54	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	14	40	-	-	-	-	-



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Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: JB-7.3 (former WQM 4-4a/b)
Sampling Date: October 5, 2015
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	70%
Embeddedness:	50-75%
Bank stability:	50-75%

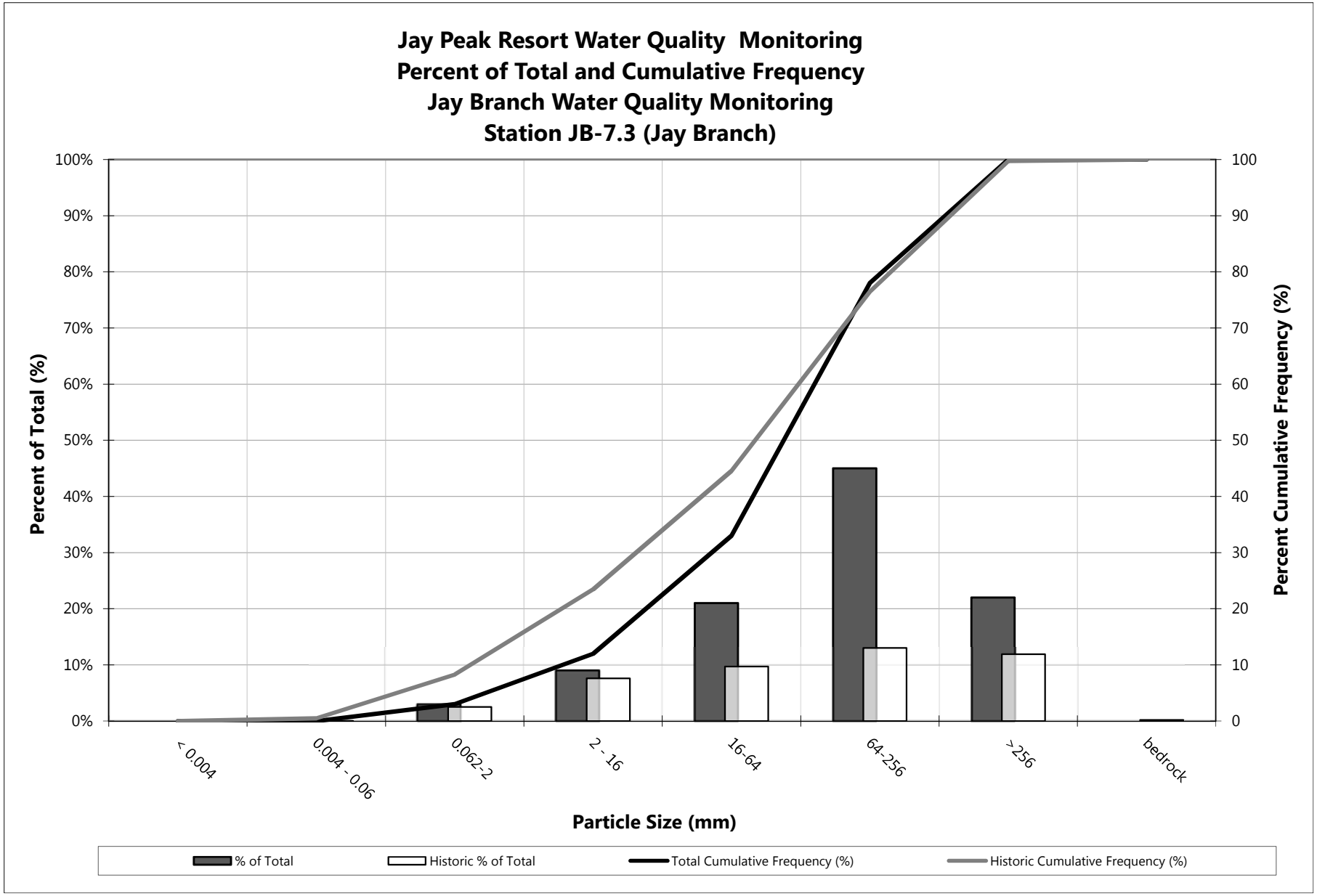
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	3	3%	3	3
Gravel	2 - 16	9	9%	12	12
Coarse gravel	16-64	21	21%	33	33
Cobble	64-256	45	45%	78	78
Boulder	>256	22	22%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	3%
% Particles < 2 mm	3%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	63	7	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	70	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	28	42	-	-	-	-	-



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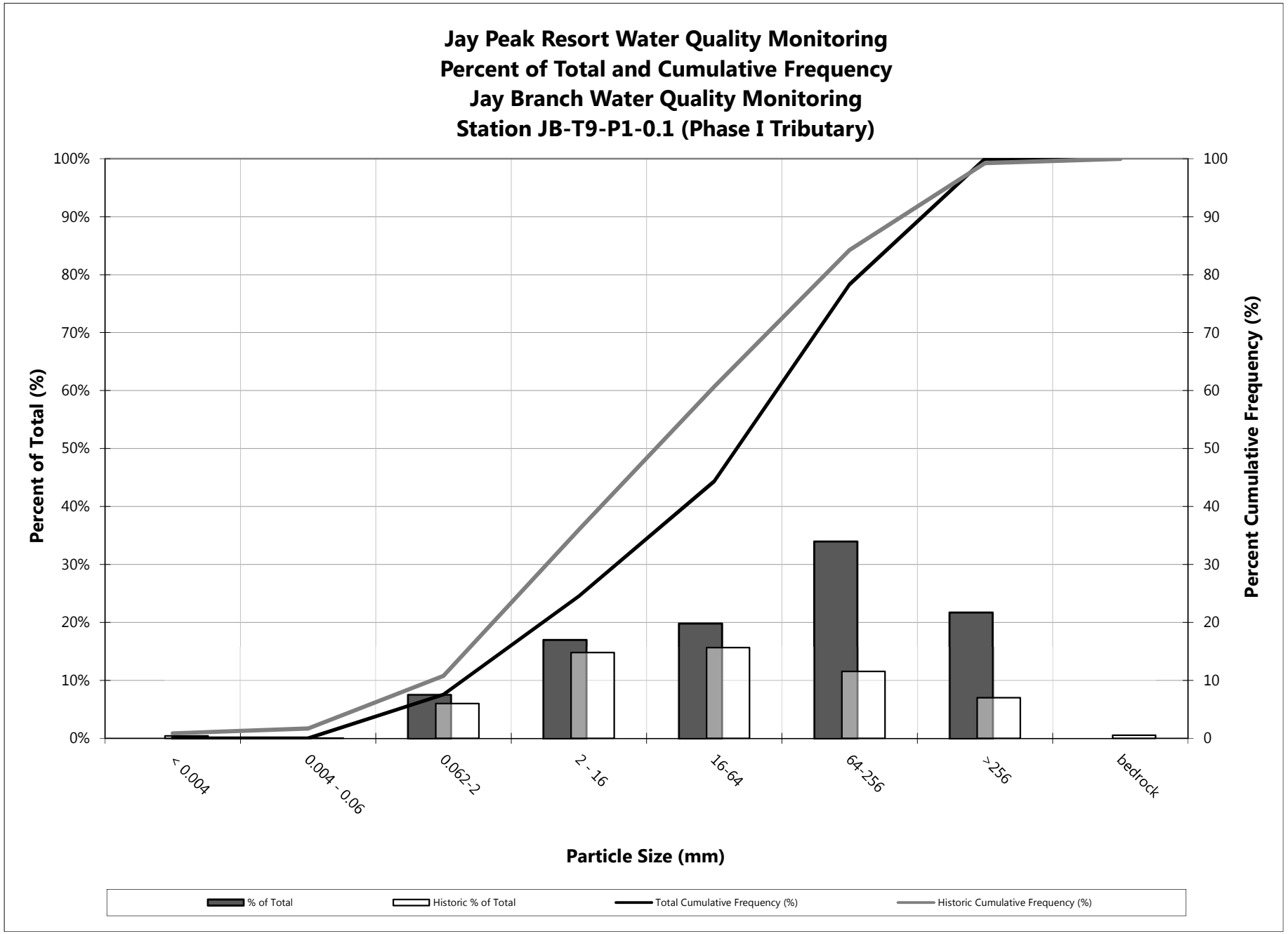
Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: JB-T9-P1-0.1 (former WQM 1-2)
Sampling Date: October 2, 2015
Samplers: RW

Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	8	8%	8	8
Gravel	2 - 16	18	17%	26	25
Coarse gravel	16-64	21	20%	47	44
Cobble	64-256	36	34%	83	78
Boulder	>256	23	22%	106	100
Bedrock	bedrock	0	0%	106	100
	Sample Size (n)	106	100		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	8%
% Particles < 2 mm	8%

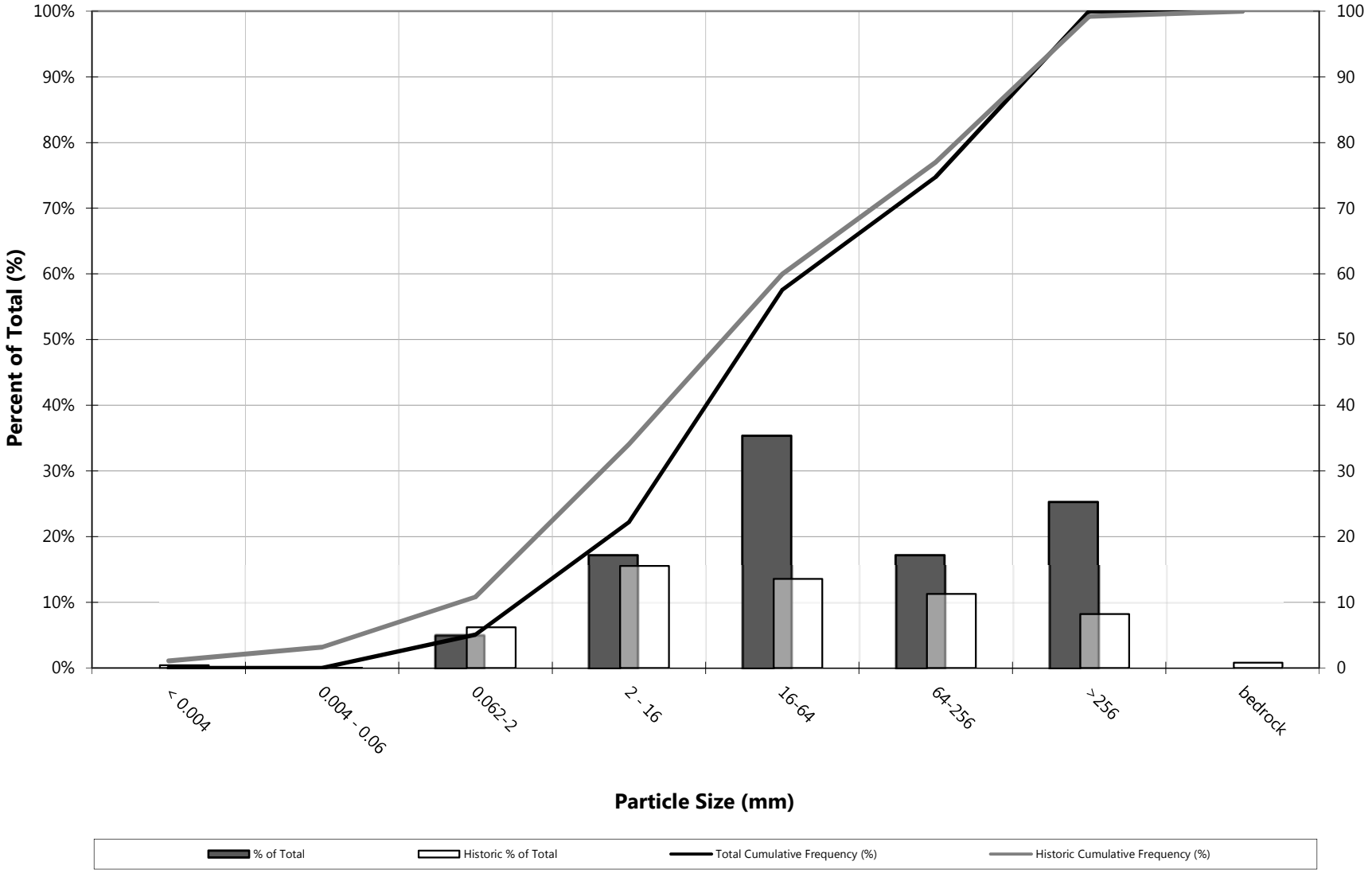

Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-P1-0.1 (Phase I Tributary)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
0.004 - 0.06
0.062-2
2 - 16
16-64
64-256
>256
bedrock
Particle Size (mm)
% of Total
Historic % of Total
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%)

Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: JB-T9-P2-0.1 (former WQM 2-3)
Sampling Date: October 2, 2015
Samplers: RAW

Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	5	5%	5	5
Gravel	2 - 16	17	17%	22	22
Coarse gravel	16-64	35	35%	57	58
Cobble	64-256	17	17%	74	75
Boulder	>256	25	25%	99	100
Bedrock	bedrock	0	0%	99	100
	Sample Size (n)	99	100		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Coarse gravel
% Fines	5%
% Particles < 2 mm	5%

Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-P2-0.1 (Phase II Tributary)



Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: JB-T9-0.1 (former WQM 3-1)
Sampling Date: October 5, 2015
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	50-75%
Bank stability:	50-75%

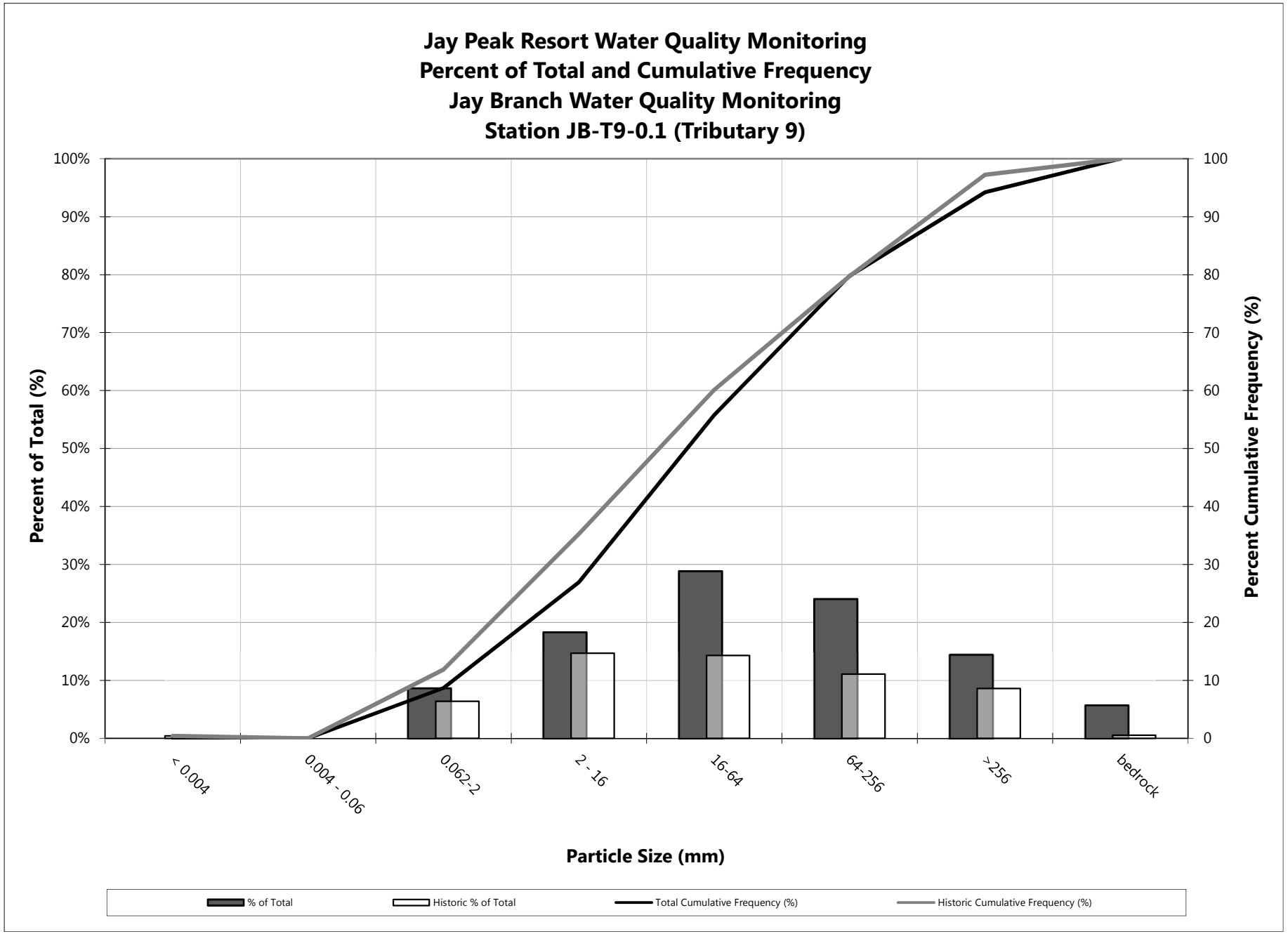
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	9	9%	9	9
Gravel	2 - 16	19	18%	28	27
Coarse gravel	16-64	30	29%	58	56
Cobble	64-256	25	24%	83	80
Boulder	>256	15	14%	98	94
Bedrock	bedrock	6	6%	104	100
	Sample Size (n)	104	100		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Coarse gravel
% Fines	9%
% Particles < 2 mm	9%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	43	3	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	46	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	23	23	-	-	-	-	-


Jay Peak Resort Water Quality Monitoring
Percent of Total and Cumulative Frequency
Jay Branch Water Quality Monitoring
Station JB-T9-0.1 (Tributary 9)
Percent of Total (%)
Percent Cumulative Frequency (%)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
100
90
80
70
60
50
40
30
20
10
0
< 0.004
0.004 - 0.06
0.062-2
2 - 16
16-64
64-256
>256
bedrock
Particle Size (mm)
% of Total
Historic % of Total
Total Cumulative Frequency (%)
Historic Cumulative Frequency (%)

Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: SMB-T3-0.5 (former WQM 108)
Sampling Date: October 5, 2015
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	80%
Embeddedness:	50-75%
Bank stability:	25-50%

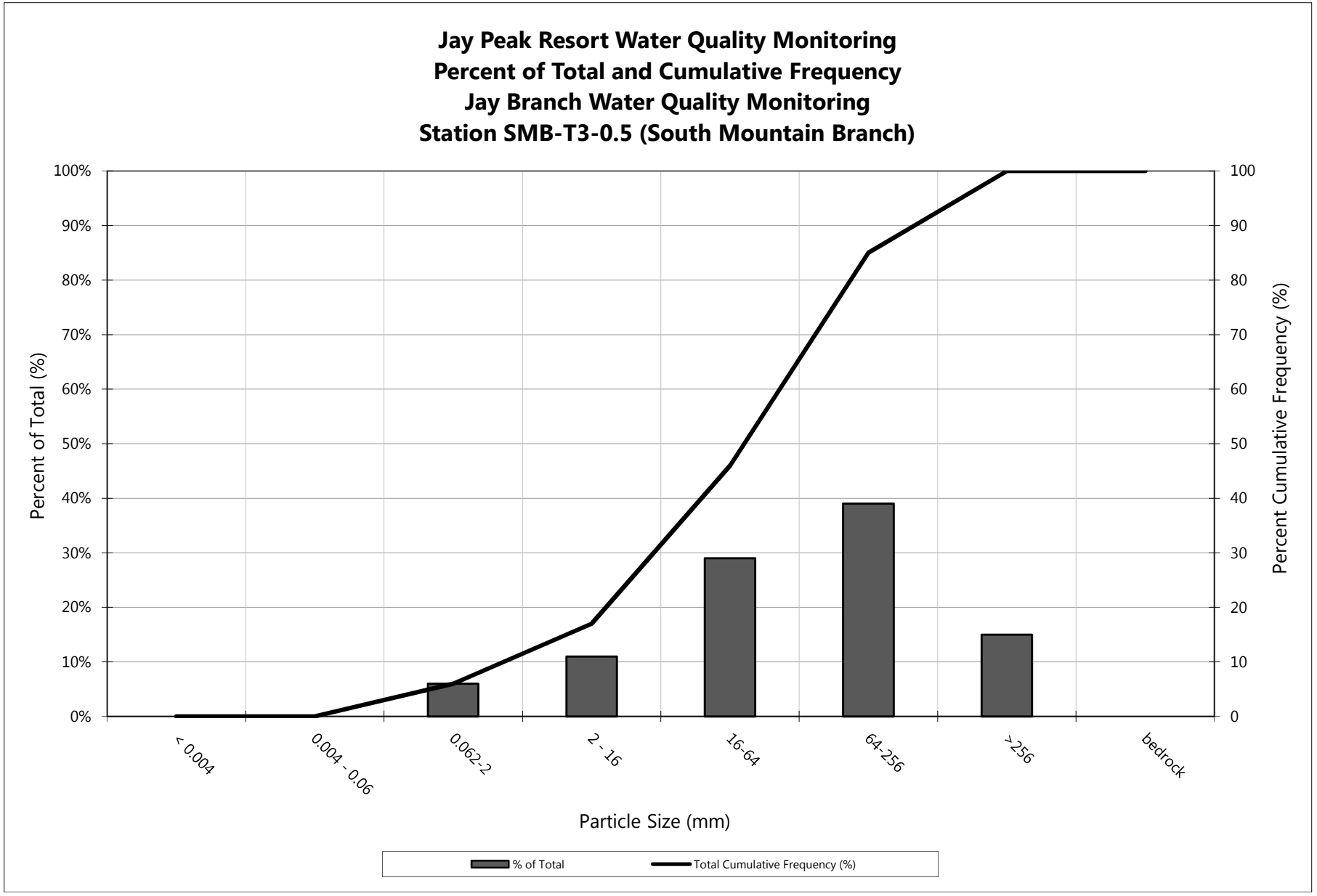
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	6	6%	6	6
Gravel	2 - 16	11	11%	17	17
Coarse gravel	16-64	29	29%	46	46
Cobble	64-256	39	39%	85	85
Boulder	>256	15	15%	100	100
Bedrock	bedrock	0	0%	100	100
	Sample Size (n)	100	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	6%
% Particles < 2 mm	6%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	49	5	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	54	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	14	40	-	-	-	-	-



\\vhb\proj\Vermont\57201.08 JPR 15-16 WQMP\tech\Biomonitoring\Jay Pebble Counts 2015108 chart,1/18/2016

Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: SMB-T3-0.1 (former WQM 106)
Sampling Date: October 5, 2015
Samplers: CS, RW

Station Habitat Observations	Sub-1
Canopy cover:	60%
Embeddedness:	50-75%
Bank stability:	75-100%

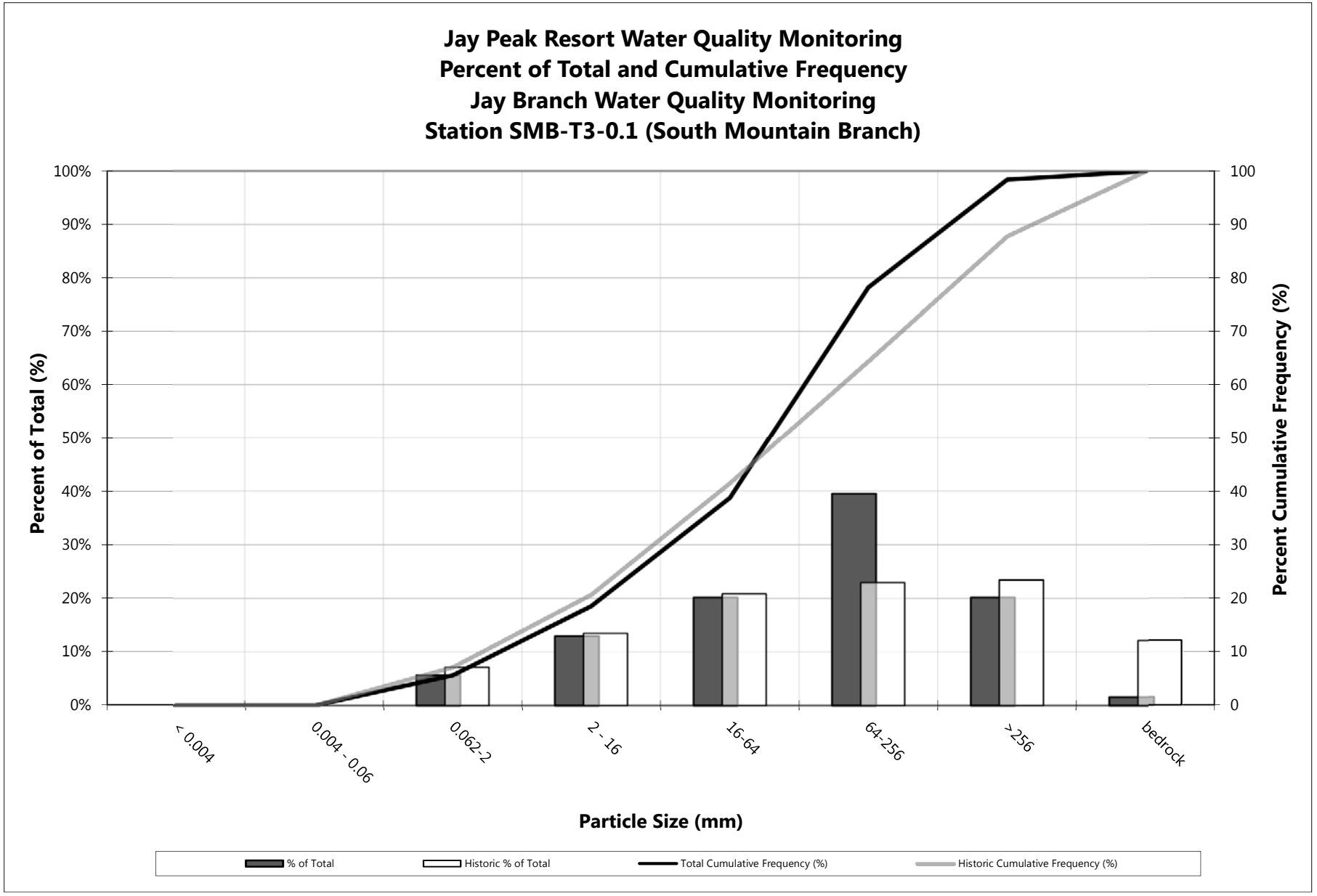
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	7	6%	7	6
Gravel	2 - 16	16	13%	23	19
Coarse gravel	16-64	25	20%	48	39
Cobble	64-256	49	40%	97	78
Boulder	>256	25	20%	122	98
Bedrock	bedrock	2	2%	124	100
	Sample Size (n)	124	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	6%
% Particles < 2 mm	6%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	37	13	-	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	50	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	16	34	-	-	-	-	-



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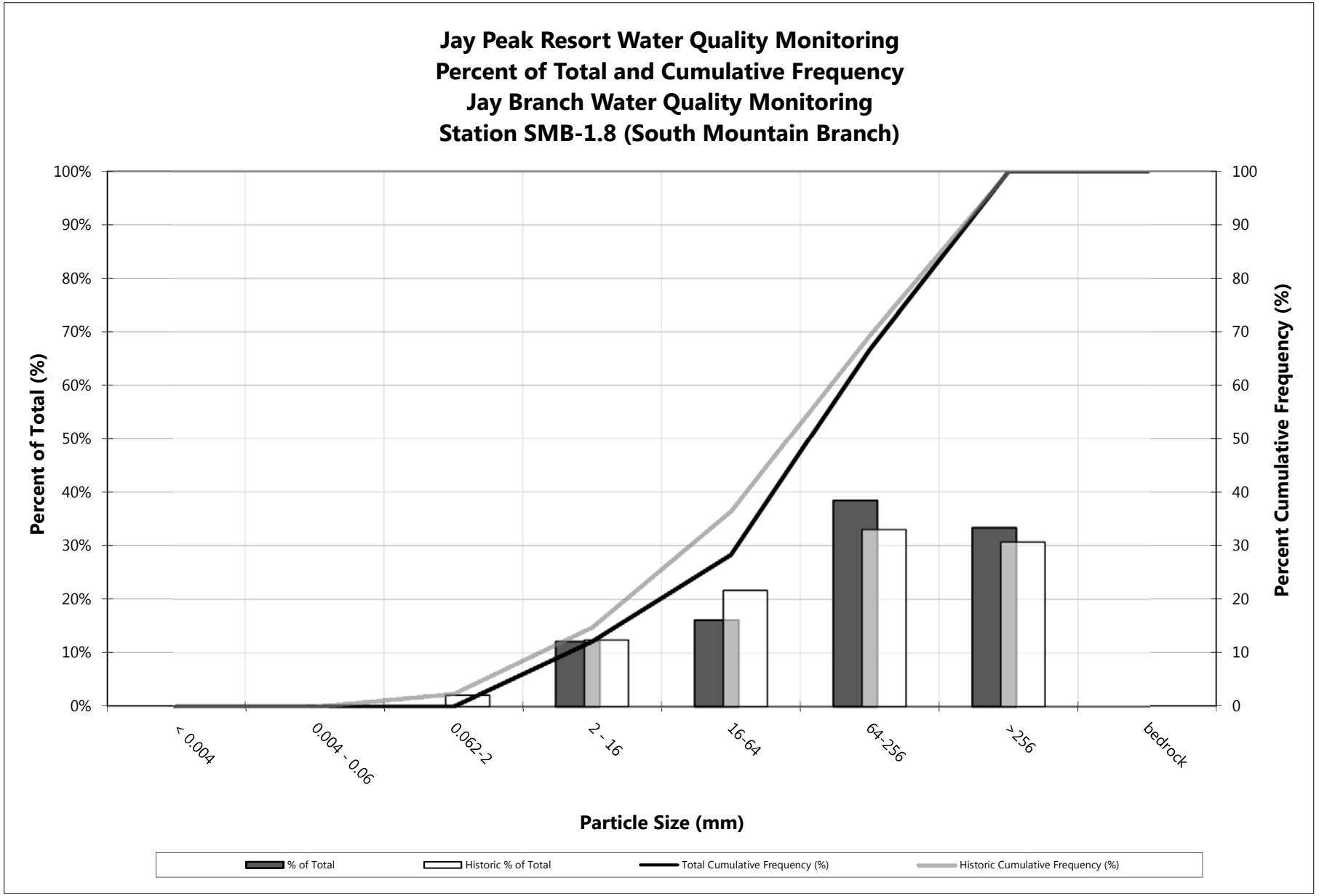
Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: SMB-1.8 (former WQM 105)
Sampling Date: October 2, 2015
Samplers: RW

Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	0	0%	0	0
Gravel	2 - 16	12	12%	12	12
Coarse gravel	16-64	16	16%	28	28
Cobble	64-256	38	38%	66	67
Boulder	>256	33	33%	99	100
Bedrock	bedrock	0	0%	99	100
	Sample Size (n)	99	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Cobble
Dominant Size Class	Cobble
% Fines	0%
% Particles < 2 mm	0%



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Jay Peak Water Quality Monitoring Plan 2015
Substrate Sampling Summary
Sample Location: SMB-1.2 (former WQM 107)
Sampling Date: October 5, 2015
Samplers: CS

Station Habitat Observations	Sub-1
Canopy cover:	60%
Embeddedness:	50-75%
Bank stability:	75-100%

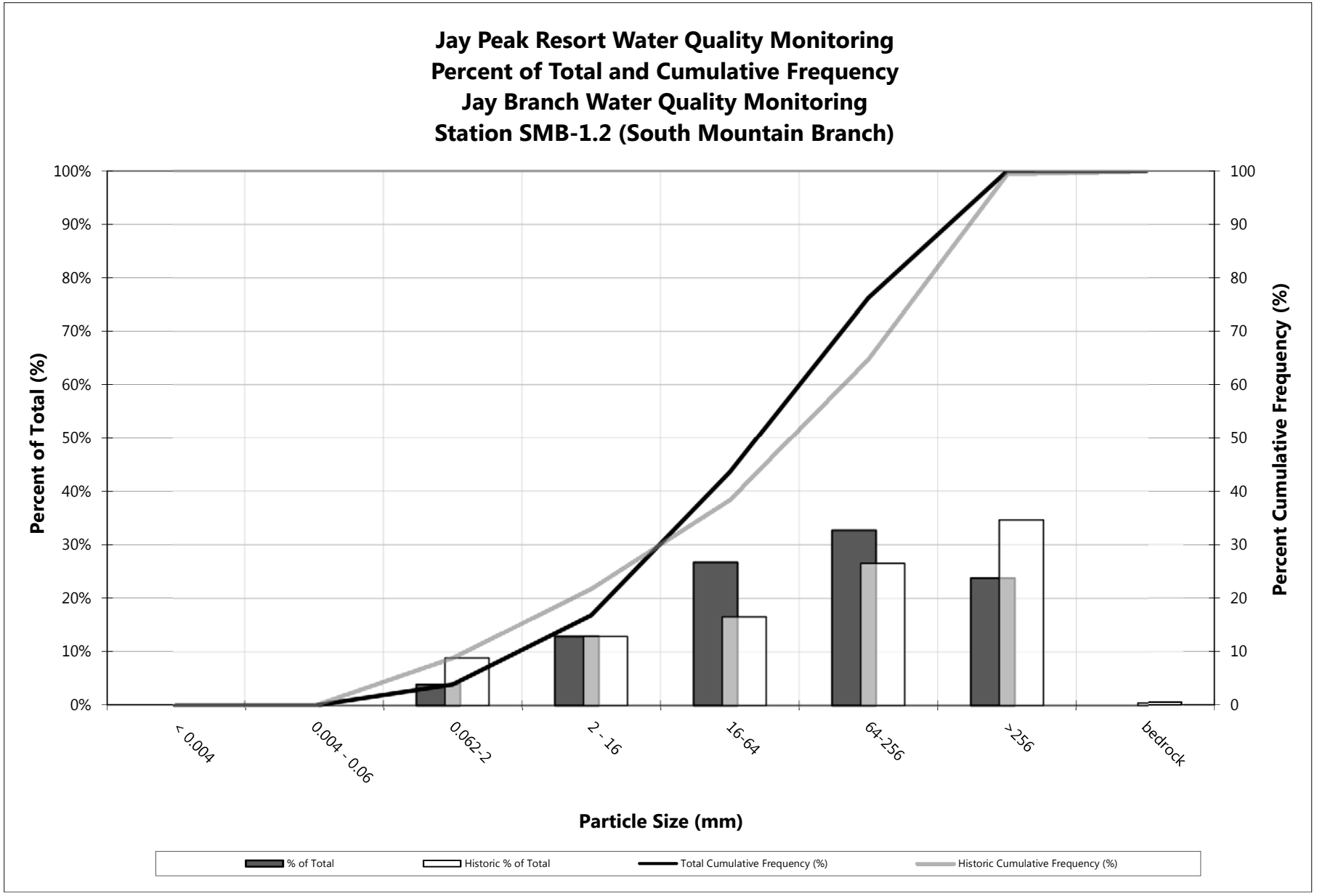
Category	Median Size (mm)	Sample Count	% of Total	Cumulative Total	Total Cumulative Frequency (%)
Clay	< 0.004	0	0%	0	0
Silt	0.004 - 0.06	0	0%	0	0
Sand (fines)	0.062-2	4	4%	4	4
Gravel	2 - 16	13	13%	17	17
Coarse gravel	16-64	27	27%	44	44
Cobble	64-256	33	33%	77	76
Boulder	>256	24	24%	101	100
Bedrock	bedrock	0	0%	101	100
	Sample Size (n)	101	100%		
	Longitudinal Distance (ft)	0'-100'			

D50 Particle Size	Coarse gravel
Dominant Size Class	Cobble
% Fines	4%
% Particles < 2 mm	4%

Moss Cover Index				
Category	0	1 (< 5%)	2 (5-25%)	3 (> 25%)
Tally	58	15	1	-

Macro-Algae Cover Index				
Category	0	1 (<5%)	2 (5-25%)	5 (>25%)
Tally	74	-	-	-

Micro-Algae Cover Index							
Category	0	1 (slimy)	2 (draw line)	3 (0.5-1mm)	4 (1-5mm)	5 (5-20mm)	6 (> 20mm)
Tally	23	51	-	-	-	-	-



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APPENDIX 6

Jay Peak Resort
2015 Kick Net Data Summary (Class B, Small High Gradient Streams)
Prepared by VHB
March 2, 2016

Station	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT / EPT+ C	% PPCS-FG	Outcome / Biological Integrity	Notes
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**		
JB-T13-0.2 Jay Branch Near Hole 13	914	34	21	70	1.03	0.46	0.94	55	Meets Class B Criteria (Ex-Vgood)	Formerly 4-1; benchmark station, no interim targets set.
JB-9.1 Jay Branch Near Hole 18 Bridge	525	37	26	68	1.40	11	0.95	63	Meets Class B Criteria (Good)	Formerly 4-2; QA/QC station with VT DEC, no interim targets set.
JB-8.3 Jay Branch Past Trib. 9 Confl.	347	35	24	63	1.18	13	0.97	51	Indeterminate (Good-Fair)	Formerly 4-3; 3 of 4 Interim Targets met. % Oligo decreased from 26 to 13, (Interim target = 12). %PPCS-FG increased from 39 to 51 (i.e., from below threshold back to full support)
JB-7.3 Jay Branch At Route 242	378	35	24	68	0.95	14	0.97	45	Indeterminate (Good-Fair)	Formerly 4-4A; 3 of 4 Interim Targets met - all full support except for % Oligo. which are below threshold
JB-T9-0.1 Trib. 9 to Jay Branch	209	32	16	60	3.33	27	0.92	67	Does Not Meet Class B Criteria (Fair-Poor)	Formerly 3-1; 1 of 4 Interim targets met (Richness > 28; Density ≥ 250; EPT ≥ 17; % Oligo. ≤ 12
SMB-T3-0.5 Trib. 3 to SMB	248	26	16	48	0.72	19	0.95	45	Does Not Meet Class B Criteria (Fair)	Formerly 108; No interim targets set as station met Class B criteria in 2014.
SMB-T3-0.1 Trib. 3 to SMB	218	21	14	46	0.71	37	0.98	42	Does Not Meet Class B Criteria (Poor)	Formerly 106; 1 of 4 Interim targets met (Density >200; Richness >24, EPT >15.5, % Oligo <20)
SMB-1.2 South Mountain Branch (SMB)	339	27	18	54	0.62	17	0.96	44	Does Not Meet Class B Criteria (Fair)	Formerly 107; No interim targets set as station has inputs other than from Resort.

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Below Threshold (I-)								
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Jay Peak Resort Kick Net Data - Jay Branch - JB-T13-0.2 Class B, Small High Gradient Stream									
Year	**Density**	**Richness**	**EPT**	**% PMA-O**	**BI**	**% Oligo.**	**EPT/EPT+C**	**% PPCS-FG**	**Outcome/ Biological Integrity**
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2008 VHBP	469	32	22	63	1.22	0.86	0.94	56	Meets Class B Criteria
2009 VHBP	625	34	23	73	1.34	0.00	0.93	59	Meets Class B Criteria
2010 VHB	642	40	25	78	1.71	0.36	0.89	56	Meets Class B Criteria
2011 VHB	421	35	23	70	0.849	0.11	0.93	46	Meets Class B Criteria
2012 VHB	883	36	25	75	1.13	0.00	0.95	44	Meets Class B Criteria
2013 VHB	872	33	21	70	0.935	0.00	0.92	61	Meets Class B Criteria
2014 VHB	781	36	24	74	1.24	0.00	0.92	65	Meets Class B Criteria
2015 VHB	914	34	21	70	1.03	0.46	0.94	55	Meets Class B Criteria

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+) Below Threshold (I-)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

Organization: VHB

VT DEC Lab ID:
Stream Name: Jay Branch
Station: JB-T13-0.2

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.94083 N	72.49222 W
or VT Site ID:	427813000002	
Date collected:	10/5/2015	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan-16	Jan-16
#sq picked:	8	9
#sq total:	24	24
Checked By:	CCS	KW
Sorted By:	CCS	CCS
Sorted Date:	Jan-16	Jan-16

Taxonomic Data								Rep1				Rep2							Biotic Index						Richness Metrics			
																			Biotic Index Scores		Old Biotic Index		New Biotic Index		Richness	EPT	Richness	EPT
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	28	84.0	CCS	A	17	45.3		SCR	N	2	3	168	91	252	136	1	0	1	0
01.03.00.00.007.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	PROMORESIA	N/A	sp	CCS	A	5	15.0				0.00		SCR	N	2	2	30	0	30	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	3	9.00	CCS	A	2	5.33		CG	Y	3	4	27	16	36	21	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	CROPSEC/TANYTARS	MICROPSECTRA	N/A	sp				0.00	CCS	A	1	2.67		CG	Y	3	6	0	8	0	16	-	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis				0.00	CCS	A	2	5.33		CG	Y	2	2	0	11	0	11	-	0	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	2	6.00	CCS	A	1	2.67		CG	Y	2	2	12	5	12	5	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	3.00	CCS	A	2	5.33		CG	Y	3	5	9	16	15	27	1	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	1	3.00	CCS	A	1	2.67		CG	Y	2	4	6	5	12	11	1	0	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	IENEMANNIMYIA GRO	THIENEMANNIMYIA	N/A	sp	CCS	A	12	36.0	CCS	A	7	18.7		PRD	Y	3	6	108	56	216	112	1	0	1	0
02.08.00.00.000.00.00	DIPTERA	EMPIDIDAE	N/A	N/A	N/A	N/A	uid				0.00	CCS	A	1	2.67		PRD	N	3	6	0	8	0	16	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	6	18.0	CCS	A	4	10.7		PRD	N	2	3	36	21	54	32	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	7	21.0	CCS	A	8	21.3		PRD	N	2	2	42	43	42	43	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	3.00				0.00		SRD	N	3	6	9	0	18	0	1	0	-	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp	CCS	A	1	3.00				0.00		CG	N	3	4	9	0	12	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus				0.00	CCS	A	1	2.67		CG	N	3	6	0	8	0	16	-	0	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	CENTRELLA/PLAUDITU	PLAUDITUS	N/A	sp				0.00	CCS	A	2	5.33		SCR	N	2	5	0	11	0	27	-	0	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	3.00	CCS	A	2	5.33		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group				0.00	CCS	A	1	2.67		CG	N	2	4	0	5	0	11	-	0	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis				0.00	CCS	A	3	8.00		SRD	N	1	0	0	8	0	0	-	0	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp				0.00	CCS	A	3	8.00		CG	N	0	0	0	0	0	0	-	0	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	3.00				0.00		SCR	N	1	4	3	0	12	0	1	1	-	0
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	12	36.0	CCS	A	15	40.0		CG	N	2	1	72	80	36	40	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	1	3.00	CCS	A	6	16.0		SHR	N	1	2	3	16	6	32	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	RATOPSYC/HYDROPS	CERATOPSYCHE	alh/slo/spa	sparna				0.00	CCS	A	1	2.67		CF	N	2	4	0	5	0	11	-	0	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	20	60.0	CCS	A	15	40.0		CF	N	0	0	0	0	0	0	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	10	30.0	CCS	A	20	53.3		SRD	N	1	1	30	53	30	53	1	1	1	1
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp	CCS	A	2	6.00				0.00		SCR	N	0	0	0	0	0	0	1	1	-	0
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	23	69.0	CCS	A	20	53.3		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDA	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	9	27.0				0.00		PRD	N	3	6	81	0	162	0	1	1	-	0
04.16.00.00.001.01.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	invaria grp	invaria grp	CCS	A	1	3.00				0.00		PRD	N	1	1	3	0	3	0	1	1	-	0
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	14	42.0	CCS	A	4	10.7		PRD	N	0	1	0	0	42	11	1	1	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CCS	A	8	24.0	CCS	A	7	18.7		PRD	N	0	0	0	0	0	0	1	1	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp				0.00	CCS	A	4	10.7		SCR	N	1	3	0	11	0	32	-	0	1	1
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm				0.00	CCS	A	5	13.3		SRD	N	1	3	0	13	0	40	-	0	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	6	18.0	CCS	A	14	37.3		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	3.00				0.00		PRD	N	0	0	0	0	0	0	1	1	-	0
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	118	354	CCS	A	98	261		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	6	18.0	CCS	A	17	45.3		SRD	N	1	0	18	45	0	0	1	1	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	2	6.00	CCS	A	1	2.67		PRD	N	1	2	6	3	12	5	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	12	36.0	CCS	A	6	16.0		PRD	N	1	2	36	16	72	32	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	13	39.0	CCS	A	18	48.0		SRD	N	1	0	39	48	0	0	1	1	1	1
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	4	12.0	CCS	A	1	2.67		PRD	N	2	5	24	5	60	13	1	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	2	6.00	CCS	A	1	2.67		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										333	**999**			311	**829**													
GRAND TOTAL:	1828 organisms																											

Total BI Score	771	608	1134	752	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	999	829	999	829				
# of Organisms w/o BI	6	3	6	3	32		35	
Total # Organisms with BI	993	827	993	827		19		22
Biotic Index	0.78	0.74	1.14	0.91				

*Notes:
[1] ID is initial of taxonomist or organization
[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%
[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.
[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
VT Site ID 427813000002
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	84.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
01.03.00.00.007.00.00	15.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	36.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	21.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	36.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	60.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	30.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.11.00.00.001.00.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	69.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	27.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	42.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.03.09	0.00	0.00	0.00	24.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	18.0	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	354	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	18.0	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	36.0	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	39.0	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	
Total	**99.0**	**102**	**42.0**	**264**	**474**	**6.00**	**0.00**	**0.00**	**12.0**	**0.00**	**999**
Percent	**9.91%**	**10.2%**	**4.20%**	**26.4%**	**47.4%**	**0.601%**	**0.00%**	**0.00%**	**1.20%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
VT Site ID 427813000002
Sample Date 10/05/15

2015 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	45.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
01.03.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	5.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	5.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	5.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	18.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	10.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	21.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	5.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	5.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	40.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	16.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	40.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	53.3	0.00	0.00	0.00	0.00	0.00	0.00	
04.11.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	53.3	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	10.7	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.03.09	0.00	0.00	0.00	18.7	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	10.7	0.00	0.00	0.00	0.00	0.00	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	13.3	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	37.3	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	261	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	45.3	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	16.0	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	48.0	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.67	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	2.67	0.00	0.00	0.00	0.00	
Total	**45.3**	**77.3**	**72.0**	**205**	**424**	**2.67**	**0.00**	**0.00**	**2.67**	**0.00**	**829**
Percent	**5.47%**	**9.32%**	**8.68%**	**24.8%**	**51.1%**	**0.322%**	**0.00%**	**0.00%**	**0.322%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 10/5/2015

2015 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	84.0	0.00		0.00	0.00	0.00	0.00	0.00	45.33	0.00	
01.03.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	15.0	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	9.00	0.00	0.00	0.00	0.00	0.00	0.00		5.33	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.67	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5.33	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00		2.67	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00		5.33	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	3.00	0.00	0.00	0.00	0.00	0.00	0.00		2.67	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	0.00	36.0	0.00	0.00	0.00	0.00		0.00	0.00	18.7	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	2.67	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	18.0	0.00	0.00	0.00	0.00		0.00	0.00	10.7	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	21.0	0.00	0.00	0.00	0.00		0.00	0.00	21.3	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.67	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	5.33	0.00	
03.04.00.00.004.00.01	3.00	0.00	0.00	0.00	0.00	0.00	0.00		5.33	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		2.67	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	8.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		8.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	36.0	0.00	0.00	0.00	0.00	0.00	0.00		40.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	3.00	0.00	0.00		0.00	0.00	0.00	0.00	16.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	2.67	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	60.0	0.00	0.00	0.00	0.00	0.00		0.00	40.0	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	30.0	0.00	0.00	0.00		0.00	0.00	0.00	53.33	0.00	0.00	0.00	
04.11.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	69.0	0.00	0.00	0.00	0.00	0.00		0.00	53.3	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	27.0	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.01.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	42.0	0.00	0.00	0.00	0.00		0.00	0.00	10.7	0.00	0.00	0.00	0.00	
04.16.00.00.001.03.09	0.00	0.00	24.0	0.00	0.00	0.00	0.00		0.00	0.00	18.7	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	10.67	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	13.33	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	18.0	0.00	0.00	0.00	0.00		0.00	0.00	37.3	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	354	0.00	0.00	0.00		0.00	0.00	0.00	261.33	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	18.0	0.00	0.00	0.00		0.00	0.00	0.00	45.33	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00		0.00	0.00	2.67	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	36.0	0.00	0.00	0.00	0.00		0.00	0.00	16.0	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	39.0	0.00	0.00	0.00		0.00	0.00	0.00	48.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	12.0	0.00	0.00	0.00	0.00		0.00	0.00	2.67	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00		2.67	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**69.0**	**129**	**246**	**444**	**3.00**	**108**	**0.00**	**999**	**85**	**96.0**	**141.3**	**429.3**	**16.00**	**61.33**	**0.00**	**829**
Percent	**6.91%**	**12.9%**	**24.6%**	**44.4%**	**0.300%**	**10.8%**	**0.00%**	**100%**	**10.3%**	**11.58%**	**17.0%**	**51.77%**	**1.93%**	**7.40%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 10/5/2015

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	6.91%	22.3%	10.3%	33.2%
Col. Filt.	18%	30%	36%	12.9%	71.7%	11.6%	64.3%
Predator	19%	13%	7%	24.6%	77.2%	17.0%	89.7%
Shred-Det.	15%	4%	2%	44.4%	33.8%	51.8%	29.0%
Shred- Herb.	1%	1%	5%	0.300%	30.0%	1.93%	51.8%
Scraper	12%	13%	22%	10.8%	90.1%	7.40%	61.6%
				PPCS-FG =	**54.2%**	**PPCS-FG =**	**54.9%**

CG = Collector/Gatherer

CF = Collector/Filterer

PRD = Predator

SRD = Shredder - Detritus

SHR = Shredder - Herbivore

SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
VT Site ID 427813000002 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	9.91%	1.91	5.47%	2.53
Diptera	19%	18%	13%	10.2%	8.79	9.32%	9.68
Ephemeroptera	23%	34%	32%	4.20%	18.8	8.68%	14.3
Plecoptera	21%	8%	8%	47.4%	26.4	51.1%	30.1
Trichoptera	28%	33%	33%	26.4%	1.57	24.8%	3.24
Oligochaeta	0.5%	0.5%	1.0%	0.601%	0.101	0.322%	0.178
Other	0.5%	0.5%	1.0%	1.20%	0.701	0.322%	0.178
				Sum diff	58.3		60.3
				Sum diff * 0.5	29.2		30.1
				100-(sum diff * 0.5)	70.8		69.9
				% model affinity	**70.8%**		**69.9%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002
Sample Date 10/5/2015
Class B, Small High Gradient
Sampler CS

	KN-1	KN-2
#EPT organisms	780	701
#C organisms	57.0	42.7
EPT/EPT+C	0.932	0.943

Biometric Summary

Project Jay Peak Resort
Station JB-T13-0.2
Stream Jay Branch
Location 427813000002 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	999	829	914
Species Richness	32.0	35.0	33.5
EPT Richness	19.0	22.0	20.5
Old Bio Index (0 to 5)	0.776	0.735	0.756
New Bio Index (0 to 10)	1.14	0.910	1.03
% dominant taxa	35.4%	31.5%	33.5%
EPT/EPT+C	0.932	0.943	0.937
EPT/Richness	0.594	0.629	0.612
% Model Affinity (orders)	70.8%	69.9%	70.4%
PPCS - functional groups	54.2%	54.9%	54.6%
Major Groups:			
Coleoptera (%)	9.91%	5.47%	7.69%
Diptera (%)	10.2%	9.32%	9.77%
Ephemeroptera (%)	4.20%	8.68%	6.44%
Trichoptera (%)	26.4%	24.8%	25.6%
Plecoptera (%)	47.4%	51.1%	49.3%
Oligochaeta (%)	0.601%	0.322%	0.461%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	1.20%	0.322%	0.761%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	6.91%	10.3%	8.60%
Collector Filterer (%)	12.9%	11.6%	12.2%
Predator (%)	24.6%	17.0%	20.8%
Shredder - Detritus (%)	44.4%	51.8%	48.1%
Shredder - Herbivore (%)	0.300%	1.93%	1.11%
Scraper (%)	10.8%	7.40%	9.10%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station JB-T13-0.2 **Latitude** 44.94083 N
Stream Jay Branch **Longitude** 72.49222 W
Location 427813000002 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	914	≥300	Pass	≥400	Pass	≥500	Pass
Richness	33.5	≥27	Pass	≥31	Pass	≥35	Fail
EPT	20.5	≥16	Pass	≥19	Pass	≥21	I-
% PMA-O	70.4%	≥45%	Pass	≥55%	Pass	≥65%	Pass
BI (New 1-10)	1.03	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	0.5%	≤12%	Pass	≤5	Pass	≤2	Pass
EPT/EPT+C	0.937	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	54.6%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I+
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines
1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET

(2014 edition)

Bug Lab ID _____

Chem ID _____ Time _____

DUP Chem ID _____ Time

Site Name Jax River Mile _____ USFS___ PROB___

Site ID Jay Br 4-1

Date 10/6/15 Time 1120 Crew CS RW

Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft

D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____

Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" rain 5 days ago - scouring event

Surrounding Land Use: Forest

SAMPLING INFORMATION

Sampler: CS Gear: KN

Effort Time: ____ min Mesh: 500 um

Area: _____ m^2 Quantitative: Y / (N)

#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)

Diatom 70 % Filamentous Green _____ % and length _____ in

Blue Green Tr % Moss 20 % .Green _____ % Other _____ %

General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS

Embeddedness 0-5% Excel, 5-25% V Good, (25-50%Good,) 50-75% Fair, >75%Poor Estimate _____ %

Silt Rating: 3 FPOM (0=none, 5= chocolate) CPOM Rating (leaf packs): 5 (0= none,5=high) LWD (>4"dia) #: 5 /100m (reach)

Habitat Comments: Great CPOM

GENERAL WATER TYPE (Riffle,) Winder, Other _____ Channelized: Y / (N) Upstream Dam: Y / (N) ____ mi

B.F.Width: 15' (m) Wetted Width: 6' (m) Riffle Depth: 2' (m) Pool Depth: 1 (m) and Obs: _____

Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec (F) >2 ft/sec Measured: _____ ft/sec

100-75% Stable

Fish: Bottom Type: Hard -- Soft -- Mixed Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m

Overstory: Softwood 30 % Hardwood 70 % Understory: Shrub (brush) 40 % Herbaceous 20 % Grass ____ %

Canopy%: 100 90 (80) 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, (Closed)

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H – (M) – L

Meter (type, #)1-_____ 2-_____ 3- _____ Color_____ Color DUP:_____

Temp Air 45 (°F) °C Temp Water 8 °C fpH_____ lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

Circle: Cond pH Alk TP DP Cl lCAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____, _____,

WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply)

Overall Aesthetic Rating: 0(poor) – 5(exc.) 5

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand) | (Silt) | Sewage | Oily Sheen | Trash | Iron | Scum | None

B – Water Clarity: (Clear) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm

C – Water Color: (Clear) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish

D – Odors: (None) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas

Leaves on

Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Pebble count
Sand - 2
Gravel - 13
Coarse Gravel - 36
Cobble - 42
Boulder - 16
Bedrock - 1

Peri count				
	0	1	2	3
moss	17	9	7	11
macro	44			
micro	9	35		

Field Sheet Complete: CS (initial)

Photos: (Y) / N

Fish Survey Conducted: Y / (N)

Jay Peak Resort
Kick Net Data - Jay Branch - JB-9.1
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2005 DEC	923	40	23	74	1.96	24	0.94	64	Does Not Meet Class B Criteria
2007 DEC	1872	39	22	62	1.50	20	0.95	52	Does Not Meet Class B Criteria
2008 DEC	1162	37	23	76	1.97	6.4	0.96	71	Meets Class B Criteria
2009 DEC	1892	46	25	76	1.88	17	0.92	66	Does Not Meet Class B Criteria
2010 DEC	1516	42	25	68	2.29	6.0	0.97	65	Meets Class B Criteria
2011 DEC	238	40	24	66	1.64	18	0.94	60	Does Not Meet Class B Criteria
2012 VHB	172	25	17	64	0.580	3.2	0.95	46	Does Not Meet Class B Criteria
2013 VHB	828	39	24	80	1.09	7.5	0.95	53	Meets Class B Criteria
2014 DEC / VHB	1071	40	24	68	1.95	17	0.93	52	Does Not Meet Class B Criteria
2015 VHB	525	37	26	68	1.40	11	0.95	63	Meets Class B Criteria

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Below Threshold (I-)								
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

VT DEC Lab ID:
Stream Name: Jay Branch
Station: JB-9.1

Organization: VHB

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.93972	72.50232
or VT Site ID:	427800000091	
Date collected:	10/5/2015	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan-16	Jan-16
#sq picked:	16	14
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan-16	Jan-16

Taxonomic Data								Rep1				Rep2							Biotic Index						Richness Metrics			
																			Biotic Index Scores		Old Biotic Index		New Biotic Index		Richness	EPT	Richness	EPT
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	7	10.5	CCS	A	4	6.86		SCR	N	2	3	21	14	32	21	1	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	5	7.50	CCS	A	7	12.0		CG	Y	3	4	23	36	30	48	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	SEC/TANY	MICROPSECTRA	N/A	sp	CCS	A	4	6.00				0.00		CG	Y	3	6	18	0	36	0	1	0	-	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp				0.00	CCS	A	1	1.71		SRD	Y	3	5	0	5	0	9	-	0	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	1	1.50	CCS	A	1	1.71		PRD	Y	3	5	5	5	8	9	1	0	1	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp				0.00	CCS	A	1	1.71		CG	Y	2	2	0	3	0	3	-	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1.50	CCS	A	1	1.71		CG	Y	3	5	5	5	8	9	1	0	1	0
02.05.05.00.096.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	RHEOCRICOTOPUS	N/A	sp				0.00	CCS	A	1	1.71		CG	Y	2	6	0	3	0	10	-	0	1	0
02.05.05.00.114.01.04	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	TVETENIA	bavarica grp	paucunca	CCS	A	1	1.50	CCS	A	3	5.14		CG	Y	2	4	3	10	6	21	1	0	1	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp				0.00	CCS	A	2	3.43		CG	N	3	4	0	10	0	14	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp				0.00	CCS	A	5	8.57		PRD	N	2	3	0	17	0	26	-	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	6.00	CCS	A	2	3.43		PRD	N	2	2	12	7	12	7	1	0	1	0
02.19.00.00.019.00.00	DIPTERA	TIPULIDAE	N/A	N/A	MOLOPHILUS	N/A	sp				0.00	CCS	A	1	1.71		CG	N	3	4	0	5	0	7	-	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	4	6.00	CCS	A	6	10.3		CG	N	3	6	18	31	36	62	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLA	PLAUDITUS	N/A	sp				0.00	CCS	A	1	1.71		SCR	N	2	5	0	3	0	9	-	0	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivilli	CCS	A	6	9.00	CCS	A	1	1.71		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	7	10.5	CCS	A	4	6.86		CG	N	2	4	21	14	42	27	1	1	1	1
03.04.00.00.005.00.02	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EURYLOPHELLA	N/A	funeralis	CCS	A	2	3.00				0.00		SRD	N	1	0	3	0	0	0	1	1	-	0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	12	18.0	CCS	A	6	10.3		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	18	27.0	CCS	A	2	3.43		SCR	N	1	4	27	3	108	14	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	12	18.0	CCS	A	16	27.4		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	4	6.00	CCS	A	3	5.14		CG	N	2	1	12	10	6	5	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	3	4.50				0.00		SHR	N	1	2	5	0	9	0	1	1	-	0
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	8	12.0	CCS	A	3	5.14		SCR	N	1	0	12	5	0	0	1	1	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYDI	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	25	37.5	CCS	A	10	17.1		CF	N	2	3	75	34	113	51	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	18	27.0	CCS	A	3	5.14		SRD	N	1	1	27	5	27	5	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	14	21.0	CCS	A	16	27.4		CF	N	0	0	0	0	0	0	1	1	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDA	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.50	CCS	A	7	12.0		PRD	N	3	6	5	36	9	72	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	4	6.00	CCS	A	17	29.1		PRD	N	1	2	6	29	12	58	1	1	1	1
04.16.00.00.001.00.91	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp a				0.00	CCS	A	1	1.71		PRD	N	0	1	0	0	0	2	-	0	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group				0.00	CCS	A	2	3.43		PRD	N	0	1	0	0	0	3	-	0	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	11	16.5				0.00		SCR	N	2	3	33	0	50	0	1	1	-	0
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	4	6.00	CCS	A	4	6.86		SCR	N	1	3	6	7	18	21	1	1	1	1
05.01.00.00.000.00.01	PLECOPTERA	CAPNIIDAE	N/A	N/A	N/A	N/A	imm				0.00	CCS	A	3	5.14		SRD	N	1	3	0	5	0	15	-	0	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	47	70.5	CCS	A	28	48.0		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	1.50	CCS	A	3	5.14		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	10	15.0	CCS	A	22	37.7		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.007.00.00	PLECOPTERA	NEMOURIDAE	N/A	N/A	SOYEDINA	N/A	sp				0.00	CCS	A	1	1.71		SRD	N	0	0	0	0	0	0	-	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	25	37.5	CCS	A	30	51.4		SRD	N	1	0	38	51	0	0	1	1	1	1
05.06.00.00.001.00.00	PLECOPTERA	PERLIDAE	N/A	N/A	ACRONEURIA	N/A	sp				0.00	CCS	A	1	1.71		PRD	N	0	0	0	0	0	0	-	0	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	1.50	CCS	A	2	3.43		PRD	N	1	2	2	3	3	7	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	25	37.5	CCS	A	42	72.0		PRD	N	1	2	38	72	75	144	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	16	24.0	CCS	A	21	36.0		SRD	N	1	0	24	36	0	0	1	1	1	1
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid				0.00	CCS	A	1	1.71		CG	N	-	-	-	-	-	-	-	-	-	-
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	31	46.5	CCS	A	37	63.4		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										332	**498**			322	**552**				**Total BI Score**		435	468	638	677	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	1050 organisms																		**Total # Organisms**		498	552	498	552				
																			# of Organisms w/o BI		47	65	47	65	32		41	
																			Total # Organisms with BI		452	487	452	487		24		27
																			Biotic Index		0.96	0.96	1.41	1.39				

*Notes:
[1] ID is initial of taxonomist or organization
[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%
[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.
[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	10.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	7.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.096.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	10.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	27.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	4.50	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	37.5	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	27.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	21.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	16.5	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	70.5	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	15.0	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	37.5	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	37.5	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	24.0	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	46.5	0.00	0.00	0.00	0.00	
Total	**10.5**	**24.0**	**97.5**	**132**	**188**	**46.5**	**0.00**	**0.00**	**0.00**	**0.00**	**498**
Percent	**2.11%**	**4.82%**	**19.6%**	**26.5%**	**37.7%**	**9.34%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091
Sample Date 10/05/15

2015 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	6.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.096.00.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	0.00	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	8.57	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	10.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	6.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	10.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	27.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	5.14	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	17.1	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	5.14	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	27.4	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	29.1	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	6.86	0.00	0.00	0.00	0.00	0.00	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	5.14	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	48.0	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	5.14	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	37.7	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	51.4	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.001.00.00	0.00	0.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	72.0	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	36.0	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	1.71	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	63.4	0.00	0.00	0.00	0.00	
Total	**6.86**	**42.9**	**66.9**	**108**	**262**	**65.1**	**0.00**	**0.00**	**0.00**	**0.00**	**552**
Percent	**1.24%**	**7.76%**	**12.1%**	**19.6%**	**47.5%**	**11.8%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/5/2015

2015 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	10.5	0.00		0.00	0.00	0.00	0.00	0.00	6.86	0.00	
02.05.01.00.085.00.05	7.50	0.00	0.00	0.00	0.00	0.00	0.00		12.0	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.71	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00		0.00	0.00	1.71	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.71	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	1.50	0.00	0.00	0.00	0.00	0.00	0.00		1.71	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.096.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.71	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.114.01.04	1.50	0.00	0.00	0.00	0.00	0.00	0.00		5.14	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.43	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	8.57	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00		0.00	0.00	3.43	0.00	0.00	0.00	0.00	
02.19.00.00.019.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.71	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	6.00	0.00	0.00	0.00	0.00	0.00	0.00		10.3	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	1.71	0.00	
03.04.00.00.004.00.01	9.00	0.00	0.00	0.00	0.00	0.00	0.00		1.71	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	10.5	0.00	0.00	0.00	0.00	0.00	0.00		6.86	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.005.00.02	0.00	0.00	0.00	3.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00		10.3	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	27.0	0.00		0.00	0.00	0.00	0.00	0.00	3.43	0.00	
03.06.00.00.005.00.00	18.0	0.00	0.00	0.00	0.00	0.00	0.00		27.4	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00		5.14	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	4.50	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	12.0	0.00		0.00	0.00	0.00	0.00	0.00	5.14	0.00	
04.05.00.02.008.01.04	0.00	37.5	0.00	0.00	0.00	0.00	0.00		0.00	17.1	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	27.0	0.00	0.00	0.00		0.00	0.00	0.00	5.14	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	21.0	0.00	0.00	0.00	0.00	0.00		0.00	27.4	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00		0.00	0.00	12.0	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	6.00	0.00	0.00	0.00	0.00		0.00	0.00	29.1	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	1.71	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	3.43	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	16.5	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00		0.00	0.00	0.00	0.00	0.00	6.86	0.00	
05.01.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	5.14	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	70.5	0.00	0.00	0.00	0.00		0.00	0.00	48.0	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00		0.00	0.00	5.14	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	15.0	0.00	0.00	0.00		0.00	0.00	0.00	37.7	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.71	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	37.5	0.00	0.00	0.00		0.00	0.00	0.00	51.4	0.00	0.00	0.00	
05.06.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	1.71	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	1.50	0.00	0.00	0.00	0.00		0.00	0.00	3.43	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	37.5	0.00	0.00	0.00	0.00		0.00	0.00	72.0	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	24.0	0.00	0.00	0.00		0.00	0.00	0.00	36.0	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.71	0.00	0.00	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	46.5	0.00	0.00	0.00	0.00	0.00	0.00		63.4	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**131**	**58.5**	**126**	**107**	**4.50**	**72.0**	**0.00**	**498**	**154**	**44.6**	**190**	**139**	**0.00**	**24.0**	**0.00**	**552**
Percent	**26.2%**	**11.7%**	**25.3%**	**21.4%**	**0.904%**	**14.5%**	**0.00%**	**100%**	**28.0%**	**8.07%**	**34.5%**	**25.2%**	**0.00%**	**4.35%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/5/2015

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	26.2%	84.5%	28.0%	90.2%
Col. Filt.	18%	30%	36%	11.7%	65.3%	8.07%	44.9%
Predator	19%	13%	7%	25.3%	75.1%	34.5%	55.1%
Shred-Det.	15%	4%	2%	21.4%	70.1%	25.2%	59.6%
Shred- Herb.	1%	1%	5%	0.904%	90.4%	0.00%	0.00%
Scraper	12%	13%	22%	14.5%	83.0%	4.35%	36.2%
				PPCS-FG =	**78.1%**	**PPCS-FG =**	**47.7%**

CG = Collector/Gatherer

CF = Collector/Filterer

PRD = Predator

SRD = Shredder - Detritus

SHR = Shredder - Herbivore

SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
VT Site ID 427800000091 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	2.11%	5.89	1.24%	6.76
Diptera	19%	18%	13%	4.82%	14.2	7.76%	11.2
Ephemeroptera	23%	34%	32%	19.6%	3.42	12.1%	10.9
Plecoptera	21%	8%	8%	37.7%	16.7	47.5%	26.5
Trichoptera	28%	33%	33%	26.5%	1.49	19.6%	8.43
Oligochaeta	0.5%	0.5%	1.0%	9.34%	8.84	11.8%	11.3
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	51.0		75.6
				Sum diff * 0.5	25.5		37.8
				100-(sum diff * 0.5)	74.5		62.2
				% model affinity	**74.5%**		**62.2%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091
Sample Date 10/5/2015
Class B, Small High Gradient
Sampler CS

	KN-1	KN-2
#EPT organisms	417	437
#C organisms	18.0	25.7
EPT/EPT+C	0.959	0.944

Biometric Summary

Project Jay Peak Resort
Station JB-9.1
Stream Jay Branch
Location 427800000091 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	498	552	525
Species Richness	32.0	41.0	36.5
EPT Richness	24.0	27.0	25.5
Old Bio Index (0 to 5)	0.963	0.961	0.962
New Bio Index (0 to 10)	1.41	1.39	1.40
% dominant taxa	14.2%	13.0%	13.6%
EPT/EPT+C	0.959	0.944	0.952
EPT/Richness	0.750	0.659	0.699
% Model Affinity (orders)	74.5%	62.2%	68.3%
PPCS - functional groups	78.1%	47.7%	62.9%
Major Groups:			
Coleoptera (%)	2.11%	1.24%	1.68%
Diptera (%)	4.82%	7.76%	6.29%
Ephemeroptera (%)	19.6%	12.1%	15.8%
Trichoptera (%)	26.5%	19.6%	23.0%
Plecoptera (%)	37.7%	47.5%	42.6%
Oligochaeta (%)	9.34%	11.8%	10.6%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	26.2%	28.0%	27.1%
Collector Filterer (%)	11.7%	8.07%	9.91%
Predator (%)	25.3%	34.5%	29.9%
Shredder - Detritus (%)	21.4%	25.2%	23.3%
Shredder - Herbivore (%)	0.904%	0.00%	0.452%
Scraper (%)	14.5%	4.35%	9.40%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station JB-9.1 **Latitude** 44.93972
Stream Jay Branch **Longitude** 72.50232
Location 427800000091 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	525	≥300	Pass	≥400	Pass	≥500	I+
Richness	36.5	≥27	Pass	≥31	Pass	≥35	Pass
EPT	25.5	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	68.3%	≥45%	Pass	≥55%	Pass	≥65%	I+
BI (New 1-10)	1.40	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	10.6%	≤12%	I+	≤5	Fail	≤2	Fail
EPT/EPT+C	0.952	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	62.9%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are met**					
The following metrics do not meet Class B thresholds:		NA					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines
1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET

(2014 edition)

Bug Lab ID _____

Chem ID _____ Time _____

DUP Chem ID _____ Time _____

Site Name Jay Br _____ River Mile _____ USFS___ PROB___

Site ID 4-J

Date 10/5/15 Time 1215 Crew CS RW

Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft

D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____

Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" rain 5 d. ago - scouring event

Surrounding Land Use: Resort, Forest

SAMPLING INFORMATION

Sampler: CS Gear: KW

Effort Time: ___ min Mesh: 500 um

Area: _____ m^2 Quantitative: (Y) N

#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)

Diatom 70 % Filamentous Green 5 % and length _____ in

Blue Green 5 % Moss 15 % Green 5 % Other _____ %

General Trophic Rating: 1 (0=oligo, S=Eutroph)

HABITAT OBSERVATIONS

Embeddedness 0-S% Excel, S-2S% V Good, (2S-S0%Good,) S0-7S% Fair, >7S%Poor Estimate _____ %

Silt Rating: 2 (0=none, S= chocolate) CPOM Rating (leaf packs): 2-3 (0= none,S=high) LWD (>4"dia) #: 4 /100m (reach)

Habitat Comments:

GENERAL WATER TYPE (Riffle,) Winder, Other _____ Channelized: Y /(N) Upstream Dam: Y (N) mi

B.F.Width: 35' (m) Wetted Width: 20' (m) Riffle Depth: 4-6 (m) Pool Depth: NA (m) and Obs: _____

Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec

Fish: Bottom Type: Hard -- Soft -- Mixed 50-75% Stable Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 30 m, R 60 m

Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 30 % Herbaceous 20 % Grass 10 %

Canopy%: 100 90 80 70 60 (50) 40 30 20 10 0 Overhead: Open, (Partly Open,) Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H -(M)- L

Meter (type, #)1-_____ 2-_____ 3- _____ Color_____ Color DUP:_____

Temp Air 45 (°F,) °C Temp Water 8° °C fpH_____ lab pH_____ fCond_____ *D.O.*%_____ D.Omg/l_____

Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____, _____,

WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand,) | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None

B – Water Clarity: (Clear,) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm

C – Water Color: (Clear,) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish

D – Odors: (None,) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas

Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Pebble count

Sand-2

Gravel-9

Coarse Gravel-22

Cobble-45

Boulder-21

Bedrock-1

Peri count

	0	1	2	3
moss	58	9	6	2
macro	71	3	1	
micro	14	3	1	

Field Sheet Complete: CS (initial)

Photos (Y) / N

Fish Survey Conducted: Y (N)

Jay Peak Resort
Kick Net Data - Jay Branch - JB-8.3
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004 PIO	324	27	18	60	1.96	7	0.98	56	Meets Class B Criteria
2005 ESI	849	49	23	69	2.65	21	0.87	60	Does Not Meet Class B Criteria
2006 ESI	851	34	21	58	2.68	0.3	0.95	34	Does Not Meet Class B Criteria
2007 PIO	363	32	22	72	1.12	8	0.96	60	Meets Class B Criteria
2008 VHBP	311	31	19	70	1.41	15	0.98	50	Does Not Meet Class B Criteria
2009 VHBP	374	32	24	71	1.55	10	0.98	61	Meets Class B Criteria
2010 VHB	361	31	25	57	1.36	6	1.0	55	Meets Class B Criteria
2011 VHB	117	22	15	58	1.10	18	0.97	54	Does Not Meet Class B Criteria
2012 VHB	230	24	17	71	1.15	7	0.98	56	Does Not Meet Class B Criteria
2013 VHB	238	30	22	80	1.13	10	0.95	57	Does Not Meet Class B Criteria
2014 VHB	403	34	23	63	0.99	26	0.97	39	Meets 3 of 4 Interim Targets
2015 VHB	347	35	24	63	1.18	13	0.97	51	Meets 3 of 4 Interim Targets

2014 Interim Targets	>250	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	>275	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Below Threshold (I-)								
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

VT DEC Lab ID:

Organization: VHB

Stream Name: Jay Branch

Station: JB-8.3

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.93895074	-72.48945144
or VT Site ID:	427800000083	
Date collected:	10/5/2015	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan-16	Jan-16
#sq picked:	21	22
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan-16	Jan-16

Taxonomic Data																			**Biotic Index**						**Richness Metrics**			
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				Rep2				NOTES	FFG	Chiro	Biotic Index Scores		Old Biotic Index		New Biotic Index		Richness	EPT	Richness	EPT
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]				Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	8	9.14	CCS	A	5	5.45		SCR	N	2	3	18	11	27	16	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	ZIA/PALPON	BEZZIA	N/A	sp	CCS	A	1	1.14				0.00		PRD	N	3	6	3	0	7	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	1.14	CCS	A	3	3.27		CG	Y	3	4	3	10	5	13	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	PSEC/TANYT	MICROPSECTRA	N/A	sp	CCS	A	2	2.29				0.00		CG	Y	3	6	7	0	14	0	1	0	-	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis				0.00	CCS	A	3	3.27		CG	Y	2	2	0	7	0	7	-	0	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	MANNIMYIA	THIENEMANNIMYIA	N/A	sp	CCS	A	3	3.43	CCS	A	1	1.09		PRD	Y	3	6	10	3	21	7	1	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	1	1.14				0.00		CF	N	1	2	1	0	2	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	3	3.43	CCS	A	8	8.73		PRD	N	2	3	7	17	10	26	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	8	9.14	CCS	A	6	6.55		PRD	N	2	2	18	13	18	13	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1.14	CCS	A	5	5.45		SRD	N	3	6	3	16	7	33	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	3	3.43	CCS	A	6	6.55		CG	N	3	6	10	20	21	39	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	RELLA/PLA	PLAUDITUS	N/A	sp	CCS	A	1	1.14	CCS	A	2	2.18		SCR	N	2	5	2	4	6	11	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	3	3.43	CCS	A	4	4.36		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	8	9.14	CCS	A	17	18.5		CG	N	2	4	18	37	37	74	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	27	30.9	CCS	A	15	16.4		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	12	13.7	CCS	A	4	4.36		SCR	N	1	4	14	4	55	17	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	56	64.0	CCS	A	21	22.9		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	8	9.14	CCS	A	2	2.18		CG	N	2	1	18	4	9	2	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp				0.00	CCS	A	1	1.09		SHR	N	1	2	0	1	0	2	-	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	PSYC/HYD	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	3	3.43	CCS	A	5	5.45		CF	N	2	3	7	11	10	16	1	1	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1.14				0.00		CF	N	0	0	0	0	0	0	1	1	-	0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	6	6.86	CCS	A	7	7.64		SRD	N	1	1	7	8	7	8	1	1	1	1
04.11.00.00.001.00.00	TRICHOPTERA	ODONTOCERIDAE	N/A	N/A	PSILOTRETA	N/A	sp				0.00	CCS	A	1	1.09		SCR	N	0	0	0	0	0	0	-	0	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	8	9.14	CCS	A	3	3.27		CF	N	0	0	0	0	0	0	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	5	5.71	CCS	A	8	8.73		PRD	N	1	2	6	9	11	17	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	1	1.14	CCS	A	2	2.18		PRD	N	0	1	0	0	1	2	1	1	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp				0.00	CCS	A	1	1.09		SCR	N	2	3	0	2	0	3	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp	CCS	A	1	1.14	CCS	A	4	4.36		SCR	N	1	3	1	4	3	13	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	32	36.6	CCS	A	55	60.0		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp				0.00	CCS	A	2	2.18		PRD	N	0	0	0	0	0	0	-	0	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	33	37.7	CCS	A	40	43.6		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	5	5.71	CCS	A	4	4.36		SRD	N	1	0	6	4	0	0	1	1	1	1
05.06.00.00.004.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	PARAGNETINA	N/A	media	CCS	A	1	1.14				0.00		PRD	N	1	1	1	0	1	0	1	1	-	0
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata				0.00	CCS	A	3	3.27		PRD	N	0	2	0	0	0	7	-	0	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	1	1.14	CCS	A	1	1.09		PRD	N	1	2	1	1	2	2	1	1	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	16	18.3	CCS	A	15	16.4		PRD	N	1	2	18	16	37	33	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	7	8.00	CCS	A	12	13.1		SRD	N	1	0	8	13	0	0	1	1	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	1	1.14				0.00		SRD	N	2	3	2	0	3	0	1	1	-	0
06.06.00.00.007.00.00	ODONATA	GOMPHIDAE	N/A	N/A	LANTHUS	N/A	sp	CCS	A	3	3.43	CCS	A	1	1.09		PRD	N	2	5	7	2	17	5	1	0	1	0
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A	N/A	PHYSA	N/A	sp				0.00	CCS	A	1	1.09		CG	N	4	8	0	4	0	9	-	0	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	35	40.0	CCS	A	48	52.4		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										305	**349**			316	**345**													

GRAND TOTAL: 693 organisms

	Old Biotic Index KN-1	Old Biotic Index KN-2	New Biotic Index KN-1	New Biotic Index KN-2
Total BI Score	199	224	331	376
Total # Organisms	349	345	349	345
# of Organisms w/o BI	40	52	40	52
Total # Organisms with BI	309	292	309	292
Biotic Index	0.64	0.76	1.07	1.29

Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**
34		35	
	23		25

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	2.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	30.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	13.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	64.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	6.86	0.00	0.00	0.00	0.00	0.00	0.00	
04.11.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	5.71	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	36.6	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	37.7	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	5.71	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.01	0.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	18.3	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.43	0.00	
12.08.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	40.0	0.00	0.00	0.00	0.00	
Total	**9.14**	**22.9**	**135**	**28.6**	**110**	**40.0**	**0.00**	**0.00**	**3.43**	**0.00**	**349**
Percent	**2.62%**	**6.56%**	**38.7%**	**8.20%**	**31.5%**	**11.5%**	**0.00%**	**0.00%**	**0.984%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083
Sample Date 10/05/15

2015 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	8.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	6.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	6.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	18.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	16.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	22.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	7.64	0.00	0.00	0.00	0.00	0.00	0.00	
04.11.00.00.001.00.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	8.73	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	60.0	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	43.6	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	16.4	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	13.1	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00	
12.08.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	52.36	0.00	0.00	0.00	0.00	
Total	**5.45**	**28.4**	**77.5**	**34.9**	**144**	**52.4**	**0.00**	**0.00**	**1.09**	**1.09**	**345**
Percent	**1.58%**	**8.23%**	**22.5%**	**10.1%**	**41.8%**	**15.2%**	**0.00%**	**0.00%**	**0.316%**	**0.316%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/5/2015

2015 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	9.14	0.00		0.00	0.00	0.00	0.00	0.00	5.45	0.00	
02.03.00.01.003.00.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	1.14	0.00	0.00	0.00	0.00	0.00	0.00		3.27	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	2.29	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00		3.27	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00		0.00	0.00	1.09	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	1.14	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00		0.00	0.00	8.73	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	9.14	0.00	0.00	0.00	0.00		0.00	0.00	6.55	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	0.00	0.00	1.14	0.00	0.00	0.00		0.00	0.00	0.00	5.45	0.00	0.00	0.00	
03.01.00.00.001.00.09	3.43	0.00	0.00	0.00	0.00	0.00	0.00		6.55	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	1.14	0.00		0.00	0.00	0.00	0.00	0.00	2.18	0.00	
03.04.00.00.004.00.01	3.43	0.00	0.00	0.00	0.00	0.00	0.00		4.36	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00		18.5	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	30.9	0.00	0.00	0.00	0.00	0.00	0.00		16.4	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	13.7	0.00		0.00	0.00	0.00	0.00	0.00	4.36	0.00	
03.06.00.00.005.00.00	64.0	0.00	0.00	0.00	0.00	0.00	0.00		22.9	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	9.14	0.00	0.00	0.00	0.00	0.00	0.00		2.18	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	1.09	0.00	0.00	
04.05.00.02.008.01.04	0.00	3.43	0.00	0.00	0.00	0.00	0.00		0.00	5.45	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	1.14	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	6.86	0.00	0.00	0.00		0.00	0.00	0.00	7.64	0.00	0.00	0.00	
04.11.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	1.09	0.00	
04.12.00.00.002.00.00	0.00	9.14	0.00	0.00	0.00	0.00	0.00		0.00	3.27	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	5.71	0.00	0.00	0.00	0.00		0.00	0.00	8.73	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00		0.00	0.00	2.18	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	1.09	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	1.14	0.00		0.00	0.00	0.00	0.00	0.00	4.36	0.00	
05.02.00.00.006.00.00	0.00	0.00	36.6	0.00	0.00	0.00	0.00		0.00	0.00	60.0	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	2.18	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	37.7	0.00	0.00	0.00		0.00	0.00	0.00	43.6	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	5.71	0.00	0.00	0.00		0.00	0.00	0.00	4.36	0.00	0.00	0.00	
05.06.00.00.004.00.01	0.00	0.00	1.14	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	3.27	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	1.14	0.00	0.00	0.00	0.00		0.00	0.00	1.09	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	18.3	0.00	0.00	0.00	0.00		0.00	0.00	16.4	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	8.00	0.00	0.00	0.00		0.00	0.00	0.00	13.1	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	1.14	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
06.06.00.00.007.00.00	0.00	0.00	3.43	0.00	0.00	0.00	0.00		0.00	0.00	1.09	0.00	0.00	0.00	0.00	
12.08.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.09	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	40.0	0.00	0.00	0.00	0.00	0.00	0.00		52.4	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**163**	**14.9**	**84.6**	**60.6**	**0.00**	**25.1**	**0.00**	**349**	**131**	**8.73**	**111**	**74.2**	**1.09**	**18.5**	**0.00**	**345**
Percent	**46.9%**	**4.26%**	**24.3%**	**17.4%**	**0.00%**	**7.21%**	**0.00%**	**100%**	**38.0%**	**2.53%**	**32.3%**	**21.5%**	**0.316%**	**5.38%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/5/2015

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	46.9%	66.1%	38.0%	81.6%
Col. Filt.	18%	30%	36%	4.26%	23.7%	2.53%	14.1%
Predator	19%	13%	7%	24.3%	78.3%	32.3%	58.9%
Shred-Det.	15%	4%	2%	17.4%	86.3%	21.5%	69.7%
Shred- Herb.	1%	1%	5%	0.00%	0.00%	0.316%	31.6%
Scraper	12%	13%	22%	7.21%	60.1%	5.38%	44.8%
				PPCS-FG =	**52.4%**	**PPCS-FG =**	**50.1%**

CG = Collector/Gatherer

CF = Collector/Filterer

PRD = Predator

SRD = Shredder - Detritus

SHR = Shredder - Herbivore

SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
VT Site ID 427800000083 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	2.62%	5.38	1.58%	6.42
Diptera	19%	18%	13%	6.56%	12.4	8.23%	10.8
Ephemeroptera	23%	34%	32%	38.7%	15.7	22.5%	0.532
Plecoptera	21%	8%	8%	31.5%	10.5	41.8%	20.8
Trichoptera	28%	33%	33%	8.20%	19.8	10.1%	17.9
Oligochaeta	0.5%	0.5%	1.0%	11.5%	11.0	15.2%	14.7
Other	0.5%	0.5%	1.0%	0.984%	0.484	0.633%	0.133
				Sum diff	75.2		71.2
				Sum diff * 0.5	37.6		35.6
				100-(sum diff * 0.5)	62.4		64.4
				% model affinity	**62.4%**		**64.4%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083
Sample Date 10/5/2015
Class B, Small High Gradient
Sampler CS

	KN-1	KN-2
#EPT organisms	273	256
#C organisms	6.86	7.64
EPT/EPT+C	0.976	0.971

Biometric Summary

Project Jay Peak Resort
Station JB-8.3
Stream Jay Branch
Location 427800000083 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	349	345	346.6
Species Richness	34.0	35.0	34.5
EPT Richness	23.0	25.0	24.0
Old Bio Index (0 to 5)	0.644	0.765	0.705
New Bio Index (0 to 10)	1.07	1.29	1.18
% dominant taxa	18.4%	17.4%	17.9%
EPT/EPT+C	0.976	0.971	0.973
EPT/Richness	0.676	0.714	0.696
% Model Affinity (orders)	62.4%	64.4%	63.4%
PPCS - functional groups	52.4%	50.1%	51.3%
Major Groups:			
Coleoptera (%)	2.62%	1.58%	2.10%
Diptera (%)	6.56%	8.23%	7.39%
Ephemeroptera (%)	38.7%	22.5%	30.6%
Trichoptera (%)	8.20%	10.1%	9.16%
Plecoptera (%)	31.5%	41.8%	36.6%
Oligochaeta (%)	11.5%	15.2%	13.3%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.984%	0.316%	0.650%
Other (%)	0.00%	0.316%	0.158%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	46.9%	38.0%	42.4%
Collector Filterer (%)	4.26%	2.53%	3.40%
Predator (%)	24.3%	32.3%	28.3%
Shredder - Detritus (%)	17.4%	21.5%	19.4%
Shredder - Herbivore (%)	0.00%	0.316%	0.158%
Scraper (%)	7.21%	5.38%	6.30%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station JB-8.3 **Latitude** 44.938951
Stream Jay Branch **Longitude** -72.48945
Location 427800000083 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	347	≥300	I+	≥400	Fail	≥500	Fail
Richness	34.5	≥27	Pass	≥31	Pass	≥35	I-
EPT	24.0	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	63.4%	≥45%	Pass	≥55%	Pass	≥65%	I-
BI (New 1-10)	1.18	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	13.3%	≤12%	I-	≤5	Fail	≤2	Fail
EPT/EPT+C	0.973	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	51.3%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	I+
Outcome:		**Indeterminate**					
The following metrics do not meet Class B thresholds:		% Oligo					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines
1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET

(2014 edition)

Bug Lab ID _____

Chem ID _____ Time _____

DUP Chem ID _____ Time _____

Site Name Jay River Mile _____ USFS___ PROB___

Site ID Jay Br 4-3

Date 10/5/15 Time 0950 Crew CS RW

Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft

D.D° Latitude: _____ **Longitude:** _____ Lat/Long source (GPS --NAD83:) _____

Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" 5 days ago - scouring even

Surrounding Land Use: Golf course, resort forest

SAMPLING INFORMATION

Sampler: CS Gear: KN

Effort Time: ____ min Mesh: 500 um

Area: _____ m^2 Quantitative: Y / N

#Reps: 8 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)

Diatom 60% Filamentous Green _____% and length _____in

Blue Green Tr % Moss 3 % Green _____% Other _____%

General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS A lot of sand

Embeddedness 0-5% Excel, 5-25% V Good, (25-50%Good,) 50-75% Fair, >75%Poor Estimate _____%

Silt Rating: 2 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high) LWD (>4"dia) #: 4 /100m (reach)

Habitat Comments: CPOM scoured

GENERAL WATER TYPE (Riffle,) Winder, Other _____ Channelized: Y /(N) Upstream Dam: Y /(N) ___mi

B.F.Width: 35' (m) Wetted Width: 20' (m) Riffle Depth: 6" (m) Pool Depth: 2.5' (m) and Obs: _____

Bank Stability: (EX) VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec

Fish: Bottom Type: Hard -- Soft -- Mixed 100-75% stable well armored Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*focing upstreom*) L 100m, R 100 m

Overstory: Softwood 50 % Hardwood 50 % Understory: Shrub (brush) 20 % Herbaceous 10 % Grass ___%

Canopy%: 100 90 80 70 (60) 50 40 30 20 10 0 Overhead: Open, (Partly Open) Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H –(M)– L

Meter (type, #)1-_____ 2-_____ 3- _____ Color_____ Color DUP:_____

Temp Air 38 (°F,) °C Temp Water 8 °C fpH_____ lab pH_____ fCond_____ *D.O.*%_____ D.Omg/l_____

Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____, _____,

WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply)

Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand) | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None

B – Water Clarity: (Clear) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm

C – Water Color: (Clear) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish

D – Odors: (None) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas

Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Sampled 2 reaches.
This station has been scoured.

Pebble Count
Sand - 6
Gravel - 11
Coarse Gravel - 29
Cobble - 39
Boulder - 15

Peri count	0	1
moss	49	5
macro	54	
micro	14	40

Field Sheet Complete: CS (initial)

Photos (Y) / N

Fish Survey Conducted: Y /(N)

Jay Peak Resort
Kick Net Data - Jay Branch - JB-7.3
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004 PIO	222	26	20	61	1.54	4.4	0.98	54	Does Not Meet Class B Criteria
2005 DEC/ESI	458	40	21	62	2.34	8.1	0.88	38	Does Not Meet Class B Criteria
2006 ESI	1276	25	14	55	2.85	0.77	0.94	23	Does Not Meet Class B Criteria
2007 PIO	423	27	19	73	1.24	1.4	0.95	58	Meets Class B Criteria
2008 VHBP	568	33	22	72	0.94	2.4	0.97	49	Meets Class B Criteria
2009 DEC/VHBP	427	34	25	76	1.26	6.1	0.99	67	Meets Class B Criteria
2010 VHB	344	31	23	55	1.11	1.3	1.0	54	Meets Class B Criteria
2011 VHB	97.5	17	11	71	0.94	3.7	0.99	44	Does Not Meet Class B Criteria
2012 VHB	176	28	20	67	1.24	9.3	0.96	48	Does Not Meet Class B Criteria
2013 VHB	327	28	21	74	0.79	9.2	0.96	62	Meets Class B Criteria
2014 VHB	340	34	26	66	1.17	8.9	0.98	63	Meets Interim Target and Class B Criteria
2015 VHB	378	35	24	68	0.95	14	0.97	45	Indeterminate; Meets 3 of 4 Interim Targets

2014 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	≥300	≥28	≥17	(-)	(-)	≤9.5	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+) / Below Threshold (I-)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

Organization: VHB

VT DEC Lab ID:
Stream Name: Jay Branch
Station: JB-7.3

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.94218	72.47381
or VT Site ID:	427800000073	
Date collected:	10/5/2015	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan-16	Jan-16
#sq picked:	19	22
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan-16	Jan-16

Taxonomic Data																	Biotic Index						Richness Metrics			
								Rep1				Rep2							Biotic Index Scores		Old Biotic Index		New Biotic Index		Richness	EPT	Richness	EPT
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	1	1.26	CCS	A	1	1.09		SCR	N	2	3	3	2	4	3	1	0	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	BEZZIA/PALPOMYIA	BEZZIA	N/A	sp				0.00	CCS	A	2	2.18		PRD	N	3	6	0	7	0	13	-	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	2	2.53	CCS	A	1	1.09		CG	Y	3	4	8	3	10	4	1	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	4	5.05	CCS	A	3	3.27		CG	Y	3	6	15	10	30	20	1	0	1	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp				0.00	CCS	A	1	1.09		SRD	Y	3	5	0	3	0	5	-	0	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	1	1.26	CCS	A	1	1.09		PRD	Y	3	5	4	3	6	5	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	4	5.05				0.00		CG	Y	2	2	10	0	10	0	1	0	-	0
02.08.00.00.000.00.00	DIPTERA	EMPIDIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	2	2.53	CCS	A	1	1.09		PRD	N	3	6	8	3	15	7	1	0	1	0
02.14.00.00.004.00.00	DIPTERA	SIMULIDAE	N/A	N/A	PROSIMULIUM	N/A	sp	CCS	A	1	1.26				0.00		CF	N	1	2	1	0	3	0	1	0	-	0
02.19.00.00.001.00.00	DIPTERA	TIPULIDAE	N/A	N/A	ANTOCHA	N/A	sp				0.00	CCS	A	1	1.09		CG	N	3	4	0	3	0	4	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	5	6.32	CCS	A	5	5.45		PRD	N	2	3	13	11	19	16	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	5	6.32	CCS	A	8	8.73		PRD	N	2	2	13	17	13	17	1	0	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1.26				0.00		SRD	N	3	6	4	0	8	0	1	0	-	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	3	3.79	CCS	A	3	3.27		CG	N	3	6	11	10	23	20	1	1	1	1
03.01.00.02.006.00.01	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	ACENTRELLA	N/A	turbida				0.00	CCS	A	1	1.09		SCR	N	1	2	0	1	0	2	-	0	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp				0.00	CCS	A	1	1.09		SCR	N	2	5	0	2	0	5	-	0	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	7	8.84	CCS	A	2	2.18		CG	N	0	0	0	0	0	0	1	1	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	3	3.79	CCS	A	5	5.45		CG	N	2	4	8	11	15	22	1	1	1	1
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	21	26.5	CCS	A	27	29.5		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	7	8.84	CCS	A	2	2.18		SCR	N	1	4	9	2	35	9	1	1	1	1
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	61	77.1	CCS	A	103	112		CG	N	0	0	0	0	0	0	1	1	1	1
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	5	6.32	CCS	A	2	2.18		CG	N	2	1	13	4	6	2	1	1	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	14	17.7	CCS	A	4	4.36		CF	N	2	3	35	9	53	13	1	1	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	1	1.26				0.00		CF	N	2	4	3	0	5	0	1	1	-	0
04.05.01.00.001.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	ARCTOPSYCHE	N/A	ladogensis	CCS	A	1	1.26				0.00		CF	N	0	1	0	0	1	0	1	1	-	0
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	4	5.05				0.00		SRD	N	1	1	5	0	5	0	1	1	-	0
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	61	77.1	CCS	A	10	10.9		CF	N	0	0	0	0	0	0	1	1	1	1
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	WORMALDIA	N/A	sp	CCS	A	2	2.53				0.00		CF	N	0	0	0	0	0	0	1	1	-	0
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	2	2.53	CCS	A	5	5.45		PRD	N	3	6	8	16	15	33	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	14	17.7	CCS	A	11	12.0		PRD	N	1	2	18	12	35	24	1	1	1	1
04.16.00.00.001.00.91	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp a	CCS	A	1	1.26				0.00		PRD	N	0	1	0	0	1	0	1	1	-	0
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group				0.00	CCS	A	2	2.18		PRD	N	0	1	0	0	0	2	-	0	1	1
04.20.00.00.001.00.00	TRICHOPTERA	APATANIIDAE	N/A	N/A	APATANIA	N/A	sp				0.00	CCS	A	3	3.27		SCR	N	1	3	0	3	0	10	-	0	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	16	20.2	CCS	A	18	19.6		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	1	1.26	CCS	A	6	6.55		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	8	10.1	CCS	A	7	7.64		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.007.00.00	PLECOPTERA	NEMOURIDAE	N/A	N/A	SOYEDINA	N/A	sp	CCS	A	1	1.26				0.00		SRD	N	0	0	0	0	0	0	1	1	-	0
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature	CCS	A	2	2.53				0.00		SRD	N	1	0	3	0	0	0	1	1	-	0
05.06.00.00.004.00.02	PLECOPTERA	PERLIDAE	N/A	N/A	PARAGNETINA	N/A	immarginata				0.00	CCS	A	1	1.09		PRD	N	2	1	0	2	0	1	-	0	1	1
05.06.00.00.007.00.01	PLECOPTERA	PERLIDAE	N/A	N/A	AGNETINA	N/A	capitata	CCS	A	2	2.53	CCS	A	3	3.27		PRD	N	0	2	0	0	5	7	1	1	1	1
05.07.00.00.006.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	ISOPERLA	N/A	sp	CCS	A	2	2.53				0.00		PRD	N	1	2	3	0	5	0	1	1	-	0
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	10	12.6	CCS	A	9	9.82		PRD	N	1	2	13	10	25	20	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	24	30.3	CCS	A	2	2.18		SRD	N	1	0	30	2	0	0	1	1	1	1
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	33	41.7	CCS	A	57	62.2		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										332	**419**			308	**336**												
GRAND TOTAL:	755 organisms																										

Total BI Score	234	148	349	265
Total # Organisms	419	336	419	336
# of Organisms w/o BI	42	62	42	62
Total # Organisms with BI	378	274	378	274
Biotic Index	0.62	0.54	0.92	0.97

Total Richness	**Total EPT-R**	**Total Richness**	**Total EPT-R**
36		33	
	25		22

*Notes:
[1] ID is initial of taxonomist or organization
[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%
[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.
[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	5.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	6.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	6.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.006.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	8.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	3.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	26.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	8.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	77.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	6.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	17.7	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.001.00.01	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	5.05	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	77.1	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.003.00.00	0.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	17.7	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	20.2	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	10.1	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	12.6	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	30.3	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	41.7	0.00	0.00	0.00	0.00	
Total	**1.26**	**31.6**	**135**	**126**	**83.4**	**41.7**	**0.00**	**0.00**	**0.00**	**0.00**	**419**
Percent	**0.301%**	**7.53%**	**32.2%**	**30.1%**	**19.9%**	**9.94%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073
Sample Date 10/05/15

2015 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	8.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.006.00.01	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	29.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	112	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.001.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	10.9	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	19.6	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	6.55	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	7.64	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.02	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	0.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	9.82	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	62.2	0.00	0.00	0.00	0.00	
Total	**1.09**	**25.1**	**159**	**38.2**	**50.2**	**62.2**	**0.00**	**0.00**	**0.00**	**0.00**	**336**
Percent	**0.325%**	**7.47%**	**47.4%**	**11.4%**	**14.9%**	**18.5%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/5/2015

2015 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	1.26	0.00		0.00	0.00	0.00	0.00	0.00	1.09	0.00	
02.03.00.01.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	2.18	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	2.53	0.00	0.00	0.00	0.00	0.00	0.00		1.09	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	5.05	0.00	0.00	0.00	0.00	0.00	0.00		3.27	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.09	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00		0.00	0.00	1.09	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	5.05	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00		0.00	0.00	1.09	0.00	0.00	0.00	0.00	
02.14.00.00.004.00.00	0.00	1.26	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.09	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	6.32	0.00	0.00	0.00	0.00		0.00	0.00	5.45	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	6.32	0.00	0.00	0.00	0.00		0.00	0.00	8.73	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	3.79	0.00	0.00	0.00	0.00	0.00	0.00		3.27	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.006.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	1.09	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	1.09	0.00	
03.04.00.00.004.00.01	8.84	0.00	0.00	0.00	0.00	0.00	0.00		2.18	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	3.79	0.00	0.00	0.00	0.00	0.00	0.00		5.45	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	26.5	0.00	0.00	0.00	0.00	0.00	0.00		29.5	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	8.84	0.00		0.00	0.00	0.00	0.00	0.00	2.18	0.00	
03.06.00.00.005.00.00	77.1	0.00	0.00	0.00	0.00	0.00	0.00		112	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	6.32	0.00	0.00	0.00	0.00	0.00	0.00		2.18	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	17.7	0.00	0.00	0.00	0.00	0.00		0.00	4.36	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	1.26	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.001.00.01	0.00	1.26	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	5.05	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	77.1	0.00	0.00	0.00	0.00	0.00		0.00	10.9	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.003.00.00	0.00	2.53	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00		0.00	0.00	5.45	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	17.7	0.00	0.00	0.00	0.00		0.00	0.00	12.0	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	1.26	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	2.18	0.00	0.00	0.00	0.00	
04.20.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	3.27	0.00	
05.02.00.00.006.00.00	0.00	0.00	20.2	0.00	0.00	0.00	0.00		0.00	0.00	19.6	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	1.26	0.00	0.00	0.00	0.00		0.00	0.00	6.55	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	10.1	0.00	0.00	0.00		0.00	0.00	0.00	7.64	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	1.26	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	2.53	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	1.09	0.00	0.00	0.00	0.00	
05.06.00.00.007.00.01	0.00	0.00	2.53	0.00	0.00	0.00	0.00		0.00	0.00	3.27	0.00	0.00	0.00	0.00	
05.07.00.00.006.00.00	0.00	0.00	2.53	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	12.6	0.00	0.00	0.00	0.00		0.00	0.00	9.82	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	30.3	0.00	0.00	0.00		0.00	0.00	0.00	2.18	0.00	0.00	0.00	
18.04.00.00.000.00.00	41.68	0.00	0.00	0.00	0.00	0.00	0.00		62.2	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**181**	**101**	**77.1**	**50.5**	**0.00**	**10.1**	**0.00**	**419**	**223**	**15.3**	**78.5**	**10.9**	**0.00**	**8.73**	**0.00**	**336**
Percent	**43.1%**	**24.1%**	**18.4%**	**12.0%**	**0.00%**	**2.41%**	**0.00%**	**100%**	**66.2%**	**4.55%**	**23.4%**	**3.25%**	**0.00%**	**2.60%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/5/2015

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	43.1%	72.0%	66.2%	46.8%
Col. Filt.	18%	30%	36%	24.1%	74.7%	4.55%	25.3%
Predator	19%	13%	7%	18.4%	96.7%	23.4%	81.3%
Shred-Det.	15%	4%	2%	12.0%	80.3%	3.25%	21.6%
Shred- Herb.	1%	1%	5%	0.00%	0.00%	0.00%	0.00%
Scraper	12%	13%	22%	2.41%	20.1%	2.60%	21.6%
				PPCS-FG =	**57.3%**	**PPCS-FG =**	**32.8%**

CG = Collector/Gatherer

CF = Collector/Filterer

PRD = Predator

SRD = Shredder - Detritus

SHR = Shredder - Herbivore

SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
VT Site ID 427800000073 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.301%	7.70	0.325%	7.68
Diptera	19%	18%	13%	7.53%	11.5	7.47%	11.5
Ephemeroptera	23%	34%	32%	32.2%	9.23	47.4%	24.4
Plecoptera	21%	8%	8%	19.9%	1.12	14.9%	6.06
Trichoptera	28%	33%	33%	30.1%	2.12	11.4%	16.6
Oligochaeta	0.5%	0.5%	1.0%	9.94%	9.44	18.5%	18.0
Other	0.5%	0.5%	1.0%	0.00%	0.500	0.00%	0.500
				Sum diff	41.6		84.8
				Sum diff * 0.5	20.8		42.4
				100-(sum diff * 0.5)	79.2		57.6
				% model affinity	**79.2%**		**57.6%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073
Sample Date 10/5/2015
Class B, Small High Gradient
Sampler CS

	KN-1	KN-2
#EPT organisms	345	248
#C organisms	13.9	6.55
EPT/EPT+C	0.961	0.974

Biometric Summary

Project Jay Peak Resort
Station JB-7.3
Stream Jay Branch
Location 427800000073 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	419	336	378
Species Richness	36.0	33.0	34.5
EPT Richness	25.0	22.0	23.5
Old Bio Index (0 to 5)	0.619	0.542	0.580
New Bio Index (0 to 10)	0.923	0.968	0.946
% dominant taxa	18.4%	33.4%	25.9%
EPT/EPT+C	0.961	0.974	0.968
EPT/Richness	0.694	0.667	0.681
% Model Affinity (orders)	79.2%	57.6%	68.4%
PPCS - functional groups	57.3%	32.8%	45.0%
Major Groups:			
Coleoptera (%)	0.301%	0.325%	0.313%
Diptera (%)	7.53%	7.47%	7.50%
Ephemeroptera (%)	32.2%	47.4%	39.8%
Trichoptera (%)	30.1%	11.4%	20.7%
Plecoptera (%)	19.9%	14.9%	17.4%
Oligochaeta (%)	9.94%	18.5%	14.2%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	43.1%	66.2%	54.7%
Collector Filterer (%)	24.1%	4.55%	14.3%
Predator (%)	18.4%	23.4%	20.9%
Shredder - Detritus (%)	12.0%	3.25%	7.65%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	2.41%	2.60%	2.50%
No FG Designation (%)	0.00%	0.00%	0.00%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station JB-7.3 **Latitude** 44.94218
Stream Jay Branch **Longitude** 72.47381
Location 427800000073 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	378	≥300	Pass	≥400	I-	≥500	Fail
Richness	34.5	≥27	Pass	≥31	Pass	≥35	I-
EPT	23.5	≥16	Pass	≥19	Pass	≥21	Pass
% PMA-O	68.4%	≥45%	Pass	≥55%	Pass	≥65%	I+
BI (New 1-10)	0.946	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	14.2%	≤12%	I-	≤5	Fail	≤2	Fail
EPT/EPT+C	0.968	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	45.0%	≥ 40%	Pass	≥ 45%	I+	≥ 50%	I-
Outcome:		**Indeterminate**					
The following metrics do not meet Class B thresholds:		% Oligo					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines
1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2014 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID _____ Time

Site Name Jay _____ River Mile _____ USF5___ PROB___
Site ID 4-4a
Date 10/5/15 Time 1550 Crew CS RW
Site Description _____

Town: _____ 5tream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GP5 --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" rain 5 days ago
Surrounding Land Use: Road, Forest

SAMPLING INFORMATION
5ampler: _____ Gear: _____
Effort Time: ____ min Mesh: 500 um
Area: _____ m^2 Quantitative: Y / N
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70 % Filamentous Green _____ % and length _____ in
Blue Green _____ % Moss Tr % Green _____ % Other _____ %

General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS A lot of sand
Embeddedness 0-5% Excel, 5-25% V Good, 25-50%Good, (50-75% Fair), >75%Poor Estimate 60 %
5ilt Rating: 2 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high) LWD (>4"dia) #: 3 /100m (reach)
Habitat Comments: Little CPOM
Scour?

GENERAL WATER TYPE (Riffle) Winder, Other _____ Channelized: Y / N Upstream Dam: Y (N) mi
B.F.Width: 25' (m) Wetted Width: 20' (m) Riffle Depth: 4" (m) Pool Depth: 3' (m) and Obs: _____
Bank 5tability: EX VG G F P stable Velocity estimate (circle): (5) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: Bottom Type: Hard -- Soft -- Mixed 50-75% naturally armored Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L>100m, R>100 m
Overstory: Softwood 40 % Hardwood 60 % Understory: 5hrub (brush) 30 % Herbaceous 20 % Grass ___ %
Canopy%: 100 90 80 (70) 60 50 40 30 20 10 0 Overhead: Open, Partly Open, Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H (M) L
Meter (type, #)1-_____ 2-_____ 3- _____ Color_____ Color DUP:_____
Temp Air 54 °F, °C Temp Water 8 °C fpH_____ lab pH_____ fCond_____ *D.O.*%_____ D.Omg/l_____
Circle: Cond pH Alk TP DP Cl lCAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____, _____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand) | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: (Clear) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: (Clear) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: (None) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

150' downstream of station due to lack of good habitat.

Pebble count
Sand - 3
Gravel - 9
Coarse Gravel - 21
Cobble - 45
Boulder - 22

Peri count		
moss	0 63	1 7
macro	70	
micro	28	42

Field Sheet Complete: CS (initial)
Photos: (Y) / N
Fish Survey Conducted: Y / (N)

Jay Peak Resort
Kick Net Data - Tributary 9 to Jay Branch - JB-T9-0.1
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2004 PIO	200	24	14	44	4.61	0.20	0.31	42	Does Not Meet Class B Criteria
2005 DEC/ESI	309	41	17	70	4.23	17	0.82	53	Does Not Meet Class B Criteria
2006 DEC/ESI	320	36	16	55	5.12	0.97	0.88	29	Does Not Meet Class B Criteria
2007 DEC/PIO	484	37	24	63	1.22	1.9	0.95	39	Meets Class B Criteria
2008 DEC/VHBP	492	28	17	70	1.18	0.0	0.92	42	Meets Class B Criteria
2009 VHBP	252	28	16	80	1.72	7.8	0.95	61	Indeterminate
2010 VHB	176	22	16	63	2.13	23	0.98	53	Does Not Meet Class B Criteria
2011 VHB	77	23	15	66	1.47	8.7	0.99	55	Does Not Meet Class B Criteria
2012 VHB	95	26	16	69	1.96	21	0.93	54	Does Not Meet Class B Criteria
2013 VHB	157	30	20	74	2.07	14	0.91	58	Does Not Meet Class B Criteria
2014 VHB	168	27	15	63	1.49	15	0.96	54	Does Not Meet Interim Targets
2015 VHB	209	32	16	60	3.33	27	0.92	67	Meets 1 of 4 Interim Targets

2014 Interim Targets	>200	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (1/16/2015)
2015 Interim Targets	>250	≥28	≥17	(-)	(-)	≤12	(-)	(-)	Per 2014 WQRP, Appendix 4 (1/16/2015)

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Below Threshold (I-)								
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

VT DEC Lab ID:

Organization: VHB

Stream Name: Trib. 9 to Jay Branch

Station: JB-T9-0.1

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.93859756	-72.49139171
or VT Site ID:	427809000001	
Date collected:	10/5/2015	
# Reps Collected:	1	
# Rep Picked:	1	
Collection Method:	Kick Net	
Collector:	C. Szal	

REPS:	**Rep 1**
Picked By:	CCS
Date Picked:	Jan-16
#sq picked:	24
#sq total:	24
Checked By:	CCS
Sorted By:	CCS
Sorted Date:	Jan-16

Taxonomic Data															Biotic Index				Richness Metrics	
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	Rep1				NOTES	FFG	Chiro	Biotic Index Scores		Old Biotic Index (1-5)	New Biotic Index (1-10)	Richness	EPT
								ID [1]	QA [2]	Count [3]	Total Sample Count [4]				Old BI	New BI	KN-1	KN-1	KN-1	KN-1
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	7	7.00		SCR	N	2	3	14	21	1	0
01.05.00.00.002.00.00	COLEOPTERA	PSEPHENIDAE	N/A	N/A	PSEPHENUS	N/A	sp	CCS	A	2	2.00		SCR	N	2	4	4	8	1	0
02.03.00.01.003.00.00	DIPTERA	CERATOPOGONIDAE	N/A	BEZZIA/PALPOMYIA	BEZZIA	N/A	sp	CCS	A	1	1.00		PRD	N	3	6	3	6	1	0
02.05.01.00.055.00.00	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	MICROTENDIPES	N/A	sp	CCS	A	1	1.00		CG	Y	3	6	3	6	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	3	3.00		CG	Y	3	4	9	12	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	1	1.00		CG	Y	3	6	3	6	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	2	2.00		PRD	Y	3	5	6	10	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	1.00		CG	Y	2	2	2	2	1	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	THIENEMANNIMYIA	N/A	sp	CCS	A	1	1.00		PRD	Y	3	6	3	6	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	4	4.00		PRD	N	2	3	8	12	1	0
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	6	6.00		SRD	N	3	6	18	36	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	21	21.0		CG	N	3	6	63	126	1	1
03.01.00.02.006.00.01	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	ACENTRELLA	N/A	turbida	CCS	A	1	1.00		SCR	N	1	2	1	2	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	4	4.00		SCR	N	2	5	8	20	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.00		CG	N	0	0	0	0	1	1
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	4	4.00		CG	N	2	4	8	16	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	2	2.00		SHR	N	1	2	2	4	1	1
04.03.00.00.002.00.00	TRICHOPTERA	GLOSSOSOMATIDAE	N/A	N/A	GLOSSOSOMA	N/A	sp	CCS	A	5	5.00		SCR	N	1	0	5	0	1	1
04.05.00.00.003.00.01	TRICHOPTERA	HYDROPSYCHIDAE	N/A	N/A	DIPLECTRONA	N/A	modesta	CCS	A	31	31.0		CF	N	0	0	0	0	1	1
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	9	9.00		CF	N	2	3	18	27	1	1
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	sparna	CCS	A	11	11.0		CF	N	2	4	22	44	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	2	2.00		SRD	N	1	1	2	2	1	1
04.14.00.00.005.00.00	TRICHOPTERA	POLYCENTROPODIDAE	N/A	N/A	POLYCENTROPUS	N/A	sp	CCS	A	1	1.00		PRD	N	3	6	3	6	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	8	8.00		PRD	N	1	2	8	16	1	1
04.16.00.00.001.03.09	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	minor/manistee	minor	CCS	A	1	1.00		PRD	N	0	0	0	0	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	4	4.00		SRD	N	0	0	0	0	1	1
05.06.00.00.004.00.02	PLECOPTERA	PERLIDAE	N/A	N/A	PARAGNETINA	N/A	immarginata	CCS	A	1	1.00		PRD	N	2	1	2	1	1	1
06.04.00.00.001.00.00	ODONATA	CORDULEGASTRIDAE	N/A	N/A	CORDULEGASTER	N/A	sp	CCS	A	2	2.00		PRD	N	1	3	2	6	1	0
12.08.00.00.002.00.00	GASTROPODA	PHYSIDAE	N/A	N/A	PHYSA	N/A	sp	CCS	A	13	13.0		CG	N	4	8	52	104	1	0
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP	CCS	A	2	2.00		-	N	-	-	-	-	1	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	55	55.0		CG	N	-	-	-	-	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	2	2.00		CG	N	-	-	-	-	1	0
TOTALS by Rep: --->										209	**209**									
GRAND TOTAL:	209 organisms																			

Total BI Score	269	499	**Total Richness**	**Total EPT-R**
Total # Organisms	209	209		
# of Organisms w/o BI	59	59	32	
Total # Organisms with BI	150	150		16
Biotic Index	1.79	3.33		

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms											
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	NEMATOMORPHA	GASTROPODA	TOTAL
01.03.00.00.006.00.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
01.05.00.00.002.00.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.03.00.01.003.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.055.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	21.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.006.00.01	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.03.00.00.002.00.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.00.003.00.01	0.00	0.00	0.00	31.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	11.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.14.00.00.005.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.03.09	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.06.00.00.004.00.02	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
06.04.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	
12.08.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.0	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	55.0	0.00	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	
Total	**9.00**	**20.0**	**31.0**	**70.0**	**5.00**	**57.0**	**0.00**	**0.00**	**2.00**	**2.00**	**13.0**	**209**
Percent	**4.31%**	**9.57%**	**14.8%**	**33.5%**	**2.39%**	**27.3%**	**0.00%**	**0.00%**	**0.957%**	**0.957%**	**6.22%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms											
	Collector Filterer	Collector Gatherer	Parasite	Planktivore	Predator	Piercing Carnivore	Piercing Herbivore	Scraper	Shredder-Herbivore	Shredder-Detritus	Other/ Unidentified	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	**7.00**
01.05.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	**2.00**
02.03.00.01.003.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
02.05.01.00.055.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
02.05.01.00.085.00.05	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**3.00**
02.05.03.02.121.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
02.05.05.00.008.00.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.00**
02.05.05.00.029.00.11	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
02.05.09.04.110.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
02.19.00.00.003.00.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	**4.00**
02.19.00.00.016.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	**6.00**
03.01.00.00.001.00.09	0.00	21.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**21.0**
03.01.00.02.006.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	**1.00**
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	**4.00**
03.04.00.00.004.00.01	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
03.04.00.00.004.01.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**4.00**
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	**2.00**
04.03.00.00.002.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	**5.00**
04.05.00.00.003.00.01	31.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**31.0**
04.05.00.02.008.01.04	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**9.00**
04.05.00.02.008.01.07	11.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**11.0**
04.07.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	**2.00**
04.14.00.00.005.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
04.16.00.00.001.00.01	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	0.00	**8.00**
04.16.00.00.001.03.09	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	**4.00**
05.06.00.00.004.00.02	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.00**
06.04.00.00.001.00.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.00**
12.08.00.00.002.00.00	0.00	13.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**13.0**
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	**2.00**
18.04.00.00.000.00.00	0.00	55.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**55.0**
18.06.00.00.000.00.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.00**
Group Total	**51.0**	**102**	**0.00**	**0.00**	**21.0**	**0.00**	**0.00**	**19.0**	**2.00**	**12.0**	**2.00**	**209**
Percent of Sample Total	**24.4%**	**48.8%**	**0.00%**	**0.00%**	**10.0%**	**0.00%**	**0.00%**	**9.09%**	**0.957%**	**5.74%**	**0.957%**	**100%**

	Model			Kicknet 1 vs. SHG	
	SHG	MHG	WWMG	KN-1	PPCS
Col. Gath.	31%	32%	22%	48.8%	63.5%
Col. Filt.	18%	30%	36%	24.4%	73.8%
Predator	19%	13%	7%	10.0%	52.9%
Shred-Det.	15%	4%	2%	5.74%	38.3%
Shred- Herb.	1%	1%	5%	0.957%	95.7%
Scraper	12%	13%	22%	9.09%	75.8%
				PPCS-FG =	**66.6%**

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** C. Szal

Order	Model			Kicknet 1 vs. Model (SHG)	
	SHG	MHG	WWMG	**%**	**difference**
Coleoptera	8%	6%	13%	4.31%	3.69
Diptera	19%	18%	13%	9.57%	9.43
Ephemeroptera	23%	34%	32%	14.8%	8.17
Plecoptera	21%	8%	8%	2.39%	18.6
Trichoptera	28%	33%	33%	33.5%	5.49
Oligochaeta	0.5%	0.5%	1.0%	27.3%	26.8
Other	0.5%	0.5%	1.0%	8.13%	7.634

Sum diff	79.8
Sum diff * 0.5	39.9
100-(sum diff * 0.5)	60.1
% model affinity	**60.1%**

EPT / EPT+C Calculations

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001
Sample Date 10/05/15
Class B, Small High Gradient
Sampler C. Szal

	KN-1
#EPT organisms	106
#C organisms	9.00
EPT/EPT+C	0.922

Biometrics Summary

Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** C. Szal

Replicate # Sampling Method	1 KN	Average KN
Biometrics:		
Density/Unit	209	209
Species Richness	32.0	32.0
EPT Richness	16.0	16.0
Old Bio Index (0 to 5)	1.79	1.79
New Bio Index (0 to 10)	3.33	3.33
% dominant taxa	26.3%	26.3%
# dominant taxa	55.0	
dominant taxa ID	OLIGOCHAETA	LUMBRICULIDAE
EPT/EPT+C	0.922	0.922
EPT/Richness	0.500	0.500
% Model Affinity (orders)	60.1%	60.1%
PPCS - functional groups	66.6%	66.6%
Major Groups:		
Coleoptera (%)	4.31%	4.31%
Diptera (%)	9.57%	9.57%
Ephemeroptera (%)	14.8%	14.8%
Trichoptera (%)	33.5%	33.5%
Plecoptera (%)	2.39%	2.39%
Oligochaeta (%)	27.3%	27.3%
Bivalvia (%)	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%
Odonata (%)	0.957%	0.957%
Other (%)	7.18%	7.18%
Total (%)	100%	100%
Feeding Groups:		
Collector Gatherer (%)	48.8%	48.8%
Collector Filterer (%)	24.4%	24.4%
Predator (%)	10.0%	10.0%
Shredder - Detritus (%)	5.74%	5.74%
Shredder - Herbivore (%)	0.957%	0.957%
Scraper (%)	9.09%	9.09%
Other (%)	0.957%	0.957%
Total (%)	100%	100%

Prepared By VHB
Project Jay Peak Resort

Station JB-T9-0.1
Stream Trib. 9 to Jay Branch
Location 427809000001
Sample Date 10/05/15

Latitude 44°20'21.314"N
Longitude 72°16'9.961"W
Class B, Small High Gradient
Sampler C. Szal

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	209	≥300	Fail	≥400	Fail	≥500	Fail
Richness	32.0	≥27	Pass	≥31	I+	≥35	Fail
EPT	16.0	≥16	I+	≥19	Fail	≥21	Fail
PMA-O	60.1%	≥45%	Pass	≥55%	Pass	≥65%	I-
BI (New 1-10)	3.33	≤4.50	Pass	≤3.50	Pass	≤3.00	Fail
% Oligo	27.3%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.922	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
PPCS-FG	66.6%	≥ 40%	Pass	≥ 45%	Pass	≥ 50%	Pass
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		Density, % Oligo					

Individual Metric Outcome Guidelines (using the table below)

1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines

1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2014 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID _____ Time _____

Site Name Jay River Mile _____ USFS___ PROB___
Site ID 3-1
Date 10/5/15 Time 1030 Crew RW, CS
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" rain 5 d. ago
Surrounding Land Use: Resort, forest

SAMPLING INFORMATION
Sampler: CS Gear: KN
Effort Time: ___ min Mesh: 500 um
Area: _____ m^2 Quantitative: Y / (N)
#Reps: 1 Comp/rep: 4
limited kickable area

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 60 % Filamentous Green _____ % and length _____ in
Blue Green _____ % Moss Tr % Green _____ % Other _____ %

General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS
Embeddedness 0-5% Excel, S-25% V Good, 25-50%Good, (50-75% Fair) >75%Poor Estimate _____ %
Silt Rating: 3-4 (0=none, 5= chocolate) CPOM Rating (leaf packs): 3 (0= none,5=high) LWD (>4"dia) #: 3 /100m (reach)
Habitat Comments:

GENERAL WATER TYPE (Riffle), Winder, Other _____ Channelized: Y / (N) Upstream Dam: Y / (N) ___ mi
B.F.Width: 20' (m) Wetted Width: 6 (m) Riffle Depth: 1-2" (m) Pool Depth: 1' (m) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: Bottom Type: Hard -- Soft -- Mixed (75-50%) Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 20 % Hardwood 80 % Understory: Shrub (brush) 30 % Herbaceous 30 % Grass 10 %
Canopy%: 100 90 (80) 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, (Closed)
Leaves still on

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H (M) L
Meter (type, #)1-_____ 2-_____ 3-_____ Color_____ Color DUP:_____
Temp Air 45 (°F) °C Temp Water 8.5 °C fpH_____ lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____, _____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply)

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand) (Silt) | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: (Clear) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm
C – Water Color: (Clear) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: (None) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Overall Aesthetic Rating: 0(poor) – 5(exc.)_____

A lot of sand, Good CPOM, not highly scoured

Pebble count
Sand - 9
Gravel - 19
Coarse Gravel - 30
Cobble - 25
Boulder - 15
Bedrock - 6

Peri count

	0	1
moss	43	3
macro	46	
micro	23	23

Field Sheet Complete: CS (initial)
Photos: (Y) / N
Fish Survey Conducted: Y / (N)

Jay Peak Resort
Kick Net Data - Trib. 3 to South Mountain Branch - SMB-T3-0.5
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2014 VHB	403	27	18	66	2.00	8.1	0.95	57	Meets Class B Criteria
2015 VHB	248	26	16	48	0.725	19	0.95	45	Does Not Meet Class B Criteria

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Below Threshold (I-)								
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

VT DEC Lab ID: Organization: VHB

Stream Name: **Trib. 3 to South Mountain Branch**

Station: **SMB-T3-0.5**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.9285118	-72.5014718
or VT Site ID:	427807030005	
Date collected:	10/5/2015	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan-16	Jan-16
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan-16	Jan-16

Taxonomic Data																		**Biotic Index**						**Richness Metrics**			
								Rep1				Rep2															
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro	Biotic Index Scores		Old Biotic Index		New Biotic Index		Richness	EPT	Richness	EPT
																			Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	1	1.00				0.00		SCR	N	2	3	2	0	3	0	1	0	-	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps	CCS	A	1	1.00				0.00		CG	Y	3	4	3	0	4	0	1	0	-	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	3	3.00				0.00		CG	Y	3	6	9	0	18	0	1	0	-	0
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp				0.00	CCS	A	1	1.00		SRD	Y	3	5	0	3	0	5	-	0	1	0
02.05.05.00.008.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	CARDIOCLADIUS	N/A	sp	CCS	A	1	1.00	CCS	A	3	3.00		PRD	Y	3	5	3	9	5	15	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	1	1.00				0.00		CG	Y	2	2	2	0	2	0	1	0	-	0
02.05.05.00.068.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARACHAETOCLADIUS	N/A	sp	CCS	A	1	1.00	CCS	A	4	4.00		CG	Y	2	2	2	8	2	8	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1.00				0.00		CG	Y	3	5	3	0	5	0	1	0	-	0
02.05.09.04.110.00.00	DIPTERA	CHIRONOMIDAE	PENTANEURINI	THIENEMANNIMYIA GROUP	THIENEMANNIMYIA	N/A	sp				0.00	CCS	A	3	3.00		PRD	Y	3	6	0	9	0	18	-	0	1	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	6	6.00	CCS	A	3	3.00		PRD	N	2	3	12	6	18	9	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	4	4.00	CCS	A	9	9.00		PRD	N	2	2	8	18	8	18	1	0	1	0
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	2	2.00	CCS	A	4	4.00		SCR	N	2	5	4	8	10	20	1	1	1	1
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.00				0.00		CG	N	0	0	0	0	0	0	1	1	-	0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	7	7.00	CCS	A	11	11.0		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	1	1.00				0.00		SCR	N	1	4	1	0	4	0	1	1	-	0
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	1	1.00	CCS	A	1	1.00		SHR	N	1	2	1	1	2	2	1	1	1	1
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	3	3.00	CCS	A	1	1.00		CF	N	0	0	0	0	0	0	1	1	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	9	9.00				0.00		SRD	N	1	1	9	0	9	0	1	1	-	0
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	6	6.00	CCS	A	10	10.0		CF	N	0	0	0	0	0	0	1	1	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	4	4.00	CCS	A	12	12.0		PRD	N	1	2	4	12	8	24	1	1	1	1
04.16.00.00.001.00.91	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp a	CCS	A	1	1.00	CCS	A	3	3.00		PRD	N	0	1	0	0	1	3	1	1	1	1
04.16.00.00.001.02.00	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	carolina/fenestra	carolina group	CCS	A	7	7.00				0.00		PRD	N	0	1	0	0	7	0	1	1	-	0
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	2	2.00	CCS	A	1	1.00		SCR	N	2	3	4	2	6	3	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	32	32.0	CCS	A	14	14.0		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp				0.00	CCS	A	1	1.00		PRD	N	0	0	0	0	0	0	-	0	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	88	88.0	CCS	A	100	100		SRD	N	0	0	0	0	0	0	1	1	1	1
05.04.00.00.007.00.00	PLECOPTERA	NEMOURIDAE	N/A	N/A	SOYEDINA	N/A	sp				0.00	CCS	A	1	1.00		SRD	N	0	0	0	0	0	0	-	0	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature				0.00	CCS	A	2	2.00		SRD	N	1	0	0	2	0	0	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	12	12.0	CCS	A	13	13.0		PRD	N	1	2	12	13	24	26	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	3	3.00	CCS	A	4	4.00		SRD	N	1	0	3	4	0	0	1	1	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm				0.00	CCS	A	1	1.00		SRD	N	2	3	0	2	0	3	-	0	1	1
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP	CCS	A	1	1.00				0.00		-	N	-	-	-	-	-	-	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	48	48.0	CCS	A	46	46.0		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid	CCS	A	1	1.00				0.00		CG	N	-	-	-	-	-	-	1	0	-	0
TOTALS by Rep: --->										248	**248**			248	**248**												
GRAND TOTAL:	496 organisms																										

Total BI Score	82	97	136	154	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms	248	248	248	248				
# of Organisms w/o BI	50	46	50	46	28		23	
Total # Organisms with BI	198	202	198	202		16		16
Biotic Index	0.41	0.48	0.69	0.76				

*Notes:
[1] ID is initial of taxonomist or organization
[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%
[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.
[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.5
Stream Trib. 3 to South Mountain Branch
VT Site ID 427807030005
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	32.0	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	88.0	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	12.0	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	48.0	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	
Total	**1.00**	**18.0**	**11.0**	**33.0**	**135**	**49.0**	**0.00**	**0.00**	**0.00**	**1.00**	**248**
Percent	**0.403%**	**7.26%**	**4.44%**	**13.3%**	**54.4%**	**19.8%**	**0.00%**	**0.00%**	**0.00%**	**0.403%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.5
Stream Trib. 3 to South Mountain Branch
VT Site ID 427807030005
Sample Date 10/05/15

2015 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	9.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	11.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	10.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	14.0	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	100	0.00	0.00	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	13.0	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	46.0	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**0.00**	**23.0**	**15.0**	**28.0**	**136**	**46.0**	**0.00**	**0.00**	**0.00**	**0.00**	**248**
Percent	**0.00%**	**9.27%**	**6.05%**	**11.3%**	**54.8%**	**18.5%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.5
Stream Trib. 3 to South Mountain Branch
Location 427807030005
Sample Date 10/5/2015

2015 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.00	0.00	0.00	0.00	
02.05.05.00.008.00.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00		0.00	0.00	3.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.068.00.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00		4.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.09.04.110.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	3.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00		0.00	0.00	3.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00		0.00	0.00	9.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00		0.00	0.00	0.00	0.00	0.00	4.00	0.00	
03.04.00.00.004.00.01	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00		11.0	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00		0.00	0.00	0.00	0.00	1.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	3.00	0.00	0.00	0.00	0.00	0.00		0.00	1.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	9.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00		0.00	10.0	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	4.00	0.00	0.00	0.00	0.00		0.00	0.00	12.0	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	1.00	0.00	0.00	0.00	0.00		0.00	0.00	3.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.02.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00		0.00	0.00	0.00	0.00	0.00	1.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	32.0	0.00	0.00	0.00	0.00		0.00	0.00	14.0	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	1.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	88.0	0.00	0.00	0.00		0.00	0.00	0.00	100	0.00	0.00	0.00	
05.04.00.00.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	2.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	12.0	0.00	0.00	0.00	0.00		0.00	0.00	13.0	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	3.00	0.00	0.00	0.00		0.00	0.00	0.00	4.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	48.0	0.00	0.00	0.00	0.00	0.00	0.00		46.0	0.00	0.00	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**64.0**	**9.00**	**67.0**	**100**	**1.00**	**6.00**	**1.00**	**248**	**61.0**	**11.0**	**61.0**	**109**	**1.00**	**5.00**	**0.00**	**248**
Percent	**25.8%**	**3.63%**	**27.0%**	**40.3%**	**0.403%**	**2.42%**	**0.403%**	**100%**	**24.6%**	**4.44%**	**24.6%**	**44.0%**	**0.403%**	**2.02%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.5
Stream Trib. 3 to South Mountain Branch
Location 427807030005
Sample Date 10/5/2015

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	25.8%	83.2%	24.6%	79.3%
Col. Filt.	18%	30%	36%	3.63%	20.2%	4.44%	24.6%
Predator	19%	13%	7%	27.0%	70.3%	24.6%	77.2%
Shred-Det.	15%	4%	2%	40.3%	37.2%	44.0%	34.1%
Shred- Herb.	1%	1%	5%	0.403%	40.3%	0.403%	40.3%
Scraper	12%	13%	22%	2.42%	20.2%	2.02%	16.8%
				PPCS-FG =	**45.2%**	**PPCS-FG =**	**45.4%**

CG = Collector/Gatherer
CF = Collector/Filterer
PRD = Predator
SRD = Shredder - Detritus
SHR = Shredder - Herbivore
SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB-T3-0.5
Stream Trib. 3 to South Mountain Branch
VT Site ID 427807030005 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.403%	7.60	0.00%	8.00
Diptera	19%	18%	13%	7.26%	11.7	9.27%	9.73
Ephemeroptera	23%	34%	32%	4.44%	18.6	6.05%	17.0
Plecoptera	21%	8%	8%	54.4%	33.4	54.8%	33.8
Trichoptera	28%	33%	33%	13.3%	14.7	11.3%	16.7
Oligochaeta	0.5%	0.5%	1.0%	19.8%	19.3	18.5%	18.0
Other	0.5%	0.5%	1.0%	0.403%	0.097	0.00%	0.500
				Sum diff	105		104
				Sum diff * 0.5	52.7		51.9
				100-(sum diff * 0.5)	47.3		48.1
				% model affinity	**47.3%**		**48.1%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.5
Stream Trib. 3 to South Mountain Branch
Location 427807030005
Sample Date 10/5/2015
Class B, Small High Gradient
Sampler CS

	KN-1	KN-2
#EPT organisms	179	179
#C organisms	8.00	11.0
EPT/EPT+C	0.957	0.942

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.5
Stream Trib. 3 to South Mountain Branch
Location 427807030005 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	248	248	248
Species Richness	28.0	23.0	25.5
EPT Richness	16.0	16.0	16.0
Old Bio Index (0 to 5)	0.414	0.480	0.447
New Bio Index (0 to 10)	0.687	0.762	0.725
% dominant taxa	35.5%	40.3%	37.9%
EPT/EPT+C	0.957	0.942	0.950
EPT/Richness	0.571	0.696	0.627
% Model Affinity (orders)	47.3%	48.1%	47.7%
PPCS - functional groups	45.2%	45.4%	45.3%
Major Groups:			
Coleoptera (%)	0.403%	0.00%	0.202%
Diptera (%)	7.26%	9.27%	8.27%
Ephemeroptera (%)	4.44%	6.05%	5.24%
Trichoptera (%)	13.3%	11.3%	12.3%
Plecoptera (%)	54.4%	54.8%	54.6%
Oligochaeta (%)	19.8%	18.5%	19.2%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.403%	0.00%	0.202%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	25.8%	24.6%	25.2%
Collector Filterer (%)	3.63%	4.44%	4.03%
Predator (%)	27.0%	24.6%	25.8%
Shredder - Detritus (%)	40.3%	44.0%	42.1%
Shredder - Herbivore (%)	0.403%	0.403%	0.403%
Scraper (%)	2.42%	2.02%	2.22%
No FG Designation (%)	0.403%	0.00%	0.202%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station SMB-T3-0.5 **Latitude** 44.928512
Stream Trib. 3 to South Mountain Branch **Longitude** -72.50147
Location 427807030005 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	248	≥300	Fail	≥400	Fail	≥500	Fail
Richness	25.5	≥27	Fail	≥31	Fail	≥35	Fail
EPT	16.0	≥16	I+	≥19	Fail	≥21	Fail
% PMA-O	47.7%	≥45%	I+	≥55%	Fail	≥65%	Fail
BI (New 1-10)	0.725	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	19.2%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.950	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	45.3%	≥ 40%	Pass	≥ 45%	I+	≥ 50%	I-
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		Density, Richness, % Oligo					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines
1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET

(2014 edition)

Bug Lab ID _____

Chem ID _____ Time _____

DUP Chem ID _____ Time _____

Site Name Jay River Mile _____ USF5___ PROB___

5ite ID 108

Date 10/5/15 Time 1310 Crew CS RW

Site Description _____

Town: _____ 5tream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft

D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____

Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" rain 5 days ago

Surrounding Land Use: Ski area, Rd, residential forest

SAMPLING INFORMATION

5ampler: CS Gear: kN

Effort Time: ___ min Mesh: 500 um

Area: _____ m^2 Quantitative: Y (N)

#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)

Diatom 70 % Filamentous Green _____ % and length _____ in

Blue Green _____ % Moss Tr % Green _____ % Other _____ %

General Trophic Rating: 0 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS

Embeddedness 0-5% Excel, 5-25% V Good, 25-50%Good, (50-75% Fair,) >75%Poor Estimate _____ %

5ilt Rating: 3 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high) LWD (>4"dia) #: 4 /100m (reach)

Habitat Comments:

GENERAL WATER TYPE (Riffle) Winder, Other _____ Channelized: Y / N Upstream Dam: Y (N) ___ mi

B.F.Width: 20' (m) Wetted Width: 10' (m) Riffle Depth: 2" (m) Pool Depth: 1' (m) and Obs: _____

Bank Stability: EX VG G F P Velocity estimate (circle): (5) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec

Fish: Bottom Type: Hard -- 5oft -- Mixed 25-50% Stable Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 50 m, R 100 m

Overstory: 5oftwood 10 % Hardwood 90 % Understory: Shrub (brush) 10 % Herbaceous 30 % Grass ___ %

Canopy%: 100 90 (80) 70 60 50 40 30 20 10 0 Overhead: Open, Partly Open, (Closed)

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H (M) L

Meter (type, #)1-_____ 2-_____ 3- _____ Color_____ Color DUP:_____

Temp Air 54 °F, °C Temp Water 9 °C fpH_____ lab pH_____ fCond_____ *D.O.*%_____ D.Omg/l_____

Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, T5S Other_____, _____,

WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply)

Overall Aesthetic Rating: 0(poor) – 5(exc.) 3

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand) | Silt | Sewage | Oily Sheen | (Trash) | Iron | Scum | None

B – Water Clarity: (Clear) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm

C – Water Color: (Clear) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish

D – Odors: (None) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas

Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

Leaves mainly on A lot of sand, substrate embedded

Pebble count	Peri count		
Sand- 6		0	1
Gravel- 11	moss	49	5
Coarse Gravel- 29	macro	54	
Cobble- 39	micro	14	40
Boulder- 15			

Field Sheet Complete: CS (initial)

Photos: (Y) / N

Fish Survey Conducted: Y / (N)

Jay Peak Resort
Kick Net Data - Trib. 3 to South Mountain Branch - SMB-T3-0.1
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2012 DEC	259	35	22	67	0.93	21	0.93	57	Does Not Meet Class B Criteria/Fair-Poor
2013 VHB	133	22	15	58	1.04	30	0.93	50	Does Not Meet Class B Criteria
2014 VHB	361	27	19	58	0.71	18	0.96	46	Meets All Interim Targets
2015 VHB	218	21	14	46	0.71	37	0.98	42	Meets 1 of 4 Interim Targets

2014 Interim Targets	> 150	> 22	> 15.3	(-)	(-)	< 25	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)
2015 Interim Targets	> 200	> 24	> 15.5	(-)	(-)	< 20	(-)	(-)	Per 2014 WQRP, Appendix 4 (01/16/2015)

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Below Threshold (I-)								
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

VT DEC Lab ID: Organization: VHB

Stream Name: **Trib. 3 to South Mountain Branch**

Station: **SMB-T3-0.1**

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.928770	-72.49562
or VT Site ID:	427807030001	
Date collected:	10/5/2015	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan-16	Jan-16
#sq picked:	24	24
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan-16	Jan-16

Taxonomic Data								Rep1				Rep2						
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp				0.00	CCS	A	2	2.00		SCR	N
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	2	2.00				0.00		CG	Y
02.05.05.00.005.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	BRILLIA	N/A	sp	CCS	A	1	1.00				0.00		SRD	Y
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis				0.00	CCS	A	1	1.00		CG	Y
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp				0.00	CCS	A	1	1.00		CG	Y
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	1	1.00	CCS	A	2	2.00		PRD	N
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	1	1.00	CCS	A	6	6.00		PRD	N
02.19.00.00.016.00.00	DIPTERA	TIPULIDAE	N/A	N/A	TIPULA	N/A	sp	CCS	A	1	1.00				0.00		SRD	N
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	3	3.00	CCS	A	2	2.00		SCR	N
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	1	1.00				0.00		CG	N
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	1	1.00				0.00		CG	N
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	28	28.0	CCS	A	20	20.0		CG	N
03.07.00.00.005.00.00	EPHEMEROPTERA	LEPTOPHLEBIIDAE	N/A	N/A	PARALEPTOPHLEBIA	N/A	sp	CCS	A	1	1.00				0.00		CG	N
04.05.01.00.006.00.01	TRICHOPTERA	HYDROPSYCHIDAE	ARCTOPSYCHINAE	N/A	PARAPSYCHE	N/A	apicalis	CCS	A	1	1.00				0.00		CF	N
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	4	4.00	CCS	A	4	4.00		SRD	N
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	5	5.00	CCS	A	1	1.00		CF	N
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	6	6.00	CCS	A	4	4.00		PRD	N
04.16.00.00.001.00.91	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp a	CCS	A	1	1.00				0.00		PRD	N
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	5	5.00	CCS	A	1	1.00		SCR	N
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	19	19.0	CCS	A	28	28.0		PRD	N
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	23	23.0	CCS	A	47	47.0		SRD	N
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature				0.00	CCS	A	1	1.00		SRD	N
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	8	8.00	CCS	A	14	14.0		PRD	N
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	5	5.00	CCS	A	21	21.0		SRD	N
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	2	2.00				0.00		SRD	N
06.04.00.00.001.00.00	ODONATA	CORDULEGASTRIDAE	N/A	N/A	CORDULEGASTER	N/A	sp	CCS	A	1	1.00				0.00		PRD	N
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP				0.00	CCS	A	2	2.00		-	N
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	90	90.0	CCS	A	69	69.0		CG	N
TOTALS by Rep: --->										210	**210**			226	**226**			

GRAND TOTAL: 436 organisms

Biotic Index							Richness Metrics			
	Biotic Index Scores		Old Biotic Index		New Biotic Index		Richness	EPT	Richness	EPT
	Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
	2	3	0	4	0	6	-	0	1	0
	3	6	6	0	12	0	1	0	-	0
	3	5	3	0	5	0	1	0	-	0
	2	2	0	2	0	2	-	0	1	0
	3	5	0	3	0	5	-	0	1	0
	2	3	2	4	3	6	1	0	1	0
	2	2	2	12	2	12	1	0	1	0
	3	6	3	0	6	0	1	0	-	0
	2	5	6	4	15	10	1	1	1	1
	0	0	0	0	0	0	1	1	-	0
	2	4	2	0	4	0	1	1	-	0
	0	0	0	0	0	0	1	1	1	1
	2	1	2	0	1	0	1	1	-	0
	0	0	0	0	0	0	1	1	-	0
	1	1	4	4	4	4	1	1	1	1
	0	0	0	0	0	0	1	1	1	1
	1	2	6	4	12	8	1	1	1	1
	0	1	0	0	1	0	1	1	-	0
	2	3	10	2	15	3	1	1	1	1
	0	0	0	0	0	0	1	1	1	1
	0	0	0	0	0	0	1	1	1	1
	1	0	0	1	0	0	-	0	1	1
	1	2	8	14	16	28	1	1	1	1
	1	0	5	21	0	0	1	1	1	1
	2	3	4	0	6	0	1	1	-	0
	1	3	1	0	3	0	1	0	-	0
	-	-	-	-	-	-	-	0	1	0
	-	-	-	-	-	-	1	0	1	0
Total BI Score			64	75	105	84	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
Total # Organisms			210	226	210	226				
# of Organisms w/o BI			90	71	90	71	23		18	
Total # Organisms with BI			120	155	120	155		16		11
Biotic Index			0.53	0.48	0.88	0.54				

*Notes:
[1] ID is initial of taxonomist or organization
[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%
[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.
[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream Trib. 3 to South Mountain Branch
VT Site ID 427807030001
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	28.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	19.0	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	23.0	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	
06.04.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	90.0	0.00	0.00	0.00	0.00	
Total	**0.00**	**6.00**	**34.0**	**22.0**	**57.0**	**90.0**	**0.00**	**0.00**	**1.00**	**0.00**	**210**
Percent	**0.00%**	**2.86%**	**16.2%**	**10.5%**	**27.1%**	**42.9%**	**0.00%**	**0.00%**	**0.476%**	**0.00%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-T3-0.1
Stream Trib. 3 to South Mountain Branch
VT Site ID 427807030001
Sample Date 10/05/15

2015 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	20.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	4.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	28.0	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	47.0	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	14.0	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	21.0	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
06.04.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	69.0	0.00	0.00	0.00	0.00	
Total	**2.00**	**10.0**	**22.0**	**10.0**	**111**	**69.0**	**0.00**	**0.00**	**0.00**	**2.00**	**226**
Percent	**0.885%**	**4.42%**	**9.73%**	**4.42%**	**49.1%**	**30.5%**	**0.00%**	**0.00%**	**0.00%**	**0.885%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream Trib. 3 to South Mountain Branch
Location 427807030001
Sample Date 10/5/2015

2015 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	2.00	0.00	
02.05.03.02.121.00.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.005.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00		0.00	0.00	2.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00		0.00	0.00	6.00	0.00	0.00	0.00	0.00	
02.19.00.00.016.00.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	3.00	0.00		0.00	0.00	0.00	0.00	0.00	2.00	0.00	
03.04.00.00.004.00.01	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	28.0	0.00	0.00	0.00	0.00	0.00	0.00		20.0	0.00	0.00	0.00	0.00	0.00	0.00	
03.07.00.00.005.00.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.01.00.006.00.01	0.00	1.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	4.00	0.00	0.00	0.00		0.00	0.00	0.00	4.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00		0.00	1.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	6.00	0.00	0.00	0.00	0.00		0.00	0.00	4.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	1.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	5.00	0.00		0.00	0.00	0.00	0.00	0.00	1.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	19.0	0.00	0.00	0.00	0.00		0.00	0.00	28.0	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	23.0	0.00	0.00	0.00		0.00	0.00	0.00	47.0	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	1.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00		0.00	0.00	14.0	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	5.00	0.00	0.00	0.00		0.00	0.00	0.00	21.0	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	2.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
06.04.00.00.001.00.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	2.00	
18.04.00.00.000.00.00	90.0	0.00	0.00	0.00	0.00	0.00	0.00		69.0	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**123**	**6.00**	**37.0**	**36.0**	**0.00**	**8.00**	**0.00**	**210**	**91.0**	**1.00**	**54.0**	**73.0**	**0.00**	**5.00**	**2.00**	**226**
Percent	**58.6%**	**2.86%**	**17.6%**	**17.1%**	**0.00%**	**3.81%**	**0.00%**	**100%**	**40.3%**	**0.442%**	**23.9%**	**32.3%**	**0.00%**	**2.21%**	**0.885%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-T3-0.1
Stream Trib. 3 to South Mountain Branch
Location 427807030001
Sample Date 10/5/2015

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	58.6%	52.9%	40.3%	77.0%
Col. Filt.	18%	30%	36%	2.86%	15.9%	0.442%	2.46%
Predator	19%	13%	7%	17.6%	92.7%	23.9%	79.5%
Shred-Det.	15%	4%	2%	17.1%	87.5%	32.3%	46.4%
Shred- Herb.	1%	1%	5%	0.00%	0.00%	0.00%	0.00%
Scraper	12%	13%	22%	3.81%	31.7%	2.21%	18.4%
				PPCS-FG =	**46.8%**	**PPCS-FG =**	**37.3%**

CG = Collector/Gatherer

CF = Collector/Filterer

PRD = Predator

SRD = Shredder - Detritus

SHR = Shredder - Herbivore

SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream Trib. 3 to South Mountain Branch
VT Site ID 427807030001 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	0.00%	8.00	0.885%	7.12
Diptera	19%	18%	13%	2.86%	16.1	4.42%	14.6
Ephemeroptera	23%	34%	32%	16.2%	6.81	9.73%	13.3
Plecoptera	21%	8%	8%	27.1%	6.14	49.1%	28.1
Trichoptera	28%	33%	33%	10.5%	17.5	4.42%	23.6
Oligochaeta	0.5%	0.5%	1.0%	42.9%	42.4	30.5%	30.0
Other	0.5%	0.5%	1.0%	0.48%	0.024	0.885%	0.385
				Sum diff	97.0		117
				Sum diff * 0.5	48.5		58.5
				100-(sum diff * 0.5)	51.5		41.5
				% model affinity	**51.5%**		**41.5%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-T3-0.1
Stream Trib. 3 to South Mountain Branch
Location 427807030001
Sample Date 10/5/2015
Class B, Small High Gradient
Sampler CS

	KN-1	KN-2
#EPT organisms	113	143
#C organisms	3.00	2.00
EPT/EPT+C	0.974	0.986

Biometric Summary

Project Jay Peak Resort
Station SMB-T3-0.1
Stream Trib. 3 to South Mountain Branch
Location 427807030001 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	210	226	218
Species Richness	23.0	18.0	20.5
EPT Richness	16.0	11.0	13.5
Old Bio Index (0 to 5)	0.533	0.484	0.509
New Bio Index (0 to 10)	0.875	0.542	0.708
% dominant taxa	42.9%	30.5%	36.7%
EPT/EPT+C	0.974	0.986	0.980
EPT/Richness	0.696	0.611	0.659
% Model Affinity (orders)	51.5%	41.5%	46.5%
PPCS - functional groups	46.8%	37.3%	42.1%
Major Groups:			
Coleoptera (%)	0.00%	0.885%	0.442%
Diptera (%)	2.86%	4.42%	3.64%
Ephemeroptera (%)	16.2%	9.73%	13.0%
Trichoptera (%)	10.5%	4.42%	7.45%
Plecoptera (%)	27.1%	49.1%	38.1%
Oligochaeta (%)	42.9%	30.5%	36.7%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.476%	0.00%	0.238%
Other (%)	0.00%	0.885%	0.442%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	58.6%	40.3%	49.4%
Collector Filterer (%)	2.86%	0.442%	1.65%
Predator (%)	17.6%	23.9%	20.8%
Shredder - Detritus (%)	17.1%	32.3%	24.7%
Shredder - Herbivore (%)	0.00%	0.00%	0.00%
Scraper (%)	3.81%	2.21%	3.01%
No FG Designation (%)	0.00%	0.885%	0.442%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station SMB-T3-0.1 **Latitude** 44.928770
Stream Trib. 3 to South Mountain Branch **Longitude** -72.49562
Location 427807030001 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	218	≥300	Fail	≥400	Fail	≥500	Fail
Richness	20.5	≥27	Fail	≥31	Fail	≥35	Fail
EPT	13.5	≥16	Fail	≥19	Fail	≥21	Fail
% PMA-O	46.5%	≥45%	I+	≥55%	Fail	≥65%	Fail
BI (New 1-10)	0.708	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	36.7%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.980	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	42.1%	≥ 40%	I+	≥ 45%	I-	≥ 50%	Fail
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		Density, Richness, EPT, % Oligo					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines
1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET
(2014 edition)

Bug Lab ID _____
Chem ID _____ Time _____
DUP Chem ID _____ Time _____

Site Name Jay River Mile _____ USFS___ PROB___
Site ID 10B
Date 10/5/15 Time 1400 Crew CS RW
Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft
D.D° Latitude: _____ Longitude: _____ Lat/Long source (GPS --NAD83:) _____
Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" rain 5 d. ago
Surrounding Land Use: Forest, Ski area, road

SAMPLING INFORMATION
Sampler: CS Gear: kN
Effort Time: ____ min Mesh: 500 um
Area: _____ m^2 Quantitative: Y (N)
#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)
Diatom 70 % Filamentous Green _____ % and length _____ in
Blue Green _____ % Moss Tr % Green _____ % Other _____ %

General Trophic Rating: O (0=oligo, S=Eutroph)

HABITAT OBSERVATIONS
Embeddedness 0-S% Excel, S-2S% V Good, 2S-50%Good, (S0-7S% Fair), >7S%Poor Estimate _____ %
Silt Rating: 2 (0=none, S= chocolate) CPOM Rating (leaf packs): 1 (0= none,S=high) LWD (>4"dia) #: 4 /100m (reach)
Habitat Comments: scoured

GENERAL WATER TYPE Riffle, Winder, Other _____ Channelized: Y (N) Upstream Dam: Y (N) ____ mi
B.F.Width: 25' (m) Wetted Width: 6-12' (m) Riffle Depth: 4" (m) Pool Depth: 3.5 (m) and Obs: _____
Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec
Fish: Bottom Type: Hard -- Soft -- Mixed 100-75 stable well armored Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L >100 m, R >100 m
Overstory: Softwood 10 % Hardwood 90 % Understory: Shrub (brush) 20 % Herbaceous 20 % Grass ___ %
Canopy%: 100 90 80 70 (60) 50 40 30 20 10 0 Overhead: Open, (Partly Open), Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H (M) L
Meter (type, #)1-_____ 2-_____ 3- _____ Color _____ Color DUP: _____
Temp Air 54 °F, °C Temp Water 8 °C fpH _____ lab pH _____ fCond _____ D.O.% _____ D.Omg/l _____
Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, TSS Other _____, _____,
WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply)
Overall Aesthetic Rating: 0(poor) – S(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand) | Silt | Sewage | Oily Sheen | Trash | Iron | Scum | None
B – Water Clarity: (Clear) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube _____ mm
C – Water Color: (Clear) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish
D – Odors: (None) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas
Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other salamander

High scour event
A lot of sand, rocks embedded, little CPOM

Pebble count	
Sand - 7	
Gravel - 16	
Coarse Gravel - 25	
Cobble - 49	
Boulder - 25	
Bedrock - 2	

Peri count	0	1
moss	37	13
macro	50	
micro	16	34

Field Sheet Complete: CS (initial)
Photos: (Y) / N
Fish Survey Conducted: Y / (N)

Jay Peak Resort
Kick Net Data - South Mountain Branch - SMB-1.2
Class B, Small High Gradient Stream

Year	Density	Richness	EPT	% PMA-O	BI	% Oligo.	EPT/EPT+C	% PPCS-FG	Outcome/ Biological Integrity
Class B, SHG	**≥300**	**≥27**	**≥16**	**≥45**	**≤4.50**	**≤12**	**≥0.45**	**≥40**	
2012 VHB/DEC	234	28	19	71	0.89	12	0.98	58	Does Not Meet Class B Criteria/Fair
2013 VHB	239	26	18	61	0.81	23	0.96	49	Does Not Meet Class B Criteria/Fair
2014 VHB	354	27	20	71	0.71	13	0.99	63	Indeterminate
2015 VHB	339	27	18	54	0.62	17	0.96	44	Does Not Meet Class B Criteria/Fair

Full Support (Pass)	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
Above Threshold (I+)	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
Below Threshold (I-)								
Non-Support (Fail)	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

Macroinvertebrate data submittal form - VTDEC October 2015 version

Project Name: Jay Peak Resort

VT DEC Lab ID: Organization: VHB

Stream Name: South Mountain Branch

Station: SMB-1.2

Note: a minimum of 25% of sample and no less then 300 animals must be processed; no fewer then 24 grids (squares) should be used to process a sample

	Latitude (NAD83)	Longitude (NAD83)
Site lat/long:	44.938328	-72.479061
or VT Site ID:	427807000012	
Date collected:	10/5/2015	
# Reps Collected:	2	
# Rep Picked:	2	
Collection Method:	Kicknet	
Collector:	C. Szal	

REPS:	**Rep 1**	**Rep 2**
Picked By:	CCS	CCS
Date Picked:	Jan-16	Jan-16
#sq picked:	22	22
#sq total:	24	24
Checked By:	CCS	CCS
Sorted By:	CCS	CCS
Sorted Date:	Jan-16	Jan-16

Taxonomic Data								Rep1				Rep2							Biotic Index						Richness Metrics			
Expanded Key	Order	Family	SubFamily Or Tribe	Genus Group	Genus	Species Group	Species	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	ID [1]	QA [2]	Count [3]	Total Sample Count [4]	NOTES	FFG	Chiro	Biotic Index Scores		Old Biotic Index		New Biotic Index		Richness	EPT	Richness	EPT
																			Old BI	New BI	KN-1	KN-2	KN-1	KN-2	KN-1	KN-1	KN-2	KN-2
01.03.00.00.006.00.00	COLEOPTERA	ELMIDAE	N/A	N/A	OULIMNIUS	N/A	sp	CCS	A	5	5.45	CCS	A	1	1.09		SCR	N	2	3	11	2	16	3	1	0	1	0
02.05.01.00.085.00.05	DIPTERA	CHIRONOMIDAE	CHIRONOMINI	N/A	POLYPEDILUM	N/A	aviceps				0.00	CCS	A	5	5.45		CG	Y	3	4	0	16	0	22	-	0	1	0
02.05.03.02.121.00.00	DIPTERA	CHIRONOMIDAE	TANYTARSINI	MICROPSEC/TANYTARSUS	MICROPSECTRA	N/A	sp	CCS	A	4	4.36	CCS	A	5	5.45		CG	Y	3	6	13	16	26	33	1	0	1	0
02.05.05.00.029.00.11	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	EUKIEFFERIELLA	N/A	tirolensis	CCS	A	2	2.18	CCS	A	1	1.09		CG	Y	2	2	4	2	4	2	1	0	1	0
02.05.05.00.075.00.00	DIPTERA	CHIRONOMIDAE	ORTHOCLADIINAE	N/A	PARAMETRIOCNEMUS	N/A	sp	CCS	A	1	1.09	CCS	A	1	1.09		CG	Y	3	5	3	3	5	5	1	0	1	0
02.08.00.00.000.00.00	DIPTERA	EMPIDIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	2	2.18				0.00		PRD	N	3	6	7	0	13	0	1	0	-	0
02.19.00.00.003.00.00	DIPTERA	TIPULIDAE	N/A	N/A	DICRANOTA	N/A	sp	CCS	A	2	2.18	CCS	A	3	3.27		PRD	N	2	3	4	7	7	10	1	0	1	0
02.19.00.00.006.00.00	DIPTERA	TIPULIDAE	N/A	N/A	HEXATOMA	N/A	sp	CCS	A	2	2.18	CCS	A	1	1.09		PRD	N	2	2	4	2	4	2	1	0	1	0
03.01.00.00.001.00.09	EPHEMEROPTERA	BAETIDAE	N/A	N/A	BAETIS	N/A	tricaudatus	CCS	A	2	2.18	CCS	A	3	3.27		CG	N	3	6	7	10	13	20	1	1	1	1
03.01.00.02.007.00.00	EPHEMEROPTERA	BAETIDAE	N/A	ACENTRELLA/PLAUDITUS	PLAUDITUS	N/A	sp	CCS	A	1	1.09				0.00		SCR	N	2	5	2	0	5	0	1	1	-	0
03.04.00.00.004.00.01	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	N/A	aurivillii	CCS	A	2	2.18				0.00		CG	N	0	0	0	0	0	0	1	1	-	0
03.04.00.00.004.01.00	EPHEMEROPTERA	EPHEMERELLIDAE	N/A	N/A	EPHEMERELLA	subv/inv/rotund	group	CCS	A	6	6.55				0.00		CG	N	2	4	13	0	26	0	1	1	-	0
03.06.00.00.003.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	EPEORUS	N/A	sp	CCS	A	17	18.5	CCS	A	7	7.64		CG	N	0	0	0	0	0	0	1	1	1	1
03.06.00.00.004.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	HEPTAGENIA	N/A	sp	CCS	A	2	2.18				0.00		SCR	N	1	4	2	0	9	0	1	1	-	0
03.06.00.00.005.00.00	EPHEMEROPTERA	HEPTAGENIIDAE	N/A	N/A	RHITHROGENA	N/A	sp	CCS	A	67	73.1	CCS	A	39	42.5		CG	N	0	0	0	0	0	0	1	1	1	1
04.01.00.00.003.00.00	TRICHOPTERA	BRACHYCENTRIDAE	N/A	N/A	MICRASEMA	N/A	sp	CCS	A	1	1.09				0.00		SHR	N	1	2	1	0	2	0	1	1	-	0
04.05.00.02.008.01.04	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	alhedra	CCS	A	2	2.18				0.00		CF	N	2	3	4	0	7	0	1	1	-	0
04.05.00.02.008.01.07	TRICHOPTERA	HYDROPSYCHIDAE	N/A	CERATOPSYC/HYDROPSYC	CERATOPSYCHE	alh/slo/spa	sparna				0.00	CCS	A	1	1.09		CF	N	2	4	0	2	0	4	-	0	1	1
04.07.00.00.001.00.00	TRICHOPTERA	LEPIDOSTOMATIDAE	N/A	N/A	LEPIDOSTOMA	N/A	sp	CCS	A	2	2.18	CCS	A	1	1.09		SRD	N	1	1	2	1	2	1	1	1	1	1
04.12.00.00.002.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	DOLOPHILODES	N/A	sp	CCS	A	4	4.36	CCS	A	17	18.5		CF	N	0	0	0	0	0	0	1	1	1	1
04.12.00.00.003.00.00	TRICHOPTERA	PHILOPOTAMIDAE	N/A	N/A	WORMALDIA	N/A	sp				0.00	CCS	A	1	1.09		CF	N	0	0	0	0	0	0	-	0	1	1
04.16.00.00.001.00.01	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	fuscula	CCS	A	5	5.45	CCS	A	5	5.45		PRD	N	1	2	5	5	11	11	1	1	1	1
04.16.00.00.001.00.91	TRICHOPTERA	RHYACOPHILIDAE	N/A	N/A	RHYACOPHILA	N/A	sp a				0.00	CCS	A	2	2.18		PRD	N	0	1	0	0	0	2	-	0	1	1
04.18.00.00.001.00.00	TRICHOPTERA	UENOIDAE	N/A	N/A	NEOPHYLAX	N/A	sp	CCS	A	1	1.09	CCS	A	2	2.18		SCR	N	2	3	2	4	3	7	1	1	1	1
05.02.00.00.006.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	SWELTSA	N/A	sp	CCS	A	43	46.9	CCS	A	43	46.9		PRD	N	0	0	0	0	0	0	1	1	1	1
05.02.00.00.091.00.00	PLECOPTERA	CHLOROPERLIDAE	N/A	N/A	GENUS A	N/A	sp	CCS	A	2	2.18	CCS	A	5	5.45		PRD	N	0	0	0	0	0	0	1	1	1	1
05.03.00.00.000.00.01	PLECOPTERA	LEUCTRIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	55	60.0	CCS	A	53	57.8		SRD	N	0	0	0	0	0	0	1	1	1	1
05.05.00.00.000.00.01	PLECOPTERA	PELTOPERLIDAE	N/A	N/A	N/A	N/A	immature				0.00	CCS	A	5	5.45		SRD	N	1	0	0	5	0	0	-	0	1	1
05.07.00.00.007.00.00	PLECOPTERA	PERLODIDAE	N/A	N/A	MALIREKUS	N/A	sp	CCS	A	13	14.2	CCS	A	18	19.6		PRD	N	1	2	14	20	28	39	1	1	1	1
05.08.00.00.001.00.02	PLECOPTERA	PTERONARCYIDAE	N/A	N/A	PTERONARCYS	N/A	proteus	CCS	A	18	19.6	CCS	A	33	36.0		SRD	N	1	0	20	36	0	0	1	1	1	1
05.09.00.00.000.00.01	PLECOPTERA	TAENIOPTERYGIDAE	N/A	N/A	N/A	N/A	imm	CCS	A	2	2.18				0.00		SRD	N	2	3	4	0	7	0	1	1	-	0
16.01.00.00.001.00.00	NEMATOMORPHA	GORDIIDAE	N/A	N/A	GORDIUS	N/A	SP	CCS	A	1	1.09				0.00		-	N	-	-	-	-	-	-	1	0	-	0
18.04.00.00.000.00.00	OLIGOCHAETA	LUMBRICULIDAE	N/A	N/A	N/A	N/A	uid	CCS	A	50	54.5	CCS	A	54	58.9		CG	N	-	-	-	-	-	-	1	0	1	0
18.06.00.00.000.00.00	OLIGOCHAETA	LUMBRICINA	N/A	N/A	N/A	N/A	uid			1	1.09	CCS	A	1	1.09		CG	N	-	-	-	-	-	-	1	0	1	0
TOTALS by Rep: --->										315	**344**			307	**335**				**Total BI Score**		124	133	190	161	**Total Richness**	**Total EPT-R**	**Total Richness**	**Total EPT-R**
GRAND TOTAL:	679 organisms																		**Total # Organisms**		344	335	344	335				
																			# of Organisms w/o BI		57	60	57	60	29		25	
																			Total # Organisms with BI		287	275	287	275		19		16
																			Biotic Index		0.43	0.48	0.66	0.59				

*Notes:

[1] ID is initial of taxonomist or organization

[2] QA is confidence of ID: A=99%, B=90%,C=75%,D=50%

[3] Count: only report a 0 in case of Rare taxa not found in subsample. Leave blank if no organisms were identified in a rep.

[4] Total Sample Count: estimated count for entire sample, based on ratio of # squares picked to # squares total

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 10/05/15

2015 Expanded Key ID#	KN-1: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	6.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	18.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	73.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	46.9	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	60.0	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	14.2	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	19.6	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	54.5	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	
Total	**5.45**	**14.2**	**106**	**16.4**	**145**	**55.6**	**0.00**	**0.00**	**0.00**	**1.09**	**344**
Percent	**1.59%**	**4.13%**	**30.8%**	**4.76%**	**42.2%**	**16.2%**	**0.00%**	**0.00%**	**0.00%**	**0.317%**	**100%**

Major Taxonomic Group Statistics

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012
Sample Date 10/05/15

2015 Expanded Key ID#	KN-2: Numbers of Organisms										
	COLEOPTERA	DIPTERA	EPHEMEROPTERA	TRICHOPTERA	PLECOPTERA	OLIGOCHAETA	BIVALVIA	MEGALOPTERA	ODONATA	OTHER	TOTAL
01.03.00.00.006.00.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.01.00.085.00.05	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	0.00	0.00	3.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	0.00	0.00	7.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	0.00	0.00	42.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	0.00	0.00	18.5	0.00	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.003.00.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.006.00.00	0.00	0.00	0.00	0.00	46.9	0.00	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	0.00	57.8	0.00	0.00	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	5.45	0.00	0.00	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	0.00	0.00	19.6	0.00	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	0.00	36.0	0.00	0.00	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	58.9	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00	0.00	0.00	
Total	**1.09**	**17.5**	**53.5**	**31.6**	**171**	**60.0**	**0.00**	**0.00**	**0.00**	**0.00**	**335**
Percent	**0.326%**	**5.21%**	**16.0%**	**9.45%**	**51.1%**	**17.9%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/5/2015

2015 Expanded Key ID#	KN-1: Numbers of Organisms								KN-2: Numbers of Organisms							
	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total	CG	CF	PRD	SRD	SHR	SCR	No FG Designation	Total
01.03.00.00.006.00.00	0.00	0.00	0.00	0.00	0.00	5.45	0.00		0.00	0.00	0.00	0.00	0.00	1.09	0.00	
02.05.01.00.085.00.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00		5.45	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.03.02.121.00.00	4.36	0.00	0.00	0.00	0.00	0.00	0.00		5.45	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.029.00.11	2.18	0.00	0.00	0.00	0.00	0.00	0.00		1.09	0.00	0.00	0.00	0.00	0.00	0.00	
02.05.05.00.075.00.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00		1.09	0.00	0.00	0.00	0.00	0.00	0.00	
02.08.00.00.000.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
02.19.00.00.003.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00		0.00	0.00	3.27	0.00	0.00	0.00	0.00	
02.19.00.00.006.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00		0.00	0.00	1.09	0.00	0.00	0.00	0.00	
03.01.00.00.001.00.09	2.18	0.00	0.00	0.00	0.00	0.00	0.00		3.27	0.00	0.00	0.00	0.00	0.00	0.00	
03.01.00.02.007.00.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.00.01	2.18	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.04.00.00.004.01.00	6.55	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.003.00.00	18.5	0.00	0.00	0.00	0.00	0.00	0.00		7.64	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.004.00.00	0.00	0.00	0.00	0.00	0.00	2.18	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
03.06.00.00.005.00.00	73.1	0.00	0.00	0.00	0.00	0.00	0.00		42.5	0.00	0.00	0.00	0.00	0.00	0.00	
04.01.00.00.003.00.00	0.00	0.00	0.00	0.00	1.09	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.04	0.00	2.18	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
04.05.00.02.008.01.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	1.09	0.00	0.00	0.00	0.00	0.00	
04.07.00.00.001.00.00	0.00	0.00	0.00	2.18	0.00	0.00	0.00		0.00	0.00	0.00	1.09	0.00	0.00	0.00	
04.12.00.00.002.00.00	0.00	4.36	0.00	0.00	0.00	0.00	0.00		0.00	18.5	0.00	0.00	0.00	0.00	0.00	
04.12.00.00.003.00.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	1.09	0.00	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.01	0.00	0.00	5.45	0.00	0.00	0.00	0.00		0.00	0.00	5.45	0.00	0.00	0.00	0.00	
04.16.00.00.001.00.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	2.18	0.00	0.00	0.00	0.00	
04.18.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	1.09	0.00		0.00	0.00	0.00	0.00	0.00	2.18	0.00	
05.02.00.00.006.00.00	0.00	0.00	46.9	0.00	0.00	0.00	0.00		0.00	0.00	46.9	0.00	0.00	0.00	0.00	
05.02.00.00.091.00.00	0.00	0.00	2.18	0.00	0.00	0.00	0.00		0.00	0.00	5.45	0.00	0.00	0.00	0.00	
05.03.00.00.000.00.01	0.00	0.00	0.00	60.0	0.00	0.00	0.00		0.00	0.00	0.00	57.8	0.00	0.00	0.00	
05.05.00.00.000.00.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	5.45	0.00	0.00	0.00	
05.07.00.00.007.00.00	0.00	0.00	14.2	0.00	0.00	0.00	0.00		0.00	0.00	19.6	0.00	0.00	0.00	0.00	
05.08.00.00.001.00.02	0.00	0.00	0.00	19.6	0.00	0.00	0.00		0.00	0.00	0.00	36.0	0.00	0.00	0.00	
05.09.00.00.000.00.01	0.00	0.00	0.00	2.18	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16.01.00.00.001.00.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09		0.00	0.00	0.00	0.00	0.00	0.00	0.00	
18.04.00.00.000.00.00	54.5	0.00	0.00	0.00	0.00	0.00	0.00		58.9	0.00	0.00	0.00	0.00	0.00	0.00	
18.06.00.00.000.00.00	1.09	0.00	0.00	0.00	0.00	0.00	0.00		1.09	0.00	0.00	0.00	0.00	0.00	0.00	
Total	**166**	**6.55**	**75.3**	**84.0**	**1.09**	**9.8**	**1.09**	**344**	**127**	**20.7**	**84.0**	**100**	**0.00**	**3.27**	**0.00**	**335**
Percent	**48.3%**	**1.90%**	**21.9%**	**24.4%**	**0.317%**	**2.86%**	**0.317%**	**100%**	**37.8%**	**6.19%**	**25.1%**	**30.0%**	**0.00%**	**0.977%**	**0.00%**	**100%**

Functional Feeding Group Analysis

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/5/2015

	Model			Kicknet 1 vs. SHG		Kicknet 2 vs. SHG	
	SHG	**MHG**	**WWMG**	**KN-1**	**PPCS**	**KN-2**	**PPCS**
Col. Gath.	31%	32%	22%	48.3%	64.2%	37.8%	82.0%
Col. Filt.	18%	30%	36%	1.90%	10.6%	6.19%	34.4%
Predator	19%	13%	7%	21.9%	86.7%	25.1%	75.8%
Shred-Det.	15%	4%	2%	24.4%	61.4%	30.0%	50.1%
Shred- Herb.	1%	1%	5%	0.317%	31.7%	0.00%	0.00%
Scraper	12%	13%	22%	2.86%	23.8%	0.977%	8.14%
				PPCS-FG =	**46%**	**PPCS-FG =**	**42%**

CG = Collector/Gatherer

CF = Collector/Filterer

PRD = Predator

SRD = Shredder - Detritus

SHR = Shredder - Herbivore

SCR = Scraper

Percent Model Affinity of Orders (PMA-O) Calculations

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
VT Site ID 427807000012 **Class** B, Small High Gradient
Sample Date 10/05/15 **Sampler** CS

Order	Model			Kicknet 1 vs. Model (SHG)		Kicknet 2 vs. Model (SHG)	
	SHG	MHG	WWMG	%	difference	%	difference
Coleoptera	8%	6%	13%	1.59%	6.41	0.326%	7.67
Diptera	19%	18%	13%	4.13%	14.9	5.21%	13.8
Ephemeroptera	23%	34%	32%	30.8%	7.79	16.0%	7.04
Plecoptera	21%	8%	8%	42.2%	21.2	51.1%	30.1
Trichoptera	28%	33%	33%	4.76%	23.2	9.45%	18.6
Oligochaeta	0.5%	0.5%	1.0%	16.2%	15.7	17.9%	17.4
Other	0.5%	0.5%	1.0%	0.3%	0.183	0.00%	0.500
				Sum diff	89.4		95.1
				Sum diff * 0.5	44.7		47.6
				100-(sum diff * 0.5)	55.3		52.4
				% model affinity	**55.3%**		**52.4%**

EPT / EPT+C Calculations

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012
Sample Date 10/5/2015
Class B, Small High Gradient
Sampler CS

	KN-1	KN-2
#EPT organisms	267	256
#C organisms	7.64	13.1
EPT/EPT+C	0.972	0.951

Biometric Summary

Project Jay Peak Resort
Station SMB-1.2
Stream South Mountain Branch
Location 427807000012 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

Replicate # Sampling Method	1 KN	2 KN	Average KN
Biometrics:			
Density/Unit	344	335	339.3
Species Richness	29.0	25.0	27.0
EPT Richness	19.0	16.0	17.5
Old Bio Index (0 to 5)	0.433	0.484	0.459
New Bio Index (0 to 10)	0.662	0.587	0.624
% dominant taxa	21.3%	17.6%	19.4%
EPT/EPT+C	0.972	0.951	0.962
EPT/Richness	0.655	0.640	0.648
% Model Affinity (orders)	55.3%	52.4%	53.9%
PPCS - functional groups	46.4%	41.7%	44.1%
Major Groups:			
Coleoptera (%)	1.59%	0.326%	0.957%
Diptera (%)	4.13%	5.21%	4.67%
Ephemeroptera (%)	30.8%	16.0%	23.4%
Trichoptera (%)	4.76%	9.45%	7.10%
Plecoptera (%)	42.2%	51.1%	46.7%
Oligochaeta (%)	16.2%	17.9%	17.1%
Bivalvia (%)	0.00%	0.00%	0.00%
Megaloptera (%)	0.00%	0.00%	0.00%
Odonata (%)	0.00%	0.00%	0.00%
Other (%)	0.317%	0.00%	0.159%
Total (%)	100%	100%	100%
Feeding Groups:			
Collector Gatherer (%)	48.3%	37.8%	43.0%
Collector Filterer (%)	1.90%	6.19%	4.05%
Predator (%)	21.9%	25.1%	23.5%
Shredder - Detritus (%)	24.4%	30.0%	27.2%
Shredder - Herbivore (%)	0.317%	0.00%	0.159%
Scraper (%)	2.86%	0.977%	1.92%
No FG Designation (%)	0.317%	0.00%	0.159%
Total (%)	100%	100%	100%

Prepared By VHB
Project Jay Peak Resort
Station SMB-1.2 **Latitude** 44.938328
Stream South Mountain Branch **Longitude** -72.479061
Location 427807000012 **Class** B, Small High Gradient
Sample Date 10/5/2015 **Sampler** CS

APPLICATION OF STATE OF VERMONT DEC BIOCRITERIA (2/10/04)

Metric	Value	Metric Scoring Results Based on DEC Thresholds for SHG Streams					
		Class B		Class B1		Class A	
		Threshold	Outcome	Threshold	Outcome	Threshold	Outcome
Density	339	≥300	I+	≥400	Fail	≥500	Fail
Richness	27.0	≥27	I+	≥31	Fail	≥35	Fail
EPT	17.5	≥16	Pass	≥19	Fail	≥21	Fail
% PMA-O	53.9%	≥45%	Pass	≥55%	I-	≥65%	Fail
BI (New 1-10)	0.624	≤4.50	Pass	≤3.50	Pass	≤3.00	Pass
% Oligo	17.1%	≤12%	Fail	≤5	Fail	≤2	Fail
EPT/EPT+C	0.962	≥0.45	Pass	≥0.55	Pass	≥0.65	Pass
% PPCS-FG	44.1%	≥ 40%	I+	≥ 45%	I-	≥ 50%	Fail
Outcome:		**Biocriteria are not met**					
The following metrics do not meet Class B thresholds:		% Oligo					

Individual Metric Outcome Guidelines (using the table below)
1) A metric is scored "pass" when the result meets the full support requirements
2) A metric is scored "I+" when the result is between the threshold level and the full support level
3) A metric is scored "I-" when the result is between the threshold level and the non-support level
4) A metric is scored "Fail" when the result is below the non-support requirements

Overall Outcome Guidelines
1) Biocriteria are "met" when: a) five or more metrics are scored "pass" and no metrics have a score of "I-" or "Fail".
2) Biocriteria are "not met" when one or more metrics are scored "failed".
3) In situations where neither items 1 or 2 are the result, an "indeterminate" finding will be made

Scoring Guidelines - Wadeable Stream Category SHG

WQ Class	Score	Density	Richness	EPT	PMA-O	BI	% Oligo	EPT/ EPT+C	PPCS-F
A-1	Full Support	>605	>36	>22	>70%	<2.70	<1%	>0.67	>55%
	Threshold	≥500	≥35	≥21	≥65%	≤3	≤2%	≥0.65	≥50%
	Non-Support	<450	<34	<20	<60%	>3.30	>3%	<0.63	<45%
B1	Full Support	>450	>32	>20	>60%	<3.35	<3.5%	>0.57	>50%
	Threshold	≥400	≥31	≥19	≥55%	≤3.5	≤5%	≥0.55	≥45%
	Non-Support	<350	<30	<18	<50%	>3.65	>6.5%	<0.53	<40%
B	Full Support	>350	>28	>17	>50%	<4.35	<9.5%	>0.47	>45%
	Threshold	≥300	≥27	≥16	≥45%	≤4.5	≤12%	≥0.45	≥40%
	Non-Support	<250	<26	<15	<40%	>4.65	>14.5%	<0.43	<35%

LOTIC BENTHOS FIELD SHEET

(2014 edition)

Bug Lab ID _____

Chem ID _____ Time _____

DUP Chem ID _____ Time _____

Site Name Jax River Mile _____ USF5___ PROB___

Site ID 107

Date 10/5/15 Time 1445 Crew CS RW

Site Description _____

Town: _____ Stream Order: _____ Drainage Area: _____ Km^2 Elevation: _____ ft

D.D° Latitude: _____ **Longitude:** _____ Lat/Long source (GPS --NAD83:) _____

Weather: Sunny Flow/Weather Previous (2 weeks/2days): 2" rain 5 d. ago

Surrounding Land Use: Residential, resort, road, forest

SAMPLING INFORMATION

Sampler: CS Gear: KN

Effort Time: ___ min Mesh: 500 um

Area: _____ m^2 Quantitative: Y / (N)

#Reps: 2 Comp/rep: 4

Qual. PERIPHYTON COVER for each type 0-100% (*See back for Periphyton Cover Form*)

Diatom 70 % Filamentous Green _____ % and length _____ in

Blue Green Tr % Moss Tr % Green Tr % Other _____ %

General Trophic Rating: 1 (0=oligo, 5=Eutroph)

HABITAT OBSERVATIONS

Embeddedness 0-5% Excel, 5-25% V Good, 25-50%Good, (50-75% Fair), >75%Poor Estimate _____ %

Silt Rating: 2 (0=none, 5= chocolate) CPOM Rating (leaf packs): 1 (0= none,5=high) LWD (>4"dia) #: _____ /100m (reach)

Habitat Comments:

Armored

GENERAL WATER TYPE (Riffle,) Winder, Other _____ Channelized: Y / N Upstream Dam: Y (N) ___ mi

B.F.Width: 20-30 (m) Wetted Width: 12-15 (m) Riffle Depth: 4-6" (m) Pool Depth: 2 (m) and Obs: _____

Bank Stability: EX VG G F P Velocity estimate (circle): (S) <0.4 ft/sec, (M) 0.4-2 ft/sec, (F) >2 ft/sec Measured: _____ ft/sec

Fish: Bottom Type: Hard -- Soft -- Mixed 100-25 stable-armored-riprapped Cover Rating: Exc -- Very Good -- Good -- Fair -- Poor

RIPARIAN VEGETATION (both sides, does not need to add up to 100%) Riparian Width (*facing upstream*) L 30 m, R 20 m

Overstory: Softwood _____ % Hardwood 100 % Understory: Shrub (brush) 20 % Herbaceous 30 % Grass 20 %

Canopy%: 100 90 80 70 (60) 50 40 30 20 10 0 Overhead: Open, (Partly Open,) Closed

WQ Section Sampler(s) _____ Baseflow **or** Freshet Present Flow: H (M) L

Meter (type, #)1-_____ 2-_____ 3- _____ Color_____ Color DUP:_____

Temp Air 54 °F, °C Temp Water 8 °C fpH_____ lab pH_____ fCond_____ D.O.%_____ D.Omg/l_____

Circle: Cond pH Alk TP DP Cl ICAnions Turb TN N02-3 Ca Mg Na K Hardness Metals, TNH3, TSS Other_____, _____,

WQ Notes/Comments:

SITE SKETCH & GENERAL OBSERVATIONS (circle those that apply) seep

Overall Aesthetic Rating: 0(poor) – 5(exc.) 4

A – Pollution: Sludge | Sawdust | Paper Fiber | (Sand) | (Silt) | Sewage | Oily Sheen | Trash | (Iron) | Scum | None

B – Water Clarity: (Clear) | Slightly Turbid | Moderately Turbid | Very Turbid | Secci Tube_____mm

C – Water Color: (Clear) | Green Milky | Brown (Tannic) L M H | Gray | Metallic | Reddish

D – Odors: (None) | Musty | Fishy | Sewage | Manure | Sulfur(eggs) | Oily/gas

Aquatic Biota Observed: Mussels, Crayfish, Gastropods, Fish, Other

A lot sand, little CPOM, many kickable areas embedded

Pebble count

Sand - 4

Gravel - 13

Coarse Gravel - 27

Cobble - 33

Boulder - 24

Peri count

	0	1	2
moss	58	15	1
macro	74	0	
micro	23	51	

Field Sheet Complete: CS (initial)

Photos: (Y) / N

Fish Survey Conducted: Y / (N)

APPENDIX 7

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.

.

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

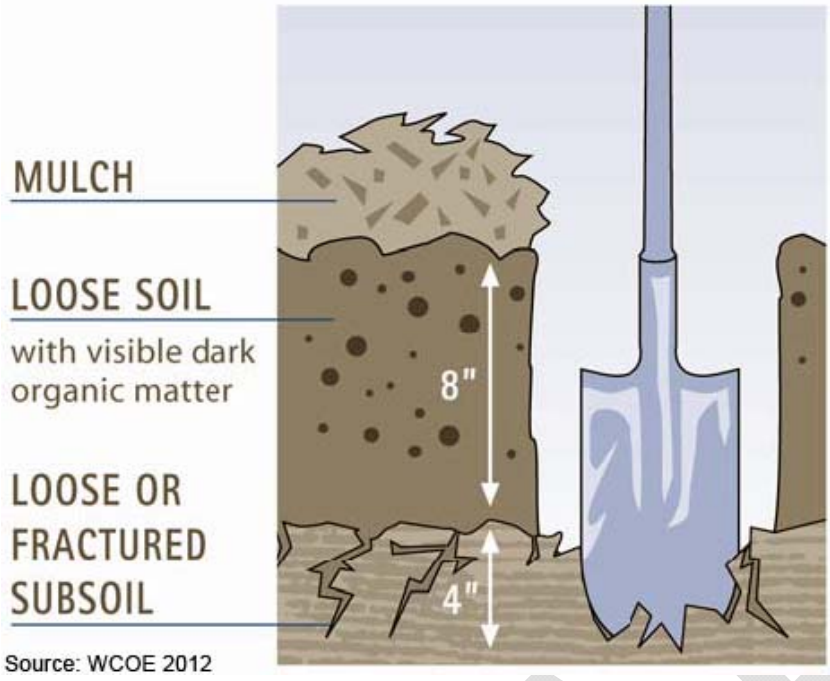


Figure XX-1. Typical Section, Verifying Post-Construction Soil Depth and Quality Using a Test Hole. Test holes should be about one foot deep (after first scraping away any mulch) and about one foot square.

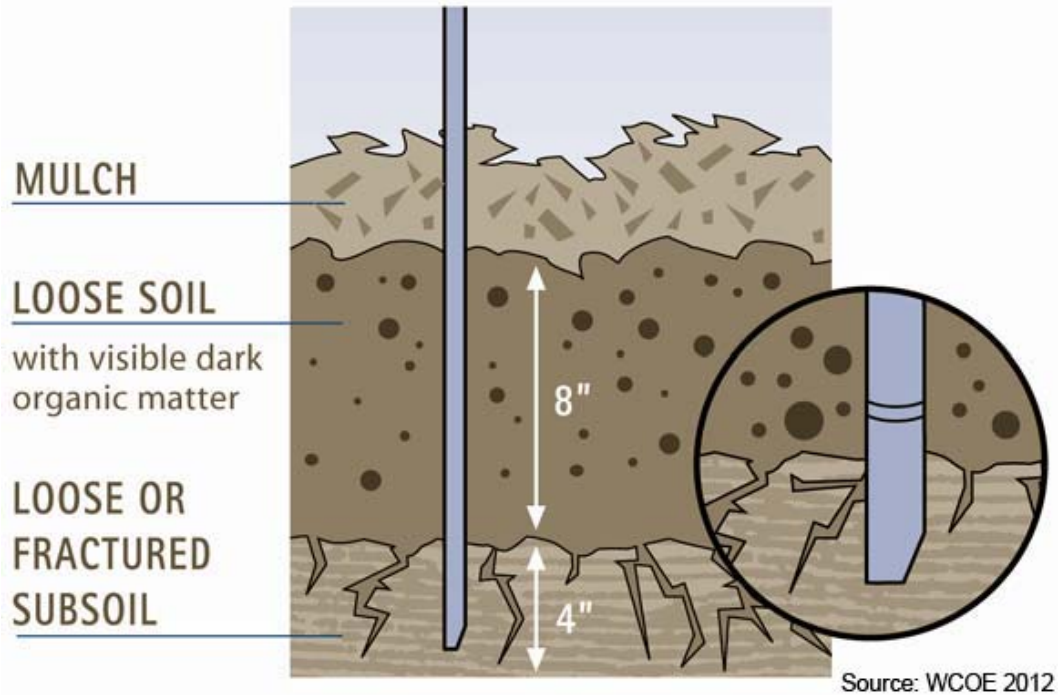


Figure XX-2. Typical Section, Verifying Post-Construction Soil Depth and Quality Using a Rod Penetrometer.

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.

- 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.

- 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.

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

<table>
<tr><th>Option</th><th colspan="2">Construction Sequence</th></tr>
<tr><td colspan="3">OPTION 1: Leave native vegetation and soil undisturbed, and protect from compaction during construction.</td></tr>
<tr><td></td><td colspan="2">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.</td></tr>
<tr><td colspan="3">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.</td></tr>
<tr><td rowspan="2"></td><td colspan="2">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.</td></tr>
<tr><td>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.</td><td>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.</td></tr>
<tr><td colspan="3">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.</td></tr>
<tr><td rowspan="2"></td><td colspan="2">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.</td></tr>
<tr><td>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.</td><td>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.</td></tr>
</table>

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.

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.

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

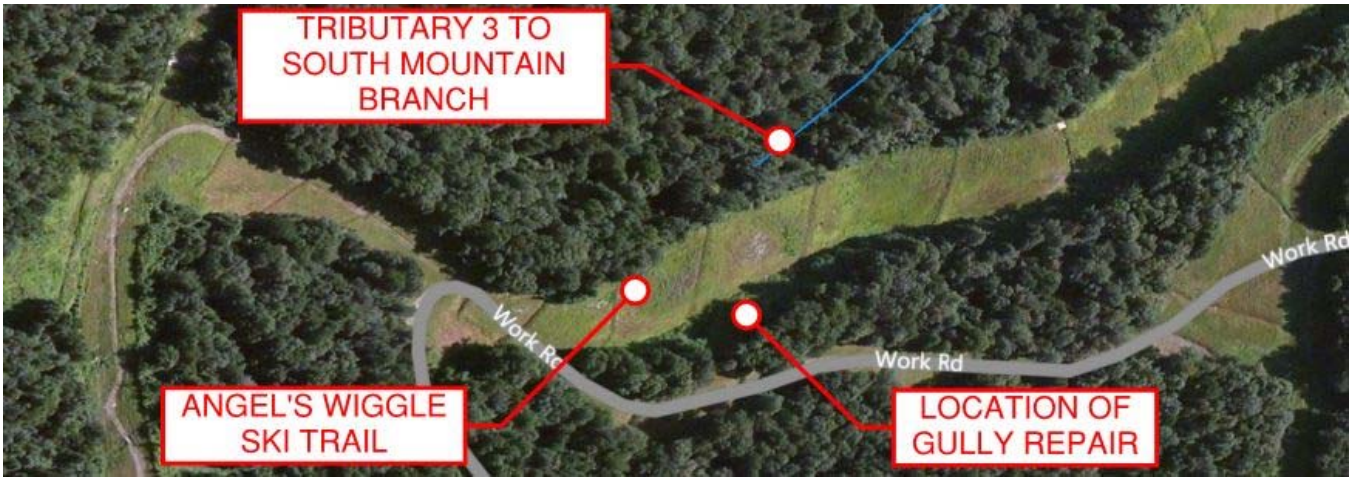
Description: Eroded channel between Hell's Crossing and Angel's Wiggle was stabilized using boulders and riprap to prevent further downcutting and widening. Bank height was measured from the average of three locations between the headcut and the culvert inlet.

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

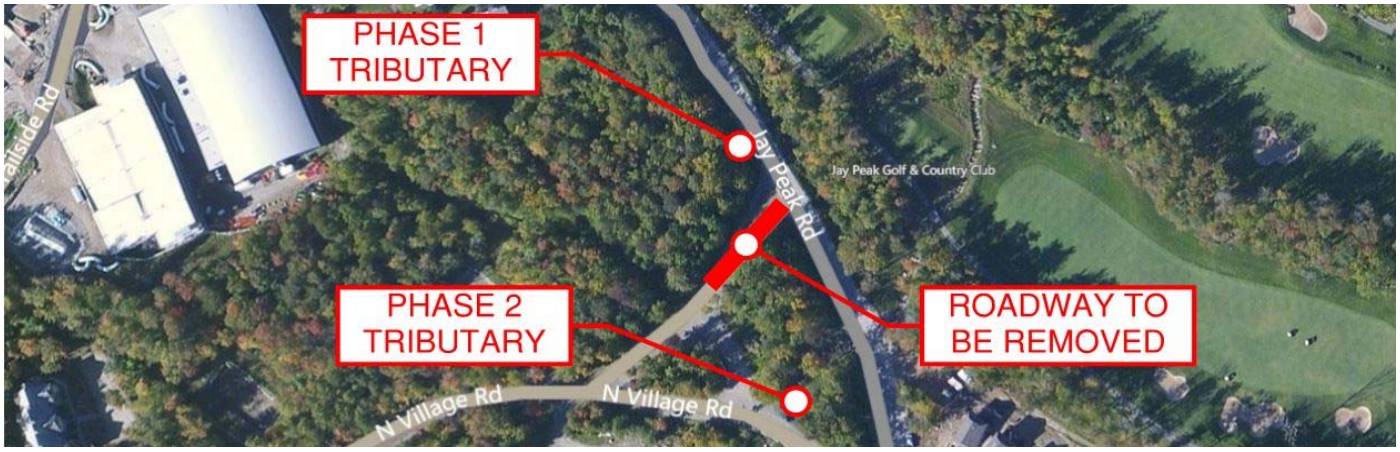
Abandon existing gravel road and convert to vegetated surface to reduce runoff and sediment load. Area to be revegated is 24 feet in width by 350 feet in length.

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.

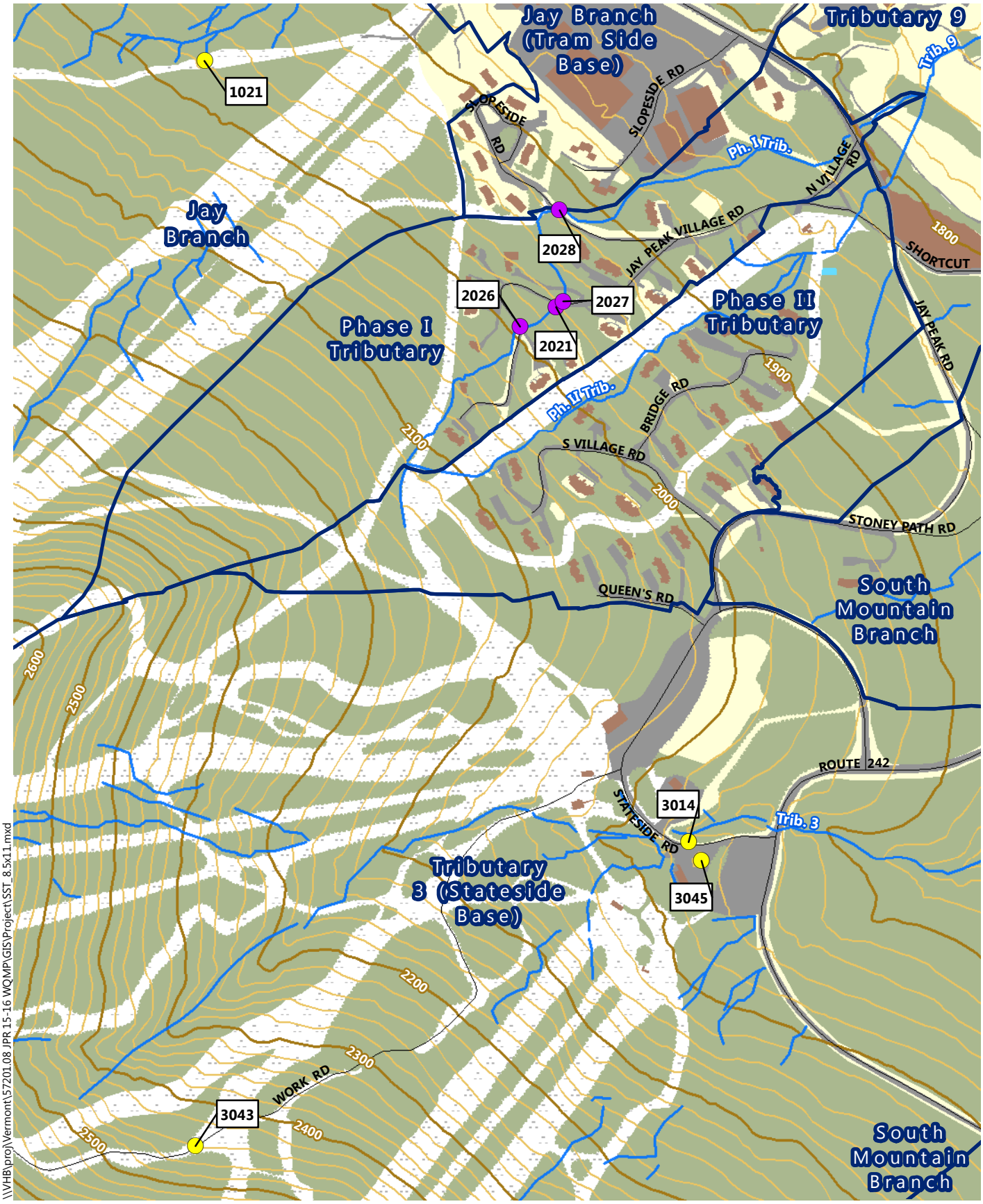
Table 1. Proposed 2016 Sediment Reduction BMPs

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



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0 300 600 1200 Feet

Jay Peak Resort WQRP | Jay, Vermont

2016 Small- & Medium-Scale BMPs

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

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